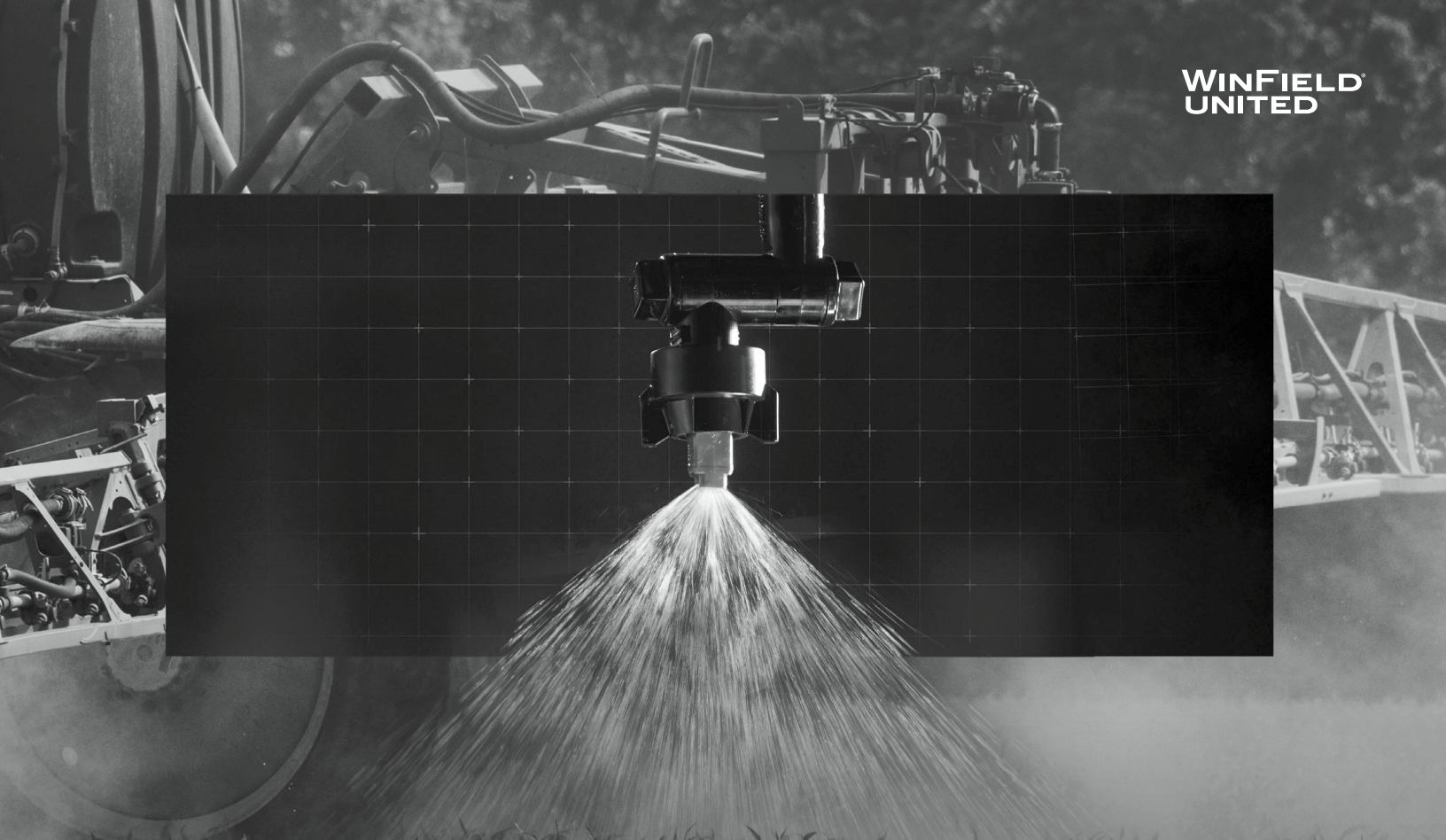


WinField® United

2026 Crop Protection Guide

INFORMATION FOR DEALERS



WINFIELD® UNITED

SIMPLIFY HOW YOU BOOST HERBICIDE PERFORMANCE WITH SUPERLOCK™ ADJUVANT.

BUILT FOR IT.

Proven to perform in 3,600 wind tunnel measurements, SuperLock adjuvant simplifies your tank mix by combining a high surfactant crop oil concentrate with proprietary drift reduction technology, making it highly adaptable to various crop types and herbicides. Not only that, but it's easy to use with stress-free warehouse management and is a qualifying drift mitigation measure under the EPA Herbicide Strategy.

With all this behind it, SuperLock adjuvant offers a simple solution to boost herbicide performance.

Contact your local WinField United retailer to stay ahead all season long.

WINFIELDUNITED.COM
SCAN THE QR CODE TO LEARN MORE.

SuperLock™

© 2025 WinField United. **Important: Before use always read and follow label instructions.** Crop performance is dependent on several key factors many of which are beyond the control of WinField United, including without limitation, soil type, pest pressures, agronomic practices and weather conditions. Growers are encouraged to consider data from multiple locations, over multiple years and to be mindful of how such agronomic conditions could impact results. SuperLock and WinField are trademarks of WinField United. All other trademarks are the property of their respective owners.

WINFIELD® UNITED

INTRODUCTION

Building on a 100+ year connection to agriculture, WinField United continues to deliver the winning combination of top-performing products and industry experience to advance agriculture intelligently. We help growers, dealers and other industry partners stay ahead of the ever-changing agricultural environment and achieve the highest level of bottom-line success. Our high-performance crop protection products including adjuvants, micronutrients, seed treatments, grain protectants, herbicides, insecticides, and fungicides are geared toward adding value to your operation and profits to your bottom line. After all, any job that's worth doing is worth doing right, the first time.

Please note, this guide is not a substitute for product labels and may not have all the information specific to your fields. For more information on access to product labels and Safety Data Sheets, see the Use and Handling Pesticide Section.

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WHAT'S NEW FOR 2026

WinField United is dedicated to ongoing improvements in the Crop Protection Guide. Working with product registrants and in-house professionals. The Guide's content is annually re-examined to update product application recommendations, use instructions and to find alternative ways to present information critical to your crop protection assessments and decisions.

- **14 new or updated crop protection products —**

  7 Herbicides: Kyber Pro, Liberty Ultra, NovaGraz, Sonic Boom, Sapphire, Weedar HXL, WeedMaster HXL

  5 Fungicides: Bexfond, Floxcor, Forcivo, Viatude, Zorina

  2 Nematicides: Outreach SC, Salibro

- **Products removed:** Alite 27, Athena, Azera, Broadstar, Celaro, Clutch, Envoy, Illoxam, Laredo EW, Laredo EW, PasturAll HL, Payload, Reclaim, SafeGuard, Stellar, Team 2G, Tersus, Tourney, Vertisan, Zeal, Zeal Pro, Zidua.

- **WinField United introduces new biological, nutrition and adjuvant products.** See the WinField United Products section and www.winfieldunited.com for more information.

  WinField United Bioverified Products have been updated to include a current list of Bioverified products plus descriptions, key crops, and application timing.

  4 new Winfield United product entries:

  Green Soybean IDC is a water, soluble, dry 6% Fe. Designed for in furrow applications.

  MicroFuse Corn is a soil applied, S, B, Cu, Mn, Zn, granular blend, micronutrient premix fertilizer for corn.

  MicroFuse Soybean is a soil applied, S, B, Cu, Fe, Mn, Zn, granular blend micronutrient premix fertilizer for Soybeans.

  SuperLock adjuvant is a high surfactant oil concentrate crop oil concentrate (HSOC-COC) with a built-in oil emulsion drift and deposition aid.

All WinField United crop protection product choices are easily identified with ***BOLD ITALICIZED*** font in tables and charts. Additional WinField United products – like adjuvants, biologicals, plant nutrients, and plant growth regulators – are presented in the WinField United Products section.

This guide was developed as a quick reference guide for pest management decisions. It is not intended to replace the label, but rather to provide a convenient supplemental source of information on pest management. Always follow the pesticide label.

This guide provides thresholds for economically and environmentally sound pest control, pest identification aids, pesticide product performance comparisons, alternatives to pesticides such as cultural control, and safe handling procedures. Generally, crop protection information is grouped by crop and arranged in the order of weeds, insects, and diseases.

LAYOUT OF THE CROP PROTECTION GUIDE

CROPS I

- Corn
- Soybean
- Small Grains (Wheat, Barley, Oat, Rye, Triticale)

CROPS II

- Alfalfa and Other Legumes
- Bean (Field) and Other Pulse Crops
- Canola, Crambe, Mustard, and Rape Seed
- Cotton
- Fallow
- Flax
- Grasses Grown for Seed
- Millet (Proso and Pearl)
- Mint
- Pasture
- Pea
- Peanut
- Potato
- Rice
- Sorghum
- Sugarbeet
- Sugar Cane
- Sunflower/Safflower

SEED AND GRAIN

- Inoculants
- Seed Treatments
- Stored Grain

VEGETABLES

- Herbicide Efficacy Charts
- Herbicides Labeled for Vegetables
- Insecticides Labeled for Vegetables
- Fungicides Labeled for Vegetables
- Asparagus
- Cole Crops
- Cucurbits
- Leafy Vegetables
- Onions and Garlic
- Root Crops
- Solanaceous Crops

NON-CROP

- Aquatic
- Brush/Woody Plants
- CRP and Buffer Strips
- Lawn/Turf
- Non-Cropland
- Shelterbelt and Christmas Trees
- Weed Competitive Index
- Common Weed Names

TECHNICAL INFORMATION

- Herbicide Resistance
- Herbicide Site of Action
- Herbicide Injury Symptoms
- Herbicide Properties Affecting Performance
- Herbicide Classification
- Insecticide Classification
- Insect Resistance Management
- Fungicide Classification
- Fungicide Resistance Management
- Seed Treatment Classification
- EPA Registration Numbers for Pesticides
- Restricted Use Pesticides
- Pesticides for Impregnation, Liquid Fertilizer, and Irrigation
- Registered Trademarks
- Herbicide Premix Conversions
- Glyphosate Formulation Comparisons
- Fungicide and Insecticide Premix Conversions
- Winter Storage Temperatures and Weights per Gallon
- Minimum Rain-Free Interval
- Herbicide Rotational Restrictions
- Herbicide Carryover and Residue Testing
- Insecticide Rotational Restrictions
- Fungicide and Seed Treatment Rotational Restrictions
- Conversions and Measurements
- Crop Protection Company Resources

USE AND HANDLING PESTICIDES

- Foam Marking
- Drift Reduction
- Mixing Pesticides
- Cleaning Sprayers
- Herbicide Application with Fertilizers
- Chemigation
- First Aid
- Poison Control Centers
- Dictionary: Common and Trade Names
- Product Dictionary

WINFIELD UNITED PRODUCTS

- Equivalent Products
- Adjuvant Descriptions
- Bioverified Designation
- Plant Nutrition
- Herbicide Selection Worksheet
- Weights of Liquid and Dry Fertilizers

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Rating reflects burndown activity only; not residual control. Ratings assume that old growth is removed before application and 6-12" of new growth is present. Low soil moisture can reduce control. Time from application to planting varies by products. See application timing table or label.

KEY
9-10 = EXCELLENT
8 = GOOD
7 = FAIR
<6 = POOR
N = NONE
U = UNKNOWN

	APPLICATION TIME	SITE OF ACTION[A]	GRASSES AND BROADLEAVES												
			Alfalfa	Bluegrass	Cool-season grasses**	Orchardgrass	Quackgrass	Red clover	Smooth brome	Sweet clover	Tall fescue	Timothy	Vetch, hairy	Wheatgrass	Warm season grasses**
SOD & CRP HERBICIDE (RATE)															
CORNERSTONE 5 PLUS/GLYPHOSATE* *(24 fl oz)*	Spring	9	5	**8**	5	6	7	5	4	5	5	7	6	4	4
CORNERSTONE 5 PLUS/GLYPHOSATE* *(48 fl oz)*	Spring	9	6	**9**	6	7	**9**	7	6	7	7	**8**	7	6	7
CORNERSTONE 5 PLUS/GLYPHOSATE* *(72 fl oz)*	Spring	9	7	**10**	**8**	**8**	**10**	**8**	**9**	**9**	**8**	**9**	**8**	**8**	**8**
CORNERSTONE 5 PLUS/GLYPHOSATE* *(24 fl oz)*	Fall	9	6	**9**	7	**8**	**9**	7	6	7	7	**9**	7	6	7
CORNERSTONE 5 PLUS/GLYPHOSATE* *(48 fl oz)*	Fall	9	7	**10**	**8**	**9**	**10**	**9**	**8**	**9**	**9**	**9**	7	**9**	**8**
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***2,4-D 4#*** *(24 fl oz + 1 pt)*	Spring	9,4	7	**8**	4	5	6	**8**	4	**8**	5	6	**8**	4	4
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***2,4-D 4#*** *(48 fl oz + 1 qt)*	Spring	9,4	**8**	**9**	6	6	**8**	**9**	6	**9**	7	**8**	**8**	6	7
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***2,4-D 4#*** *(24 fl oz + 1 pt)*	Fall	9,4	**8**	**9**	7	7	**9**	**9**	6	**9**	7	**9**	**8**	6	7
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***2,4-D 4#*** *(48 fl oz + 1 qt)*	Fall	9,4	**9**	**10**	**8**	**9**	**10**	**10**	**8**	**10**	**9**	**10**	**8**	**8**	**9**
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(24 fl oz + 0.5 pt)*	Spring	9,4	**8**	**8**	5	5	6	**8**	4	**9**	5	6	7	4	4
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(48 fl oz + 0.5 pt)*	Spring	9,4	**8**	**9**	5	6	**8**	**9**	6	**9**	7	**8**	7	6	7
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(48 fl oz + 1 pt)*	Spring	9,4	**9**	**9**	6	6	**8**	**10**	6	**10**	7	**8**	**8**	6	7
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(24 fl oz + 0.5 pt)*	Fall	9,4	**9**	**9**	7	7	**8**	**10**	6	**10**	7	**8**	7	6	7
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(48 fl oz + 1 pt)*	Fall	9,4	**10**	**10**	**8**	**9**	**10**	**10**	**8**	**10**	**9**	**10**	**9**	**8**	**9**
GRAMOXONE SL 3.0 ‡ *(1.3 pt)*	Spring	22	2	5	3	3	3	5	3	3	5	3	**8**	3	3
GRAMOXONE SL 3.0 ‡ *(2.7 pt)*	Spring	22	3	6	4	4	4	6	4	4	7	5	**9**	4	4
GRAMOXONE SL 3.0 ‡ *(1.3 pt)*	Fall	22	3	6	4	4	4	6	4	4	6	4	7	4	4
GRAMOXONE SL 3.0 ‡ *(2.7 pt)*	Fall	22	5	6	5	4	4	6	5	4	7	4	**8**	5	5
GRAMOXONE SL 3.0 ‡ + ***ATRAZINE 90DF*** ‡ *(1.3 pt + 2 lb)*	Spring	22,5	5	**9**	7	7	7	7	7	7	7	**8**	**8**	7	3
2,4-D 4# + ***STERLING BLUE***/CLARITY/***CLARIFIER***/***DICAMBA MAX 4***/ DIFLEXX *(1 qt + 0.5 pt)*	Spring	4,4	**9**	N	N	N	N	**10**	2	**10**	2	N	**8**	N	N
2,4-D 4# + ***STERLING BLUE***/CLARITY/***CLARIFIER***/***DICAMBA MAX 4***/ DIFLEXX *(1 qt + 0.5 pt)*	Fall	4,4	**10**	N	N	N	N	**10**	2	**10**	2	N	7	N	N

[A] Site of Action described in Technical Information section.

** **Cool-season perennial grasses:** Two applications may be required. Apply in fall before a hard freeze and in the spring 7-14 days prior to planting.
Warm-season perennial grasses: Two applications are often required for effective control. Make first application in late summer to active growth prior to dormancy or frost followed by a second application in spring 7-14 days prior to planting. Warm-season grasses include bluestem, Indiangrass, switchgrass, buffalograss and eastern grama grass.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Inofrmation section for more information on use restrictions.

HERBICIDE PERFORMANCE RATINGS *continued*

Rating reflects burndown activity only; not residual control. Time from application to planting varies by products. See application timing table or label.

KEY
9-10 = EXCELLENT
8 = GOOD
7 = FAIR
<6 = POOR
N = NONE
U = UNKNOWN

BURNDOWN HERBICIDE (RATE)	SITE OF ACTION[A]	GRASSES										
		Barnyardgrass	Bluegrass, annual**	Carolina foxtail/little barley**	Crabgrass	Downy brome**	Foxtail	Foxtail barley	Little barley**	Ryegrass, annual**	Sandbur, field	Wheat, winter**
ACURON ‡ *(2.5 qt)*	5,15,27	**8**	**8**	**9**	6	4	**8**	4	U	U	7	6
AIM EC + ***ATRAZINE 4L*** ‡ + ***STERLING BLUE***/CLARITY/***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(0.5 fl oz + 1 qt + 0.5 pt)*	14,5,4	4	**8**	**9**	4	5	6	**8**	**8**	6	5	6
ALLUVEX *(1.5 oz)*	2	**9**	**9**	**8**	**9**	**9**	**9**	**9**	**9**	**9**	**8**	**9**
ALLUVEX + GLYPHOSATE *(1.5 oz + labeled)*	2,9	6	**9**	**10**	5	7	6	**9**	**9**	6	5	6
ATRAZINE 4L ‡ *(2 qt)*	5	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
ATRAZINE 4L ‡ + ***2,4-D LV4*** *(2 qt + 1 pt)*	5,4	7	**10**	**10**	5	**8**	6	**10**	**9**	7	6	7
ATRAZINE 4L ‡ + ***STERLING BLUE***/CLARITY/***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(2 qt + 0.5 pt)*	5,4	7	**10**	**10**	5	**8**	5	**9**	**9**	5	6	7
ATRAZINE 4L ‡ + ***STERLING BLUE***/CLARITY/***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(1 qt + 0.5 pt)*	5,4	4	**8**	**9**	4	5	6	**9**	**9**	6	5	6
AUTUMN SUPER 51 WDG *(not labeled for sorghum) (0.3-0.5 oz)*	2	N	N	N	N	N	N	N	N	N	N	N
BALANCE FLEXX ‡ *(not labeled for sorghum) (4-6 fl oz)*	27	**8**	N	N	7	5	**9**	N	N	N	7	2
BALANCE FLEXX ‡ *(not labeled for sorghum)* + ***ATRAZINE 4L*** ‡ *(4-6 fl oz + 1 qt)*	27,5	**9**	U	U	**8**	7	**8**	U	U	U	7	6
BASIS BLEND *(not labeled for sorghum)* + ***2, 4-D LV4*** *(0.825 oz + 1.25 pt)*	2,4	**8**	7	7	6	5	**8**	U	7	U	7	6
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***2-4-D LV4*** *(18 fl oz + 1 pt)*	9,4	**10**	**10**	**8**	**9**	**10**	**10**	**9**	**9**	**9**	**10**	**10**
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***ATRAZINE 4L*** ‡ *(18 fl oz + 1 pt)*	9,5	**10**	**10**	**9**	**9**	**10**	**9**	**8**	**9**	**10**	**10**	**10**
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***ATRAZINE 4L*** ‡ *(18 fl oz + 1.5 pt)*	9,5	**10**	**10**	**10**	**9**	**10**	**9**	**9**	**9**	**10**	**10**	**10**
CORVUS ‡ *(not labeled for sorghum) (3.33-5.6 fl oz)*	27,2	**9**	6	U	7	6	**8**	5	U	6	**8**	6
DIFLEXX DUO *(24-40 fl oz)*	27,4	**8**	U	U	**9**	U	**8**	U	U	7	**8**	7
ELEVORE + GLYPHOSATE + ***2,4-D LV4*** *(1 fl oz + 32-40 fl oz + 11.4 fl oz)*	4,9,4	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
ENLIST DUO *(3.5 -4.75 pt)*	4,9	**10**	**10**	**10**	**10**	**10**	**10**	**9**	**9**	**10**	**10**	**10**
GRAMOXONE SL 3.0 ‡ *(1.3 pt)*	22	**8**	**8**	**9**	**8**	7	**8**	7	**9**	7	7	7
GRAMOXONE SL 3.0 ‡ + ***ATRAZINE 4L*** ‡ *(1.3 pt + 2 qt)*	22,5	**10**	**10**	**10**	**9**	**9**	**9**	**10**	**9**	**10**	**9**	**10**
GRAMOXONE SL 3.0 ‡ + ***ATRAZINE 4L*** ‡ *(1.3 pt + 1 qt)*	22,5	**8**	**9**	**9**	**8**	**8**	**8**	**9**	**9**	**8**	**8**	**8**
LEADOFF + ***2,4-D***	2,4	**8**	**9**	U	7	U	**9**	U	U	**8**	6	7
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH *(not labeled for sorghum) (19-29 fl oz* or *29-43 fl oz)*	10	**8**	6	**9**	**8**	U	**8**	7	U	6	**8**	4
LUMAX EZ ‡ or LEXAR EZ ‡ *(not labeled for sorghum) (2.7-3.25 qt* or *3-3.5 qt)*	5,15,27	6	**8**	**9**	6	4	6	4	U	U	7	6
MAVERICK + ***ATRAZINE 4L*** ‡ *(32 fl oz + 1 qt)*	4,5,15,27	**8**	**9**	**9**	6	6	**8**	5	7	7	7	7
PANOFLEX *(0.3-0.6 oz)*	2	N	N	N	N	N	N	N	N	N	N	N
PRINCEP 4L/SIMAZINE 4L *(not labeled for sorghum)* + ***2,4-D LV4*** *(1 qt + 1 pt - Fall)*	5,4	7	**8**	**8**	7	7	U	U	U	U	5	U
SHARPEN *(1 oz)*	14	N	N	N	N	N	N	N	N	N	N	N
STERLING BLUE/CLARITY/***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(0.5 pt)*	4	N	N	N	N	N	N	N	N	N	N	N
TRIVOLT ‡ *(10-20 fl oz)*	2,15,27	**9**	6	U	7	6	**8**	5	U	6	**8**	6
VALOR SX or VALOR EZ/PANTHER SC/CHATEAU EZ + ***2,4-D LV4*** + GLYPHOSATE *(1-2 oz or 1-2 fl oz) + (1 pt + 2 pt)*	14,4	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**
VERDICT/***TESTIFY*** *(10-16 fl oz)*	14,15	N	N	N	N	N	N	N	N	N	N	N
2,4-D LV4 *(1 pt - Fall)*	4	N	N	N	N	N	N	N	N	N	N	N
2,4-D LV4/ENLIST ONE *(1 pt - Spring)*	4	N	N	N	N	N	N	N	N	N	N	N
2,4-D LV4 + ***STERLING BLUE***/CLARITY/***CLARIFIER***/***DICAMBA MAX 4***/DIFLEXX *(0.5 qt + 0.5 pt)*	4,4	N	N	N	N	N	N	N	N	N	N	N

[A] Site of Action described in Technical Information section.
* May use other glyphosate products at greater or lesser volumes; see individual labels for Roundup PowerMAX 3; WeatherMAX/Honcho K6/Credit Xtreme/Cornerstone Plus.

** As a winter annual, these are best controlled in fall or early spring.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

	BROADLEAVES																														
	Alfalfa	Bittercress/Sibara**	Canada thistle	Chickweed**	Clover, red	Clover, sweet	Cutleaf evening primrose**	Daisy fleabane	Dandelion	Field pansy	Hairy vetch	Henbit/Deadnettle**	Horseweed (marestail)**	Knotweed, tall	Kochia	Kochia, triazine rest.	Lambsquarters, common	Mousetail**	Mustard, annual/winter**	Mustard, wild	Pennycress**	Pigweed	Prickly lettuce**	Purslane speedwell**	Ragweed, common	Russian thistle	Shepherdspurse**	Smartweed, annual	Sunflower	Velvetleaf	Virginia pepperweed**	Wild buckwheat
	6	U	6	9	U	U	U	5	8	9	U	9	9	U	9	9	10	U	8	10	10	10	8	U	9	8	9	9	10	10	10	8
	8	8	7	10	8	7	6	5	9	9	10	10	8	10	10	9	10	10	10	10	8	10	10	10	10	9	0	10	10	10	9	10
	5	U	7	8	U	U	U	U	7	U	U	9	5	U	8	8	9	U	8	8	8	8	U	5	5	5	8	8	U	9	U	5
	4	8	5	10	4	3	9	U	9	U	U	10	9	U	10	10	10	U	10	10	10	10	U	9	9	9	10	10	U	10	U	9
	6	10	8	10	7	7	U	7	4	9	6	9	8	8	10	1	10	10	9	10	10	10	9	10	9	9	10	10	10	10	9	9
	5	10	6	10	9	8	10	6	7	9	10	10	10	10	10	6	10	10	10	10	10	10	10	10	10	9	10	10	10	10	10	9
	7	10	7	10	10	9	10	8	7	9	10	10	10	10	10	8	10	10	10	10	10	10	10	10	10	9	10	10	10	9	10	10
	7	8	7	10	8	7	6	5	9	9	10	10	8	10	9	9	10	10	10	10	8	10	10	10	10	9	10	10	10	9	9	10
	8	U	8	9	U	5	U	7	8	U	6	9	9	7	7	7	9	U	9	9	9	8	8	U	9	8	9	8	9	8	9	7
	2	U	4	8	6	1	U	6	6	8	1	7	8	U	8	8	9	U	9	9	7	10	8	8	8	8	8	8	8	10	8	5
	4	U	4	9	6	2	U	7	7	8	6	8	9	9	9	9	10	U	8	9	8	10	9	9	10	9	9	10	8	10	8	7
	6	9	6	7	8	7	7	6	8	7	8	8	9	7	6	6	10	9	9	9	10	10	9	7	9	8	9	10	9	9	8	7
	6	9	8	10	8	6	9	6	8	9	7	9	9	9	9	9	9	10	10	10	10	9	10	10	9	9	10	9	10	10	9	6
	4	10	6	10	6	3	9	7	6	8	6	10	10	10	10	8	10	10	10	10	10	10	10	10	9	10	10	10	10	9	10	9
	6	10	8	10	7	4	10	7	6	9	6	10	10	10	9	8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9
	4	U	6	9	6	2	U	7	7	5	1	8	9	U	9	9	10	U	9	9	8	10	9	9	10	8	9	9	7	10	8	5
	7	7	8	8	8	7	8	8	2	10	8	7	9	8	9	7	9	9	7	9	8	9	7	9	9	7	8	10	10	7	9	9
	7	9	9	9	8	8	10	9	10	10	10	10	10	10	10	10	9	9	9	9	9	9	9	9	9	9	6	9	10	10	10	8
	6	9	8	10	8	6	9	6	8	9	7	9	9	9	9	9	9	10	10	10	10	10	10	10	9	9	10	9	10	10	9	8
	4	9	5	9	4	4	7	5	5	4	7	9	7	9	9	8	8	10	10	8	10	7	7	6	8	6	9	6	10	8	9	6
	5	10	5	10	7	7	10	7	5	8	8	10	10	10	10	8	10	10	10	10	10	8	9	10	10	9	10	9	10	10	10	10
	5	9	5	10	5	5	8	6	5	9	7	10	9	10	9	8	10	10	10	10	9	8	10	9	9	9	10	9	10	9	9	9
	8	9	7	9	U	U	9	U	9	U	U	9	7	U	8	8	9	U	9	9	9	9	U	U	8	6	9	9	9	9	9	7
	6	7	U	9	4	4	8	6	7	U	7	7	8	8	8	9	8	10	U	10	10	8	U	10	9	8	8	10	8	8	U	7
	6	U	6	9	U	U	U	5	8	9	U	9	9	U	9	9	10	U	8	10	10	10	8	U	8	7	8	9	10	10	10	8
	6	U	8	9	7	7	U	U	7	6	6	10	9	6	8	5	10	10	10	10	10	9	9	9	9	U	9	9	9	10	U	8
	4	U	8	10	P	P	U	U	9	U	8	7	6	U	N	N	9	U	9	9	9	7	8	7	5	7	9	9	8	9	U	7
	7	9	6	9	8	8	9	U	8	U	8	8	9	7	9	6	8	U	9	9	9	8	9	7	8	U	9	9	U	7	9	U
	7	U	8	8	7	7	8	9	7	3	7	7	8	5	8	8	9	9	9	9	9	9	9	8	8	9	9	9	8	8	8	9
	7	7	7	8	8	8	7	8	8	2	10	8	7	9	8	9	7	4	5	7	9	8	9	4	9	9	7	8	10	7	7	9
	4	U	6	9	6	2	U	7	7	5	1	8	9	U	9	9	10	U	9	9	8	10	9	9	10	8	9	9	7	10	8	5
	9	9	9	9	9	9	9	9	9	3	9	9	9	9	9	9	9	9	9	10	9	9	9	9	9	9	9	9	9	9	9	8
	7	9	8	7	7	7	8	8	7	3	7	7	8	8	8	8	9	U	9	9	9	9	9	9	9	9	8	9	9	9	9	9
	7	9	6	6	8	8	U	8	8	5	10	8	7	9	8	9	7	4	5	8	9	8	9	4	9	9	8	8	10	7	7	9
	5	9	4	7	7	6	7	7	7	3	7	4	7	6	6	6	9	8	10	8	10	8	8	7	9	9	8	7	10	8	7	9
	5	9	4	7	7	6	7	8	9	2	10	8	8	9	9	8	9	8	9	8	10	10	9	7	9	9	8	9	10	8	9	9

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

HERBICIDE PERFORMANCE RATINGS *continued*

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES														
			Barnyardgrass	Crabgrass	Fall panicum	Foxtail, giant;green	Foxtail, yellow	Johnsongrass (Seedling)	Quackgrass	Sandbur, field	Shattercane	Volunteer small grain	Wild oat	Wild proso millet	Wirestem muhly	Woolly cupgrass	Yellow nutsedge
PP OR PRE HERBICIDE (A.I.S)																	
ACURON ‡ *(atrazine + s-metolachlor + mesotrione + bicyclopyrone)*	E	5,15,27,27	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F/**G**	P	F	**G/E**
ACURON FLEXI *(bicyclopyrone + mesotrione + s-metolachlor)*	E	27,27,15	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F/**G**	P	F	**G/E**
ALLUVEX/LEADOFF/CRUSHER *(rimsulfuron + thifensulfuron methyl)*	E	2,2	P	F	**G**	**E**	**E**	P	P	P	P	**G**	F	P	U	P	P
ANTHEM FLEX *(carfentrazone + pyroxasulfone)*	E	14,15	**E**	**E**	**E**	**E**	**E**	F/**G**	P	F/**G**	F	F	**G/E**	**G**	P	F/**G**	F
ANTHEM MAXX *(fluthiacet + pyroxasulfone)*	E	14,15	**E**	**E**	**E**	**E**	**E**	F/**G**	P	F/**G**	F	F	**G/E**	**G**	P	F/**G**	F
ATRAZINE 4L; 90DF ‡ *(atrazine)*	E	5	F	P	P	F	F	P	F	F	P	F	**G**	P	P	P	F
BALANCE FLEXX ‡ *(isoxaflutole)*	E	27	**G**	F/**G**	**G**	**G/E**	F	F	P	F	P	P	P	**G**	P	F/**G**	P
CALLISTO/***INCINERATE*** *(mesotrione)*	E	27	**G**	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CAPRENO *(thiencarbazone + tembotrione)*	G	2,27	**G**	**G**	**G**	**G**	**G**	**G**	U	F	**G/E**	**G**	**G**	**G**	U	F/**G**	P
CHARGER MAX/DUAL II MAGNUM/EVERPREX* *(s-metolachlor)*	E	15	**E**	**E**	**E**	**E**	**E**	P	P	P/F	P	P	P	F	P	F	F/**G**
CHARGER MAX ATZ ‡/BICEP II MAGNUM ‡/BICEP II MAGNUM FC ‡ *(atrazine + s-metolachlor)*	E	5,15	**E**	**E**	**E**	**E**	**E**	P	P	F	P	P/F	F	F	P	F	F/**G**
CHARGER MAX ATZ LITE ‡/BICEP LITE II MAGNUM* ‡ *(atrazine + s-metolachlor)*	E	5,15	**E**	**E**	**E**	**E**	**E**	P	P	F	P	P/F	F	F	P	F	F/**G**
CONFIDENCE/***TREMOR NXT***/HARNESS/SURPASS NXT* *(acetochlor)*	E	15	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F/**G**	P	F/**G**	F/**G**
CONFIDENCE XTRA 5.6L ‡/***TREMOR ATZ NXT*** ‡/HARNESS XTRA 5.6L ‡/KEYSTONE LA NXT ‡ *(atrazine + acetochlor)*	E	5,15	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F/**G**	P	F/**G**	F/**G**
CORVUS ‡ *(thiencarbazone + isoxaflutole)*	G	2,27	**E**	**E**	**G**	**G/E**	**G**	F/**G**	U	F	**E**	F	F	**E**	U	F/**G**	F
DEGREE XTRA ‡/FULTIME NXT* ‡ *(atrazine + acetochlor)*	E	5,15	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F/**G**	P	F/**G**	F/**G**
DIMETRIC EXT/***DIMETRIC LIQUID*** *(metribuzin)*	F	5	F	F	F	F	F	P	P	P	P	P	P	P	P	P	P
ENVERSA *(acetochlor)*	E	15	**G/E**	**G/E**	**G/E**	**G/E**	**G/E**	F	U	F	F	F	F	U	U	**G**	U
FRAMEWORK 3.3 EC/PROWL H2O *(pendimethalin)*	G/E	3	**G/E**	**E**	**G/E**	**G/E**	**G/E**	F	P	F	F	P	F	**G**	P	**G**	P
HARNESS MAX *(acetochlor + mesotrione)*	E	15,27	**G**	**E**	**E**	**E**	**E**	P	P	P	P	P	P	P	P	P	F
HARNESS XTRA ‡ *(acetochlor + atrazine)*	E	15,5	**G**	**E**	**G**	**E**	**E**	P	P	P	P	P	P	P	P	F	**G**
HORNET *(flumetsulam + clopyralid)*	G	2,4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LOROX *(linuron)*	G	5	U	P/F	P/F	P	P	U	P	N	N	N	N	N	N	P	P
LUMAX EZ ‡/LEXAR EZ ‡ *(atrazine+ s-metolachlor + mesotrione)*	E	5,15,27	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F	P	F	**G**
MAVERICK *(clopyralid + mesotrione + pyroxasulfone)*	E	4,15,27	**E**	**E**	**E**	**E**	**E**	F	P	P/F	P	F	**G**	**G/E**	P	F	**F**
OUTLOOK* *(dimethenamid-p)*	E	15	**E**	**E**	**E**	**E**	**E**	P	P	P/F	P	P	F	**G**	P	F/**G**	F/**G**
PERPETUO *(Pyroxasulfone + Flumiclorac pentyl ester)*	E	14,15	**E**	**E**	**E**	**E**	**E**	F/**G**	P	F/**G**	F	F	**G/E**	**G**	P	**F/G**	**F**
PRINCEP 4L/PRINCEP CALIBER 90/***SIMAZINE 4L***/***SIMAZINE 90DF*** *(simazine)*	E	5	**G**	F	P/F	**G**	**G**	P	P	P	P	U	U	U	P	P	U
PYTHON *(flumetsulam)*	E	2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RESICORE/RESICORE REV* *(acetochlor + clopyralid + mesotrione)*	E	15,4,27	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F/**G**	P	F/**G**	F/**G**
RESOLVE Q *(rimsulfuron + Thifensulfuron - methyl)*	G/E	2,2	**G**	F	F/**G**	**G**	F/**G**	F	P	P/F	F	**G**	**G**	P	P	P	P
SURTAIN *(Pyroxasulfone) + (saflufenacil)*	G/E	14,15	**E**	**E**	**E**	**E**	**E**	F	P	F	F	P	**G**	**E**	F	F	F
THREESIDUAL/SURESTART II/TRIPLEFLEX II* *(acetochlor + clopyralid + flumetsulam)*	E	15,4,2	**G/E**	**G/E**	**G**	**G/E**	**G/E**	P	P	F	P	F	F	F/**G**	P	F	F/**G**
TRIVOLT ‡ *(thiencarbazone-methyl + flufenacet + isoxaflutole)*	G	2,15,27	**E**	**E**	**E**	**E**	**E**	**G/E**	U	F	**E**	F	F	**E**	U	F/**G**	F
VALOR SX/VALOR EZ/PANTHER SC/CHATEAU EZ + ***ATRAZINE 4L; 90DF*** ‡ *(flumioxazin + atrazine)*	E	5,14	F	F	F	F	F	P	F	P	P	F	**G**	P	P	P	F
VERDICT*/***TESTIFY***** *(saflufenacil + dimethenamid-p)*	E	14,15	**E**	**E**	**E**	**E**	**E**	P	P	F	P	F	F	F/**G**	P	F/**G**	F/**G**
ZIDUA SC *(pyroxasulfone)*	E	15	**E**	**E**	**E**	**E**	**E**	F	P	F	F	P	**G**	**E**	F	F	F

[A] Site of Action described in Technical Information section.
* Yellow nutsedge control with these herbicides is generally Good if PPI, Fair if PRE.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																								
Bindweed, field	Bindweed, hedge	Buffalobur	Burcucumber	Canada thistle	Cocklebur	Horsenettle	Jerusalem artichoke	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard	Nightshade, black	Pigweed	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Sunflower	Velvetleaf	Waterhemp spp.	Wild buckwheat	PP OR PRE HERBICIDE (A.I.S)
P/F	P/F	G/E	F/G	P/F	E	P	P/F	E	G	E	E	G/E	E	E	E	E	E	E	G/E	E	G/E	E	E	G	ACURON ‡
P/F	P/F	G/E	F/G	P/F	G/E	P	P/F	E	G	G/E	E	F/G	E	E	E	E	E	E	G/E	E	F/G	E	E	F/G	ACURON FLEXI
U	U	U	U	P	G	U	U	G	P	G	E	G	E	F/G	E	E	G	P	G	F/G	U	G	F/G	P	ALLUVEX/LEADOFF/CRUSHER
N	N	P	P	N	P	N	N	F	F	F	G	F	F	G	G/E	G/E	F	P	P	P	P	F	E	F	ANTHEM FLEX
N	N	P	P	N	P	N	N	F	F	F	G	F	F	G	G/E	G/E	F	P	P	P	P	F	E	F	ANTHEM MAXX
P	P	P	F	P	G	P	P	G/E	G	G/E	E	G/E	E	E	E	E	F/G	E	E	F/G	E	F	E	E	***ATRAZINE 4L; 90DF*** ‡
N	N	E	F/G	N	P	N	N	F/G	U	G/E	G/E	P/F	E	G	G/E	G	G/E	P/F	G	G	F	E	G/E	P	BALANCE FLEXX ‡
P/F	P/F	G/E	P/F	P	F	P/F	P/F	G/E	P	F	G/E	F/G	E	E	E	E	G	G	G	G/E	G/E	E	E	F	CALLISTO/***INCINERATE***
N	N	G	F/G	F	P	F	U	G	U	G/E	E	F	E	E	E	P	G/E	G	E	E	G/E	E	E	F/G	CAPRENO
N	N	P	P	N	P	N	N	P	F	P	F	P	P	G	G	F	P	P	P	P	P	P	G	P	***CHARGER MAX***/DUAL II MAGNUM/ EVERPREX*
P	P	P	P	P	F/G	P	P	G	G	G/E	E	G	E	E	E	G	G/E	G	G	G	F/G	F	E	G	***CHARGER MAX ATZ*** ‡/BICEP II MAGNUM ‡/BICEP II MAGNUM FC ‡/
P	P	P	P	P	F	P	P	F	F/G	G	G	G	E	E	E	F	G	F	F/G	F/G	F	F	G	F/G	***CHARGER MAX ATZ LITE*** ‡/BICEP LITE II MAGNUM* ‡
N	N	P	P	N	P	N	N	P	P	P/F	F/G	P	P	G	G/E	G	F/G	P	P	P	P	P	G/E	P	***CONFIDENCE***/***TREMOR NXT***/ HARNESS/SURPASS NXT*
P	P	P	F	P	F/G	P	P	G	G	G/E	E	G	E	E	E	G	E	G	G	G	F/G	F	E	G	***CONFIDENCE XTRA 5.6L*** ‡/***TREMOR ATZ NXT*** ‡/HARNESS XTRA 5.6L ‡/ KEYSTONE LA NXT ‡
U	U	G	F	U	F	U	U	F	U	E	E	F	E	E	E	G/E	G/E	F	F	G/E	F	E	E	P	CORVUS ‡
P	P	P	F	P	F/G	P	P	G	G	G/E	E	G	E	E	E	G	G/E	G	F	G	F/G	F	E	G	DEGREE XTRA ‡/FULTIME NXT* ‡
P	F	F	P/F	P	F	N	P	G	G	G	E	P	G/E	P	E	G	E	P/F	G	G	F	G	G	F	***DIMETRIC EXT***/***DIMETRIC LIQUID***
U	U	U	U	U	P	U	U	U	U	U	G	P	U	G/E	E	E	P	P.	U	F	U	P	G/E	U	ENVERSA
N	N	P	P	N	P	N	N	P	P	G	G	P	P	P	G	P	P	P	PP	F	P	F	G	P	***FRAMEWORK 3.3 EC***/PROWL H2O
F	F	F	P	F	G	G	F	G	F	G	E	F	F	G	E	E	G	F	P	G	F	G	E	F	HARNESS MAX
P	P	P	F	F	E	F	F	G	F	P	E	F	F	E	E	G	E	G	G	G	F	G	E	G	HARNESS XTRA ‡
N	N	F	P	F	G	N	N	G	F	G	G/E	F	E	G	G/E	E	G/E	G	E	E	G/E	G	G	F	HORNET
U	U	U	N	P/F	F	U	U	F	U	F	F	U	U	F	E	U	G	F	U	E	F	F	G	U	LOROX
P/F	P/F	G/E	P	P/F	G	P	P/F	E	G	G/E	E	G	E	E	E	E	G	F/G	F/G	E	G/E	E	E	G	LUMAX EZ ‡/LEXAR EZ ‡
P	P	F	P	G/E	G	U	U	G	E	G/E	E	G/E	E	E	E	E	E	G/E	E	G/E	G/E	E	E	G	MAVERICK
	N	P	P	N	P	N	N	P	F	P/F	F/G	P	P	G	G/E	G	F	P	P	P	P	P	G/E	P	OUTLOOK*
N	N	P	P	N	P	N	N	F	F	F	G	F	F	G	G/E	G/E	F	P	P	P	P	F	E	F	PERRPETUO
P	P	U	P	U	F/G	U	U	G/E	U	G/E	E	G	E	E	E	E	E	F	U	G	F	F	G	U	PRINCEP 4L/PRINCEP CALIBER 90/ ***SIMAZINE 4L***/***SIMAZINE 90DF***
N	N	F	P	N	F	N	N	F	F	G	G/E	P	E	G	E	E	F	P	E	G/E	F/G	G/E	G	P	PYTHON
P/F	P/F	G/E	F	F	G/E	P	P/F	E	G	G/E	E	G/E	E	E	E	E	E	E	G/E	E	E	E	E	G/E	RESICORE/RESICORE REV*
U	U	U	U	P	F	U	U	F	P	F	F/G	P/F	F/G	P/F	G	G	P/F	P	P	PF	P	F	P/F	F	RESOLVE Q
P/F	P/F	G/E	F	F	G/E	P	P/F	E	G	G/E	E	G/E	E	E	E	E	E	E	G/E	E	E	E	E	G/E	SURTAIN
N	N	F	P	P	G	N	N	G	F	G	E	F	E	G	E	E	G	F	G	E	G/E	G	G	G/E	***THREESIDUAL***/SURESTART II/ TRIPLEFLEX II*
U	U	G	F	U	F	U	U	F	U	E	E	F	E	E	E	G/E	G/E	F	F	G/E	F	E	E	P	TRIVOLT ‡
P	P	F	F	N	G	P	P	P	E	E	E	E	E	E	E	E	E	G/E	E	E	E	E	E	E	VALOR SX/VALOR EZ/PANTHER SC/ CHATEAU EZ + ***ATRAZINE 4L; 90DF*** ‡
P/F	P/F	G/E	F	F	G/E	P	P/F	E	G	G/E	E	G/E	E	E	E	E	E	E	G/E	E	E	E	E	G/E	VERDICT*/***TESTIFY*****
N	N	P	P	N	P	N	N	P	F	P/F	F/G	P	P	G	G/E	G	F	P	P	P	P	P	E	P	ZIDUA SC

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

HERBICIDE PERFORMANCE RATINGS *continued*

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

POST HERBICIDE (A.I.S)	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES															BROADLEAVES				
			Barnyardgrass	Crabgrass	Fall panicum	Foxtail, giant; green	Foxtail, yellow	Johnsongrass (seedling)	Quackgrass	Sandbur, field	Shattercane	Volunteer small grain	Wild oat	Wild proso millet	Wirestem muhly	Woolly cupgrass	Yellow nutsedge	Bindweed, field	Bindweed, hedge	Buffalobur	Burcucumber	Canada thistle
ACCENT Q *(nicosulfuron)*	G/E	2	G/E	P	G	E	G/E	E	G	G	E	G	E	G/E	F	G/E	F	P/F	P/F	G/E	F/G	G
ACURON ‡ *(atrazine + s-metolachlor + mesotrione + bicyclopyrone)*	E	5,15,27,27	G	G/E	P	G	G	P	P	P	P	P	P	P	P	P	P/F	P/F	P/F	G/E	F/G	G
ACURON FLEXI *(bicyclopyrone + mesotrione + s-metolachlor)*	E	15,27,27	G	G/E	P	G	G	P	P	P	P	P	P	P	P	P	P/F	P/F	P/F	G/E	F/G	G
ACURON GT *(glyphosate + s-metolachlore + mesotrione + bicyclopyrone)*	E	9,15,27,27	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	G	G	E	E	G
AIM EC/SHARK EW *(carfentrazone)*	G	14	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
ARMEZON PRO *(topramezone + dimethenamid)*	E	27,15	F/G	F/G	F	E;G	F	P/F	P	P/F	P/F	F	P	G	P	F/G	P	N	P	U	F/G	P/F
ATRAZINE 4L; 90DF ‡ *(atrazine)*	E	5	F	P	P	F	F	P	F	P/F	P	F	G	P	P	P	F	F	F	G	F/G	P
BASAGRAN/BASAGRAN 5L *(bentazon)*	E	6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	G	P/F	P/F	P	N	G
BASIS BLEND *(rimsulfuron + thifensulfuron)*	G	2,2	G	F**	G	G/E	F/G	G	P	P/F	E	F/G	F	P/F	P	P/F	P	U	U	P	P/F	P
CALLISTO/***INCINERATE*** *(mesotrione)*	E	27	N	G**	N	N	N	N	N	N	N	N	N	N	N	N	N	P/F	P/F	F	F	P
CALLISTO XTRA ‡ *(atrazine + mesotrione)*	E	5,27	N	G**	N	P	N	N	N	N	N	N	N	N	N	N	N	P/F	P/F	F	G	P/F
CAPRENO *(thiencarbazone + tembotrione)*	G	2,27	G	G	G	G	G	G	U	F/G	G	G	G	G	U	F/G	P	N	N	G	F/G	F
CORNERSTONE 5 PLUS/GLYPHOSATE* *(glyphosate)*	E	9	E	E	E	E	E	E	G/E	E	E	E	E	E	G/E	E	F	F/G	G	G	G	G
DIFLEXX DUO *(dicamba + tembotrione)*	G	27,4	G	F/G	P	G	G	F	U	F	G	G	G	G	F/G	G/E	P	F	F	G	F/G	G
DIMETRIC EXT/DIMETRIC LIQUID *(metribuzin)*	G	5	P/F	P/F	P	P/F	P/F	P	P	P/F	P	P	P	P	P	P	P	F	F	E	F	P
ENLIST DUO or ENLIST ONE + GLYPHOSATE [Enlist corn only] *(2,4-D choline + glyphosate)*	E	4,9	E	E	E	E	E	E	G/E	E	E	E	E	E	G/E	E	F	F/G	G	G	G	G
ENLIST ONE [Enlist corn only] *(2,4-D choline)*	E	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	F	F	P	P	F
HALEX GT *(glyphosate + s-metolachlor + mesotrione)*	E	9,15,27	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	G	G	E	E	G
HARNESS MAX *(acetochlor + mesotrione)*	E	15,27	F	E	G	G	E	P	F	P/F	P	F	G	P	P	F	F	F	F	G	F/G	P/F
HARNESS XTRA ‡ *(acetochlor + atrazine)*	E	15,5	F	G	F	F	F	F	P	P	P	F	P	G	P	F/G	P	N	P	U	F/G	P/F
HERBIVORE/PERMIT *(halosulfuron)*	E	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	E	P	P	P	F	P
HORNET *(flumetsulam + clopyralid)*	E	2,4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P/F	P/F	G	N	G/E
IMPACT/ARMEZON *(topramezone)*	E	27	F/G	F/G	F	E;G	F	P/F	P	P/F	P/F	F	P	G	P	F/G	P	N	P	U	F/G	P/F
IMPACT CORE *(topramezone + acetochlor)*	E	27,15	F/G	F/G	F	E;G	F	P/F	P	P/F	P/F	F	P	G	P	F/G	P	N	P	U	F/G	P/F
KOCHIAVORE *(2,4-D + bromoxynil + fluroxypyr)*	F/G	4,4,6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	F	F	G	F	E
KYRO *(topramezone + acetochlor + clopyralid)*	E	27,15,4	F/G	F/G	F	E/G	F	P/F	P	P/F	P/F	F	P	G	P	F/G	P	P	P	P	F/G	E
LAUDIS *(tembotrione)*	E	27	G	F/G	P	G;P/F	G	G	U	F	G	G	G	G	F/G	G/E	P	N	N	G	F/G	F
LIBERTY ULTRA/LIBERTY 28 SL/***TOTAL/ TOTAL 2.3/TOTAL SL***/CHEETAH *(glufosinate)*	E	10	F/G	G	F/G	E	F	F	F	F	G	G	G	E	F/G	G/E	P	F	F	G	F/G	F
LUMAX EZ ‡/LEXAR EZ ‡ *(atrazine + s-metolachlor + mesotrione)*	E	5,15,27	P	F	P	P	P	P	P	F	P	F	F	F	P	F	P/F	P/F	P/F	G/E	F	G
MAESTRO 2EC *(bromoxynil)*	E	6	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	P	G	F	F
MAVERICK *(clopyralid + mesotrione + pyroxasulfone)*	E	4,15,27	P	F	P	P	P	P	P	P	P	P	P	P	P	P	F	P	P	G	F	G
PEAK *(prosulfuron)*	E	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	F/G	F/G	G/E	F/G	F/G
PYTHON *(flumetsulam)*	E	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
REALM Q *(rimsulfuron + mesotrione)*	E	2,27	G	G**	G	G/E	G	G	G	F	G	G	G	G	F/G	F/G	F/G	P/F	P/F	F	F	F
RESICORE/RESICORE REV *(acetochlor + clopyralid + mesotrione)*	E	15,27,4	P	F	P	P	P	P	P	P	P	P	P	P	P	P	P/F	P/F	P/F	G/E	F	G/E

See notes and footnotes at end of table.

	BROADLEAVES *(continued)*																											
	Cocklebur	Dandelion	Hemp dogbane	Horsenettle	Horse weed (Marestail)	Jerusalem artichoke	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Milkweed, common	Milkweed, honeyvine	Morningglory, annual	Morningglory, bigroot	Mustard	Nightshade, black	Pigweed***	Pokeweed	Prickly sida	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Smartweed, swamp	Sunflower	Velvetleaf	Waterhemp	Wild buckwheat
	P	P	P	P	P/F	P	G	N	F	P	P	P	F	P	G	N	G/E	P	P	N	P	P	P	G	P	P	P	P/F	P
	E	G/E	U	G	G/E	F	G/E	G	G/E	E	U	U	G/E	P	E	E	E	G	F/G	E	E	E	G/E	E	U	E	E	E	G/E
	E	G/E	U	F/G	F/G	F	G/E	G	G/E	E	U	U	G/E	P	E	E	E	F/G	F/G	E	E	E	F/G	G/E	U	G/E	E	E	P/F
	E	G	G	E	F/G	G	E	E	E	E	F	F	G	F	E	E	E	E	G	E	E	E	E	E	F	E	E	E	G
	F	U	P	U	F	P	F/G	U	G	G/E	P	P	F/G	P	G	G/E	G/E	U	F	U	F	F	F	F	P	P	E	G	P
	G	P/F	P	U	P/F	U	E	U	G	E	P	U	F	U	G/E	E	E	U	F	U	G	G	G/E	G	U	E	G/E	E	P
	E	F	P	P/F	P	P/F	E	G	G	E	P	P	E	P	E	E	E	U	G/E	F	E	F/G	F/G	E	P	E	G/E	G/E	G
	E	P	P	P	U	P	E	P	F	F	P	P	F	P	E	P	P	U	G	E	F/G	P/F	P	E	P	G/E	G/E	P	F/G
	P/F	P	P	P	P	P	P	N	P/F	G/E	P	P	P	P	E	P	E	U	P	N	P	P	P/F	E	U	F	F/G	G	F
	G	F	P/F	G	P	P/F	E	F	F	E	P/F	P/F	F	P	E	E	E	G	F	E	F/G	F	E	E	F	E	E	E	F
	E	G	P/F	G	P	P/F	E	F	G	E	P/F	P/F	G	P	E	E	E	G	F	E	G/E	G	E	E	F	E	E	E	G
	G/E	P	P	F	F	P/F	E	F	G/E	E	P	P	F	F	E	E	E	U	F	P	G/E	G	E	E	P	G/E	E	E	F/G
	E	F	F/G	F/G	P	G	E	G	G	G/E	F	F	F	P	E	G	E	F/G	F/G	E	G/E	G/E	F/G	G/E	F	G/E	G	G	F
	E	G	F	F	P/F	F/G	E	E	G/E	E	P/F	P/F	E	F	G/E	E	E	F	G	E	E	E	E	E	F	E	E	E	E
	E	F	P	U	U	G	E	E	G	G/E	P	P	P/F	P	G	G/E	E	P	U	G	E	G/E	F	E	P	E	G	G	G
	E	G	F/G	F/G	P/F	G	E	G	G	E	F	F	E	F	E	E	E	F/G	G	E	E	E	F/G	G/E	F	E	E	E	F
	E	G	P/F	F	P/F	F/G	F	P	F	G	F	F	E	F	E	F	G	F/G	G	P	G	G	F	P	P/F	F/G	G	G	P
	E	G	G	E	P/F	G	E	E	E	E	F	F	F	P/F	E	E	E	E	G	E	E	G/E	E	E	F	E	E	E	G
	E	F	P/F	P/F	P	P/F	E	G	P	E	P	P	E	P	E	E	E	U	G/E	F	E	G	F/G	G	G	G	G	E	F
	G	F	P/F	G	P	P/F	E	F	F	E	P/F	P/F	F	P	E	E	E	G	F	E	F/G	F	E	E	F	E	E	E	F
	E	U	P/F	F	P	P	P/F	U	G	G	P/F	P	F	P	E	P	G/E	G	F	U	G/E	F/G	P	G	U	E	E	G	P
	E	G	F	P	G	G	F/G	N	F	F/G	F	F	F/G	P	E	F	F/G	P	F	E	E	E	F	G/E	P	E	E	F	F/G
	G	P/F	P	U	P/F	U	E	U	G	E	P	U	F	U	G/E	E	E	U	F	U	G	G	G/E	G	U	E	G/E	E	P
	G	P/F	P	U	P/F	U	E	U	G	E	P	U	F	U	G/E	E	E	U	F	U	G	G	G/E	G	U	E	G/E	E	P
	E	G	P/F	F	G	E	E	G	E	E	F	F	E	F	E	E	G	G	G	P	E	E	E	E	P/F	E	G	G	E
	E	F	P/F	F	P/F	E	E	F	G	E	P	P/F	F	U	G/E	E	G/E	P/F	F	F	E	E	G/E	G	G	E	G/E	E	F/G
	G/E	P	P	P	P/F	U	E	U	G/E	E	P	P	F	F	G/E	E	E	U	F	P	E	G	E	E	P	G/E	E	E	F
	G/E	G	P/F	U	P	F	E	G	G	G	P/F	P	G/E	P	E	E	G	P/F	G/E	G	G/E	G/E	G	G/E	P	E	G	F/G	F/G
	G	G	U	G	U	F	G/E	G	G/E	E	U	U	G	P	E	E	E	G	U	E	G/E	G	F/G	E	U	E	E	E	G
	E	P	P	F	G	P	E	G	G	G/E	P	P	G	P	F/G	E	F/G	P	P	P	E	F	G	E	P	E	G	P	G/E
	E	G	U	G	G	U	E	F	G	E	U	U	G	U	E	E	E	G	G	E	G/E	G/E	U	G	U	G	E	E	G
	E	P	P	P	G/E	U	G/E	G/E	U	G/E	U	U	F/G	F/G	E	U	E	U	E	U	E	G/E	G/E	G/E	F/G	E	E	G/E	G/E
	F	P	P	F	G	P	F	P	F	F/G	P	P	P	P	G	F	F	P	F/G	F	F	F	F	F/G	F	F	E	F	P
	G	G	P/F	G	G	P/F	E	F	F/G	E	P/F	P/F	F/G	P	E	E	E	G	F	E	G	G	E	E	F	E	E	E	F/G
	E	G/E	U	G	G/E	G/E	G/E	G	G/E	E	U	U	G/E	P	E	E	E	G	G	E	E	E	G	E	U	E	E	E	G/E

HERBICIDE PERFORMANCE RATINGS *continued*

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

			GRASSES															BROADLEAVES				
	CROP TOLERANCE	SITE OF ACTION[A]	Barnyardgrass	Crabgrass	Fall panicum	Foxtail, giant; green	Foxtail, yellow	Johnsongrass (seedling)	Quackgrass	Sandbur, field	Shattercane	Volunteer small grain	Wild oat	Wild proso millet	Wirestem muhly	Woolly cupgrass	Yellow nutsedge	Bindweed, field	Bindweed, hedge	Buffalobur	Burcucumber	Canada thistle
POST HERBICIDE (A.I.S) *continued*																						
RESOLVE Q *(rimsulfuron + thifensulfuron)*	E	2,2	F/G	F**	F/G	G/E	G	F	F/G	F/G	G	F/G	F	F	F	P/F	P/F	U	U	P	P/F	F
RESOURCE *(flumiclorac)*	G/E	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	P	P	P/F	N
REVULIN Q *(nicosulfuron + mesotrione)*	E	2,27	G/E	E	G	E	G/E	E	G	G	E	G	E	G	F	G	F/G	F	F	F	F	P
SEQUENCE *(glyphosate + s-metolachlor)*	E	9,15	E	E	E	E	E	E	G/E	E	E	E	E	E	G/E	E	G	F/G	G	G	G	G
SINATE *(topramezone + glufosinate)*	E	27,10	G	G/E	G	E	G	G	F	F	G	G	G	E	F/G	G/E	P	F	F	G	G/E	F
SPIRIT *(primisulfuron + prosulfuron)*	G	2,2	P	P	P	P	P	G	G	P	G	U	P	P/F	P	P/F	F	P	F	G	G	F/G
STARANE ULTRA/STAREDOWN *(fluroxypyr)*	G/E	4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	F/G	G/E	F	F/G	P
STATUS *(dicamba + diflufenzopyr)*	E	4,19	P/F	P/F	F	P/F	P/F	P	P	P	P	P	P	P/F	P	P	P	F/G	G	G	F/G	G
STEADFAST Q *(rimsulfuron + nicosulfuron)*	E	2,2	G/E	F**	G	E	G/E	E	G	G	E	G	E	G/E	F	G	F	P	P	P	P	F
STERLING BLUE/CLARITY/***CLARIFIER***/ ***DICAMBA MAX 4***/DIFLEXX *(dicamba)*	G	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	F	F	F	F	G
STINGER/STINGER HL *(clopyralid)*	E	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	E
WARRANT + GLYPHOSATE *(acetochlor + glyphosate)*	E	15,9	E	E	E	E	E	E	E	E	P	P	P	U	U	U	F	U	U	U	U	G
WIDEMATCH *(clopyralid+ fluroxypyr)*	G/E	4,4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	F/G	G/E	F	F/G	G
YUKON *(halosulfuron + dicamba)*	G	2,4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	E	F	F	P	F	F
2,4-D *(2,4-D)*	F/G	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	F	F	P	P	F

[A] Site of Action described in Technical Information section.
* May use other glyphosate products at greater or lesser volumes; see individual labels for Roundup PowerMAX 3; WeatherMAX/Honcho K6/Credit Xtreme/Cornerstone Plus.
** Large crabgrass only with these herbicides.
*** Palmer amaranth tends to be harder to control with POST herbicides than other pigweeds.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES *(continued)*																												
	Cocklebur	Dandelion	Hemp dogbane	Horsenettle	Horse weed (Marestail)	Jerusalem artichoke	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Milkweed, common	Milkweed, honeyvine	Morningglory, annual	Morningglory, bigroot	Mustard	Nightshade, black	Pigweed***	Pokeweed	Prickly sida	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Smartweed, swamp	Sunflower	Velvetleaf	Waterhemp	Wild buckwheat
	F	F/G	P	P	G	P	F	N	G	F	P	P	F	P	E	P	G/E	U	U	F	F	P	P/F	F	P	P	F/G	F	F
	P/F	N	N	N	P	N	F	N	N	P/F	N	N	P/F	N	N	N	F	N	F	N	F	P/F	N	N	N	N	E	F	P/F
	G	F	F	G	P	F	E	F	F/G	E	F	F	F/G	P	E	E	E	G	F	E	G	G-E	E	E	F	E	E	E	F
	E	F	F/G	F/G	P	G	E	G	G	G/E	F	F	F	P	E	G	E	F/G	F/G	E	G/E	G/E	F/G	G/E	F	G/E	G	G	F
	E	G/E	P/F	U	F	F	E	G	E	E	P/F	P	G/E	P	E	E	E	P/F	E	G	E	E	G/E	E	P	E	E	G	F/G
	G/E	G	P/F	F	P	F	G	G	E	G	F	P	P	F	P	E	G/E	G	F	F	E	E	G/E	E	F	G	G/E	P	P
	F/G	F	G/E	F	P	F	F	G	E	P	P	G	E	U	F	P	P	F	U	E	E	G/E	P/F	P	P	F/G	G	P	F/G
	E	G	F	F/G	F	E	E	E	G/E	E	P/F	P/F	E	P/F	G	G	E	E	G	E	E	E	E	E	F/G	E	G	E	E
	F	F	F	P	P	P	F	U	F	P/F	P	P	F	P	G	P	G/E	P	P	N	P	P	P	G	U	G	P/F	P/F	P
	E	G	F	F	P/F	F/G	E	E	G	E	P/F	P/F	E	P/F	F	G	E	F	G	E	E	E	G/E	E	F	E	F/G	E	E
	E	F	P/F	F	U	E	G	F	P	P	P	P/F	P	P	P	F	P	P	P	P	E	E	P	F/G	P	E	P	P	F/G
	E	U	U	U	U	U	E	U	U	G	U	U	U	U	E	G	E	U	P	G	G	G	U	G	G	U	G	G	U
	E	G	G/E	F	P/F	G	G	G	E	F	P	G	E	U	F	F	P	F/G	P	E	E	E	F	F	P	G	G	P	E
	E	P	F	G	P/F	G	G	G	G	E	F	F	G	P	E	G	G	G	F	E	E	E	F	E	U	E	E	E	E
	E	G	P/F	F	P/F	F/G	F	P	F	G	F	F	E	F	E	F	G	F/G	G	P	G	G	F	P	P/F	F/G	G	G	P

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

HERBICIDE ADJUVANT RECOMMENDATIONS

HERBICIDE	SPRAY ADJUVANTS[1]									
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]	
ACCENT Q	1-2 qt/100 gal	or	1-2 gal/100 gal	or	0.5 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
ACURON ‡	1 qt/ 100 gal					or	1 qt/A	or	1 pt/A	
ACURON FLEXI	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
ACURON GT	1-2 qt/100 gal									
AIM EC/SHARK EW	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
AIM EC + ***ATRAZINE*** ‡ or ***STERLING BLUE***/ CLARITY/***CLARIFIER***/***DICAMBA MAX 4*** or GLYPHOSATE or HORNET or ***2,4-D***	1 qt/100 gal									
ALLUVEX	1 qt/100 gal	or	0.5 gal/100 gal	or	0.25 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
ANTHEM FLEX	1 qt/100 gal	or	1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
ANTHEM MAXX	1 qt/100 gal	or	1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
ARMEZON PRO	0.25-0.5 gal/100 gal	or	0.5-1 gal/ 100 gal	or	0.25-0.5 gal/100 gal	or	0.5-1 gal/ 100 gal	or	0.25-0.5 gal/100 gal	
ATRAZINE/AATREX ‡	1 qt/100 gal	or	1 qt/A	or	1 pt/A	or	1 qt/A	or	1 pt/A	
AUTUMN SUPER 51			1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
BASAGRAN			1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
BASAGRAN 5L	1-2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
BASIS BLEND	1 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
CALLISTO/***INCINERATE***	[L]						1 gal/100 gal	or	0.5 gal/100 gal	
+ ***ATRAZINE*** ‡ or							1 gal/100 gal	or	0.5 gal/100 gal	
+ LIBERTY ULTRA/LIBERTY 280 SL/ ***TOTAL SL***										
+ GLYPHOSATE										
CALLISTO XTRA ‡	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
CAPRENO							1 gal/100 gal	or	0.5 gal/100 gal	
CORNERSTONE PLUS/CORNERSTONE 5 PLUS										
CRUSHER	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
DIFLEXX	1 qt/ 100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
DIFLEXX DUO	1 qt/100 gal	or	1 qt/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
DIMETRIC EXT + ***BASAGRAN*** or	1 qt/100 gal									
+ RESOURCE or	1 qt/100 gal									
+ ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4*** (dry conditions)	1 qt/100 gal									
DISTINCT	1 qt/100 gal									
ELEVORE			0.5-1 gal/100 gal	or	0.5 gal-1 gal	or	0.5-1 gal/100 gal	or	0.5 gal-1 gal	
ENLIST DUO										
ENLIST ONE										
FIERCE EZ/FIERCE MTZ	1 qt/100 gal	or	1 qt/100 gal	or	0.5-1 qt/100 gal	or	1 qt/100 gal	or	0.5-1 qt/100 gal	
FIRSTSHOT SG	1-2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
GRAMOXONE SL 3.0 ‡	2 pt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
HALEX GT	1-2 qt/100 gal									
HARNESS MAX	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	

See notes and footnotes at end of table.

FERTILIZER ADDITIVES						NOTES
	28% N		AMS DRY[6]		CLASS ACT BRANDS[7]	
+	2-4 qt/A	or	2-4 lb/A		✓	
						Use of COC may result in crop injury. Do not apply to sweet corn or yellow popcorn after crop emergence. See label for specific allowances in using AMS, UAN or MSO, and for adjuvant use in preemerge and preplant burndown.
		+	8.5-17 lb/100 gal			Use of COC may result in temporary crop injury. Do not apply to sweet corn or yellow popcorn after crop emergence. See label for specific allowances in using AMS, UAN or MSO, and for adjuvant use in preemerge and preplant burndown.
		+	8.5-17 lb/100 gal		✓	Use higher rate during periods of hot, dry weather and moisture stress.
+	2-4 qt/100 gal	or	2-4 lb/A		✓	Use COC only under dry conditions, or for burndown, or with Atrazine.
+	2-4 qt/100 gal	or	2-4 lb/A		✓	
or	2 qt/A	or	2 lb/A		✓	
or	2 qt/A	or	2 lb/A		✓	
+	1-2 qt/A	or	1-2 lb/A		✓	
+	1-2 qt/A	or	1-2 lb/A		✓	
+	1.25-2.5 gal/100 gal	or	8.5-17 lb/100 gal		✓	MSO recommended under moisture or temperature stress.
+	1-2 qt/A	or	1-2 lb/A			Use NIS only for broadleaves.
+	2-4 pt/A	or	1-2 lb/A			Rates for combined adjuvants.
+	1.25-2.5 gal/100 gal	or	8.5-17 lb/100 gal		✓	MSO recommended under moisture or temperature stress.
+	2.5 gal/100 gal	or	8.5 lb/100 gal		✓	
			1.5-3 lb/A		✓	Do not include UAN or AMS for yellow popcorn or sweetcorn. Do not use MSO adjuvants for POST applications.
+	2.5 gal/100 gal	or	8.5 lb/100 gal			
		+	8.5-17 lb/100 gal		✓	
+	2.5 gal/100 gal	or	8.5-17 lb/100 gal		✓	Do not use UAN/AMS for sweet or popcorn.
+	1.5 qt/A	or	1.5 lb/A			Minimum 1.25 pt/A COC.
					✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
						Double adjuvants/fertilizers under arid conditions.
+	2-4 qt/A	or	1.25-2.5 lb/A		✓	Do not apply AMS in <10 gal/A.
+	2 gal/100 gal	or	2.5 lb/A		✓	
+	0.5-1 gal/A	or	17 lb/100 gal		✓	
+	2 gal/100 gal	or	2.5 lb/A		✓	
+	5 qt/100 gal	or	5 lb/100 gal		✓	
						Use a CPDA.
						For a current list of compatible and approved adjuvants visit www.enlisttankmix.com
						For a current list of compatible and approved adjuvants visit www.enlisttankmix.com
+	1-2 qt/A	or	2-2.5 lb/A		✓	
+	2-4 qt/A	or	2-4 lb/A		✓	
						Aerial: Use 2 pt NIS/100 gal or 1 pt/A COC.
		+	8.5-17 lb/100 gal		✓	
						Do not use COC in postemergence applications to yellow popcorn.

HERBICIDE ADJUVANT RECOMMENDATIONS *continued*

HERBICIDE	SPRAY ADJUVANTS[1]								
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]
HERBIVORE/PERMIT	1-2 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal
+ ***2,4-D LV4/2,4-D LV6***	1-2 qt/100 gal								
+ ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4***	1-2 qt/100 gal								
+ ***ATRAZINE*** ‡							1 gal/100 gal	or	0.5 gal/100 gal
HORNET	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal
+ ***ATRAZINE*** ‡	1 qt/100 gal		1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal
+ CALLISTO/INCINERATE + ***ATRAZINE*** ‡	1 qt/100 gal						1 gal/100 gal	or	0.5 gal/100 gal
+ ***STERLING BLUE***/CLARITY/ ***CLARIFIER***/***DICAMBA MAX 4*** or AIM EC	1 qt/100 gal								
IMPACT/ARMEZON			1-1.5 gal/100 gal	or	0.5-0.75 gal/100 gal	or	1-1.5 gal/100 gal	or	0.5-0.75 gal/100 gal
IMPACTZ ‡			1-1.5 gal/100 gal	or	0.5-0.75 gal/100 gal				
IMPACT CORE			1-2 qt/100 gal	or	0.5-1 qt/100 gal				
KYBER PRO	1 qt/100 gal	or	1 qt/100 gal	or	0.5-1 qt/100 gal	or	1 qt/100 gal	or	0.5-1 qt/100 gal
KYRO			0.5-1.0 gal/100 gal	or	0.5-1.0 gal/100 gal	or	0.5-1.0 gal/100 gal	or	0.5-1.0 gal/100 gal
LAUDIS			1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal
LEADOFF	1 qt/100 gal	or	2 qt/100 gal	or	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal
LEXAR EZ ‡ - POSTEMERGENCE	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal
- BURNDOWN							1 gal/100 gal	or	0.5 gal/100 gal
+ GLYPHOSATE (POSTEMERGENCE GT CORN)									
+ LIBERTY ULTRA/LIBERTY 280 SL/ TOTAL SL (POSTEMERGENCE LL CORN)									
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL SL***/ ***TOTAL***/***TOTAL 2.3***/CHEETAH									
LUMAX EZ ‡ - POSTEMERGENCE	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal
- BURNDOWN							1 gal/100 gal	or	0.5 gal/100 gal
+ LIBERTY ULTRA/LIBERTY 280 SL/ TOTAL SL (POSTEMERGENCE LL CORN)									
+ GLYPHOSATE (POSTEMERGENCE GT CORN)									
MAVERICK	1 qt/100 gal					or	1-2 pt/A	or	0.5-1 pt/A
PANOFLEX	0.5-4 pt/100 gal	or	0.5 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal
PERMIT PLUS	1-2 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal
PERPETUO			1 pt/A	or	0.5 pt/A	or	1 pt/A	or	0.5 pt/A
PYTHON	1 qt/100 gal					or	1 gal/ 100 gal	or	0.5 gal/100 gal
REALM Q	1 qt/100 gal					or	1-2 gal/100 gal	or	0.5-1 gal/100 gal
+ GLYPHOSATE	1 qt/100 gal							or	0.5-1 gal/100 gal
RESICORE - POSTEMERGENCE (SEE LABEL FOR BURNDOWN)	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal
RESICORE REV - POSTEMERGENCE (SEE LABEL FOR BURNDOWN)	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal
RESOLVE Q	1 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal

See notes and footnotes at end of table.

FERTILIZER ADDITIVES					NOTES
28% N		AMS DRY[6]		CLASS ACT BRANDS[7]	
		+ 2-4 lb/A		✓	
		+ 2-4 lb/A			
		+ 2-4 lb/A		✓	
+	2-4 qt/100 gal	or 2.5 lb/A			
+	2.5 gal/100 gal (dry cond)	or 2-4 lb/A (dry cond)		✓	
+	2.5 gal/100 gal (dry cond)	or 2-4 lb/A (dry cond)		✓	
+	2.5 gal/100 gal	or 8.5 lb/100 gal			
+	1.25-2.5 gal/100 gal	or 8.5-17 lb/100 gal			MSO preferred over COC.
+	1.25-2.5 gal/100 gal	or 8.5-17 lb/100 gal			
+	1.25-2.5 gal/100 gal	or 1.5-2.5 lb/A			Use higher rate during periods of hot, dry weather and moisture stress.
+	1-2 qt/A	or 2-2.5 lb/A		✓	
+	1.25-2.5 gal/100 gal	or 8.5-17 lb/100 gal			Use higher rate during periods of hot, dry weather and moisture stress.
+	1.5 qt/A	or 1.5 lb/A or 8.5 lb/100 gal			Minimum 1.25 pt/A MSO. MSO preferred over COC.
+	2 qt/A	or 2 lb/A		✓	
				✓	
+	2.5 gal/100 gal	or 8.5 lb/100 gal			
		8.5 lb/100 gal		✓	Do not add UAN or AMS if corn is emerged. COC may cause temporary crop injury. Use NIS for emerged corn.
		3 lb/A			
				✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
+	2.5 gal/100 gal	or 8.5 lb/100 gal		✓	
		3 lb/A			Do not add UAN or AMS if corn is emerged. COC may cause temporary crop injury to emerged corn. Use NIS for emerged corn.
		8.5 lb/100 gal		✓	
				✓	DO NOT use nitrogen-based adjuvants (AMS or UAN) or methylated seed oil (MSO) with Maverick applied to emerged corn except for inclusion of AMS to glyphosate or glufosinate tank mixes.
+	2-4 qt/A	or 2-4 lb/A		✓	
	2-4 qt/A	or 2-4 lb/A		✓	Do not use both NIS and COC in spray mixture.
+	1-2 qt/A	or 2-2.5 lb/A			Use of spray grade nitrogen source is optional.
	2.5 gal/100 gal	or 2-4 lb/A		✓	Do not use liquid fertilizer solutions or suspensions as the total carrier.
+	2 qt/A	or 2 lb/A		✓	COC is preferred over NIS, COC rates vary by environment.
		+ 8.5-17 lb/100 gal		✓	NIS not required with loaded glyphosate.
+	2.5 gal/100 gal	or 8.5 lb/100 gal			Use of COC may result in temporary crop injury. Do not apply to yellow popcorn after crop emergence. See label for specific allowances in using AMS, UAN or MSO, and for adjuvant use in burndown.
+	2.5 gal/100 gal (dry cond)	or 8.5 lb/100 gal			Use of COC may result in temporary crop injury. Do not apply to yellow popcorn after crop emergence. See label for specific allowances in using AMS, UAN or MSO, and for adjuvant use in burndown.
+	2 qt/A	or 2 lb/A		✓	Surfactant not required with loaded glyphosate.

HERBICIDE ADJUVANT RECOMMENDATIONS *continued*

HERBICIDE	SPRAY ADJUVANTS[1]									
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]	
+ GLYPHOSATE	1-2 qt/100 gal									
RESOURCE	[L]	or	1-2 pt/A	or	0.75-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
+ ***2, 4-D AMINE*** or ***STERLING BLUE***/ CLARITY/***CLARIFIER***/***DICAMBA MAX 4*** or STINGER or STINGER HL or HORNET	1 qt/100 gal									
+ ***ATRAZINE*** ‡ or PERMIT or SPIRIT			1-2 pt/A	or	0.75-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
+ LIBERTY ULTRA/LIBERTY 280 SL/ ***TOTAL SL***	[L] (1 qt/100 gal)		[L] (1 pt/A)	or	[L] (0.75 pt/A)	or	[L] (1-2 pt/A)	or	[L] (0.5-1 pt/A)	
+ ROUNDUP WEATHERMAX	[L] (1 qt/100 gal)									
REVULIN Q	1 qt/ 100 gal					or	1-2 gal/100 gal	or	0.5-1 gal/ 100 gal	
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/HONCHO K6										
RT 3										
RUGGED	1 qt/100 gal						1 qt/100 gal	or	0.5 gal/100 gal	
SADDLE-UP/SPITFIRE	2-4 pt/100 gal					or	1 qt/A	or	0.5 qt/A	
SEQUENCE										
SHARK EW	2 pt/100 gal					or	1 gal/100 gal	or	2 qt/100 gal	
SHARPEN			1 pt/A	or	0.75 pt/A					
SINATE			1 gal/100 gal	or	2-3 qt/100 gal	or	1 gal/100 gal	or	2 qt/100 gal	
SPIRIT	1-2 qt/100 gal	or	1-4 pt/A	or	0.75-2 pt/A	or	1-4 pt/A	or	0.5-2 pt/A	
STARANE ULTRA/STAREDOWN										
STATUS	1 qt/100 gal	or	1-2 pt/A	or	0.75-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
STEADFAST Q	1 qt/100 gal			or	0.5 gal/100 gal	or	2-4 qt/A	or	1-2 qt/A	
STERLING BLUE/CLARITY/***CLARIFIER***/ ***DICAMBA MAX 4***	1 qt/100 gal									
+ RESOURCE	1 qt/100 gal									
+ HORNET (low rate)	1 qt/100 gal									
STOREN ‡	1 qt/100 gal									
VERDICT/***TESTIFY***			1 pt/A	or	0.75 pt/A					
WIDEMATCH										
YUKON	1-2 qt/100 gal					or	[L] (1 gal/100 gal)	or	[L] (0.5 gal/100 gal)	
+ ***ATRAZINE*** ‡							1 gal/100 gal	or	0.5 gal/100 gal	

Always refer to product label for specific information.

[1] When rate ranges are given for adjuvants, higher rates are recommended under dry conditions. See specific label for details.

[2] Use a quality MSO like Noble.

[3] Use a quality HSOC-MSO like Optify HSCOC or Destiny HC. HSOC-MSOs are generally used at half the labeled MSO rates.

[4] Use a quality COC like Valcheck COC.

[5] Use a quality HSOC-COC like Optify HSCOC or Superb HC. HSOC-COCs are generally used at half the labeled COC rates. Do not use Superb HC at less than 1 pt/A at < 12.5 GPA. Contact the herbicide manufacturers representative to verify that they will allow its use.

[6] Liquid Ammonium Sulfate (8-0-0-9) Equivalency: 3 qt liquid ~ 2.5 lb dry, 5 gal liquid = 17 lb dry.

[7] Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

FERTILIZER ADDITIVES					NOTES
28% N		AMS DRY[6]		CLASS ACT BRANDS[7]	
		+ 8.5-17 lb/100 gal		✓	Surfactant not required with loaded glyphosate.
+	1-2 qt/A	or 2-2.5 lb/A		✓	
					Surfactant not required with loaded glyphosate.
+	1-2 qt/A	or 2-2.5 lb/A			
		+ 2.5 lb/A		✓	
		+ 2.5 lb/A		✓	Surfactant not required with loaded glyphosate.
+	2 qt/A	or 2 lb/A		✓	For control of emerged weeds use COC. Weed control better with COC compared to a NIS. Yellow pop or sweet corn use NIS.
				✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
				✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
+/or	2-4 qt/A				
		8.5-17 lb/100 gal			See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
					Use COC/HSOC-COC under dry conditions; may increase leaf speckling. Sweet corn use NIS.
+	1.25-2.5 gal/100 gal	or 8.5-17 lb/100 gal		✓	
		+ 3 lb/A			Use higher rate during periods of hot, dry weather and moisture stress.
+	2-4 qt/A	or 2-4 lb/A		✓	Use 1 qt NIS/100 gal or up to 2 pt/A COC by air.
+	2.5 gal/100 gal (dry cond)	or 2-4 lb/A (dry cond)		✓	Do not use liquid fertilizer solutions or suspensions as the total carrier because excessive crop injury may occur.
+	5 qt/100 gal	or 5-17 lb/100 gal		✓	
+	2-4 qt/A	or 2-4 lb/A		✓	
+/or	2-4 qt/A	or 2.5 lb/A		✓	
					NIS may be added, particularly in dry conditions. Do not use AMS in <10 GPA.
+	2.5 gal/100 gal	or 2-4 lb/A		✓	
		+ 8.5-17 lb/100 gal		✓	Use NIS + AMS for emerged corn. Other adjuvants may be used at PP or PRE, i.e., where crop has not emerged.
+	1.25-2.5 gal/100 gal	or 8.5-17 lb/100 gal		✓	
					See tank-mix partners.
+	2-4 qt/A	or 2-4 lb/A		✓	

[L]- labeled, but may not be the best choice because of crop tolerance or weed control issues. Consult product representatives or product label.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Section for more information on use restrictions.

GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS

Herbicide	FERTILIZER ADDITIVES				WATER CONDITIONER				DRIFT CONTROL AND DEPOSITION AID			NIS
	AMS Dry		AMS Liquid		Class Act NG		Class Act Flex		InterLock	Accudrop	MasterLock	MasterLock
CHEETAH	1.5-3 lb/A	or	1.8-3.6 qt/A	or	2.5-5 gal/100 gal**			and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
CORNERSTONE PLUS	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal	or	2.5-5 gal/100 gal	or	1-4 gal/100 gal	and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
CORNERSTONE 5 PLUS	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal	or	2.5-5 gal/100 gal	or	1-4 gal/100 gal	and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
CREDIT XTREME	8.5-17 lb/100 gal*	or	2.5-5 gal/100 gal	or	2.5 gal/100 gal	or	1-4 gal/100 gal	and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
HONCHO K6	8.5-17 lb/100 gal*	or	2.5-5 gal/100 gal	or	2.5 gal/100 gal	or	1-4 gal/100 gal	and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
LIBERTY ULTRA	1.5-3 lb/A	or	1.8-3.6 qt/A	or	2.5-5 gal/100 gal**			and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
LIBERTY 280 SL	1.5-3 lb/A	or	1.8-3.6 qt/A	or	2.5-5 gal/100 gal**			and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
ROUNDUP POWERMAX 3	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal	or	2.5-5 gal/100 gal	or	1-4 gal/100 gal	and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
ROUNDUP WEATHERMAX	8.5-17 lb/100 gal*	or	2.5-5 gal/100 gal	or	2.5 gal/100 gal	or	1-4 gal/100 gal	and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
RT 3	8.5-17 lb/100 gal*	or	2.5-5 gal/100 gal	or	2.5-5 gal/100 gal	or	1-4 gal/100 gal	and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A
TOTAL*/*TOTAL 2.3*/*TOTAL SL	1.5-3 lb/A	or	1.8-3.6 qt/A	or	2.5-5 gal/100 gal**			and	4-6 fl oz/A	3 fl oz/A	6.4 fl oz/A	6.4 fl oz/A

* Or 1-2 percent by weight.

** May be used if approved by manufacturer's representative. To ensure maximum activity, add additional AMS to Class Act NG (2.5%).

GPA	3 LB/A AMS	1.5 LB/A AMS
	(LB AMS/100 GAL TO ADD AT INDICATED GPA)	
20	6.5	-
17	9.2	0.3
16	10.3	0.9
15	11.5	1.5

POST APPLICATION RATES AND BROADLEAF/SEDGE WEED SIZES

BROADLEAF/SEDGE *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	ACCENT Q		***ATRAZINE 4L*** + COC *(Roundup Ready corn only)*		***BASAGRAN***		BASAGRAN 5L		CALLISTO/ ***INCINERATE*** *(may require atrazine - see label)*		CALLISTO XTRA ‡		EVIK DF *(geography dependent - see label)*	
	Ht in	Rate oz/A	Ht in	Rate pt/A	Ht in	Rate pt/A	Ht in	Rate pt/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate lb/A
BUFFALOBUR	—	—	—	—	—	—	—	—	<5 10*	3 3	<5 5-10	20-24 24	—	—
BURCUCUMBER	3	0.9	—	—	—	—	—	—	10*	3	<5 5-10	24 24	—	—
COCKLEBUR	—	—	<4	2.4	6 6-10	1.5 2	<4 <6 <8	0.8 1.2 1.6	<5 10	3 3	<5 5-10	20-24 24	> 2 2-4 4-6	0.75-2 1.25-2 2
JIMSONWEED	3	0.9	<4	2.4	6 6-10	1.5 2	<4 <6 <10	0.8 1.2 1.6	<5 10	3 3	<5 5-10	20-24 24	—	—
KOCHIA *(for some products, reduced control at button stage* or *<2"; see label)*	—	—	<1.5	4	—	—	—	—	<2 10*	3	<5	20-24	—	—
LAMBSQUARTERS	—	—	<6	2.4	2*	2	<1 <1.5 <2	0.8 1.2 1.6	<5 10	3 3	<5 5-10	20-24 24	> 2 2-4 4-6	0.75-2 1.25-2 2
MARESTAIL *(horseweed)*	—	—	—	—	—	—	—	—	<5	3	<5 5-10*	20-24 24	—	—
MORNINGGLORY, ANNUAL	2	0.9	<4	2.4	2*	2	<4	1.2-1.6	<5* 10*	3 3	<5	24	>2 2-4 4-6	0.75-2 1.25-2 2
NIGHTSHADE, BLACK	—	—	<1.5	4	—	—	<4	1.6	<5 10	3 3	<5 5-10	20-24 24	—	—
NUTSEDGE,YELLOW	—	—	—	—	6 *(see label)*	1.5	<8	1.2-1.6	—	—	—	—	—	—
PIGWEED SPECIES *(may include Palmer Amaranth - see label)*	4 *(redroot, smooth)*	0.9	<6	2.4	—	—	—	—	<5 10	3 3	<5 5-10	20-24 24	> 2 2-4 4-6	0.75-2 1.25-2 2
PRICKLY SIDA *(Teaweed)*	—	—	—	—	3 4	1.5 2	<3 <4	1.2 1.6	<2	3	<2	24	—	—
RAGWEED, COMMON	—	—	<4	2.4	3	2	<3	1.6	<5* 10	3 3	<5 5-10	24 24	> 2 2-4 4-6	0.75-2 1.25-2 2
RAGWEED, GIANT	—	—	<4	2.4	6	2	<6	1.6	<5 10	3 3	<5 5-10	24 24	> 2 2-4 4-6	0.75-2 1.25-2 2
SICKLEPOD	—	—	<1.5*	2.4	—	—	—	—	—	—	—	—	—	—
SMARTWEED, PENN.	4	0.9	<4	2.4	6 10	1.5 2	<6 <10	1.2 1.6	<5 10	3 3	<5 5-10	20-24 24	> 2 2-4 4-6	0.75-2 1.25-2 2
SUNFLOWER,WILD	—	—	—	—	5 8	1.5 2	<5 <8	1.2 1.6	<5 10	3 3	<5 5-10	20-24 24	—	—
VELVETLEAF	—	—	<4*	2.4	2 5	1.5 2	—	—	<5 10	3 3	<5 5-10	20-24 24	> 2 2-4 4-6	0.75-2 1.25-2 2
VENICE MALLOW	—	—	—	—	2 4	1.5 2	<2 <4	1.2 1.6	<5	3	<5	20-24		—
WATERHEMP	—	—	—	—	—	—	—	—	<5 10	3 3	<5 5-10	24 24	—	—

See notes and footnotes at end of table

POST APPLICATION RATES AND BROADLEAF/SEDGE WEED SIZES *continued*

BROADLEAF/SEDGE *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	***HERBIVORE***/ PERMIT		HORNET		*IMPACT/ ARMEZON (see labels for product rate/weed size differences and atrazine tank mix requirements)*		IMPACTZ ‡		MAESTRO 2EC		PEAK		PERMIT PLUS	
	Ht in	Rate oz/A	Ht in	Rate oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate pt/A	Ht in	Rate oz/A	Ht in	Rate oz/A
BUFFALOBUR	—	—	—	—	—	—	—	—	2 5	1 1.5-2	1-3 1-5	0.75 1	—	—
BURCUCUMBER	1-3* 4-12*	0.67 1	—	—	4-6	0.5-1	6	8-10.7	4	1.5-2	1-5*	1	1-3*	0.75
COCKLEBUR	1-9 9-14	0.67 1	1-3 1-6 1-8	2 3 4	4-8	0.5-1	8	8-10.7	8 10	1 1.5-2	2-6 2-10 2-12	0.5 0.75 1	1-9	0.75
JIMSONWEED	—	—	1-6 1-8	3 4	4-6	0.5-1	6	8-10.7	4 6	1 1.5-2	1-4 1-8	0.5 0.5	1-4*	0.75
KOCHIA *(for some products, reduced control at button stage* or *<2"; see label)*	1-3 3-6*	0.67 1	<2*	3 4	4-6	0.5-1	6	8-10.7	2	1.5-2	1-4 1-6	0.75 1	1-3*	0.75
LAMBSQUARTERS	1-2*	0.67	<2* <4*	3 4	4-6	0.5-1	6	8-10.7	6 8	1 1.5-2	1-4 1-5	0.75 1	1-4	0.75
MARESTAIL *(horseweed)*	—	—	1-3 1-6	2 3	4-6	0.5-1	6	8-10.7	—	—	1-3*	0.5	—	—
MORNINGGLORY, ANNUAL	1-3*	1	<2* <4*	3 4	4-6*	0.5-1	6*	8-10.7	3 4	1 1.5-2	1-4*	1	1-3*	0.75
NIGHTSHADE, BLACK	—	—	<2* <4*	3 4	4-6	0.5-1	6	8-10.7	6	1	—	—	—	—
NUTSEDGE,YELLOW	4-12* 4-12	0.67 1	—	—	—	—	—		—	—	—	—	3-6	0.75
PIGWEED SPECIES *(may include Palmer Amaranth - see label)*	1-3 4-6	0.67 1	<2* <4*	3 4	4-6	0.5-1	6	8-10.7	2	1.5-2	1-3 1-5 1-6	0.5 0.75 1	1-12	0.75
PRICKLY SIDA *(Teaweed)*	—	—	1-6 1-8	3 4	2-3	0.5-1	3	8-10.7	—	—	1-5*	1	—	—
RAGWEED, COMMON	1-9 9-12	0.67 1	1-6 1-8	3 4	4-6	0.5-1	6	8-10.7	4 6	1 1.5-2	2-6 2-12	0.5 1	1-9	0.75
RAGWEED, GIANT	1-3 4-6	0.67 1	1-6 1-9	3 4	5-8	0.5-1	8	8-10.7	4 6	1 1.5-2	1-3 1-4	0.75 1	1-3	0.75
SICKLEPOD	—	—	<2* <4*	3 4	—	—	—	—	—	—	1-3 1-5	0.5 1	—	—
SMARTWEED, PENN.	1-2	0.67	1-6 1-8	3 4	2-3	0.5-1	3	8-10.7	4 6	1 1.5-2	1-3 1-6	0.5 1	1-6	0.75
SUNFLOWER,WILD	1-12 12-15	0.67 1	1-3 1-6	2	5-8	0.5-1	8	8-10.7	6 8	1 1.5-2	1-6 1-9 1-12	0.5 0.75 1	1-12	0.75
VELVETLEAF	1-9 9-12	0.67 1 *(add N)*	1-3 1-6 1-8	2 3 4	4-8	0.5-1	8	8-10.7	3 5	1 1.5-2	1-4 1-6 1-9	0.5 0.75 1	1-9	0.75
VENICE MALLOW	1-3 4-12	0.67 1	1-6 1-8	3 4	2-3*	0.5-1	3	8-10.7	2	1.5-2	1-3 1-5	0.5 1	—	—
WATERHEMP	—	—	<2* <4	3 4	4-6	0.5-1	6	8-10.7	2	1.5-2	1-4	1	—	—

See notes and footnotes at end of table

POST APPLICATION RATES AND BROADLEAF/SEDGE WEED SIZES *continued*

BROADLEAF/SEDGE *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	RESOURCE *(for larger weeds/ rates - see label)*		SINATE *(LibertyLink corn only)*		SPIRIT		STEADFAST Q		***STERLING BLUE*/ *CLARIFIER*/** CLARITY/ ***DICAMBA MAX 4*/DIFLEXX****		STINGER		STINGER HL	
	Leaf Stage	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate oz/A	Ht in	Rate oz/A	Ht in	Rate oz/A	Leaf Stage	Rate pt/A	Leaf Stage	Rate pt/A
BUFFALOBUR	—	—	3 4	21 28	1-5	1	—	—	4	8-16	2-4	0.5	2-4	0.3
BURCUCUMBER	—	—	4 6	21 28	1-6	1	4	1.5	4	8-16	—	—	—	—
COCKLEBUR	1-3*	8	4 6	21 28	2-8	1	4*	1.5	4	8-16	<5	0.25-0.5	<5	0.15 - 0.3
JIMSONWEED	4	8	4 6	21 28	1-6	1	4	1.5	4	8-16	<5	0.25-0.5	<5	0.15 - 0.3
KOCHIA *(for some products, reduced control at button stage* or *<2"; see label)*	—	—	3 4	21 28	1-4	1	—	—	4	8-16	—	—	—	—
LAMBSQUARTERS	3* 3*	6 8	4 6	21 28	1-3	1	4*	1.5	4	8-16	—	—	—	—
MARESTAIL *(horseweed)*	—	—	4 6	21 28	1-6	1	—	—	—	—	—	—	—	—
MORNINGGLORY, ANNUAL	—	—	3 4	21 28	1-4*	1	4	1.5	4	8-16	—	—	—	—
NIGHTSHADE, BLACK	—	—	4 6	21 28	1-5	1	—	—	4	8-16	2-4	0.5	2-4	0.3
NUTSEDGE, YELLOW	—	—	—	—	—	—	4*	1.5	—	—	—	—	—	—
PIGWEED SPECIES *(may include Palmer Amaranth - see label)*	<3 <4	6 8	3 6	21 28	1-4	1	4 *(redroot, smooth)*	1.5	*4*	8-16	—	—	—	—
PRICKLY SIDA *(Teaweed)*	<3	6 8	3 4	21 28	1-3*	1	—	—	4	8-16	—	—	—	—
RAGWEED, COMMON	<3 <4 <6	6 6 8	4 6	21 28	2-9	1	—	—	4	8-16	<5	0.25-0.5	<5	0.15 - 0.3
RAGWEED, GIANT	—	—	4 6	21 28	2-9	1	—	—	3	8	<5	0.25-0.5	<5	0.15 - 0.3
SICKLEPOD	—	—	3 4	21 28	1-3	1	—	—	6	8-16	<5	0.25-0.5	<5	0.15 - 0.3
SMARTWEED, PENN.	—	—	3 4	21 28	1-6	1	4*	1.5	2	8-16	2-3*	0.5	2-3*	0.3
SUNFLOWER, WILD	—	—	4 6	21 28	1-'12	1	4	1.5	2	8-16	<5	0.25-0.5	<5	0.15 - 0.3
VELVETLEAF	<5 <6 <10	4 6 8	4 6	21 28	1-6	1 *(add N)*	4*	1.5	2	8-16	—	—	—	—
VENICE MALLOW	—	—	3 4	21 28	1-4	1	—	—	4	16	—	—	—	—
WATERHEMP	—	—	4 6	21 28	1-4	1	2*	1.5	4	8-16	—	—	—	—

See notes and footnotes at end of table

POST APPLICATION RATES AND BROADLEAF/SEDGE WEED SIZES *continued*

BROADLEAF/SEDGE *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	***TOTAL*/*TOTAL 2.3*** *(LibertyLink corn only; may require atrazine - see label)*		YUKON		***2,4-D AMINE 4*****	
	Ht in	Rate fl oz/A	Ht in	Rate oz/A	Ht in	Rate pt/A
BUFFALOBUR	6 7	22 29	—	—	—	—
BURCUCUMBER	6 10	22 29	4-12*	4-8	—	—
COCKLEBUR	6 14	22 29	1-14	4-8	6	0.5-1
JIMSONWEED	6 10	22 29	1-4	4-8	3*	0.5-1
KOCHIA *(for some products, reduced control at button stage* or *<2"; see label)*	4 6	22 29	1-6	4-8	2*	0.5-1
LAMBSQUARTERS	4 6	22 29	1-6	4-8	4	0.5-1
MARESTAIL *(horseweed)*	6-12	29	—	—	—	—
MORNINGGLORY, ANNUAL	6 8	22 29	1-6	4-8	6	0.5-1
NIGHTSHADE, BLACK	4 6	22 29	1-6	4-8	2*	0.5-1
NUTSEDGE,YELLOW	—	—	1-12	6-8	—	—
PIGWEED SPECIES *(may include Palmer Amaranth - see label)*	3 4	22 29	1-12 *(redroot)*	4-8	4	0.5-1
PRICKLY SIDA *(Teaweed)*	4 5	22 29	—	—	—	—
RAGWEED, COMMON	6 10	22 29	1-12	4-8	6	0.5-1
RAGWEED, GIANT	6 12	22 29	1-6	4-8	6	0.5-1
SICKLEPOD	4 6	22 29	—	—	—	—
SMARTWEED, PENN.	6 14	22 29	1-3	4-8	2*	0.5-1
SUNFLOWER,WILD	6 10	22 29	1-15	4-8	2	0.5-1
VELVETLEAF	3 4	22 29	1-12	4-8	2	0.5-1
VENICE MALLOW	6 8	22 29	1-12	6-8	—	—
WATERHEMP	5 *(add atrazine)*	29	1-6	4-8	4*	0.5-1

BE SURE TO USE THE PROPER ADJUVANTS AS RECOMMENDED ON THE HERBICIDE LABEL.
* Suppression or partial control only.
— No control or weed not on label.
** No sizes given on label; numbers here are conservative estimates. Growth regulators, including Sterling Blue, can control large weeds but best control is on young, actively growing weeds.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

POST APPLICATION RATES AND GRASS SIZES

GRASSES *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	ACCENT Q *(reduced rates, other info - see label)*		BASIS BLEND		CAPRENO		DIFLEXX DUO *(may require atrazine - see label)*		EVIK DF *(geography dependent - see label)*		HALEX GT *(Roundup Ready corn only)*		IMPACTZ ‡		LAUDIS	
	Ht in	Rate oz/A	Ht in	Rate oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate pt/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A
ANNUALS																
BARNYARDGRASS	2 4	0.45 0.9	2	0.825	5	3	5 6	3 3	≤2 2-4	1.25-2 2	4	3.6-4	4-5	8-10	5 6	3 3
BROADLEAF SIGNALGRASS	2	0.9	—	—	5	3	4 5	3 3	≤2 2-4	1.25-2 2	4	3.6-4	3*-3	8-10	4 5	3 3
CRABGRASS *(diameter) (see labels for important size/type information)*	—	—	<0.5	0.825	3	3	3 4	3 3	≤2	2	4	3.6-4	3-4	8-10	3 4	3 3
FALL PANICUM	2 4	0.7 0.9	2	0.825	5	3	—	—	≤2 2-4	1.25-2 2	4	3.6-4	3*-3	8-10	—	—
FOXTAIL, GIANT	2 4	0.45 0.9	2 *(also bristly)*	0.825	3	3	3 4	3 3	≤2-4	2	4	3.6-4	4-5	8-10	3 4	3 3
FOXTAIL, GREEN	2 4	0.45 0.9	2	0.825	2	3	2*	2	≤2-4	2	4	3.6-4		8-10	2*	3
FOXTAIL,YELLOW	2 4	0.7 0.9	2	0.825	3	3	3 4	3 3	≤2-4	2	4	3.6-4	3*-3	8-10	3 4	3 3
JOHNSONGRASS, SEEDLING	8 12	0.7 0.9	—	—	5	3	5 6	3 3	—	—	4	3.6-4	4*-4	8-10	5 6	3 3
SANDBUR	3	0.9	—	—	2	3	2*	3	—	—	4	3.6-4			2*	3
SHATTERCANE	12	0.9	4	0.825	12	3	6 8	3 3	—	—	4	3.6-4	3*-4*	8-10	6 8	3 3
TEXAS PANICUM	3	0.9	—	—	3	3	3 4	3 3	≤2 2-4	1.25-2 2	4	3.6-4	3*-3*	8-10	3 4	3 3
VOLUNTEER CEREALS	2 6	0.7 0.9	—	—	—	—	—	—	—	—	4	3.6-4			—	—
VOLUNTEER CORN	—	—	—	—	—	—	—	—	—	—	—	—			—	—
WILD OATS	4	0.9	<3 lf	0.825	6	3	—	—	—	—	4	3.6-4			—	—
WILD PROSO MILLET	2 4	0.7 0.9	—	—	6	3	4 5	3 3	—	—	4	3.6-4	3-4	8-10	4 5	3 3
WOOLLY CUPGRASS	4	0.9	1	0.825	3	3	3 4	3 3	—	—	4	3.6-4	3*-3	8-10	3 4	3 3
PERENNIALS																
JOHNSONGRASS, RHIZOME	8 18	0.7 0.9	—	—	—	—	—	—	—	—	4-10	3.6-4	—	—	5	3
QUACKGRASS	10	0.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—
WIRESTEM MUHLY	8	0.9	—	—	—	—	—	—	—	—	—	—	—	—	—	—

See notes and footnotes at end of table

POST APPLICATION RATES AND GRASS SIZES *continued*

GRASSES *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	REALM Q		RESOLVE Q		SINATE (LibertyLink corn only)		STEADFAST Q *(reduced rates, other info - see label)*		***TOTAL/ TOTAL 2.3*** *(LibertyLink corn only; 29 fl oz/A for burndown)*	
	Ht in	Rate oz/A	Ht in	Rate oz/A	Ht in	Rate oz/A	Ht in	Rate oz/A	Ht in	Rate fl oz/A
ANNUALS										
BARNYARDGRASS	1-2	4	1-3	1.25	3 4	21 28	4	1.5	3 5	22 29
BROADLEAF SIGNALGRASS	1-2*	4	1-3*	1.25	3 4	21 28	2	1.5	3 5	22 29
CRABGRASS *(diameter)* *(see labels for important size/type information)*	0.5	4	1-3	1.25	3 4	21 28	1	1.5	3 5	22 29
FALL PANICUM	1-2	4	2	1.25	3 4	21 28	4	1.5	3 5	22 29
FOXTAIL, GIANT	1-2	4	2	1.25	4 5	21 28	4	1.5	6 12	22 29
FOXTAIL, GREEN	1-2	4	2	1.25	3 4	21 28	4	1.5	6 12	22 29
FOXTAIL,YELLOW	1-2	4	2	1.25	3 4	21 28	4	1.5	3 4	22 29
JOHNSONGRASS, SEEDLING	1-2*	4	2*	1.25	3 4	21 28	8-12	1.5	3 5	22 29
SANDBUR	—	—	—	—	2* 2	21 28	2	1.5	— 2*	22 29
SHATTERCANE	4	4	4	1.25	3 4	21 28	6	1.5	6 8	22 29
TEXAS PANICUM	—	—	—	—	3 4	21 28	4	1.5	4 6	22 29
VOLUNTEER CEREALS	1-2 *(wheat)*	4	2	1.25	3 4	21 28	2	1.5	4 5	22 29
VOLUNTEER CORN	—	—	—	—	4 5	21 28	—	—	10 12	22 29
WILD OATS	1-2*	4	2*	1.25	3 4	21 28	2	1.5	3 4	22 29
WILD PROSO MILLET	1-2*	4	2*	1.25	3 4	21 28	4	1.5	6 7	22 29
WOOLLY CUPGRASS	1	4	1	1.25	3 4	21 28	3*	1.5	6 12	22 29
PERENNIALS										
JOHNSONGRASS, RHIZOME	—	—	—	—	—	—	8-12	1.5	—	—
QUACKGRASS	1-2*	4	2*	1.25	—	—	8	1.5	—	—
WIRESTEM MUHLY	—	—	—	—	—	—	4	1.5	—	—

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* Suppression or partial control only.
— No control or weed not on label.
[R] Certain herbicide-resistant biotypes may not be controlled.

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

Herbicide	In addition to Field: Seed(S),Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
ACCENT Q	S[8],P[8],SW[8]	POST	Field corn VE-V6 or 20". Field corn rescue: Drop nozzles 20-36" but <V10. Seed corn, popcorn: VE-V5 or 20". Sweet corn: Broadcast VE-V5 or 12", drop nozzles to V5 or 18".	–	–	10,15	3	4	30	30	NR
ACURON ‡	S,P,SW	PRE POST	PRE up to 28 days prior to planting. VE to 12". Do not apply POST to emerged sweet or yellow popcorn.	NR	NR	10-80	NO	–	45	45	60
ACURON FLEXI	S,P,SW	PP PRE POST	Up to 28 days prior to planting. Before crop emerges. With dense weeds, higher application volume may be required. Do not apply POST on sweet corn or yellow popcorn.	–	–	10-80 10-80 10-30	NO		45 60	45 60	45-SW 60
ACURON GT		POST	Apply to glyphosate-resistant corn to actively growing weeds (<4" in height/diameter) in corn from VE-V8 or 30"	–	–	–	–	–	45	45	45
AIM EC/SHARK EW	S,P,SW	PP POST PH	PP Burndown to actively growing weeds up to 4" or to rosettes <3" across. Days before planting not restricted or specified. Broadcast or directed VE-V8 (drop nozzles V8-V14) to actively growing weeds up to 4" or to rosettes <3" across. Up to 3 days before harvest to actively growing weeds up to 4" or to rosettes <3" across.	–	–	10	3		NR	NR	 3
ALLUVEX/CRUSHER/ LEADOFF		PP PRE	Up to planting on unfrozen ground. Do not apply to coarse soils with <1% O.M. Before crop emergence. Do not apply to course soils with <1% O.M.	–	–	15	5		30	30	30
ANTHEM FLEX	S[8],P[8],SW[8]	EPP PPI PP,PRE POST	15-45 days ahead of planting field corn. Incorporate into 1-2" up to 14 days before planting. Up to 14 days before planting until crop emergence. Not recommended for sweet corn application on coarse soils or <2% organic matter. VE-V4.	–	–	5-40	3	1	–	–	3
ANTHEM MAXX	S[8],P[8],SW[8]	FALL, EPP PPI PP, PRE POST	15-45 days ahead of planting field corn, sweet corn or popcorn. FALL Do not exceed 2" incorporation depth. Apply when soil temperatures at 4" are sustained at <55°F, before the ground freezes and after Oct.1. Incorporate into 1-2" up to 14 days before planting. Up to 14 days before planting until crop emergence. Not recommended for sweet corn application on coarse soils or <2% organic matter. VE-V4	–	–	5-40	3	1	30,40-SW	NL	70
ARMEZON/IMPACT	S[8],P[8],SW[8]	POST	VE-V8 or 45-day PHI. Use drops if needed for coverage.	–	7	10	2	1	45	45	45
ARMEZON PRO	S[8],P[8],SW[8]	POST	Emergence up to 30" or V8. From 12"-30" use drop nozzles. For popcorn emerge to 12".	–	7	10	2-10	1	45	45	45,50-SW
ATRAZINE 4L ‡/AATREX 4L ‡ or ***ATRAZINE 90DF*** ‡ /AAREX NINE-0 ‡	S,P,SW	PP PRE POST	Up to 45 days before planting. 0-14 days if PPI. Before crop emergence. VE to 12".	–	–	5/10	2	4	60,45-SW	21	NR 45-SW
AUTUMN SUPER 51 WDG	S[8]	PP	After harvest but at least 30 days prior to planting.	–	–	10	NO	2	NR	45	NR
BALANCE FLEXX ‡	S[8]	PP PRE POST	Up to 30 days before planting as planned sequential. May PPI 1-2" up to 21 days. See label for geographic restrictions. Before crop emergence. See label for geographic restrictions. VE to V2. See label for geographic restrictions.	–	–	10	NO		45	NR	NR
BASAGRAN or BASAGRAN 5L	S[8],P,SW	POST	Corn is tolerant at all stages of growth.	5	7	10-20	5	4	NR	12	NR

See notes and footnotes at end of table

HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

Herbicide	In addition to Field: Seed(S), Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
BASIS BLEND	–	PP PRE POST	FALL after harvest through spring up to planting, when ground is not frozen. Seed corn allowed PP only. Before crop emergence. Field corn only. VE-V2. Field corn only.	–	–	10	5		30	30	30
BICEP II MAGNUM ‡/ ***CHARGER MAX ATZ***/ BICEP II MAGNUM FC ‡ or BICEP LITE II MAGNUM ‡/ ***CHARGER MAX ATZ LITE***	SW	PP PRE POST	Up to 30 days before planting (single application) or 45 days (split application). May PPI 2" within 14 days. FALL in NE, KS to no-till fallow, prior to corn. See label for state restrictions and ground application equipment restrictions. Before crop emergence. VE to 5". Directed Spray: 5-12".	–	–	5 15	2	4	60,45-SW	60,45-SW	NR,30-SW
CALLISTO/***INCINERATE***	S[8],P[6],SW[8]	PRE POST	Before crop emergence. Do not apply to white popcorn. VE to 30" or V8. Do not apply to white popcorn. When mixed with atrazine only apply up to 12".	7	7	10-60 10-30	2	1	45	NR	45
CALLISTO XTRA ‡	S,P[6],SW[8]	POST	After emergence but before corn exceeds 12" height. Do not apply to white popcorn.	–	–	10-30	NO	1	NR	NR	60,45-SW
CAPRENO	S	PRE POST	Before crop emergence. Up to V5. Drop nozzles after V6 to V7.	7	7	10	NO	1	45	45	NR
CHARGER BASIC			SEE DUAL MAGNUM								
CHARGER MAX			SEE DUAL II MAGNUM								
CHARGER MAX ATZ ‡ or ***CHARGER MAX ATZ LITE*** ‡			SEE BICEP II MAGNUM								
CHEETAH			SEE LIBERTY 280 SL.								
CLARIFIER			SEE STERLING BLUE								
CLARITY			SEE STERLING BLUE								
CLEANSE	–	PP	Burndown existing or volunteer Roundup Ready corn prior to replanting corn. Wait >6 days to replant corn.	–	–	10	NO	1	NR	NR	90
CONFIDENCE/TREMOR NXT	S,P,SW	PP PRE POST	Up to 30 days before planting, or up to 45 days before planting field corn in no-till/conservation till. May PPI 1-2" within 14 days of planting. FALL applications see label. Within 5 days of the last tillage. VE to 11" corn and prior to weed 2-leaf grass stage. Do not apply POST to sweet corn.	–	–	10	NO		NR	NR	NR
CONFIDENCE XTRA‡/ ***TREMOR ATZ LITE NXT***‡ or ***CONFIDENCE XTRA 5.6L***‡/***TREMOR ATZ NXT***‡	S,P,SW	PP PRE POST	Up to 45 days before planting. May PPI 1-2" within 14 days of planting. Within 5 days of the last tillage. VE to 11" corn and prior to weed 2-leaf grass stage. Do not apply POST to sweet corn.	–	–	10	NO		60,45-SW	NR	NR
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	S,P,SW	PP PRE POST PH	Apply alone or in a tank mixture before planting corn. Applications must be made prior to emergence of the crop. PRE/at planting - prior to crop emergence. VE-V8 or 30". Apply only to Roundup Ready Corn or RR Corn 2. May apply up to 48" with drop nozzles on RR Corn 2. Pre-harvest when grain is <35% moisture. Not recommended pre-harvest on seed corn as reduction in germination or vigor may occur.	– –	– –	3-40	3-15	RE	NR or 50[7]	NR or 50[7]	NR or 7[7]
CORVUS ‡	 S[8]	PP PRE POST	Up to 30 days before planting as planned sequential. May PPI 1-2" up to 21 days. Before crop emergence. VE-V2.	–	–	10	NO		45	NR	NR
CREDIT XTREME			SEE ROUNDUP WEATHERMAX								

See notes and footnotes at end of table

Herbicide	In addition to Field: Seed(S),Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
CRUSHER			SEE ALLUVEX								
DEGREE XTRA ‡	S,P,S	PP PRE POST	Up to 45 days before planting. May PPI 1-2" within 14 days of planting. Within 5 days of last tillage. VE to 11″ corn. Do not apply POST to sweet corn.	–	–	10	NO		60	NR	NR
DICAMBA MAX 4			SEE STERLING BLUE								
DIFLEXX	S[8],P[8]	PP PRE POST	Applications in all tillage systems up to 14 days before planting. FALL post-harvest or fallow. Use higher end of rate range for soils high in organic matter or under certain weed conditions. VE to V10 or 36". Early post (weeds <3") recommended.	–	7	3-50	NO	4	45	DELAY-M	DELAY-M
DIFLEXX DUO	S[8],P[8]	PP PRE POST	Applications in conventional, conservation tillage or no-till cropping systems. Plant corn at least 1.5 inches deep. Failure to thoroughly close and firm the seed furrow can cause crop injury. VE-V7 broadcast. Drop nozzles V7-V10, up to 36″ tall or up to 15 days before tassel. Use most restrictive.			10-20	NO	4	45	45	DELAY-M
DIMETRIC EXT*/ *DIMETRIC LIQUID	SW[4,8]	PP PRE POST	Up to 30 days before planting depending on state - see label. Do not incorporate. PP or PRE sweet corn in certain states. 2ee (exp.date not given) for FALL application in several states. Before crop emergence. PP or PRE sweet corn in certain states. See label. After emergence to just prior to tasseling.	–	–	10-40	2-10		60	60	60
DISTINCT	S[8],P[8]	PP	FALL 2-8 fl oz/A with 120-day replant interval for all crops. See label for less. PP 4-6 fl oz/A at least 7 days before planting, or 6-8 fl oz/A at least 15 days before planting.	–	7	3-50	NO	4	32	NO	72
DUAL II MAGNUM/DUAL II G MAGNUM, ***CHARGER MAX***	S,P,SW	PP PRE POST	Up to 30 days before planting (single application) or 45 days (split application). May PPI 2" deep, up to 14 days before planting. In FALL (Refer to the label for specific geography), apply when soil temp is less than 55°F and before freeze-up. No more than 1 fall application per crop. Before crop emergence. VE to 40", make applications prior to weed emergence and directed toward the base of corn plants over 5" tall. Dual II G not labeled post or aerial.	–	–	10	2	–	30	30	NR 30-SW
DUAL MAGNUM/ ***CHARGER BASIC***/ EVERPREX	S,P,SW	PP PRE POST	Up to 30 days before planting (single application) or 45 days (split application). May PPI 2" deep, up to 14 days before planting. In FALL (Refer to the label for specific geography), apply when soil temp is less than 55°F and before freeze-up. No more than 1 fall application per crop. Before crop emergence. VE to 40". Make applications prior to weed emergence and directed toward the base of corn plants over 5" tall.	–	–	10	2	–	30	30	NR 30-SW
ELEVORE	–	PP	At least 14 days before planting. If corn is planted at least 1.5 inches deep and the seed furrow is completely covered with no seed exposed, can apply at least 3 days before planting.	-	-	10	5	1	NL	NL	NL

See notes and footnotes at end of table

HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

Herbicide	In addition to Field: Seed(S), Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
ENLIST DUO	S,P,SW[11]	PP PRE POST	Enlist Corn - Up to planting. Non-Enlist Corn - 7 to 14 days before planting. Enlist Corn: After planting but before crop emergence. Non-Enlist Corn: 3-5 days after planting but before crop emergence. Enlist Corn: VE-V8 or 30". Drops recommended 24-30". Drops required 30 - 48". Not labeled POST for non-Enlist Corn	–	–	10	NO	4	50	NL	NL
ENLIST ONE	S,P,SW[11]	PP PRE POST	Apply any time before or after planting, but before crop emerges. Before crop emergence. Enlist Corn: VE-V8 or 30". Drops recommended 24-30". Drops required 30 - 48". Not labeled POST for non-Enlist Corn.	-	-	10-15	NO	4	30	NL	NL
EVERPREX			SEE DUAL II MAGNUM								
ENVERSA	S,P	PP PRE POST	Not labeled in all states. Refer to the label for listed states approved for Pre Plant applications to corn. Aerial application allowed in selected states only, refer to the product label for listed states. Not labeled in all states. Refer to the label for listed states approved for Pre Emergence applications to corn. No control of emerged weeds. If weeds are emerged at time of application, apply a labeled postemergence herbicide with this product to control the emerged weeds. Applications up to 30" corn.	–	–	10	3-15	–	40	40	NR
EVIK DF	P	POST	Apply as a postemergence directed spray to weeds after the smallest corn is at least 12" tall. Do not spray over top of corn, or injury will occur. Apply between 12" corn and 3 weeks prior to tasseling. Refer to the label for listed states approved.	–	–	20	NO	–	30	30	30
EXPRESS	–	PP	No-till and minimum till only. FALL application when soil is <50 °F at 2" depth. Apply 7 to 30 days before planting in spring; See label for state restrictions.	–	–	10-30	7-10	1	NL	NL	NR
FIERCE EZ/FIERCE MTZ	–	PP	Fall or spring early PP in no-till and minimum till only. 7 to 30 days before planting.	–	–	15	7-10	1	NL	NL	NL
FIRSTSHOT SG		PP	Apply as a burndown treatment to control emerged weeds at a minimum 14 days prior to planting.	–	–	10	5		NL	NL	NL
FRAMEWORK 3.3 EC	S,P,SW	PP PRE POST	Up to 60 days before planting. May PPI 45 to 60 days before planting. Application to seed corn,sweet corn and popcorn in conventional tillage only. After planting but before weed and crop emergence. VE to V8 or 30" (field corn) or 20-24" (pop, seed, sweet corn). May culti-spray from 4" to lay-by.	–	–	10	NO		21	21	NR
FULTIME NXT ‡	S,P,SW	PRE POST	Within 5 days of last tillage. VE to 11" corn. Do not apply POST to sweet corn.								
GRAMOXONE SL 3.0 ‡	S,P,SW S,P	PP PRE PH	Before planting to emerged weeds. Before crop emergence to emerged weeds. PRE-harvest. After black layer. Not for sweet corn.	–	–	10 20	5 5		NR NR	NR 7	NR 7
HALEX GT	–	POST	Glyphosate tolerant corn: VE to 30" or V8.	7	7	10-30	2	1	45	45	45
HARMONY EXTRA SG	–	PP	14 days before planting. 21 days before planting on light textured soil or pH>7.9	–	–	5-20	2-5	4	NO	NO	45

See notes and footnotes at end of table

Herbicide	In addition to Field: Seed(S),Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
HARNESS	S,P,SW	PP PRE POST	Up to 30 days before planting, or up to 45 days before planting field corn in no-till/conservation till. May PPI 1-2" within 14 days of planting. FALL applications see label. Within 5 days of the last tillage. Up to 11" corn. Not for POST to sweet corn.	–	–	10	NO		NR	NR	60
HARNESS MAX	S,P	PP, PPI, PRE POST	<30 days PP (<14 days PPI) before planting but before weed emergence, as close as possible to planting. Up to 11″ corn.	–	–	10-60 10-30	NO		NR	NR	NR
HARNESS XTRA ‡ or XTRA 5.6L ‡	S,P,SW	PP PRE POST	Up to 45 days before planting. May PPI 1-2″ within 14 days of planting. Within 5 days of the last tillage. VE to 11" corn and prior to weed 2-leaf grass stage. Do not apply POST to sweet corn.	–	–	10	NO		60	NR	NR
HERBIVORE/PERMIT	S,P[8],SW[8]	POST	Broadcast or drop nozzles VE to lay-by.	–	7	10	3-15	4	30	30	NR
HORNET	S[8]	PP PRE POST	Up to 30 days before planting. May PPI 2". Prior to weed emergence or 2" corn. VE up to and including V6 or 20". Drop nozzles to 36". PHI 45 silage if applied before V6.	10	10	10-60	5	2	45	NL	85
IMPACTZ ‡	S,P,SW	POST	VE to 12" or until 45 days before harvest. Use most restrictive.	–	7	10	3	4	60	60	45
IMPACT CORE	S,P	POST	VE to 11".	–	–	10	NO	–	45	45	45
INCINERATE			SEE CALLISTO								
KEYSTONE NXT ‡	S,P,SW	PP PRE POST	Up to 30 days before planting (single application) or 45 days (split application). May PPI 1-2" within 14 days of planting. Broadcast or banded. Precipitation or irrigation of at least 0.25" required or follow with incorporation 7 days after application. VE to 11" corn and before 2-leaf weeds. Apply up to 60 days before harvest in field corn. Do not apply POST to sweet corn.	–	–	10	NO		45,60	NR	NR
KEYSTONE LA NXT ‡	S,P,SW	PP PRE POST	Up to 30 days before planting, or up to 45 days before planting field corn in medium/fine soil. May PPI 1-2" within 14 days of planting. Before crop emergence. Before crop emergence. VE-11". Before 2-leaf weeds. Not on sweet corn.	–	–	10	NO		60,45-SW	NR	NR
KOCHIAVORE	S[8]	PP PRE POST	Delay planting and tillage a minimum of 7 days after application. After planting and before emergence to control broadleaf weeds. V3-V5, broadcast or band, drops after V6 but not from 2 weeks before tasseling to dough stage.	–	7 7-10	8	3	1	47	47	90
KYBER PRO	–	PP	Fall or spring early PP in no-till and minimum till 7-30 days before planting.	–	–	10-30	7-10	1	60	60	60
KYRO	S,P,	POST	VE up to 20" tall.			10-30	NO		45,60	see label	45
LAUDIS	S[8],P[8],SW[8,9]	POST	Emergence to V9 for field or popcorn (V7 for sweet corn).	7	7	10	NO	1	45	45	NR
LEADOFF			SEE ALLUVEX								
LEXAR EZ ‡	S[8],P[5],SW[10]	PP PRE POST	Apply up to 14 days before planting. Before crop emergence. Aerial in certain states only; see label. VE to 12" for broadleaf weeds <5".	–	–	10-80 10-30	NO	4	45	45	60

See notes and footnotes at end of table

HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

Herbicide	In addition to Field: Seed(S), Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH	S[8],SW	PP	Burndown prior to planting. Days before planting not restricted or specified.			15-40	10	4	60	NR	70,50-SW
		PRE	Prior to crop emergence.								
		POST	Glufosinate-tolerant corn. Liberty Ultra/Liberty 280 SL: VE-V6; drop nozzles to -36". Total SL/Cheetah: VE-V6. Total/ Total 2.3: VE-V7 or 24"; drop nozzles to 36"	5	7			4	55-SW	NL	50-SW
LOROX DF/LINEX 4L	–	PRE	Before crop emergence.	–	–	15	NO		NR	NR	57
LUMAX EZ ‡	S[8],P[5],SW[10]	PP	Up to 14 days before planting in field, seed and popcorn.	–	–	10-80	NO		45	45	60,45-SW
		PRE	Before crop emergence in field, seed, pop, and sweet corn.								
		POST	VE to 12" corn, before grasses emerge in field and seed corn.			10-30		4			
MAESTRO 2EC	S[8],P	PRE	Before crop emergence.			10-20	3-10		45	45	NR
		POST	VE to prior to tassel emergence. Only 1 pt/A before V4. Seed corn, popcorn V3-prior to tassel.	–	5-7			1			
MAVERICK	S[8]	PP/ PPI, PRE, POST	PPI any time within 14 days prior to planting. PRE broadcast. Corn must be planted a min. of 1 inch deep. POST VE to V6 or 18".	–	–	10	2	6	30,60	45	30,37-SW
	P[8]	PP/ PPI, PRE	Do not apply POST to yellow popcorn or severe crop injury may occur. Do not apply to white popcorn or ornamental corn.								
OUTLOOK	S[8],P,[8]SW[8]	PP	FALL after Oct.1 when soil <55°F and before frozen. (Northern Corn Belt only; see label).	–	–	5	2		40	40	NR,50-SW
		PP	Up to 45 days before planting. May PPI 1-2" within 14 days of planting.								
		PRE	Before crop and weed emergence.								
		POST	Up to 12" corn. Lay-by application from 12-36" except for sweet corn.								
PANOFLEX	–	PP	14 days or greater before field corn, or 21 days or greater on lighter texture or high pH (>7.9) soils. PP or POST-harvest burndown only.	–	–	5-20	2-5	4	NL	7	NL
PANTHER SC			SEE VALOR SX								
PEAK	–	POST	4" to V6 or 20". Drop nozzles 20 to 30".	–	–	5	2	4	30,40	30	60
PERMIT			SEE HERBIVORE								
PERMIT PLUS	–	POST	V2-V6, broadcast or drop nozzles. See label for geographic restrictions.	–	–	10	3-15	4	30	30	NR
PERPETUO	S[8]	PP,PRE	Burndown and prior to crop emergence.	–	–	15	7	1	28	28	NR
		POST	V2-V6. Drop nozzles recommended if canopy interferes with application.								
POAST	SW	PRE	Before crop emerges.	5	7	5-20	5-10	1	45,30-SW	45,30-SW	60,45-SW
		PP	Burndown 30 days or more before planting corn.								
		POST	Up to onset of pollen shed for SR or Poast Protected sweet corn only.								
PRINCEP 4L/ PRINCEP CALIBER 90	SW	PP	Before planting. In FALL, after harvest before frozen; prior to corn. Do not graze after FALL application.	–	–	10	NO		NL	60,45-SW	60,45-SW
		PRE	Before crop emergence.	–	–						
PROWL H2O	S,P,SW	PRE	After planting, before weeds and crops emerge. Do not incorporate.	–	–	10	5		21	21	NR
		POST	Up to V8 or 30" (field corn) or 20-24" other corn, culti-spray, 4" to lay-by.								
PYTHON	S	PP	EPP FALL or spring. PP or PPI up to 30 days before planting. PPI 2-3".	–	–	10-40	NO		45	0	85
		PRE	Prior to weed emergence.								
		POST	VE-V6 or 20" corn.	10	10			6			

See notes and footnotes at end of table

Herbicide	In addition to Field: Seed(S),Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
REALM Q	–	POST	VE to V6 or 20".			10,15	NO	4	45	45	70
RESICORE/RESICORE REV	S,P[5]	PP	Up to 28 days prior to planting. PPI into upper 2" within 14 days prior to planting. Apply to soil surface.	–	–	10-80	NO	2	60,45	NR	45
		PRE	Before crop emergence. Precipitation or irrigation of at least 0.25" required or follow with incorporation 7 days after application.								
		POST	VE to 11" for Resicore, VE to 24" for Resicore REV. See label for split applications. Do not apply POST to yellow popcorn.			10-30					
RESOLVE Q	–	PP	Before planting.	–	–	10	5		30	30	NR
		PRE	Prior to crop emergence.								
		POST	Do not apply to corn taller than 20" or V7. Use most restrictive.					4			
RESOURCE	S[8]	POST	V2-V10.	–	–	15	5-10	1	28	28	NL
REVULIN Q	S,P[6],SW	POST	Up to 20" or V6. Directed up to 30". Seed corn, yellow popcorn <20" or V5. Sweet corn <18" or V6.	–	–	10	NO	4	45	45	70
ROUNDUP WEATHERMAX; POWERMAX 3/CREDIT XTREME/HONCHO K6	S,P,SW	PP	Apply alone or in a tank mixture. Applications must be made prior to crop emergence. FALL applications see label.	–	–	16-40	6-15		NR	NR	NR
		PRE	Before crop emergence.								
		POST	Roundup Ready Corn 2: VE-V8 or 30". Drops recommended 24-30". Drops required 30 - 48".	–	10-20			RE	50, 30-SW	NR	50,30-SW
		PH	When grain is <35% moisture.						7	–	7
RUGGED	P[8],SW[8]	PP	Delay planting >7 days up to 1 pt, >14 days for 1-2 pt.	–	7	5	2		7		7,45-SW
		PRE	Before crop emergence to emerged broadleaves.								
		POST	V2 (after leaves unfurl) to 8" via broadcast. 8" to 2 weeks before VT via drop nozzles.	7-10				6			
		PH	After silks completely brown. Field corn and popcorn only.								
RT 3	S,P,SW	PP	Prior to planting.	–	–	3-40	3-15	RE	7	NR	7
		PRE	Prior to crop emergence.								
		PH	PRE-harvest when grain is <35% moisture or less.								7
SADDLE-UP/SPITFIRE	S[8],P[8]	PP	7-14 days before planting; may be used with any tillage system.	–	–	5-40	3-10	4	7	see label	NL
		PRE	Spitfire only: 3-5 days after planting but before emergence with any tillage system.								
SCORCH	–	PP	7-14 days before planting; may be used with any tillage system.	–	–	5-40	3-10	4	47	47	90
SECTION THREE	–	PP	Burndown existing or volunteer Roundup Ready corn prior to replanting corn. Wait >6 days to replant corn.	–	–	5-40	3-10	1	NL	NL	90
SELECT MAX	–	PP	Burndown existing or volunteer Roundup Ready corn prior to replanting corn. Wait >6 days to replant corn.	–	–	10		1			90
SEQUENCE	S,P,SW	PP	Apply before planting.	–	3	10-40	3-15		30	30	50
		PRE	Apply up to 30 days before crop emergence.								30-SW
		POST	Glyphosate-tolerant corn: VE to V8 or 30". Drop nozzles 30-48".					RE			
SHARK EW			SEE AIM EC.								
SHARPEN	S,P[8],SW[8]	PP	Apply up to 30 days before planting. PPI 1-2" up to 14 days before planting.	–	–	5	3	1	80	80	NR
		PRE	Before crop emergence. PP or PRE for seed corn.								

See notes and footnotes at end of table

HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

Herbicide	In addition to Field: Seed(S), Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
SIMAZINE 4L/SIMAZINE 90DF	SW	PRE PP	Before crop and weed emergence. In FALL, after harvest before frozen; prior to corn. Do not graze after FALL application. Before, during or after final seedbed preparation (best if applied within 2 weeks of planting).	–	–	20	NO		NR	60,45-SW	60,45-SW
SINATE	SW	POST	Glufosinate-tolerant corn. VE-V7 or 24", use most restrictive. Drop nozzles 24" to 36". SW: VE-V6.	5	7	15	10	4	60,55-SW	60,55-SW	70,60-SW
SONIC BOOM		EPP FAll (only)	Apply after September 30, north of Interstate 90 and October 15, north of Interstate 40. Apply when soil temperatures are below 55°F. Do not apply to frozen soils.	–	do not till	10	5				
SPIRIT	S[8],P[7]	POST	Broadcast from 4" up to 20" or V6. Drop nozzles 20" up to 24". Popcorn: Directed from 10-24" before tassel. Seed: Drop nozzles from 20-24" before tassel.	10	7	10-20	3	4	30,40 -silage	30	60
SPITFIRE			SEE SADDLE-UP								
STARANE NXT	S[8]	PP POST	From prior to planting to just prior to crop emergence. VE up to and including V5; >V3-V5 for some Seed corn.	–	–	8	3	1	45	45	45
STARANE ULTRA/ STAREDOWN	SW	PP POST	For volunteer potato or emerged weeds. Broadcast up to through V5; up to V4 for sweet corn. Drop nozzles after V5 (V4 sweet corn).	–	–	8	3	1	47,31-SW	47,31-SW	90,31-SW
STATUS	S,P	POST	Apply from V2 to 36" corn.	–	7	3-50	NO	4	32	32	72
STEADFAST Q	–	POST	Up to 20" or through V6 corn.	–	–	10,15	5	4	30	30	NR
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	S[8],P[8]	PP PRE POST	In no-till corn only. Days before planting not restricted or specified. FALL post-harvest or fallow. Prior to corn emergence for actively growing broadleaves on medium/fine soils with >2% O.M. Do not apply in conv. or reduced till to coarse soils. Early Post: VE-V5 or 8". Late Post: V5 to 36" or 15 days before tassel emergence, whichever comes first.	–	7	20	1-10	4	DELAY-M	DELAY-M	NR
STINGER/STINGER HL	S[8],P[8],SW[8]	POST	VE to 24"; 18" for sweet corn. Do not transfer livestock from treated areas to sensitive broadleaf crop areas without 7 days of grazing on untreated pasture (see label).	–	–	10		6	40,60-P/ SW	40	30-SW
STOREN	S[8],P,SW	PP PRE POST	Up to 28 days before planting. Broadcast or banded. VE-V8. Field corn and seed corn only.	–	–	–	NO	–	45	45	45
SURESTART II			SEE THREESIDUAL								
SURPASS NXT	S,P,SW	PP PRE POST	Up to 45 days before planting. May PPI 1-2" within 14 days of planting. FALL after Sept.30, but before soil freeze-up, certain states. As close as possible to planting. VE to 11" corn. Do not apply POST to sweet corn.	–	–	10	NO		NR	NR	NR
SURTAIN	S[8]	PP PRE POST	Within 30 days of planting. May PPI 1-2" within 14 days of planting. Application to the soil surface after planting and before crop emergence VE-V3. Does not control emerged weeds.	– –	– –	3 3 3	3 3 3	– – –	NR NR NR	NR NR NR	NR NR NR
THREESIDUAL/ SURESTART II/ TRIPLEFLEX II	S[8]	PP PRE POST	Up to planting. May incorporate 1-2" up to 14 days before planting. FALL, after Oct.15, soil temperature <50 °F, before ground freezes; to soybean stubble. Before crop emergence. VE up to 11" corn.	–	–	10	NO		NR	NR	85
TOTAL/***TOTAL 2.3***/ ***TOTAL SL***			SEE LIBERTY 280 SL								
TREMOR NXT			SEE CONFIDENCE								

See notes and footnotes at end of table

Herbicide	In addition to Field: Seed(S),Pop(P), Sweet (SW)[1]	Application Timing[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast (hrs.)	Interval (Days)[2]		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
TREMOR ATZ LITE NXT ‡			SEE CONFIDENCE XTRA								
TREMOR ATZ NXT ‡			SEE CONFIDENCE XTRA 5.6L								
TRIPLEFLEX II			SEE THREESIDUAL								
TRIVOLT ‡		PP PRE POST	Up to 30 days before planting as planned sequential. May PP surface apply up to 21 days or PPI 1-2" up to 21 days. PP/PRE Burndown as tank mixure (see label); During planting behind planter after furrow closure, or after planting, but before weeds emerge. In tank mix with atrazine, VE-V2.	–	–	10	NO		45	NL	NL
TRUST/TREFLAN HFP	–	POST	V2 to 30". Must be incorporated within 24 hrs.	–	–	5-40	5-10		42	42	NR
TUSCANY SC	–	PP	Up to 7 days before planting. FALL: Before ground freezes; timing depends on geographic region; see label.	–	–	10-60	5-10	1	NR	NR	NR
VALOR SX/VALOR EZ/ PANTHER SC/CHATEAU EZ	–	PP	Apply 7-30 days before planting.	–	–	10-60	5-10	1	NR	NR	NR
VERDICT/***TESTIFY***	S[8],P[8],SW[8]	PP PRE	FALL after Oct.1 in IA, MN, ND, SD, and WI. Up to 30 days before planting. PPI 1-2" up to 14 days before planting. PRE before crop emergence or injury will occur.	–	–	3	3	1	80	80	NR
VIDA	S,P	PP PRE POST	At planting. After planting, before crop emergence. Up to V4, Drops up to V8.	–	–	10	5		50	NL	90
WARRANT	S	POST	VE to 30" corn, drop nozzles 24-30".	–	–	10	3-15		40	40	NR
WEEDMASTER/ WEEDMASTER XHL	S[8],P[8]	PP PRE	7-14 days before planting with any tillage system. 3-5 days after planting but before emergence with any tillage system.	–	–	5-40	3-10	4	DELAY-M	DELAY-M	DELAY-M
WIDEMATCH		POST	Broadcast up through V5. Drop nozzles after V5.	–	–	10	3	6	47	47	90
YUKON	S	POST	VE to 20" broadcast and directed or drop nozzles from 20-36" corn.	7	7	10	5-15	4	30	30	NR
ZIDUA SC		PP PRE POST	FALL use PP rates; PPI up to 14 days before planting. PP 15 to 45 days before planting. Not recommended PP on coarse soils, areas with >40" rainfall and/or irrigation, or for popcorn or sweet corn. After planting before crop emergence. VE-V8.	–	–	5	3		NL	NL	37-SW
2,4-D AMINE 4; LV4; LV6, SHREDDER E-99/ WEEDAR 64/WEEDONE 638 /WEEDAR XHL	P,SW	PP PRE POST PH	7-14 days before planting to control emerged broadleaf weed seedlings. See label for rate-specific planting delays and additional information. Before crop emergence. Broadcast V2 to 8" corn. Drop nozzle from 8". Amine 4, LV4, LV6: until 2 weeks prior to VT. Shredder E-99 until tassel. Sweet corn: V2 to 45 days preharvest. PRE-harvest after silks completely brown or denting stage. Field and popcorn only.	– – –	7 10 –	10	2		7	NL	7,45-SW

[1] For sweetcorn or popcorn, product may be labeled for certain varieties. User may assume all liability for use.
[2] Application Timing and Interval. Consult current labels for verification and specific tillage equipment since depth settings vary from desired depth of incorporation. Incorporation is not required for many of these herbicides.
EPP - Early preplant
PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
PH - Preharvest
PGR - Plant growth regulator
POST - Postemergence
DELAY-M - Delay until milk stage
DELAY-M 30- Delay until milk stage, at least 30 days after application
DELAY-S - Delay until silage stage
NR - No restrictions
NO - Not permitted
NL - No related information on label.
RE – Heavy rainfall soon after application may require retreatment.
Y - Permitted
[3] Includes labeled minimum or range.
[4] In certain states.
[5] Yellow popcorn PP or PRE.
[6] Yellow popcorn.
[7] Directed spray.
[8] Check with seed supplier or crop protection company rep.
[9] Single application per season. Do not apply Laudis to sweet corn grown for grain or seed.
[10] PRE only.
[11] Seed corn, Popcorn, Sweet Corn, not containing the Enlist trait.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

DEFINITION OF SOIL TEXTURES

COARSE: Sand, Loamy sand, Sandy loam.

MEDIUM: Loam, Silt, Silt loam,

FINE: Silty clay loam, Sandy clay loam, Silty clay, Sandy clay, Clay loam, Clay. Soils with LOW organic matter, use low end of rate range; with HIGH organic matter, use high end of rate range. For preemergence herbicides to work properly, rainfall or sprinkler irrigation prior to weed germination is necessary. If adequate rain does not fall within 7 days of application, rotary hoe.

DEFINITION OF APPLICATION TIMING

Preplant surface applications are designated as **PP**. **Preplant incorporated as PPI** – applied before planting, **Preemergence as PRE** – at or after planting but before crop or weed emergence, **Postemergence as POST** – after crop or weed emergence. **EARLY POST** refers to conventional preemergence treatments that can be applied after crop or weed emergence or standard **POST** treatments applied to small emerged crops and weeds. However, herbicides that lack burndown properties such as the soil residual grass herbicides (S-metolachlor, alachlor, dimethenamid-P, etc.) will not control emerged grasses. Pre-harvest or harvest aids – PH, are applied just prior to harvest.

NO-TILL/MINIMUM TILL

BURNDOWN OF EMERGED VEGETATION – Atrazine used at full rates will generally control emerged weed seedlings that are less than 2" tall. High spray volumes (20-40 GPA) improve coverage and allow spray penetration through crop residue. Liquid fertilizer carriers or the addition of surfactants/COC increase the burndown activity of herbicides. In many cases, however, the addition of one of the her-bicides listed below will be required for control of emerged weeds. AVOID DRIFT potential with the use of InterLock!

EARLY PREPLANT (EPP) – When established weeds are present, a POST herbicide should be combined with the PRE herbicide. Atrazine, glyphosate, and paraquat, control established weeds. Control is improved when COC or UAN is added. Apply paraquat to grasses <4" tall. Apply glyphosate to larger grasses. 2,4-D ester can be tank mixed for additional broadleaf control.

RIDGE TILL

Ridge-till planter sweeps disturb early preplant herbicides applied over the ridge. With the ridge plant system the row has fewer weeds because the weed seed produced the preceding year is not worked into the soil when the seedbed is prepared. During planting, sweeps or disks move soil containing kernels and ears, sorghum seed and/or heads, and most weed seed from the ridge. A banded herbicide treatment should be used at planting time in the row. If timely cultivation is not possible, weed pressure is heavy, or the field contains many hard-to-control weeds like velvetleaf, a broadcast herbicide treatment at planting may be necessary.

EARLY PREPLANT treatments can be applied prior to planting to keep early summer weeds under control. The early herbicide treatment should eliminate planting through 4" or taller weed growth. Trouble may arise along the cutting edge of the planter sweep, where larger broadleaf weeds such as kochia and Russian thistle may not be uprooted or covered. Most early germinating broadleaf weeds can be controlled effectively and economically with 2,4-D or dicamba. It is better to apply the 2,4-D at planting time from a spray boom on the front end or underbelly of the tractor rather than after planting. If considerable grass weed growth is present before planting, paraquat or glyphosate should be used. Another option would be to preplant cultivate for row-middle tillage, leaving ridge top weed removal to the planter sweep. This works extremely well on fields where corn was ensiled. Preplant cultivation also allows for rebuilding ridges, which may be desirable if they have been damaged by harvest equipment or livestock trampling. However, preplant cultivation mixes weed seed into the ridge.

Source: adapted from Univ. Nebraska

BURNDOWN	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC/SHARK EW	**All soil textures:** 2 fl oz			Add 0.5-1 gal HSOC-COC/100 gal.* Apply in tank mixes with glyphosate, 2,4-D, or Gramoxone SL 3.0. Speeds activity, and broadens spectrum of control. Burndown only, no residual. Add to tank before other herbicides. Rate depends on target weeds; see label. Max. 2 fl oz/A/season including all application timings/methods. Do not apply when conditions favor drift or wind is >10 mph.
ALLUVEX	**All soil textures:** 1.5 oz			Add 0.5 gal HSOC-COC or 0.25 HSOC-MSO/100 gal + 2 qt UAN or 2 lb AMS.* Do not apply PRE to coarse soils with <1% O.M. Apply in tank mixes with atrazine, glyphosate, glufosinate, 2,4-D LVE, paraquat, saflufenacil, and/or dicamba. Burndown or PRE only, no residual. Apply PP in early spring up to crop planting on unfrozen ground. Add to tank before liquid fertilizers. Allow 3 weeks between Alluvex and any POST product containing rimsulfuron. Application to corn treated with Counter 20 or Thimet 20-G may cause severe crop injury.
ANTHEM MAXX, ANTHEM FLEX	SEE PREPLANT/PREEMERGE SECTION			
AUTUMN SUPER 51 WDG	**All soil textures:** 0.3-0.5 oz			Add 0.5 gal HSOC-COC or HSOC-MSO/100 gal + 1.5-2 qt UAN or 1.5-3 lb AMS.* Apply in FALL before ground freezes or in spring 30 days or more before planting field corn and 60 or more days before planting SWEET, POP or SEED corn. North of I-70, prior to November 1 apply 0.3 oz/A on soils pH <6.8 or 0.5 oz/A on soils pH >6.8. After November 1, apply 0.5 oz/A south of I-70 on soils pH <6.8 or 0.3 oz/A on soils pH >6.8. Do not apply to frozen soil. Apply to broadleaves <3" and grasses <1". Use 0.3 oz/A if soil pH is 7-8. Provides good dandelion and marestail control with burndown and residual for small-seeded broadleaves. Tank mix with 2,4- D, dicamba, paraquat, metribuzin, simazine or glyphosate. 2ee several states(exp. date not given) for FALL application rates on soils with soil pH 7-8 when soybeans are the next rotational crop the following Spring. 2ee in most states (exp. date not given) for reduced rates in FALL.
BASIS BLEND	**All soil textures:** 0.825-2.5 oz			Add 0.5 gal HSOC-COC/100 gal + 2 qt 28%N or 2-4 lb/A AMS.* Apply after FALL harvest to soil that is not frozen through planting in spring. Do not apply to coarse soil with < 1% O.M. MSO or NIS may be used.* Apply to grasses <3", broadleaves <4", and winter annuals <6". Can be mixed with liquid nitrogen fertilizer if first slurried in clean water. In FALL, may tank mix with 1 pt 2,4-D ester and glyphosate for control of winter annual grasses. For 0.825 oz, soybeans may be planted 15 days after application. Adding 0.2-0.3 oz/A Express plus 1 pt/A 2,4-D ester in FALL provides improved control of dandelion, chickweed and Canada thistle. Corn or soybeans can be planted 14 days after Express application.
CHEETAH	SEE LIBERTY 280 SL			
CLARITY/***CLARIFIER***	SEE STERLING BLUE			
CLEANSE	SEE SELECT MAX			
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 48 fl oz or up to 36 fl oz: annual weed control rates Up to 5 qt or up to 7.5 pt: perennial weed control rates. Refer to the labeled weed tables, weed species and sizes for more specific rates.			Add 8.5-17 lb AMS/100 gal, include WC+NIS as needed.* PP or PRE to emerged weeds. Most perennials are controlled better in fall than spring. Delay tillage 3 days after spraying annuals and 7 days for perennials. May be tank mixed with many products.
CREDIT XTREME	SEE ROUNDUP POWERMAX 3			
DICAMBA MAX 4	SEE STERLING BLUE			
DIFLEXX	SEE PREPLANT/PREEMERGE SECTION			
DIFLEXX DUO	SEE PREPLANT/PREEMERGE SECTION			
DISTINCT	**All soil textures:** 4-8 oz			Add 1 qt NIS/100 gal + 5 qt 28%N or 5 lb AMS/100 gal.* FALL - apply 2 to 8 oz/A after crop harvest and prior to frost. See label for replant restrictions.
ENLIST DUO	**All soil textures:** 3.5-4.75 pt			PP or PRE. No plant back restrictions for Enlist corn. For non-Enlist corn avoid use on light, sandy soils and delay planting 7 days for 3.5 pt/A and 14 days for 4.75 pt/A. Delay PRE applications 3-5 days following planting, but before emergence.
ENLIST ONE	**All soil textures:** 1.5-2 pt			PP or PRE. No plant back restrictions for Enlist corn. For non-Enlist corn avoid use on light, sandy soils and delay planting 7 days for 1.5 pt/A and 14 days for 2 pt/A. Delay PRE applications 3-5 days following planting, but before emergence. 24c AL (exp. date not given) do not apply at wind speeds >10 mph.
ELEVORE	**All soil textures:** 1 fl oz			Apply at least 14 days prior to planting. For best performance apply with glyphosate and 2,4-D.

See notes and footnotes at end of table

HERBICIDE APPLICATION RATES *continued*

BURNDOWN *(continued)*	**Rate/Acre**			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
EXPRESS	**All soil textures:** 0.25-0.5 oz			Add 0.5-1 gal HSOC-COC or HSOC-MSO/100 gal.* PP burndown. Delay planting at least 14 days. NIS may be used. UAN/AMS may be added. Add 1 pt/A of 2,4-D 4 lb/gal product.
FIERCE EZ or FIERCE MTZ	**All soil textures:** 6-9 fl oz or 1-1.5 pint: FALL 3 oz or 6 fl oz or 1-1.5 pint: SPRING			PP. FALL or in spring between 7-30 days before planting. Use in minimum and no-till only. See label for state and planting interval restrictions. May be tank mixed with other herbicides. Mix with a burndown herbicide for more consistent control of emerged weeds. Rrequires moisture/rain for activation.
FIRSTSHOT SG	**All soil textures:** 0.5-0.8 oz			Apply more than 14 days before planting. In light soils, or soil pH >7.9, extend 7 additional days. May use 0.5-0.6 oz/A in tank mixes. Do not exceed 1 oz/A total if sequential application. Include MSO, COC, NIS plus UAN or AMS.*
GRAMOXONE SL 3.0 ‡ *1-3" weeds* *3-6" weeds* *6" weeds*	**All soil textures:** 1.3-2 pt 2-2.7 pt 2-2.7 pt			Add 2 pt NIS/100 gal.* Mix with clean water or fluid fertilizer, but not suspensions or high phosphate fertilizer. Apply in 25-40 GPA of carrier with 30-40 PSI pressure for best results. Triazine herbicides enhance performance of paraquat. When tank mixing with 2,4-D, use ester formulation. Amine can reduce grass control.
GRAMOXONE SL 3.0 ‡ + BICEP II MAGNUM ‡/BICEP II MAGNUM FC ‡ or ***DIMETRIC EXT*** or ***DIMETRIC LIQUID*** or DUAL II MAGNUM or FULTIME NXT ‡ or HARNESS EC or HARNESS XTRA ‡/ CONFIDENCE XTRA ‡/ ***TREMOR ATZ LITE NXT*** ‡ HORNET or LEXAR EZ ‡ or LUMAX EZ ‡ or OUTLOOK or SURPASS NXT	**All soil textures:** 1.3-2.7 pt + 1.6-2.6 qt or 2-5.3 oz or 0.25-0.66 pt 1-1.67 pt or 2.5-4 qt or 1.5-3 pt or 1.8-2.3 qt or 4-6 oz or 2.5-3 qt or 3-3.5 qt or 13-21 fl oz or 2-3 pt			See comments above for Gramoxone SL 3.0 and the label for tank mix partners application timing and adjuvant recommendations.
HARMONY EXTRA SG	**All soil textures:** 0.45-0.9 oz			PP. Delay planting at least 14 days. Include NIS, COC or MSO plus UAN/AMS.*
HONCHO K6	SEE ROUNDUP POWERMAX 3			
KYBER PRO	**All soil textures:** 1-1.5 pint: FALL or SPRING			PP. FALL or in spring between 7-30 days before planting. Use in minimum and no-till only. Use minimum 20 GPA carrier rate for dense vegetation and heavy residue. See label for state and planting interval restrictions. May be tank mixed with other herbicides. Mix with a burndown herbicide for more consistent control of emerged weeds. Requires moisture/rain for activation. Do not make more than 1 application of Kyber Pro per acre per year. Do not apply more than 1.5 pt (0.094 lb flumioxazin, 0.281 lb metribuzin and 0.120 lb pyroxasulfone) of Kyber Pro per acre per year.
LEXAR EZ ‡	SEE PREPLANT OR PREEMERGENCE SECTION			
LIBERTY ULTRA or LIBERTY 280 SL or ***TOTAL SL***/CHEETAH or ***TOTAL/TOTAL 2.3***	**All soil textures:** 19 to 29 fl oz field/silage/sweet or 32 fl oz field/silage, 22 fl oz sweet or 29-43 fl oz field/silage, 22 fl oz sweet or 29-36 fl oz field/silage/sweet			Add 1.5-3 lb/A AMS.* PP or PRE. Do not apply to emerged corn unless it is LibertyLink. AMS or WC+NIS* should be added to maximize weed control. May be tank mixed with other products to broaden weed spectrum or add residual control. Do not make POST applications if Total or Total 2.3 is used for burndown.
LUMAX EZ ‡	SEE PREPLANT OR PREEMERGENCE SECTION			
MAVERICK	SEE PREPLANT OR PREEMERGENCE SECTION			
PANOFLEX	**All soil textures:** 0.3-0.6 oz			PP or POST-harvest burndown. Apply 14 days or greater before field corn, or 21 days or greater on lighter texture or high pH (>7.9) soils. Sequential treatments may also be made provided the total amount applied during one post harvest/fallow/pre-plant time period does not exceed 0.6 oz/A. Allow 14 days between treatments. See label for crop rotation plant-back timings. Include COC, MSO, HSOC, NIS + UAN/AMS.*
PERPETUO	**All soil textures:** 6-10 fl oz			Apply in combination with labeled burndown herbicides to control emerged weeds prior to crop emergence. Max. 10 fl oz/A/year. Max. 1 application/year.
POAST	**All soil textures:** 1 pt or 0.75-1 pt - see Comments			At 1 pt/A rate, add 0.5-1 pt HSOC-COC.* At 0.75-1 pt/A add HSOC-MSO and 2-4 pt/A UAN or 1-2 lb/A AMS.* PP. Burndown for grasses. Apply 30 days or more before planting corn.

See notes and footnotes at end of table

BURNDOWN *(continued)*	**Rate/Acre**			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
RESICORE *<3% O.M.* *≥3% O.M*	 2.25 qt 2.25 qt	 2.25 qt 2.75 qt	 2.75 qt 3 qt	Do not apply >3.25 qt/A/year. Do not make more than two applications/year. Do not use on soils with >10% O.M. May be tank mixed with glyphosate, glufosinate, or paraquat in reduced and no-till corn up to 28 days prior to planting and crop emergence. For best results, apply to emerged weeds that are < 6" tall. Notes 3, 5, 6.
RESOURCE	**All soil textures:** 2-4 fl oz			Tank mix with glyphosate products for faster burndown and greater weed control.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			Add 8.5-17 lb AMS/100 gal or WC+NIS.* Use flat fan nozzles and at least 30 psi pressure. If tank mixed with residual herbicides or UAN, use at least 16 oz/A in 10-20 GPA carrier to reduce antagonism. For best results with UAN carrier, do not use more than 50 lb/A of N. Spray to actively growing weeds and temperature >50 °F. Avoid application in late evening under marginal conditions. Most perennials are controlled better in FALL than in the SPRING. May be tank mixed with many products. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6 *Orchardgrass Smooth Bromegrass* *Reed Canarygrass* *Tall Fescue - Spring* *Tall Fescue - Fall*	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			Add 8.5-17 lb AMS/100 gal or WC+NIS.* No-till sod or small grains. Follow with residual herbicide at planting. For most consistent control, apply in FALL to active growth 6" or more. In SPRING, grass is best controlled when in boot to early heading stage. Canarygrass best controlled from boot to head stage. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
RT 3	**All soil textures: 16-32 fl oz**			Add 8.5-17 lb AMS/100 gal or WC+NIS.* Application must be made prior to corn emergence. For use in CO,ID,MT,NV, ND,OR,SD,TX,UT,WA,WY and with county restrictions (see label) for KS,MN,NE,NM,OK.
RUGGED	**All soil textures: 1-2 pt**			PP or PRE. 2,4-D acid formulation for control of emerged broadleaf weeds. Do not use on light, sandy soils. Do not till for 7 days. Planting must be delayed after application: 7 days (up to 1 pt/A), 14 days (1-2 pt/A). PRE after planting but before crop emergence. Maximum 1 application.
SECTION THREE	**All soil textures:** 2 fl oz			Add 1 gal COC or 0.5 gal HSOC-COC/100 gal + 2.5- 4 lb AMS/A or WC + NIS.* Burndown of existing or volunteer Roundup Ready corn up to 12" six days or more prior to reseeding corn. Do not make more than 1 application/ season or apply >2 fl oz/A/season.
SELECT MAX or CLEANSE	**All soil textures:** 6 fl oz or 3 fl oz			Add 1 qt NIS/100 gal + 2.5-4 lb AMS.* Burndown of existing or volunteer Roundup Ready corn up to 12" tall. Replant no sooner than 6 days after application. Maximum 1 application.
SELECT MAX + GLYPHOSATE	**All soil textures:** 9-16 fl oz + See glyphosate product label			Burndown. See label for potential delays in planting. Include AMS and NIS if needed.*
SEQUENCE	**All soil textures:** 2.5-4 fl oz			Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP or PRE. For burndown and residual control of weeds. See label for states and counties. Do not exceed 3.5 pt/A on coarse and 4 pt/A on medium or fine soils. Do not exceed 4 pt/A/season. Injury may occur following use under abnormally high soil moisture during early crop development. Do not apply to emerged conventional corn.
SHARK EW	See AIM EC			
SHARPEN	2 fl oz	2.5 fl oz	3 fl oz	Add 0.75 pt HSOC-MSO + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal.* PP or PRE. Apply up to 30 days before planting. PPI 1-2" up to 14 days before planting. PRE before crop emergence. May use 1 oz for burndown with no residual. Do not use where OP or carbamate insecticide is or will be used at-planting. Early PP not recommended for coarse soils, areas with >40" rainfall, or for POP corn. Apply as part of a planned sequential program.
STERLING BLUE/ CLARITY/ ***CLARIFIER*** or ***DICAMBA MAX 4***	**PP or PRE No-till** 0.5-1 pt **PRE Reduced or Conventional tillage** 1 pt			PP or PRE no-till corn only. Sterling Blue/Clarifier/Clarity: 0.5 pt/A on coarse or medium- and fine-textured soils w/ <2.5 % O.M., 1 pt/A on medium- or fine-textured soils with ≥2.5% O.M. Dicamba Max 4: 0.5 pt/A on coarse or medium- and fine-textured soils w/ <2 % O.M., 1 pt/A on medium- or fine-textured soils with ≥2% O.M. PRE reduced or conventional. Sterling Blue/Clarifier/Clarity: 1 pt on medium- to fine-textured soils with ≥2.5 % O.M.; do not apply to coarse soils or soils with <2.5% O.M. until after crop emergence (see Early POST). Dicamba Max 4: 1 pt on medium- to fine-textured soils with ≥2 % O.M.; do not apply to coarse soils until after crop emergence (see Early POST). Delay PRE application until corn is emerged if corn is planted less than 1.5" deep or if planted on coarse textured soils or soils with organic matter levels less than 2.5%. FALL POST-harvest or fallow or to crop stubble. Apply to actively growing small weeds <4".
TOTAL/TOTAL 2.3/TOTAL SL	SEE LIBERTY 280 SL			

See notes and footnotes at end of table

HERBICIDE APPLICATION RATES *continued*

BURNDOWN *(continued)*	**Rate/Acre**			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
TUSCANY SC	2-3 fl oz			Max. 3 fl oz/A/application, 3 fl oz/A/year, 4 applications/year. Fall application of 2-4 fl oz/A provides residual weed control in fields planted to corn the following spring. If weeds have emerged at time of application, use in combinated with a labeled burndown herbicide; see label for geographic region, application timing, and herbicide programs using glyphosate + COC, AMS and/or NIS.* Spring burndown before emergence of weeds for residual control apply at 2 fl oz/A between 7-30 days prior to planting depending on rainfall occurrence (see label), or apply 3 fl oz/A between 14-30 days prior to planting. Spring burndown of emerged weeds and residual control with 1-3 fl oz/A + labeled PP burndown herbicides. See label for tank mix partners.
VALOR SX or VALOR EZ/ PANTHER SC/CHATEAU EZ	**All soil textures:** 1-4 oz or 1-4 fl oz			PP. Apply from 14-30 days before planting in minimum and no-till fields. Do not irrigate when corn is emerging to 2-leaf. May be tank mixed with many other herbicides. Mixes with acetochlor, metolachlor, dimethenamid, flufenacet, or alachlor may injure crop. Has significant soil residual control, do not disturb soil after application.
VIDA	**All soil textures:** 0.5-2 fl oz			PP and PRE. Allow 30 days before application.
2,4-D LV4 or ***LV6*** or ***AMINE 4*** or ***SHREDDER E-99***	**PP - All soil textures:** 1-2.1 pt LV4 or 0.75-1.33 pt LV6 or 1-2 pt Amine 4 or 0.67-1.33 pt E-99 **PRE - All soil textures:** 2.1 pt LV4 or 1.33 pt LV6 or 2 pt Amine 4 or 0.66-1.33 pt E-99			PP or PRE. Do not use on light, sandy soils. Do not till for 7 days. Planting must be delayed after application: 7 days (up to 1 pt/A LV4, LV6, or Amine 4), 14 days (1-2 pt/A LV4 or Amine 4 or 1-1.33 pt/A LV6), 7-14 days before planting (E-99). Ester formulations dissipate faster than amines. PRE after planting but before crop emergence. Maximum 1 application.
2,4-D LV4 + ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	**All soil textures:** 1 qt + 0.5 pt			No-till alfalfa sod. Apply in FALL or SPRING to alfalfa with 4" new growth. Best control in FALL. Wait at least 3 days before applying 28% UAN or a triazine herbicide. If bromegrass or blue-grass is present, add Roundup WeatherMAX. Delay planting as for 2,4D LV4 & LV6 or Amine 4 & Shredder E-99.

PREPLANT OR PREEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
ACURON ‡ *<3% O.M.* *≥3% O.M.*	**All soil textures:** 2.5 qt 3 qt			Do not apply with any organophosphates or carbamates insecticides. Up to 28 days prior to planting. For extended residual or control of heavy weed infestations, 3 qt/A may be applied to soils with <3% O.M. See label regarding mandatory spray drift management.
ACURON FLEXI *<3% O.M.* *≥3% O.M.*	**All soil textures:** 2 qt 2.25 qt			See label for max. Application rates/A/yr and max. a.i. lbs/A/yr based on soil texture. PPI into the upper 1-2" up to 14 days before planting. Popcorn/Sweet Corn: PRE on coarse soils or where average annual rainfall exceeds 40" is not recommended. 14-day min. application interval.
ALLUVEX	SEE BURNDOWN SECTION			
ANTHEM FLEX - EPP *Other uses* *< 1% O.M.* *≥ 1% ≤3 % O.M.* *> 3% O.M.*	3.5-4.5 fl oz 2.75-3.5 fl oz 3.0-4.0 fl oz 4.0-5.0 fl oz	4.5-5.5 fl oz 3.0-4.5 fl oz 3.5-5.5 fl oz 4.5-6.0 fl oz	5.0-7.28 fl oz 3.5-4.5 fl oz 4.5-6.0 fl oz 5.5-7.28 fl oz	See label for max. application rates/A/yr and max. a.i. lbs/A/yr based on soil texture. PPI into the upper 1-2" up to 14 days before planting. Popcorn/Sweet Corn: PRE on coarse soils or where average annual rainfall exceeds 40" is not recommended. 14-day min. application interval.
ANTHEM MAXX - EPP *Other uses* *< 1% O.M.* *≥ 1% ≤3 % O.M.* *> 3% O.M.*	3-4 fl oz 2.5-3 fl oz 2.5-3.5 fl oz 3.5-4 fl oz	4-5 fl oz 2.5-4 fl oz 3.25-5 fl oz 4-5.5 fl oz	4.5-6.5 fl oz 3-4 fl oz 4 - 5.5 fl oz 5-6.5 fl oz	If applying FALL application followed by SPRING application, do not exceed 8.15 fl oz/A. FALL Do not exceed 2" incorporation depth. Apply when soil temperatures at 4" are sustained at < 55 °F and before the ground freezes and after Oct. 1. See label for max. application rates/A/yr and max. a.i. lbs/A/yr based on soil texture. PRE up to 14 days before planting. PPI into the upper 1-2" up to 14 days before planting. Popcorn/Sweet Corn: PRE on coarse soils or where average annual rainfall exceeds 40" is not recommended. 14-day min. application interval.
ATRAZINE 4L ‡/AATREX 4L ‡ or ***ATRAZINE 90DF*** ‡/ AATREX NINE-0 ‡	**All soil textures:** 3.2-4 pt or 1.8-2.2 lb			EPP. Apply up to 45 days before planting (14 days on coarse soils). PPI 0-14 days prior to planting or PRE. For quackgrass, use a split application. Check label for state or region restrictions on rates, timing and crop rotation. Note 1.
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	**All soil textures:** 0.5-4 pt or 0.5-2.2 lb			No-till into cool season grass sod. Weak on warm-season perennial grasses. On medium or fine textured soils, atrazine may provide suppression only. Not recommended on coarse soils if groundwater contamination can occur. Apply in early spring to 4-6" grass. Add Gramoxone SL 3.0 or Roundup WeatherMAX. Note 1. Apply a maximum of 2.0 lb ai/A broadcast per calendar year. If a postemergence treatment is required following an earlier atrazine application, the total atrazine applied may not exceed 2.5 lb ai per acre per calendar year.
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡ + GRAMOXONE SL 3.0 ‡	1.2 qt or 1.33 lb + 1.7 pt	1.4 qt or 1.55 lb + 1.7 pt	1.5 qt or 1.67 lb + 1.7 pt	No-till into winter wheat or rye. Apply when rye and wheat are 4-10" tall and before corn emerges. Can add Balance Flexx. Note 1.
AUTUMN SUPER 51 WDG	SEE BURNDOWN SECTION			
BALANCE FLEXX ‡ *8-30 days before planting* *0-7 days before planting or PRE*	 4-5 fl oz 3-4 fl oz	 6 fl oz 5-6 fl oz	 6 fl oz 5-6 fl oz	PP or PPI up to 30 days before planting if planned sequential, otherwise 21 days. See remarks below. Corn seed must be covered >1.5". See label for states and specific restrictions. PP or PPI 0-7 days preplant or PRE before crop or weeds emerge. Include 1 pt HSOC-COC or HSOC-MSO/A for burndown.* Can incorporate <2". For labeled weeds 3" or less in height. For weeds greater than 3"in height or those not controlled by Balance Flexx, add another burndown herbicide (e.g. Gramoxone SL 3.0, Roundup WeatherMAX, or 2,4-D). Atrazine will improve control of giant ragweed or Pennsylvania smartweed. When tank mixing with liquid nitrogen fertilizer or Roundup WeatherMAX, substitute a NIS for COC.* Balance Flexx provides residual weed control. Requires use of Supplemental label in MN, WI (exp. dates not given). Requires use of 24c in CO, MO (exp. dates not given), KS (exp. 12/2026) - see labels for details.
BASIS BLEND	SEE BURNDOWN SECTION			
BICEP II MAGNUM ‡/ BICEP II MAGNUM FC ‡ or BICEP LITE II MAGNUM ‡	2.1 qt or 1.5 qt	2.1-2.58 qt or 1.5-1.9 qt	2.1-2.58 qt or 1.9-2.2 qt	EPP. Apply 2/3 of total rate 30-45 days prior to planting with the remainder at planting. If applied 0-29 days prior to planting, use either as a split or single application. On coarse soils, make only a single application 0-14 days prior to planting. Do not use on peat or muck soils. Apply early preplant only in CO,IA,IL,IN,KS,KY,MN,MI,MT,ND,NE,SD,TN,WI,WY. Notes 1,2,3.
BICEP II MAGNUM ‡/ BICEP II MAGNUM FC ‡ or BICEP LITE II MAGNUM ‡	1.3-1.6 qt or 0.9-1.5 qt	1.6-2.1 qt or 1.1-1.5 qt	2.1-2.58 qt or 1.5-2.2 qt	PP or PPI within 2 weeks of planting. PRE from planting to weeds <2" or crop <5". Lower rates for each soil texture with <3% O.M. (see label). On fine textured soils use maximum rates for yellow nutsedge, cocklebur and velvetleaf. Do not use on peat or muck soils. Notes 1,2,3,5.
CALLISTO/***INCINERATE*** + DUAL II MAGNUM or BICEP II MAGNUM ‡/ BICEP II MAGNUM FC ‡ or BICEP LITE II MAGNUM ‡	5.3-7.7 fl oz + 1 pt or 1.6 qt or 0.9-1.5 qt	5.3-7.7 fl oz + 1.3-1.67 pt or 1.8-2.1 qt or 1.5-2 qt	5.3-7.7 fl oz + 1.3-2 pt or 2.1-2.6 qt or 1.5-2.2 qt	PRE. Apply after planting and before crop emerges.Apply 6-7.7 fl oz/A alone or with a grass herbicide, or 5.3-7.7 fl oz/A in tank mixture with atrazine. See label for PRE aerial application to corn in AL,AR,CO,FL,GA,IL,IN,IA,KS,KY,LA,MN,MO,MS,ND,NE,OH,OK,SD,TN,TX. Apply up to 5" corn when mixed with Bicep. Note 3.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
CAPRENO	**All soil textures:** 3-6 fl oz			Apply PRE at 3-6 fl oz/A in field corn, field corn grown for silage and specialty corns such as white corn and SEED corn. Do not apply on coarse textured soils with <2.0% O.M. Will not provide season-long residual grass and broadleaf weeds. Tank mix with residual PRE herbicides or follow with a planned POST. If applied PRE, do not apply POST. For PRE herbicides where weeds have emerged prior to corn, include COC for burndown of <3" weeds. For weeds >3" or not controlled by Capreno, add a burndown herbicide (Liberty Ultra/Liberty 280 SL/Total/Total 2.3/Total SL, paraquat, glyphosate, or 2,4-D). The addition of atrazine further improves control.
CHARGER BASIC*/*CHARGER MAX, EVERPREX				EPP up to 45 days before planting. Split apply 2/3 rate if 30-45 days preplant and remainder at planting. Use a single or split application 0-30 days preplant. PPI 0-14 days before planting. PRE before corn or weeds emerge. Use high end of rate range for yellow nutsedge and black nightshade. May be FALL applied in after Sept. 30 in ND,SD,MN,WI, and North of Rt 30 in IA, after Oct. 15 North of Rt 91 in NE and South of Rt 30 in IA, and after Oct 31 north of Rt 136 in IL. Do not use on coarse soils in FALL. Soil temperature must be <55 °F and before soil freeze up (see label). Notes 4,6.
FALL Min. or No-till, >2.5% O.M.	NO	1.67-2 pt	2 pt	
EPP Min. or No-till	1.33 pt <14 day preplant	1.67 pt	2 pt	
PPI or PRE <3% O.M.	1-1.33 pt	1.33-1.67 pt	1.33-1.67 pt	
PPI or PRE ≥3% O.M.	1.33 pt	1.33-1.67 pt	1.67-2 pt	
CHARGER MAX ATZ ‡ or ***CHARGER MAX ATZ LITE*** ‡				PP or PPI within 2 weeks of planting. See label for EPP tillage, split applications, residue and state restrictions. PRE or EARLY POST to weeds < 2" or crop <5". On fine textured soils use maximum rates for yellow nutsedge, cocklebur and velvetleaf. Do not use on peat or muck soils. Notes 1,2,3,4.
EPP Single Application	2.1 qt or 1.5 qt	2.1-2.58 qt or 1.5-1.9 qt	2.1-2.58 qt or 1.9-2.2 qt	
PP, PPI, PRE <3% O.M.	1.3 qt or 0.9 qt	1.6 qt or 1.1-1.5 qt	2.1 qt or 1.5 qt	
PP, PPI, PRE ≥3% O.M.	1.6 qt or 1.1-1.5 qt	2.1 qt or 1.5 qt	2.1-2.58 qt or 1.5-2.2 qt	
CHEETAH	SEE LIBERTY 280 SL IN BURNDOWN SECTION			
CLARIFIER	SEE STERLING BLUE IN BURNDOWN SECTION			
CLARITY	SEE STERLING BLUE IN BURNDOWN SECTION			
CONFIDENCE*/*TREMOR NXT				EPP, PPI, PRE. EPP up to 45 days before planting in no-till or conservation tillage. May split apply with 60% 30-45 days before planting and rest at planting. A single application may be made 30 days before planting. PPI within 14 days of planting. Apply up to 14 days before planting on coarse soils. Apply PRE before crop and weed emergence and within 5 days of last tillage. Use 2.5 to 3.4 pt on soils with 6-10% O.M. Notes 4,6.
EPP No- or cons. till only	1.5-2 pt	2.25-2.75 pt	2.75-3 pt	
<3% O.M.	1.25-1.75 pt	1.75-2.25 pt	1.75-2.25 pt	
≥3% O.M.	1.75 pt	1.75-2.25 pt	2.25-2.75 pt	
CONFIDENCE XTRA ‡/ ***TREMOR ATZ LITE NXT*** ‡				EPP, PPI or PRE. See Confidence comments for single, split,and PPI application timings. Apply up to 14 days before planting on coarse soils. May use up to 2.7 qt/A for medium/fine soils with heavy weed pressure. Notes 1,2,3,5,6.
EPP No - or cons. till only	1.8 qt	2.3 qt	2.3 qt	
Other uses	1.8 qt	1.8-2.3 qt	2-2.3 qt	
CONFIDENCE XTRA 5.6L ‡/ ***TREMOR ATZ NXT*** ‡				EPP, PPI, or PRE. See Confidence comments for single, split, and PPI application timings. Apply up to 14 days before planting on coarse soils. May use up to 2.3 qt on coarse and 2.3-3 qt on medium/fine soils with heavy weed pressure. Notes 1,2,3,5,6.
EPP No - or cons. till only	1.7-2.3 qt	2.3-3 qt	2.3-3 qt	
Other uses <3% O.M.	1.4 qt	1.7-2.4 qt	2.3-2.6 qt	
Other uses ≥3% O.M.	1.7 qt	2.3-2.6	2.3-3	
CORNERSTONE BRANDS	SEE BURNDOWN SECTION			
CORVUS ‡				PP or PPI up to 30 days before planting if planned sequential, otherwise 21 days. See remarks below. Corn seed must be covered >1.5". Requires use of Supplemental label in MN, WI. Requires use of 24c in CO, KS, MO (exp. dates not given). See label for all states and specific restrictions. If soils are ≤2% O.M. and ≥pH 7.5 reduce rate by 0.5 oz/A. Provides burndown of labeled weeds <6" tall when applied with COC or MSO.* 2ee various states (exp. dates not given) for tank mix with glyphosate/atrazine (POST) or with dicamba/atrazine. Note 3.
≤2% O.M.	3.33 fl oz	5.6 fl oz	5.6 fl oz	
>2% O.M.	5.6 fl oz	5.6 fl oz	5.6 fl oz	
CREDIT XTREME	SEE ROUNDUP PRODUCTS IN BURNDOWN SECTION			
CRUSHER or LEADOFF	**All soil textures:** 1-1.8 oz or 1.5-2.7 oz			PP or PRE. Apply in FALL after crop harvest through early SPRING up to planting. Apply before crop emergence. Do not apply to coarse soils with <1% OM. Do not apply Counter 20G within 60 days of application. Allow 3 weeks between PRE applications and POST applications of rimsulfuron products. See label for planting in FL, GA.
DEGREE XTRA ‡	2.9 qt	2.9-3.7 qt	3.2-3.7 qt	EPP. Apply up to 45 days before planting. Apply PRE before crop or weed emergence. On heavy weed infestations, use up to 4.3 pt/A on medium or fine textured soil. Can apply EARLY POST up to 11" corn. Notes 1,2,3,5.
PRE followed by POST	2 q	2 qt	2 qt	PRE followed by POST. Roundup Ready rate for a sequential program followed by Roundup Ready POST.

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
DICAMBA MAX 4	SEE STERLING BLUE IN BURNDOWN SECTION			
DIFLEXX	**All soil textures:** 8-16 fl oz			Up to 14 days before or after planting. HSOC-MSO or HSOC-COC* at 0.5% v/v should be used to control emerged weeds. 2ee in numerous states (exp. date not given) for reduced rate of 6 fl oz/A in FIELD, POP and SEED, and for reduced rate of 6-10 fl oz/A in POP.
DIFLEXX DUO	**All soil textures:** 20-40 fl oz			Apply when weeds are present using a mixture of DiFlexx DUO with HSOC-MSO or HSOC-COC* at 0.5 % v/v.
DIMETRIC EXT or ***DIMETRIC LIQUID*** + Labeled herbicides *PP 0-30 days* *PRE* *PP 10-30 days* *PP 0-9 days or PRE*	**All soil textures:** <u>IA, KS, MO, NE, SD</u> 2-5.33 oz or 0.25-0.66 pt 2-5.33 oz or 0.25-0.66 pt <u>IL, IN, KY, MI, MN, OH, WI</u> 2-5.33 oz or 2-4 oz or 0.25-0.5 pt See label for SWEET corn rates			PP or PRE. Dimetric EXT/Dimetric Liquid aids in the residual control of horseweed, lambsquarters, pigweeds, ragweeds, smartweed, sunflower, velvetleaf and waterhemp when tank mixed with other soil applied corn herbicides. Improves burndown of small weeds. Do not use on coarse soils with <1.5% O.M. Do not use >4 oz on soil with <2% O.M. Do not use on soils with pH >7.0. Plant at least 1.5" deep. May tank mix with 2,4-D LVE in IL, IN, IA, KS, KY, MI, MO, MN, NE, OH, SD, WI for burndown. See 2,4-D for planting restrictions. 2ee several states (exp. date not given) for FALL application of Dimetric EXT at 4-12 oz/A or Dimetric Liquid at 8-24 fl oz/A. Corn can be planted at normal times at ≤5.3 oz. Delay ≥4 months for >5.3 oz.
DUAL MAGNUM or DUAL II MAGNUM or DUAL IIG MAGNUM	*Fall Minimum or No-till, >2.5% O.M.*			FALL: May be applied after Sept. 30 in ND, SD, MN,WI, and North of Rt 30 in IA, after Oct. 15 north of Rt 91 in NE and south of Rt 30 in IA, and after Oct. 31 north of Rt 136 in IL. Do not use on coarse soils in FALL. See label for Italian ryegrass control in FALL with Dual Magnum. See label for Italian ryegrass "control in FALL with Dual II Magnum and yellow nutsedge control in ID, OR, and WA in FALL with Dual II Magnum.
	– – –	1.67-2 pt D, DII 10-15 lb IIG	2 pt D, DII 12-15 lb IIG	
	EPP Minimum or No-till			EPP: See label or Timing and Restrictions table for EPP days before planting.
	1.33 pt D, DII	1.67 pt D, DII	2 pt D, DII	
	PPI or PRE < 3% O.M.; EPP for IIG			PPI: See label or Timing and Restrictions table for PP/PPI days before planting. Use a single or split application 0-30 days PP. PPI 0-14 days before planting. Split apply 2/3 rate if 30-45 days PP and remainder at planting. PRE before corn or weeds emerge or EARLY POST to corn up to 5" or layby to 40" tall. Use high end of rate range for yellow nutsedge and black nightshade. Can use up to 2.5 pt Dual Magnum or Dual II Magnum or 16 lb of granules on soils with 6-20% O.M. Soil temperature must be <55 °F and before soil freeze up (see label). 2ee in several states (exp. date not given) for use rates of Dual II Magnum on coarse soils. Notes 4,6.
	1-1.33 pt D, DII 6-8 lb IIG	1.33-1.67 pt D, DII 8-10 lb IIG	1.33-1.67 pt D, DII 8-10 lb IIG	
	PPI or PRE ≥ 3% O.M.; EPP for IIG			
	1.33 pt D, DII 8 lb IIG	1.33-1.67 pt D, DII 8-10 lb IIG	1.67-2 pt D, DII 10-12 lb IIG	
DUAL II MAGNUM + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	1.33 pt + 3.2 pt 1.75 lb	1.67 pt + 3.2-4 pt 1.75-2.2 lb	2 pt + 4 pt 2.2 lb	EPP. Apply 2/3 of total rate 30-45 days prior to planting with the remainder at planting. If applied 0-29 days prior to planting, use either as a split or single application. On coarse soils, make only a single application 0-14 days prior to planting. Do not use on peat or muck soils. See label for early preplant geographical restrictions by state. Notes 1,2,6.
DUAL II MAGNUM + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	1 pt + 3.2 pt 1.75 lb	1-1.33 pt + 3.2-4 pt 1.75-2.2 lb	1.33-1.67 pt + 3.25-4 pt 1.8-2.2 lb	PPI: See label or Timing and Restrictions table for PP/PPI days before planting. Use a single or split application 0-30 days PP. PPI 0-14 days before planting. Split apply 2/3 rate if 30-45 days PP and remainder at planting. PRE before corn or weeds emerge or EARLY POST to corn up to 5" or layby to 40" tall. Use high end of rate range for yellow nutsedge and black nightshade. Soil temperature must be <55 °F and before soil freeze up (see label). 2ee in several states (exp. date not given) for use rates of Dual II Magnum on coarse soils. Notes 4,6.
ENVERSA	<3% OM: 1.5-2.0 qt ≥3% OM: 2.0 qt	<3% OM: 1.5 -2.75 qt ≥3% OM: 2.0-2.75 qt	<3% OM: 1.75-2.75 qt ≥3% OM: 2.75 - 3.0 qt	For preplant incorporated, preemergence, or postemergence in Corn. Applications of this product may be made preplant, at-planting, or preemergence in field corn in the following listed states only. Alabama, Arkansas, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. Do not apply Enversa to sweet corn. Refer to the product label for weeds controlled. If weeds are emerged at time of application, apply a labeled postemergence herbicide with this product to control the emerged weeds. Application rates from the table should be based on the soil texture and the tolerance of the sorghum hybrid. Do not exceed a maximum of 3 quarts per acre (2.25 lb ai/acre) of this product as a single application. Do not exceed 4 quarts (3 lb ai/acre) per acre per year when making multiple applications.
EVERPREX	SEE CHARGER BASIC			
FRAMEWORK 3.3 EC or PROWL H2O (alone or) + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	1.8-3.6 pt or 2-3 pt + 1 qt or 1.1 lb	2.4-4.8 pt or 3-4 pt + 1-1.6 qt or 1.1-1.78 lb	2.4-4.8 pt or 3-4 pt + 1-1.6 qt or 1.1-1.78 lb	PRE after planting but before crop or weeds emerge. Do not incorporate. If cultivation is necessary, use rotary hoe. Plant corn at least 1.5" deep. Can apply alone or with atrazine. POST-plant incorporated or layby at reduced rates from 4" corn to last cultivation. Use on SWEET corn only for processing. Note 1.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
FULTIME NXT ‡	2.9 qt	2.9-3.7 qt	3.2-3.7 qt	EPP. Apply up to 45 days before planting. Apply PRE before crop or weed emergence. On heavy weed infestations, use up to 4.4 pt on medium or fine textured soil. Can apply EARLY POST up to 11" corn. Notes 1,2,3,5.
GRAMOXONE SL 3.0 ‡	SEE BURNDOWN SECTION			
HARNESS *EPP No- or cons. till only* *<3% O.M.* *≥3% O.M.* *PRE followed by POST*	 1.5-2 pt 1.25-1.75 pt 1.75 pt 1.5 pt	 2.25-2.75 pt 1.75-2.25 pt 1.75-2.25 pt 1.5 pt	 2.75-3 pt 1.75-2.25 pt 2.25-2.75 pt 1.5 pt	EPP, PPI, PRE. EPP up to 45 days before planting in no-till or conservation tillage. May split apply with 60% 30-45 days before planting and rest at planting. A single application may be made less than 30 days before planting. PPI within 14 days of planting. Apply up to 14 days before planting on coarse soils. Apply PRE before crop and weed emergence and within 5 days of last tillage. Use 2.5 to 3.4 pt/A on soils with 6-10% O.M. Notes 4,6. PRE followed by POST. Roundup Ready rate for a sequential program followed by Roundup Ready POST. Do not apply POST to SWEET corn. Note 7. FALL Supplement label (exp. date not given) in IA,MN,ND,SD,WI,NE (north of Rte 91) and IL (north of Rte 136): Apply after Sept. 20 when soils are <55 °F but before ground freezes.
HARNESS + ***ATRAZINE 4L*** or ***ATRAZINE 90DF***	1-1.175 pt + 1.25-2 qt 1.4-2.2 lb	1.25-2.25 pt + 1.25-2 qt 1.4-2.2 lb	1.75-2.25 pt + 1.5-2 qt 1.67-2.2 lb	PPI within 14 days of planting or PRE before weed and crop emergence and within 5 days of last tillage. Tank mixes with 1 pt Sterling Blue/Clarifier/Clarity/Dicamba Max 4 can be applied PRE or EARLY POST on corn up to 8" (products containing dicamba can cause corn injury if applied before corn emergence). With these tank mixes, plant corn >1.5" deep. Notes 1,2,5,6.
HARNESS MAX	55-64 fl oz	64-75 fl oz	<3% OM: 64-75 fl oz ≥3% OM: 75-88 fl oz	PP surface on coarse soils should not be made >14 days prior to planting. For broad-spectrum weed control, single applications must be followed with planned POST application of labeled broadleaf and/or grass herbicide. Maximum use rate of 95 fl oz/A/year. Do not make a second application within 14 days of first application.
HARNESS XTRA ‡/ ***CONFIDENCE XTRA*** ‡/ ***TREMOR ATZ LITE NXT*** ‡ *EPP No - or cons. till only* *Other uses* *PRE followed by POST*	 1.8 qt 1.8 qt 1.2 qt	 2.3 qt 1.8-2.3 qt 1.2 qt	 2.3 qt 2-2.3 qt 1.2 qt	EPP, PPI, or PRE. See Harness comments for single, split, and PPI application timings. Apply up to 14 days before planting on coarse soils. May use up to 2.7 qt/A for medium/fine soils with heavy weed pressure. Notes 1,2,3,5,6. PRE followed by POST. Roundup Ready rate for a sequential program followed by Roundup Ready POST; do not apply POST to SWEET corn. Note 7.
HARNESS XTRA 5.6L ‡ *EPP No - or cons. till only* *Other uses <3% O.M.* *Other uses ≥3% O.M.* *PREfollowed by POST*	 1.7-2.3 qt 1.4 qt 1.7 qt 1.5 qt	 2.3-3 qt 1.7-2.4 qt 2.3-2.6 qt 1.5 qt	 2.3-3 qt 2.3-2.6 qt 2.3-3 1.5 qt	EPP, PPI, or PRE. See Harness comments for single, split, and PPI application timings. Apply up to 14 days before planting on coarse soils. May use up to 2.7 qt/A for medium/fine soils with heavy weed pressure. Notes 1,2,3,5,6. PRE followed by POST. Roundup Ready Rate for a sequential program followed by Roundup Ready POST. Do not apply POST to SWEET corn. Note 7.
HONCHO K6	SEE ROUNDUP PRODUCTS IN BURNDOWN SECTION			
HORNET *<3% O.M.* *≥3% O.M.*	 4 oz 4-5 oz	 4-5 oz 5 oz	 4-5 oz 5 oz	EPP or PPI (2-3") 0-30 days prior to planting. Add a burndown herbicide for emerged weeds. Apply PRE at or after planting until spike stage (<2") corn or weed emergence. Plant corn >1.5" deep and close furrow. Do not use Counter 20G or Thimet 20-G. Apply other soil organophosphate insecticides in a T-Band. Use low end of rates if soil O.M.% is <3%. To avoid corn injury, do not apply if soil pH >7.8 or if soil O.M.<1.5%. or if soil pH <5.9 and O.M. >5%. See Product Bulletin in IA, IL, MN, WI for rotational Interval for SWEET corn.
HORNET *<3% O.M.* *≥3% O.M.*	**All soil textures:** 3 oz 4 oz			Reduced rates for use in tank mixes with atrazine-containing formulations such as Bicep, Degree Xtra, and Confidence Xtra,Tremor ATZ Lite NXT, or Harness Xtra. Tank mixes provide improved control of velvetleaf, lambsquarter, and pigweeds including waterhemp. See remarks for Hornet above.
INCINERATE	SEE CALLISTO			
KEYSTONE LA NXT ‡ *EPP No - or cons. till only* *Other uses*	 1.8 qt 1.8 qt	 2.3 qt 1.8-2.3 qt	 2.3 qt 2-2.3 qt	EPP, PPI, or PRE. See Harness Xtra comments for single, split, and PPI application timings. Apply up to 14 days before planting on coarse soils. May use up to 2.7 qt/A for medium/fine soils with heavy weed pressure. Notes 1,2,3,5,6.
KEYSTONE NXT ‡ *EPP No - or cons. till only* *Other uses <3% O.M.* *Other uses ≥3% O.M.*	 1.7-2.3 qt 1.4 qt 1.7 qt	 2.3-3 qt 1.7-2.4 qt 2.3-2.6 qt	 2.3-3 qt 2.3-2.6 qt 2.3-3 qt	EPP, PPI, or PRE. See Harness Xtra 5.6L comments for single, split, and PPI application timings. Apply up to 14 days before planting on coarse soil. May use up to 2.3 qt/A on coarse and 2.3-3 qt/A on medium/fine soils with heavy weed pressure. Notes 1,2,3,5,6.
KOCHIAVORE	Do not use	1-1.5 pt	1-1.5 pt	PP delay planting and tillage for a minimum of 7 days after application. PRE and reduced tillage applications after planting to control emerged broadleaf weeds; seed furrow must be completely closed. Limit of 1 PP or PRE application/season. Maximum 3 pt/A/season.
LEADOFF	SEE CRUSHER			

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
LEXAR EZ ‡ *<3% O.M.* *≥3% O.M.*	**All soil textures:** 3 qt 3.5 qt			PP or PRE. Apply up to 14 days before planting or PRE before crop emerges. Include HSOC-COC and AMS for burndown.* Use ≥ 2.25 qt/A in a planned sequential program on glyphosate tolerant corn. Do not apply more than 3.5 qt/A or 2.5 lb/A atrazine or 3.75 lb/A of s-metolachlor/year. Do not use on soils with >10% O.M. Do not mix with OPs or carbamates or follow Counter 20G. Do not make an additional application of any mesotrione containing products to corn treated with Lexar EZ. Notes 1,2,3,6.
LIBERTY ULTRA/LIBERTY 280 SL	SEE BURNDOWN SECTION			
LOROX DF/LINEX 4L	**All soil textures:** 1-1.5 lb/1-1.5 pt			PRE. Before crop emerges. East of Rocky mountains only.
LUMAX EZ ‡ *<3% O.M.* *≥3% O.M.*	**All soil textures:** 2.7 qt 3.25 qt			PP or PRE. Apply up to 14 days before planting or PRE before weeds emerge. SWEET corn before crop emergence only. Tank mixes include Gramoxone SL 3.0 or glyphosate for emerged weeds. Include HSOC-COC or HSOC-MSO and AMS for burndown.* Apply ≥2 qt/A in a planned sequential program on glyphosate tolerant corn. Do not apply more than 3.25 qt/A Lumax EZ or 2.5 lb/A atrazine or 3.75 lb/A of s-metolachlor per year. Lumax EZ contains 0.935 lb a.i. atrazine/gal. Do not use on soils with >10% O.M. Do not mix with OPs or carbamates or follow Counter 20G. Do not make an additional application of any mesotrione containing products to corn treated with Lumax EZ. Notes 1,2,3,6.
MAVERICK	18 fl oz	18-32 fl oz	18-32 fl oz	Apply Preplant Burndown or apply PPI and uniformly incorporate into upper 2 inches of soil any time within 14 days prior to planting. Or, apply PRE as broadcast but prior to corn emergence followed by 0.25 inches precipitation or sprinkler irrigation (or incorporate within 7 days of application). Max. 2 applications/A/year (one PRE and one POST). Min. 21-day retreatment interval. Max. 18 fl oz/A/year on coarse soils. Max. 32 fl oz/A/year on medium and fine soils (combination of PRE and POST applications). Max 14 fl oz/A/year POST. See label for aerial application state restrictions.
OUTLOOK *<3% O.M.-Spring* *≥3% O.M.-Spring* *Fall*	 12-14 fl oz 14-18 fl oz Do not use	 14-18 fl oz 18-21 fl oz Up to 21 fl oz	 14-18 fl oz 18-21 fl oz Up to 21 fl oz	PP, PPI, or PRE. Apply up to 45 days before planting. Use 21 fl oz for all EPP (15-45 days). EPP not recommended on coarse soils. May split by using 2/3 early and 1/3 at planting. PPI 1-2"up to 14 days before planting. PRE before crop emergence. PP FALL in minimum or no-till. In ND, SD, MN,WI, IA, IL north of Hwy 136, and NE north of Hwy 91. Apply after Oct. 1 to medium and fine soils >2.5% O.M. when soil <55 °F and before ground freezes. If tilling, go no deeper than 2-3". Note 6.
PANTHER SC	SEE VALOR SX			
PERPETUO	SEE BURNDOWN SECTION			
PRINCEP 4L or PRINCEP CALIBER 90	**All soil textures:** 1 qt or 1.1 lb			FALL, EPP, PPI or PRE. Labeled up to 2 qt/A or 2.2 lb/A in SPRING. Use lower rates on coarse-textured soils and soils with low O.M. Tank mix with Bicep formulations or Atrazine. When tank mixing with atrazine products, do not exceed 2.5 lbs ai/A combined atrazine and simazine. Princep pro-vides soil residual control of late-germinating weeds such as crabgrass and fall panicum. Less burndown action than other triazines. See label for rotation and use area restrictions. May apply in FALL at 1 qt/A or 1.1 lb/A after harvest and before weeds emerge. Do not apply to frozen ground. Not labeled for silage corn.
PYTHON	0.8-1 oz	0.89-1.33 oz	0.89-1.33 oz	EPP, FALL or SPRING, PP or PPI (2-3") up to 30 days prior to planting. Add burndown herbicides for emerged weeds. In FALL, apply 0.8-1 oz/A in tank mixes after soil <50 °F and to ≤4"weeds. Apply PRE through the spike stage (<2") of corn. Plant corn >1.5" deep. Use upper end of rates if soil O.M. is >3% or for specific weeds. Do not use if soil organic matter <1.5% or if soil pH >7.8; or if soil pH <5.9 and O.M. >5%. Do not use on peat or muck soils. Use 0.8-1 oz/A with atrazine-containing tank mixes for consistent control of velvetleaf, lambsquarter, pigweed, waterhemp (including triazine-tolerant biotypes). Observe insecticide restrictions.
RESICORE/RESICORE REV *<3% O.M.* *≥3% O.M.*	 2.25 qt 2.5 qt	 2.5 qt 2.75 qt	 2.75 qt 3 qt	Do not apply >3.25 qt/A/year. Do not make more than two applications/year. Do not use on soils with >10% O.M. Apply up to 28 days prior to planting (PP) or before crop emerges (PRE). Notes 3,5,6.
RESOLVE Q	**All soil textures:** 1.25-2.5 fl oz (do not apply to coarse soils with <1% O.M.)			PP or PRE for field corn only. May be incorporated ≤2". Use HSOC-MSO or HSOC-COC plus UAN or AMS for burndown of emerged weeds.* Do not exceed 1.25 oz/A PRE if following with rimsulfuron POST.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
ROUNDUP PRODUCTS	SEE BURNDOWN SECTION			May use other glyphosate herbicides: Cornerstone brands, Roundup brands or others at labeled rates.
RT 3	SEE BURNDOWN SECTION			
RUGGED	SEE BURNDOWN SECTION			
SADDLE-UP	SEE COMMENTS/RESTRICTIONS			PP: Application rate depends on days to planting and cumulative rainfall/irrigation occuring in 2 or less rainfalls and/or irrigations. For areas with ≥0.5" rainfall/irrigation, use ≤1 pt/A with 7 days PP, 1-3 pt/A with 21 days PP, or >3 pt/A with 120 days PP. For areas with <0.5" rainfall/irrigation, use ≤1 pt/A with 30 days PP, 1-2 pt/A with 60 days PP, or >2-3 pt/A with 120 days PP. Max. 2 pt/A if O.M. <2%; max. single PP application/crop cycle.
SCORCH	Do not use	1.25-1.5 pt	1.25-1.5 pt	Do not use on light, sandy soil (sand, sandy loam, and loamy sand). Apply to actively growing and emerged broadleaf weed seedlings or existing cover crops. Max. 1.5 pt/A/year. Limit to 1 PP and 1 PRE application/crop cycle. Min. 30-day application interval.
SEQUENCE	SEE BURNDOWN SECTION			
SHARPEN	SEE BURNDOWN SECTION			
SIMAZINE 4L/SIMAZINE 90/DF *PP* *PRE -Fall* *PRE*	 2 qt or 2.2 lb 1.5 qt or 1.1 lb Up to 2 qt	 2.4 qt or 2.6 lb 1.5 qt or 1.1 lb Up to 2 qt or 2.2 lb	 2.5 qt or 2.7 lb 1.5 qt or 1.1 lb Up to 2 qt or 2.2 lb	Product labels from individual registrants vary in formulation and rate/A. Check labels. FALL, PP, or PRE. PP best if applied within 2 weeks of planting. PRE prior to weed and corn emergence. See comments for Princep 4L and Princep Caliber 90.
SONIC BOOM 1 - 2% OM 2 - 4% OM	 10 fl oz. 10-14 fl oz	 10-13 fl oz. 12-14 fl oz	 12-14 fl oz. 14 fl oz	Use an approved tank mix product for additional burn down weed control. Fall application only. Do not incorporate. Do not apply more than 14 fluid ounces. Begining with the initial application, do not make more than one application per acre per twelve month period. Don't apply to coarse soils classified as sand, with less than 1% organic matter.
SPITFIRE	**All soil textures:** PP: 1.25-2.5 pt PRE: 2-2.5 pt			PP: Max. 2 pt/A if O.M. <2%; max. single PP application/crop cycle. PRE: Don't use PRE if soil O.M. <2%; do not use if seeds are <1.5" below soil surface; max. single PRE application/crop cycle. If applying PP following fall PH application to previous crop, the combination of treatments may not exceed 5 pt/A; min. 30-day application interval.
STARANE NXT	**All soil textures:** 14-21 fl oz			PP application rate depends on weed to be controlled or suppressed.
STARANE ULTRA/ STAREDOWN	0.4 pt			PP for emerged volunteer potato or emerged weeds. For best results, plant corn 2 weeks after applying to potato.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	SEE BURNDOWN SECTION			
STOREN *<3% O.M.* *≥3% O.M.*	Do not use	 1.8-2.1 qt 2.1-2.4 qt	 1.8-2.1 qt 2.1-2.4 qt	Rate is dependent on application timing, soil texture, O.M., and type/variety of corn; see label. Irrigation or significant rainfall is needed within 7 days after PP/PRE to avoid decreased weed control. See label for use of OP or carbamate insecticides after POST applications. Do not apply POST with liquid fertilizers. Do not apply POST to yellow POP or SW. Do not use in white POP or ornamental corn. Max. 2.4 qt/A/application. Min. 140-day application interval. Do not apply to corn past V8 stage.
SURESTART II	SEE THREESIDUAL			
SURPASS NXT *EPP No- or cons. till only* *<3% O.M.* *≥3% O.M.*	 1.5-2 pt 1.25-1.75 pt 1.75 pt	 2.25-2.75 pt 1.75-2.25 pt 1.75-2.25 pt	 2.75-3 pt 1.75-2.25 pt 2.25-2.75 pt	EPP, PPI, PRE. FALL only in IA, MN, ND, SD,WI, NE (north of Rte 91), and IL (north of Rte 136) after soybean harvest and prior to corn, after Sept 30 when soils are <55 °F but before ground freezes. EPP up to 45 days before planting in no-till or conservation tillage. May split apply with 60% 30-45 days before planting and rest at planting. A single application may be made less than 30 days before planting. PPI within 14 days of planting. Apply up to 14 days before planting on coarse soils. Apply PRE before crop and weed emergence and within 5 days of last tillage. Use 2.5-3.4 pt/A on soils with 6-10% O.M. Notes 4,6.
SURPASS NXT + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	1-1.175 pt + 1.25-2 qt 1.4-2.2 lb	1.25-2.25 pt + 1.25-2 qt 1.4-2.2 lb	1.75-2.25 pt + 1.5-2 qt 1.67-2.2 lb	PPI within 14 days of planting or PRE before weed and crop emergence and within 5 days of last tillage. Tank mixes with 1 pt/A Sterling Blue/ClarifieR/Clarity/Dicamba Max 4 can be applied PRE or EARLY POST on corn up to 8" (products containing dicamba can cause corn injury if applied before corn emergence). With these tank mixes, plant corn >1.5" deep. Notes 1,2,5,6.

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
SURTAIN	9.2-11 fl oz	11-14 fl oz	PP/PRE 11-17 fl oz POST 11-14 fl oz	Surtain is a soil residual product that can be applied Preplant, Preemergence, or early Postemergence. Surtain does not have any activity on emerged weeds. Add an appropriate tank mix partner for contol of emerged weeds. Tank mixing of Surtain with Glufosinate formulations for early postemergence applications is NOT advised as corn injury could result. Maximum number of applications per year is 2, separate sequential applications by at least 14 days. Maximum cumulative per season rate is 27 fl oz/A. Ensure the corn seed row is closed. Soil conditions that cause poor seed furrow closure and coverage may result in delayed corn emergence or stunting. Check the product label for additional use directions, precautions and restrictions.
THREESIDUAL/ SURESTART II/TRIPLEFLEX II				FALL, EPP, PPI, PRE or EARLY POST up to 11" corn. FALL to soybean stubble after October 15 - soil temperature <50 °F at 4" and before ground freezes. Medium and fine soils with >2.5% O.M. only. May apply 21 or more days prior to planting. Use in herbicide tolerant corn, such as Roundup Ready or LibertyLink field and silage corn and conventional corn. Provides early season control of grass and broadleaf weeds to allow for optimal timing of the in-crop POST glyphosate or glufosinate. Do not apply >3 pt in a single application or >3.5 pt/A/crop season. To avoid crop injury, plant corn at least 1.5" deep and close furrow. Do not use terbufos or phorate insecticides. Apply all other OP insecticides in a T-band or band. Do not apply if soil pH >7.8 or if soil O.M. <1.5% or soil pH <5.9 and soil OM >5%. Do not tank mix with liquid OP insecticides in POST applications. See Technical Bulletin MN, WI, IL, IA for SureStart II (exp. date not given) 10.5 month rotation interval to certain SWEET corn varieties. Notes 4,8.
<3% O.M.	1.5-2 pt	1.5-2.5 pt	2-3 pt	
≥3% O.M	1.5-2 pt	1.75-3 pt	2-3 pt	
TOTAL/***TOTAL 2.3***/***TOTAL SL***	SEE LIBERTY 280 SL IN BURNDOWN SECTION			
TREMOR ATZ LITE NXT ‡	SEE CONFIDENCE XTRA			
TREMOR ATZ NXT ‡	SEE CONFIDENCE XTRA 5.6L			
TRIPLEFLEX II	SEE THREESIDUAL			
TRIVOLT ‡				PP or PPI up to 30 days before planting if planned sequential, otherwise 21 days. See remarks below. Corn seed must be covered >1.5". Requires use of Supplemental label in MN, WI. See label for all states and specific restrictions. Note 3.
≤2% O.M.	10.75 fl oz	15-20 fl oz	20 fl oz	
>2% O.M.	15-20 fl oz	15-20 fl oz	20 fl oz	
TUSCANY SC	SEE BURNDOWN SECTION			
VALOR SX/VALOR EZ/ PANTHER SC/CHATEAU EZ	SEE BURNDOWN SECTION			
VERDICT/***TESTIFY***	10-12 fl oz	13-15 fl oz	16-18 fl oz	Add 0.75 pt HSOC-MSO/100 gal + 8.5-17 lb AMS/100 gal or 1.25-2.5 gal UAN/100 gal.* EPP, PPI or PRE. Planned sequential rates to be followed by a POST treatment. Apply up to 30 days before planting or PPI 2" up to 14 days before planting. PRE before corn emerges. FALL after October 1 in IA, MN, ND, SD, WI. Use 20-25 fl oz/A on medium to fine texture soils with >2.5% O.M. Soil temperature <55 °F at 4" and before ground freezes. Do not apply when at-planting OP or carbamate insecticide is planned or has occurred. May be tank mixed with other herbicides. Provides burndown of many broadleaves plus residual control of broadleaves and grasses. Note 8.
WARRANT	**All soil textures:**			PP, PRE only in AL,AR,GA,HI,LA,MS,NM,NC,OK,SC,TN,TX,VA only. Apply broadcast to the soil surface. Do not apply to SWEET corn. Do not exceed 4 qt/A/season.
<3% O.M.	1.5-2.75 qt			
≥3% O.M	2-3 qt			
WEEDAR 64 or	PP,PRE - All soil textures (do not use on very light, sandy soil): 1-2 pt or			Only emerged broadleaf weeds likely to be controlled. Max. 1 PP or PRE application/crop cycle. Max. per PP or PRE application: 2.0 pt/A Weedar 64, 3 pt/A Weedone 638/21 fl oz/A Weedar XHL. Max. per crop cycle incl. POST and PH: 6 pt/A Weedar 64, 8.5 pt/A Weedone 638 or 64 fl oz/A Weedar XHL .
WEEDONE 638 or	1.5-2.5 pt or			
WEEDAR XHL	10.6 - 21 fl oz			

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
WEEDMASTER or WEEDMASTER XHL	**All soil textures:** 2.0-2.5 pt or 1.0-2.0 pt.			Limit one PP or one PRE application/crop cycle. PP: Do not use >2.0 pt/A or 1.6 pt/A if O.M. is <2%. PRE: Do no use if seeds are <1.5" below soil surface or if O.M. is <2%. Do not use on sweet corn.
ZIDUA SC	2.5-4 fl oz	3.25-5 fl oz	4-6.5 fl oz	FALL, PP, PPI, PRE. Planned sequential rates. FALL applications use PP rates. PP and PPI up to 14 days before planting. PRE before crop emerges. Corn seed must be planted a minimum 1-inch deep. Maximum 4.5 fl oz/A/season on coarse soils and 5 8 fl oz/A/season on medium and fine soils. Rates shown are reduced for planned sequential POST. Full Zidua SC rates are coarse: 4.5 fl oz/A, medium: 5 fl oz/A, fine: 6.5 fl oz/A. Check with seed company for tolerance of SWEET, POP and SEED corn. PP not recommended on coarse soils; in areas with >40" rainfall and/or irrigation; or on POP or SWEET corn. Note 8.
2,4-D	SEE BURNDOWN SECTION			

[1] Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.
O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.
***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
NOTE 1: Do not exceed maximum rate of Atrazine allowed per year. FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE: Do not apply within 66' of points where field runoff enters perennial or intermittent streams or rivers. This buffer zone around stand pipes is not required if the atrazine applied in this buffer zone is incorporated into the soil after application, if area is managed under no-till system combined with high crop residue management. Mixing, loading, rinsing or washing is permitted within 50' of a well only if conducted on an impervious pad constructed to meet standards specified on the label. **On Highly Erodible Soils (as defined by NRCS)** In conservation tillage leave ≥30% of the soil covered with plant residues at planting, apply a maximum of 2 lb a.i./A as a broadcast spray. If the soil coverage with plant residue is less than 30% at planting, a maximum of 1.6 lb a.i./A may be applied as a broadcast spray. **On Soils Not Highly Erodible** Apply a maximum of 2 lb a.i./A as a broadcast spray. Do not mix, load or apply within 50' of any well or sinkhole. Do not apply within 200' of a natural or impounded lake or reservoir.
NOTE 2: These combination products contain the following amounts of atrazine: Bicep II Magnum/Charger MAX ATZ (each qt) 0.6675 lb a.i.; – Bicep Lite II Magnum/Charger MAX ATZ Lite; – Confidence Xtra/Tremor ATZ Lite NXT (each qt) 0.625 lb a.i.; – Conf. Xtra 5.6L/Tremor ATZ NXT (each qt) 0.425 lb a.i.; – Degree Xtra (each qt) 1.34 lb a.i.; – Harness Xtra 5.6L (each qt) 0.625 lb a.i.; – Harness Xtra 6L (each qt) 0.425 lb a.i.; FulTime NXT (each qt) 0.335 lb a.i.; – Keystone NXT (each qt) 0.625 lb a.i.; – Keystone LA NXT (each qt) 0.425 lb a.i.; – Lexar EZ (each qt) 0.44 lb a.i.; – Lumax EZ (each qt) 0.23 lb a.i.
NOTE 3: Not recommended if there is a risk of groundwater contamination.
NOTE 4: The maximum rate of Dual II MAGNUM/CHARGER MAX for hard- to-kill weeds may be increased to: coarse 2 pt/A, medium 2.5 pt/A, fine 3 pt/A.
NOTE 5: If ground water level is 30 feet or less, DO NOT APPLY to sands with <3% O.M. – to loamy sands <2% O.M. – to sandy loams <1% O.M. Only one treatment may be applied to a labeled crop. Do not mix or load within 50' of any wells, sinkholes, intermittent streams and rivers and lakes and reservoirs, except as permitted on an impervious pad.
NOTE 6: Can be applied at certain POST timings; see POST section.
NOTE 7: The Roundup Ready Rate may be used PRE in a planned PRE/POST program when followed by Roundup herbicide labeled for Roundup Ready Corn 2.
NOTE 8: These herbicides are designed primarily for use as a planned PRE followed by a POST herbicide. Check with seed company for tolerance of sweet corn, popcorn and seed corn.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

The staging system described here (often referred to as the Iowa State staging system) divides plant development into vegetative (V) and reproductive (R) stages (Table 1). Subdivisions of the V stages are designated numerically as V1, V2, V3, etc. through V(n), where (n) represents the last leaf stage before VT for the specific hybrid under consideration. The first and last V stages are designated as VE (emergence) and VT (tasseling). The (n) will fluctuate with hybrid and environmental differences. The six subdivisions of the reproductive stages are designated numerically with their common names in Table 1.

Table 1. Vegetative and reproductive stages of a corn plant.*

Vegetative Stages	Reproductive Stages
VE emergence	R1 silking
V1 first leaf	R2 blister
V2 second leaf	R3 milk
V3 third leaf • • • V(n) nth leaf	R4 dough
VT tasseling	R5 dent
	R6 physiological maturity

***This system accurately identifies the stages of a corn plant. However, all plants in a given field will not be in the same stage at the same time. When staging a field of corn, each specific V or R stage is defined only when 50 percent or more of the plants in the field are in or beyond that stage.**

Spike Stage or VE. Emergence of the coleoptile above the soil surface.

First Leaf (V1) – emerges from coleoptile with rounded tip. Some herbicide labels do not count this leaf as a "true leaf."

"True" Leaves (V2-Vn) – all leaves with pointed leaf tip.

Tassel (VT) – bottom-most branch of tassel completely visible and silk has not emerged.

Silking (R1) – silks visible outside husks.

Blister (R2) – kernels white on outside, clear liquid inside.

Milk (R3) – kernel yellow outside, milky white fluid inside.

Dough (R4) – kernel fluid thick/pasty, cob pink or red.

Dent (R5) – most kernels at least partially dented.

Physiological Maturity (R6) – milk line no longer evident, black layer formed. Maximum dry weight is attained.

Herbicide labels refer to the stage of development of corn based on plant height or leaf stage. **Corn height is generally defined as "free standing" or the height of the arch of the highest leaf that is at least 50% developed.** Corn height is less accurate than leaf number in determining growth stage. However, there are several different methods of counting leaves.

1. Leaf Collar Method: This staging method is the most common on labels. Count all leaves including the first leaf with a rounded tip which have formed a visible collar. This method is used in "How a Corn Plant Develops" Special Report No. 48 Iowa State University.

2. Indicator Leaf or Horizontal Leaf Method: Counts all leaves, including the first leaf, to the indicator leaf – the uppermost leaf that is 50% exposed from the whorl and whose tip points below a horizontal line. Used by hail insurance adjusters.

3. Visible True Leaf Method: Does not count the first leaf with the rounded tip. Method used on some herbicide labels. Each leaf stage is defined according to the uppermost leaf whose leaf collar is visible. An example of a two leaf corn plant is given in Figure 1 and 2. The first part of the collar that is visible is the back which appears as a discolored line between the leaf blade and leaf sheath. The characteristically oval-tipped first leaf is a reference point for counting upward to the top visible leaf collar.

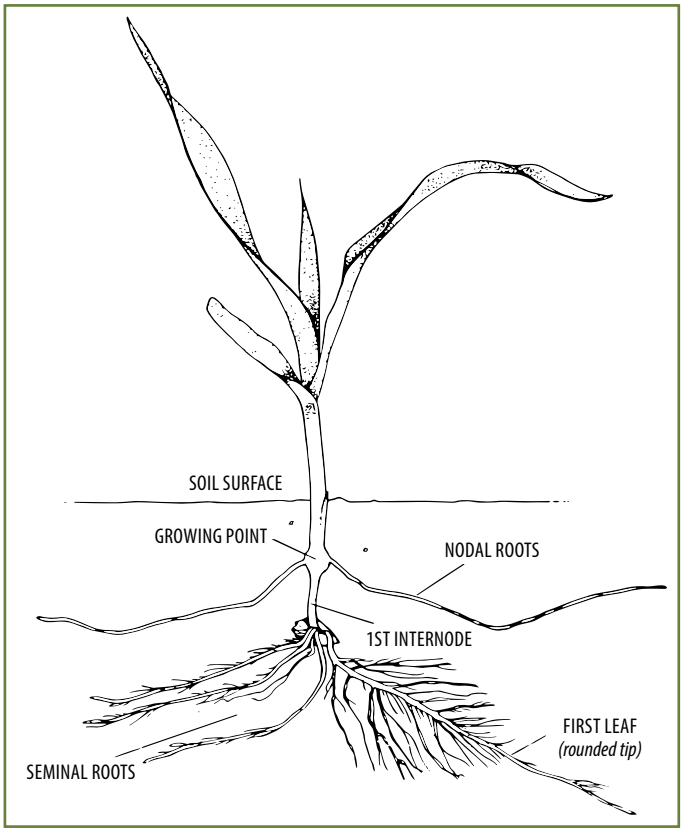
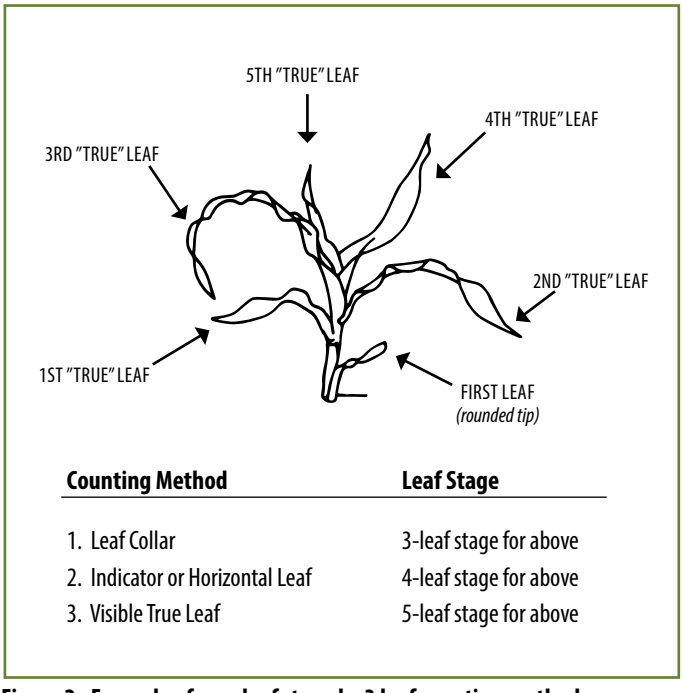


Figure 1. Corn roots.



Counting Method	Leaf Stage
1. Leaf Collar	3-leaf stage for above
2. Indicator or Horizontal Leaf	4-leaf stage for above
3. Visible True Leaf	5-leaf stage for above

Figure 2. Example of corn leaf stage by 3 leaf counting methods.

Source: "How a Corn Plant Develops" Special Report No. 48 Iowa State University

IDENTIFYING STAGES OF DEVELOPMENT *continued*

Beginning at about V6, however, increasing stalk and nodal root growth combine to tear small lowest leaves from plant. Degeneration and eventual loss of leaves results. To determine the leaf stage after lower leaf loss, split the lower stalk lengthwise (see fig. 3) and inspect for internode elongation. The first node above the first elongated stalk internode generally is the fifth leaf node. This internode usually is about one centimeter (0.4 inch) in length. This fifth leaf node may be used as a replacement reference point for counting to the top leaf collar.

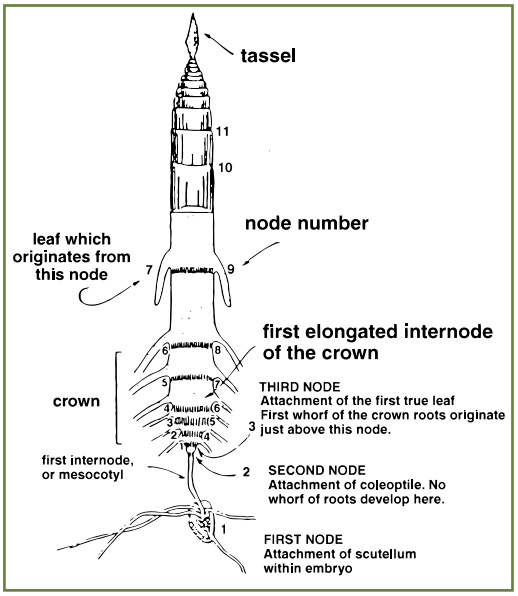


Figure 3. Split lower corn stalk method for determining leaf stage when lower leaves have been lost.

RATE OF DEVELOPMENT

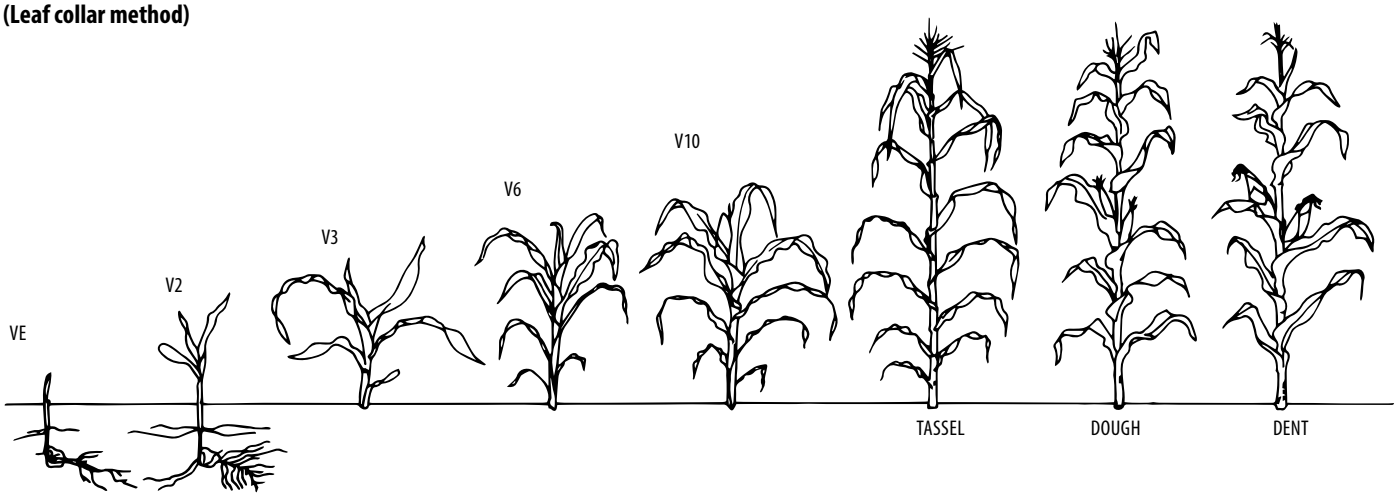
Emergence may occur as rapidly as 4 or 5 days after planting in warm moist soil, or may take 3 weeks or more in cool soils. A new leaf will appear about every 3 days during early growth, while later leaves developing during warmer conditions may appear in 1 to 2 days. Full season hybrids in central Iowa typically produce 20 to 21 leaves. Earlier maturing hybrids will produce fewer leaves.

The rate of development after pollination is given in Table 2. Keep in mind that development may be faster than suggested here under higher than normal temperatures or slower under lower than normal temperatures.

Table 2. Days after pollination for reproductive growth stages.

Kernel Growth Stage	Days After Pollination
Pre-blister	9
Blister	13
Early Milk	17
Milk	21
Late Milk	25
Soft Dough	30
Early Dent	35
Dented	40
Late Dent	45
Half Milk Line	50
Mature	55

CORN GROWTH STAGES
(Leaf collar method)



Source: "How a Corn Plant Develops" Special Report No. 48 Iowa State University

POSTEMERGENCE HERBICIDES

ADJUVANTS — The choice of a nonionic surfactant (Preference), crop oil concentrate (Superb HC, Optify HSMSO), methylated soy oil (Destiny HC, Optify HSMSO), and/or fertilizer additive depends on environmental conditions, crop and weed size and vigor and other variables. Check herbicide labels for these conditions to prevent poor herbicide performance and/or crop injury.

HERBICIDE APPLICATION TIMING is a very important. Weeds and grasses are more easily controlled, with less chemical, when they are small and actively growing. Large crop and weed canopies shelter smaller weeds and prevent the adequate spray coverage that is necessary for contact herbicides to work well.

CONDITIONS THAT DICTATE THE CHOICE —— If weeds and grasses are small and about the same size, and perennial grasses are not a problem, then a tank mix will save time and application costs. In some cases, there is an antagonism between the broadleaf herbicide and grass herbicide mixed together, so that it is necessary to increase the rate of the latter.

CULTIVATION — Cultivation 7-14 days after a POST application can greatly improve the effectiveness of a weed control program. Cultivation during, or within 7 days before or after a foliar herbicide application, can result in erratic control. Cultivation severs weed roots and prevents translocation of systemic herbicides to the weed roots. Cultivation during application may create dust which then may reduce the effectiveness of foliar herbicides

Preplant surface | Preemergence surface | Preplant incorporated and preplant surface

	Days before planting (maximum)								
Herbicide	**Fall***	******	**45**	**30**	**21**	**14**	**7**	**0**	**PRE**
ACURON ‡ - *field/seed/pop/sweet*	may be applied up to 28 days prior to planting								
ACURON FLEXI - *field/seed/pop/sweet*				may be applied up to 28 days prior to planting					
AIM EC/SHARK EW - *field/seed/pop/sweet*									
ALLUVEX/CRUSHER/LEADOFF - *field*									emerged weeds
ANTHEM MAXX - *field/seed/pop/sweet; ANTHEM FLEX - field/seed*									
AUTUMN SUPER 51 WDG - *field/seed*									
ATRAZINE ‡ - *field/seed/pop/sweet*									
BALANCE FLEXX ‡/CORVUS ‡ - *field/seed*					21 d or up to 30 d if planned sequential; geographic restrictions				
BASIS BLEND									
BICEP(s) ‡/***CHARGER MAX ATZ(S)*** - *field/sweet*				split appl.	single or split appl.				
CALLISTO/***INCINCERATE*** - *field/seed/pop/sweet*									
CAPRENO - *field/seed*									
CHARGER BASIC; MAX/DUAL(s)/EVERPREX - *field/seed/pop/sweet*				split appl.	single or split appl.				pre-weed emergence
CORNERSTONE PLUS or ***5 PLUS*** - *field/seed/pop/sweet*									emerged weeds
CONFIDENCE - *field/seed/pop/sweet*									w/in 5 d of last tillage
CONFIDENCE XTRA ‡ or ***XTRA 5.6L*** ‡/DEGREE XTRA ‡/FULTIME NXT ‡ - *field/seed/pop/sweet*									w/in 5 d of last tillage
DIFLEXX - *field/seed/pop*									
DIMETRIC EXT/***DIMETRIC LIQUID*** - *field*									
DISTINCT - *field/seed/pop*	>6 oz					4-6 oz			
ENLIST DUO/ENLIST ONE - *field*	up to plant for Enlist Corn. 7-14 days before plant for Non-Enlist-Rate dependent.								
ELEVORE - *field/seed/pop/sweet*									
ERADICANE 6.7E - *field/seed/pop/sweet*							PPI only		
FIERCE EZ/FIERCE MTZ - *field*	see label for tillage and planting restrictions 7-30 d before planting								
FIRSTSHOT SG - *field*									
FRAMEWORK 3.3 EC/PROWL H2O - *field/seed/pop/sweet*	up to 60 days Preplant; PPI only from 45 to 60 days before planting								pre-weed emergence
GRAMOXONE SL 3.0 ‡ - *field/seed/pop/sweet*	emerged weeds								emerged weeds
HARMONY EXTRA SG/EXPRESS - *field*	pop/sweet: 45 d; field/seed 21 d on light text. soils or pH >7.9, otherwise 14 d								
HARNESS - *field/seed/pop/sweet*									w/in 5 d of last tillage
HARNESS MAX - *field/seed/pop*									
HARNESS XTRA ‡/HARNESS XTRA 5.6L ‡ - *field/seed/pop/sweet*									w/in 5 d of last tillage
HORNET - *field/seed*									
KEYSTONE NXT ‡ or LA NXT ‡ - *field/seed/pop/sweet*									
KYBER PRO - *field*	see label for tillage and planting restrictions 7-30 days before planting								
LEXAR EZ ‡ - *field/seed/pop/sweet*									
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH - *field/seed/sweet*									

See notes at end of table

PP-PPI-PRE APPLICATION TIMING *continued*

Preplant surface | Preemergence surface | Preplant incorporated and preplant surface

Herbicide	Days before planting (maximum)								
	Fall*	**	45	30	21	14	7	0	PRE
LOROX DF/LINEX 4L - *field*									E of Rocky Mts. only
LUMAX or LUMAX EZ ‡ - *field/seed/pop/sweet*									
MAESTRO 2EC - *field/seed/pop*									emerged weeds
MAVERICK									
OUTLOOK - *field/seed/pop/sweet*			med. or fine text. soils						
PANOFLEX - *field/seed/pop/sweet*		pop/sweet: 45 d; field/seed 21 d on light text. soils or pH >7.9, otherwise 14 d							
PERPETUO - *field/seed*									
PRINCEP 4L/PRINCEP CALIBER 90/ ***SIMAZINE 4L/SIMAZINE 90DF*** - *field/sweet*	best if applied within 2 weeks of planting								
PYTHON - *field/seed*									pre-weed emergence
RESICORE/RESICORE REV - *field/seed/pop*					≤28 days				
RESOLVE Q - *field/seed*									not to seed corn
ROUNDUP POWERMAX 3; WEATHERMAX/HONCHO K6/CREDIT XTREME - *field/seed/pop/sweet*									
RT 3 - *field/seed/pop/sweet*									
RUGGED - *field/seed/pop/sweet*	1-2 pt						≤1 pt		
SCORCH - *field*									
SEQUENCE - *field/seed/pop/sweet*									
SHARPEN - *field/seed/pop/sweet*									
SHREDDER E-99 - *field/seed/pop/sweet*									
SONIC BOOM - *field*									fall only
SPITFIRE									w/in 3-5 days of planting
STARANE NXT						actively growing emerged weeds			
STARANE ULTRA/STAREDOWN - *field/seed/pop/sweet*				emerged weeds					
STERLING BLUE/CLARIFIER/CLARITY/ ***DICAMBA MAX 4*** - *field/seed/pop*									
STOREN						see label			see label
SURPASS NXT - *field/seed/pop/sweet*									
SURTAIN - *field/seed*				No control of emerged weeds					see label
THREESIDUAL/SURESTART II/ TRIPLEFLEX II- *field*									
TRIVOLT ‡ - *field/seed/pop./sweet*					21 d or up to 30 d if planned sequential; geographic restrictions				
TUSCANY SC - *field*	see label for timing based on rate, planting date, rainfall and residue								
VALOR SX/VALOR EZ/PANTHER SC/ CHATEAU EZ - *field*					no-till or min. till only; 2-3 oz; 7-d timing for broadleaves, % residue				
VERDICT/***TESTIFY*** - *field/seed/pop/sweet*									
WARRANT - *field/seed/pop*									
WEEDAR 64/WEEDONE 638/WEEDAR XHL - *field/pop/sweet*									emerged weeds
WEEDMASTER/WEEDMASTER XHL - *field/seed/pop*									emerged weeds
ZIDUA SC									
2,4-D AMINE 4; LV4; LV6 - *field/seed/pop/sweet*	1-1.5 pt LV6; 1-2 pt Amine4 or LV4						≤1 pt		

*Fall applications may be restricted by harvest date, crop rotation, temperature, soil characteristics, location, state, and date. See the label for detailed instructions.

**Days before planting not restricted or specified.

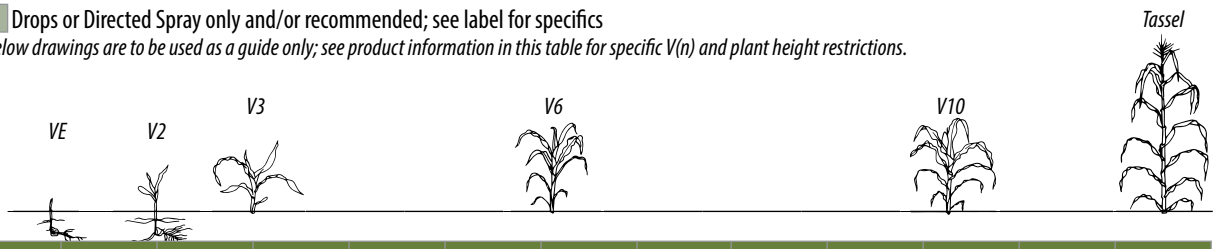
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

GROWTH STAGES

Broadcast and/or Over-the-Top and/or Drops; see label for specifics

Drops or Directed Spray only and/or recommended; see label for specifics

V(n) stages shown below drawings are to be used as a guide only; see product information in this table for specific V(n) and plant height restrictions.



Herbicide	VE	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11 to Pre-Tassel	Tassel
BALANCE FLEXX ‡/CORVUS/ TRIVOLT ‡	VE-V2 field/seed, Balance Flexx and Crovus; all types, TriVolt											
BASIS BLEND	VE-V2 or <6" field											
ANTHEM MAXX/ANTHEM FLEX	VE-V4 field*/seed*/pop*/sweet*											
ATRAZINE ‡/CALLISTO XTRA ‡	VE-12" field/seed*/pop*/sweet*											
ACURON ‡/LEXAR EZ ‡/ LUMAX EZ ‡	VE-12" field/seed*											
IMPACTZ ‡	VE-12" field*/seed/pop*/sweet*											
BICEP BRANDS ‡/***CHARGER MAX ATZ BRANDS*** ‡	VE-5" field/sweet; broadcast -12" Bicep II Magnum			drops up to 12"								
HARNESS MAX	VE-11" field/seed/pop/sweet; field/seed pop only Harness MAX											
CONFIDENCE BRANDS(‡ with atrazine)/DEGREE XTRA ‡/ FULTIME NXT ‡/HARNESS, HARNESS XTRA ‡/IMPACT CORE/KEYSTONE BRANDS (‡ with atrazine)/RESICORE/ SURPASS NXT/SURESTART II/ ***THREESIDUAL***/TRIPLEFLEX II	VE-11" field/seed/pop; field/seed only Surestart II, Threesidual, TripleFLEX II											
STARANE NXT	VE-V5, field; >V3-V5, seed*											
PYTHON/REALM Q/RESOLVE Q/STEADFAST Q	VE-V6 or 20", field/seed*											
PERMIT PLUS		V2-V6 field*										
CAPRENO	VE-V7 field/seed					drops >V5 through V7						
MAVERICK	VE-V6 field*/seed*/pop*											
CAPRENO	VE-V7 field/seed					drops >V5 through V7						
STOREN	VE-V8 field*/seed*/pop*											
ZIDUA SC	VE-V8 field*/seed*/pop*/sweet*											
ARMEZON/IMPACT	VE-V8 or 45 days preharvest, Armezon; VE-45 days preharvest, Impact. Field*/seed*/pop*/sweet*											
ACURON FLEXI	VE-V8 or 30" field/seed/pop											
ACURON GT	VE-V8 or 30" - Glyphosate Tolerant											
ARMEZON PRO	VE-12" field/seed/pop/sweet					drops to V8 or 30" or 45 days preharvest, field/pop						
CALLISTO/INCINERATE	VE-V8 or 30" field/seed/pop/sweet; - 12" only when mixed with atrazine											
ENVERSA	Up to 30" field/seed/pop - 12" only when mixed with atrazine											
FRAMEWORK 3.3 EC/PROWL H20	VE-V8 or 30" or cultispray after 4" through layby; VE-20" to 24" seed/pop/sweet											
HALEX GT	VE-V8 or 30" - Glyphosate Tolerant; - 12" only when mixed with atrazine											
KYRO	VE-V8 or 24" field*/seed*/pop*											
RESICORE REV	24" field; do not apply POST to pop											
REVULIN Q	VE-V6 or 20" field; -V5 or 20" seed*/pop*; -V6 or 18" sweet*						seed: >V6 or 30", drops >30" or to V8					
LAUDIS	VE-V9 field/seed*/pop*; -V7 sweet*											
STINGER/STRINGER HL	VE-24" field and pop (for processing); VE-18" sweet (for processing)											

See notes and footnotes at end of table

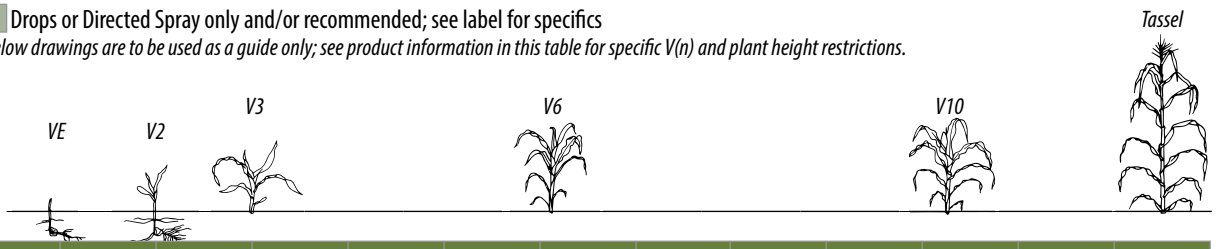
POST APPLICATION TIMING *continued*

GROWTH STAGES

Broadcast and/or Over-the-Top and/or Drops; see label for specifics

Drops or Directed Spray only and/or recommended; see label for specifics

V(n) stages shown below drawings are to be used as a guide only; see product information in this table for specific V(n) and plant height restrictions.



Herbicide	VE	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11 to Pre-Tassel	Tassel
WARRANT	VE-30" field/seed/pop											
PEAK		4"-V6 or 20", field					drops >V6 or 20"up to 30"					
SURTAIN	VE - V3 (3rd collar) No control of emerged weeds											
TRUST/TREFLAN HFP		V2-30" or 6 weeks preharvest, field										
DIFLEXX	VE-V10 or 36" field/seed*/pop*											
DIFLEXX DUO	VE-V7 broadcast							drops V7-V10 or 36"				
HERBIVORE/PERMIT	VE-layby field/seed/pop*/sweet*											
HORNET	VE-V6 or 20" broadcast, field/seed*						drops ≥V6 or 20"-36"					
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH	VE up to V6 (Liberty Ultra/Liberty 280 SL/Total SL/Cheetah); to V7 or 24" (Total/Total 2.3) - LibertyLink corn only. Field/sweet							drops only to 36" (Liberty Ultra/Liberty 280 SL/Total/Total 2.3)				
OUTLOOK	VE-12" field/seed*/pop*/sweet*					layby drops ≥12" ≤36" except for sweet corn.						
SINATE	LibertyLink corn only: VE-V7 field; VE-V6 sweet							field: drops >V7 through V10				
STARANE ULTRA/STAREDOWN, WIDEMATCH	VE-V5, field; >V3-V5, seed*				drops >V5-90 days preharvest, field; -V4, drops to 31 days Starane Ultra/Staredown, sweet							
YUKON	VE-20" field							drops rec. after 20"				
ACCENT Q	VE-V6 or 20" field; -V5 or 20" seed/pop; -V5 or 12", sweet						drops >12" or ≤18" or V6 sweet; rescue drops 20"-36" or <V10 field					
PERPETUO		V2-V6, field/seed*; drops rec. when canopy affects weed treatment										
RESOURCE		V2-V10 field/seed*										
STATUS		V2-36", field										
DIMETRIC EXT/DIMETRIC LIQUID	VE-prior to tassel as tank mix; field and tolerant seed corn											
STERLING BLUE/***CLARIFIER***/CLARITY/***DICAMABA MAX 4***	VE-36" or 15 days prior to tasseling field/seed*/pop*											
CHARGER BASIC/CHARGER MAX/DUAL MAGNUM/DUAL II MAGNUM/EVERPREX	VE to 40" 5" broadcast, field/seed/pop/sweet			Apply prior to weed emergence, directed at the base of corn plants from 5" to 40"								
CORNERSTONE BRANDS/GLYPHOSATE/ROUNDUP BRANDS	VE-V8 or 30" broadcast or drops, - Roundup Ready 2							drops rec. after 24", drops only 30"-48"				
CREDIT XTREME/HONCHO K6	Non-Roundup Ready: >12" hooded spray between rows; Roundup Ready: VE-V8 or 30" broadcast or drops.							drops rec. after 24" and drops only 30"-40"				
MAESTRO 2EC	VE-prior to tassel (use only 1 pt prior to V4), field; V3-prior to tassel, seed*/pop*											
SEQUENCE	VE-V8 or 30" - Glyphosate Tolerant								drops to 48"			
SURTAIN												
ENLIST DUO/ONE - ENLIST CORN ONLY	VE-V8 or 30"									drops to 48"		
GRAMOXONE SL 3.0 ‡	All growth stages field/seed/pop/sweet				hooded/shielded spray b/w rows OR >10" use drop spray not exceeding lower 3" of stalk; >20" not exceeding lower 1/3 of stalk							

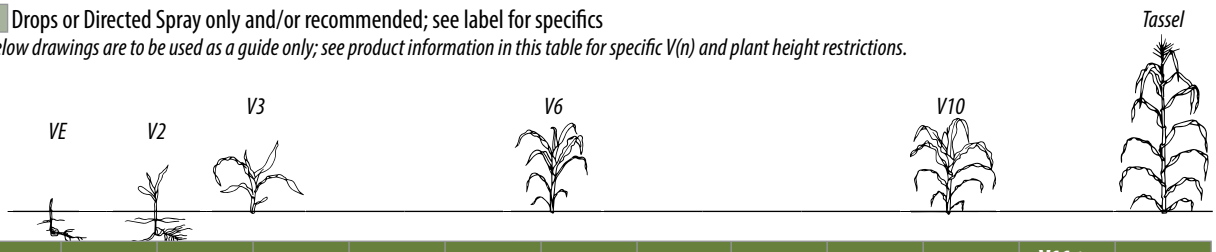
See notes and footnotes at end of table

GROWTH STAGES

Broadcast and/or Over-the-Top and/or Drops; see label for specifics

Drops or Directed Spray only and/or recommended; see label for specifics

V(n) stages shown below drawings are to be used as a guide only; see product information in this table for specific V(n) and plant height restrictions.



Herbicide	VE	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11 to Pre-Tassel	Tassel
WEEDAR 64/WEEDONE 638/ WEEDAR XHL	VE-8" field/seed/pop/sweet; -45 days preharvest, sweet				drops 8"-2 weeks prior to tassel							
RUGGED*/2,4-D AMINE 4; *LV4; LV6* or *SHREDDER E-99		V2-8" field/seed/pop/sweet; -45 days preharvest, sweet			drops 8"-2 weeks prior to tassel; E-99 up to prior to tassel							
SPIRIT		4"-V6 or 20", field*; drops 10"-24" up to prior to tassel, pop*					drops >V6 or 20" up to 24", field*; from 20"-24" up to prior to tassel, seed*					
EVIK DF						drops only 12" to 3 weeks prior to tassel						
AIM EC/SHARK EW	VE-V8 field/seed/pop/sweet							drops >V8 Through V14				
***BASAGRAN*/BASAGRAN 5L**	All Growth Stages field/seed*/pop/sweet											

* Before making applications to field, seed, pop or sweet as indicated, consult label or contact company, agronomist or University specialists.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

HERBICIDE APPLICATION RATES

POSTEMERGENCE	Rate/Acre			
Herbicide	Coarse[1]	Medium	Fine	Comments/Restrictions
ACCENT Q	**All soil textures:** 0.9 oz			Add 0.5 gal HSOC-COC or HSOC-MSO/100 gal + 2-4 qt/A 28% N or 2-4 lb/A AMS.* Apply up to and including V6 or 20" FIELD corn. Rescue with drop nozzles 20-36", but <V10 FIELD corn. Apply up to V5 or 12" SWEET corn broadcast or up to V5 or 18" SWEET corn with drop nozzles up to V5 or 20" FIELD, SEED or POP corn. Contains crop safener to reduce risk of corn injury. See insecticide restrictions at the end of this section. Notes 4,6.
ACURON ‡ *< 3% O.M.* *≥ 3% O.M.*	**All soil textures:** 2.5 qt 3 qt			Up to 12" corn. Do not apply with any organophosphates or carbamates insecticides. Some crop response may occur. May be applied as a split application. Do not apply POST to SWEET corn or yellow POP. For extended residual or control of heavy weed infestations, 3 qt/A may be applied to soils with <3% O.M. Do not apply >3 qt/A/year or make >2 applications/year or make the second application within 14 days of the first application. See label regarding mandatory spray drift management.
ACURON FLEXI *< 3% O.M.* *≥ 3% O.M.*	**All soil textures:** 2 qt 2.25 qt			Do not make more than 1 POST application. Applications in a tank mix with any organophosphate or carbamate insecticide may result in severe injury.
ACURON GT	All soil textures: 3.75 pt			Apply only in glyphosate-resistant field corn to actively growing weeds (see label). Provides 3-4 weeks of residual control with activating rainfall within 7 to 10 days of application. Max. 3.75 pt/A/ application. Max. 1 application/year. Do not make applications past 8-leaf stage of growth. See label for tank-mix combinations.
AIM EC/SHARK EW	**All soil textures:** Up to 1 fl oz broadcast; 2 fl oz directed			Add 1 qt NIS/100 gal.* Up to 14-leaf collar growth stage. Use drop nozzles in corn >V8. Rate depends on target weeds; see label. Max. 2 fl oz/A/season including all application timings/methods. Do not apply when conditions favor drift or wind is >10 mph. For SEED corn production, use only drop nozzles. Broadcast application may concentrate spray in whorl and increase leaf response. Do not apply if foliage is wet from dew, rain, or irrigation. Use on SWEET corn only under the recommendation of the seed company, food processor, or State Agricultural Extension Service. Use only NIS adjuvant with SWEET corn.
AIM EC + ***ATRAZINE 90DF*** ‡ or ***ATRAZINE 4L*** ‡ or ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	**All soil textures:** 0.5 fl oz + 9 oz or 16 fl oz or 0.5 pt			Add 1 qt NIS/100 gal.* Apply up to V5 corn with Sterling Blue/Clarifier/Clarity/Dicamba Max 4 broadcast or <12" with atrazine. Can tank mix with most labeled post herbicides. Crop injury can occur with EC formulations. Avoid tank mixes with bromoxynil. Use additives required by tank mix partner. Can substitute 1 pt HSOC-COC/100 gal* for NIS with atrazine or under dry conditions. Some temporary corn leaf burn can occur. Add Aim EC to tank before other herbicides. Maintain good agitation to avoid settling out. Use on SWEET corn only under the recommendation of the seed company, food processor, or State Agricultural Extension Service. Use only NIS adjuvant with SWEET corn. Note 1.
ANTHEM FLEX	2.25-4.5 fl oz	3.5-5.25 fl oz	4-6.5 fl oz	Coarse rates exclude sweet corn. Medium rates exclude sweet corn at <2% O.M. Apply to VE-V4 corn. See labels for max. annual application rates dependent on soil texture.
ANTHEM MAXX *≤ 1% O.M.* *> 1% O.M.*	 2-3 fl oz 2-3.5 fl oz	2.5-4.5 fl oz	3.5-6 fl oz	Apply to VE-V4 corn. For coarse textures use up to 4.5 fl oz/A. All others 8.15 fl oz/A. Add NIS at 1 qt/100 gal, COC such as HSOC-COC at 0.5-1 pt/A or MSO such as HSOC-MSO at 0.5-1 pt/A and an AMS source such as a Class Act Brand.*
ARMEZON	SEE IMPACT			
ARMEZON PRO *< 3% O.M.* *≥ 3% O.M.*	 14-16 fl oz 16-20 fl oz	 16-20 fl oz	 20-24 fl oz	MSO or COC* when applied in alone and in most tank-mixes, NIS* when applied with dicamba. 20 fl oz/A for all soil types in POP, SEED, and SWEET. Sequential applications must be 2 weeks apart.
ATRAZINE 4L ‡/ AATREX 4L ‡ or ***ATRAZINE 90DF*** ‡/ AATREX NINE-0 ‡	**All soil textures, broadleaves only:** 1.2 qt or 1.33 lb **All soil textures, grasses and broadleaves:** Up to 2 qt or 2.2 lb			Broadleaves only: Add 1 qt NIS/100 gal + 1-2 qt/A 28%N or 1-2 lb/A AMS.* For control of broadleaves only. Apply before most weeds are 4" high: pigweed and lambsquarters before 6" high and before corn exceeds 12" high. Note 1. Grasses and broadleaves: Apply before weeds are 1.5" high and before corn exceeds 12" high. Note 1.
BALANCE FLEXX ‡ (alone or) + ***ATRAZINE 90DF*** ‡ or DICAMBA or GLYPHOSATE	**All soil textures:** 3-6 fl oz + 0.5 lb or 8 fl oz or 1/2 to full labeled rate			May be applied to corn from spiking through the 2-leaf collar growth stage. In addition to soil residual, it provides POST control of newly emerged weeds. Do not use COC or MSO when applying to emerged FIELD corn. Tank-mixtures with other herbicides (other than atrazine) or adjuvants are not recommended for early POST applications. Requires use of Supplemental label in MN, WI (exp. dates not given). Requires use of 24c in CO, MO (exp. dates not given), KS (exp. 12/2026) - see labels for details. See label for additional state-specific label restrictions. 2ee IA, NE, SD (exp. dates not given) for tank mix with atrazine + glyphosate and with atrazine + dicamba tank mixes early POST; also 2ee SD (exp. date not given) for tank mix with glyphosate in GT corn.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
BASAGRAN or BASAGRAN 5L	**All soil textures:** 1.5-2 pt or 0.8-1.6 pt			Add for Basagran: 0.75-1 pt/A HSOC-MSO or 0.25-0.5 pt/A HSOC-COC or 2-4 qt/A 28%N or 2.5 lb/A AMS.* Add for Basagran 5L: 1-2 qt/100 gal NIS or 0.5 pt/A HSOC-MSO or 0.5 pt/A HSOC-COC or 2-4 pt/A 28%N or 1-2 lb/A AMS.* Apply to small weeds. Control of velvetleaf will be improved by using 2-4 qt/A 28%N instead of COC. May be applied at all stages of corn. Adjuvant needs may differ depending on inclusion of AMS, see labels.
BASAGRAN + ***ATRAZINE 4L*** ‡	**All soil textures:** 0.84-1.5 pt + 0.84-1.5 pt			Add 0.5-1 pt/A HSOC-COC.* Apply to VE-12" corn. Apply to small weeds. 2-4 qt/A 28%N may be used in place of HSOC-COC.* Note 1.
BASIS BLEND	**All soil textures:** 0.825 oz			Add 0.5-1 gal HSOC-COC/100 gal + 2 qt/A UAN or 2 lb/A AMS.* Apply from spike to 4 leaf (2 collar) or 0.5-6" corn and to grasses <3", broadleaves <4" and winter annuals and perennials <6". Do not tank mix with OP insecticides or apply PP or PRE within 60 days of Counter or within 45 days of crop emergence where Counter 20G was applied.
BICEP II MAGNUM ‡/ BICEP II MAGNUM FC ‡ or BICEP LITE II MAGNUM ‡	1.6 qt or 1.1 qt	2.1 qt or 5 qt	2.1-2.58 qt or 1.5-1.9 qt	Apply to corn from VE to 5" and before weeds exceed 2-leaf. Bicep II brands may be broadcast to corn up to 12", Bicep Lite II up to 5". Directed spray to corn 5-12". POST-directed rate for coarse soil is 1.3 qt/A Bicep II brands or 0.9 qt/A Bicep Lite II. Include UAN or NIS if weeds are present.* Notes 1,3.
CALLISTO/***INCINERATE*** (alone or) + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡ or GLYPHOSATE or LIBERTY 280 SL/ ***TOTAL SL***	**All soil textures:** 3 fl oz + 0.5-1 pt or 0.28-0.56 lb or 17-35 fl oz or 22 fl oz			Apply to VE-V8 or up to 30" corn Callisto alone or with glyphosate (glyphosate tolerant corn). Apply up to 12" corn in atrazine tank mixes. Apply to labeled broadleaf weeds 5" or less or up to 10" for most species when mixed with atrazine. May use 2.5-3 fl oz/A with atrazine. Do not tank mix with OP or carbamate insecticides. Do not use following soil applied Counter 20G. Do not apply following a PRE-application of Callisto/Lumax EZ/Lexar EZ. See the label for tank mix partners and restrictions. SWEET and POP: Do not add UAN or AMS. For mixes with atrazine add 0.5 gal HSOC-COC/100 gal + 2.5 gal 28%N/100 gal or 8.5 lb AMS/100 gal.* For mixes with glyphosate use 8.5 lb AMS/100 gal. Use Liberty 280 SLTotal SL only on LibertyLink corn and include AMS . Do not use MSO adjuvants for POST applications. POST aerial application in AL,AR,CO,FL,GA,IL,IN,IA,KS,KY,LA,MN,MO,MS,ND,NE,OH,OK,SD,TN,TX. Notes 1,4.
CALLISTO XTRA ‡	**All soil textures:** 20-24 fl oz			Add 1 qt NIS or 0.5 gal HSOC-COC/100 gal + 2.5 gal UAN or 8.5-17 lb AMS/100 gal.* Apply after crop emergence but before corn exceeds 12". See label for crop sensitivity precautions. SWEET and POP: Do not add UAN or AMS. Notes 1,3,4.
CAPRENO	**All soil textures:** 3 fl oz			Add 0.5 gal HSOC-COC/100 gal.* Apply to VE- V7 corn. Provides some residual control. Include COC for maximum control. Minimum of 1.25 pt/A COC.* UAN or AMS may be added.* Tank mixes include 1 pt/A Atrazine, 6 fl oz/A bromoxynil, glyphosate, glufosinate, 2-3 fl oz/A Laudis and others. 2ee several states (exp. date not given) for tank mixes. 24c LA (exp. date 3/2028), KS (exp. 7/2029), AK, MS (exp. 12/2027) for aerial application. See label for OP insecticide and Post emergence application restrictions.
CHARGER BASIC/ ***CHARGER MAX***, EVERPREX	**All soil textures:** Up to 2 pt			Best results if directed spray at base plants >5" up to 40". No control of emerged weeds. Do not exceed 3.75 lb a.i./A/year Charger Max or 3.9 pt/A/year Charger Basic.
CHARGER MAX ATZ ‡ or ***CHARGER MAX ATZ LITE*** ‡	1.6 qt or 1.1 qt	2.1 qt or 1.5 qt	2.1-2.58 qt or 1.5-1.9 qt	Apply to VE to 5" corn and before weeds exceed 2-leaf. May apply POST directed to corn not exceeding 12 inches. Notes 1,3.
CHEETAH	SEE LIBERTY 280 SL			
CLARIFER	SEE STERLING BLUE			
CLARITY	SEE STERLING BLUE			
CONFIDENCE/ ***TREMOR NXT***	1.25-1.75 pt	1.75-2.25 pt	1.75-2.75 pt	Apply up to 11" corn. Cultivate or rotary hoe if weeds are emerged to improve performance. May tank mix with glyphosate Atrazine, Sterling Blue, or many other herbicides. See timing restrictions for tank mix partners. Note 2.
Roundup Ready rate	1.5 pt	1.5 pt	1.5 pt	Roundup Ready rate is for tank mixes with Roundup on Roundup Ready Corn 2.
CONFIDENCE XTRA ‡/ ***TREMOR ATZ LITE NXT*** ‡	1.8 qt	1.8-2.3 qt	2-2.3 qt	Apply up to 11" corn and before weeds reach 2-leaf. May tank mix with glyphosate, Sterling Blue and many other herbicides. Notes 1,2,3.
Roundup Ready rate	1.2 qt	1.2 qt	1.2 qt	Roundup Ready rate for tank mixes with Roundup on Roundup Ready Corn 2.
CONFIDENCE XTRA 5.6L ‡ /***TREMOR ATZ NXT*** ‡	1.4-1.7	1.7-2.6 qt	2.3-3 qt	Use lower rates on soils with < 3% O.M. Apply up to 11" corn. May tank mix with glyphosate, Sterling Blue and many other herbicides. Notes 1,2,3.
Roundup Ready rate	1.5 qt	1.5 qt	1.5 qt	Roundup Ready rate for tank mixes with Roundup on Roundup Ready Corn 2.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** 24-32 fl oz or 18-24 fl oz			Add 8.5-17 lb AMS/100 gal, include NIS, WC+NIS as needed.* Apply only to Roundup Ready corn or Roundup Ready Corn 2 VE-V8 or 30" alone and 30-48" Roundup Ready Corn 2 with drop nozzles. Drops recommended for 24-30" corn. Allow 10 days between sequential applications, total not to exceed 2 qt/A or 1.5 qt/A from emergence to 30" Roundup Ready corn and 3 qt/A or 4.5 pt/A through 48" Roundup Ready Corn 2. Many residual herbicide Supplemental labels allow reduced rates followed by glyphosate. Apply early POST with labeled or reduced rates of residual herbicides including Atrazine, Charger products, Confidence/Tremor NXT/Harness, or Confidence/Xtra/Tremor ATZ Lite NXT/Harness Xtra.
CORVUS ‡ *≤2% O.M.*	5.6 fl oz 3.33 fl oz	5.6 fl oz	5.6 fl oz	May be applied to corn from spiking through the 2-leaf collar growth stage. In addition to soil residual, it will provide POST control of newly emerged weeds. Do not use COC or MSO when applying to emerged FIELD corn. NIS* can improve weed control, particularly of grasses, up to 3-leaf stage but may result in temporary crop injury symptoms including bleaching, chlorosis and temporary stunting. Tank-mixtures with other herbicides (other than atrazine) or adjuvants are not recommended for early POST applications. Requires use of Supplemental label in MN, WI. Requires use of 24c in CO, KS, MO (exp. date not given) - see labels for details. See label for state-specific restrictions. 2ee in various states (exp. date not given) for tank mix with glyphosate and with atrazine/dicamba early POST. Note 4.
CREDIT XTREME	SEE ROUNDUP POWERMAX 3			
DEGREE XTRA ‡ *Roundup Ready rate*	**All soil textures:** 2.9-3.7 qt **All soil textures:** 2 pt			Apply up to 11" corn. The 2 pt/A rate is the Roundup Ready rate that can be tank mixed with Roundup WeatherMAX. Emerged weeds will not be controlled by Degree Xtra alone without additives or other herbicides. Notes 1,3.
DICAMBA MAX 4	SEE STERLING BLUE			
DIFLEXX	**All soil textures:** 8-16 fl oz			Apply from spike to V6 or 36" corn not exceeding 6 true leaves or 15 days prior to tassel. Directed V7-V10, 36" tall or 15 days prior to tassel. 2ee in numerous states (exp. date not given) for reduced rate of 6 fl oz/A in FIELD, POP and SEED, and in IL, IN, IA, KY, MI, MO, NE, OH, SD, TN (exp. date not given) for reduced rate of 6-10 fl oz/A in POP.
DIFLEXX DUO	**All soil textures:** 20-40 fl oz			VE-V6 or 36" tall not exceeding 6 true leaves or 15 days prior to tassel. Directed V7-V10, 36" tall or 15 days prior to tassel.
DIMETRIC EXT or ***DIMETRIC LIQUID*** + BASAGRAN or ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** or MAESTRO 2EC or ***2,4-D LV4/2,4-D LV6***	**All soil textures:** 2 oz or 3.2-6 fl oz + 1 pt or 0.5-1 pt or 1 pt or 0.33-0.5 pt/ 0.33 pt			May be applied POST in FIELD corn only in tank mixes with Basagran (up to 30"); 2,4-D (up to 8"); Sterling Blue/Clarifier/Clarity/Dicamba Max 4 (up to 8"). Use drop nozzles with Maestro 2EC, Sterling Blue/Clarifier/Clarity/Dicamba Max 4 or 2,4-D on corn over 8" tall. Add 1 qt NIS/100 gal* to Sterling Blue/Clarifier/Clarity/Dicamba Max 4 and Basagran mixes. Use no adjuvant with 2,4-D. Note 5.
DUAL II MAGNUM/DUAL MAGNUM	**All soil textures:** Up to 2 pt			Best results if directed spray at base plants >5" up to 40". No control of emerged weeds. Do not exceed 3.71 lb a.i. Max or 3.9 pt/A Basic per year.
ENLIST DUO	**All soil textures:** 4.75 pt			Apply to Enlist corn only. Up to V8 or 30" corn. Use drops on 30-48" corn. Allow 12 days between sequential applications. Apply to weed 3-6" tall. For approved tank mix partners go to www.enlisttankmix.com
ENLIST ONE	**All soil textures:** 2 pt			Apply to Enlist corn only. Up to V8 or 30" corn. Use drops on 30-48" corn. Allow 12 days between sequential applications. Apply to weed 3-6" tall. 24c AL (exp. date not given) do not apply at wind speeds >10 mph. For approved tank mix partners go to www.enlisttankmix.com
ENVERSA	<3% OM: 1.5-2.0 qt ≥3% OM: 2.0 qt	<3% OM: 1.5-2.75 qt ≥3% OM: 2.0-2.75 qt	<3% OM: 1.75-2.75 qt ≥3% OM: 2.75-3.0 qt	Apply this product after crop emergence prior to weed emergence in corn and production seed corn. Do not use Enversa on sweet corn. For emerged weeds, consider adding a labeled tank mix product. Enversa may be applied post emergence on corn. Enversa applications allowed up to 30 inches in height.
EVERPREX	SEE CHARGER BASIC			

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
EVIK DF	**All soil textures:** 0.75-2.0 lb			Apply to corn 12" to 3 weeks prior to tassel, drops only. Rate dependent on weed species and geographic area; see label.
FRAMEWORK 3.3 EC or PROWL H2O	1.8-2.4 pt or 2-3 pt	2.4-3.6 pt or 3-4 pt	2.4-3.6 pt or 3-4 pt	POST rates same as PRE rates. Rates are lower for southern states. See label. Apply POST alone before 30" (20-24" SEED, SWEET and POP) or V8 corn. Culti-spray apply from 4" to 12" FIELD corn, see culti-spray Note 9 and label for rates.
FRAMEWORK 3.3 EC or PROWL H2O + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	1.8-2.4 pt or 2-3 pt + 1 qt or 1.1 lb	2.4-3.6 pt or 3-4 pt + 1-1.2 qt 1.1-1.33 lb	2.4-3.6 pt or 3-4 pt + 1-1.2 qt 1.1-1.33 lb	See label for soil texture and organic matter restrictions. See label for FIELD corn culti-spray and southern states rates. Apply before 12" corn. FIELD corn: culti-spray from 4" to 12", see Note 9. Use lower rate in southern states; see label. Note 1.
FULTIME NXT ‡ *Roundup Ready rate*	**All soil textures:** 2.9-3.7 qt **All soil textures:** 2 qt			Apply up to 11" corn. The 2 qt/A rate is the Roundup Ready rate that can be tank mixed with glyphosate-containing products. Emerged weeds will not be controlled by FulTime NXT alone without additives or other herbicides. Notes 1,3.
HALEX GT	**All soil textures:** 3.6-4 pt			Add 2.5-5 gal Class Act NG or Optify A/100 gal.* Apply up to 30" or V8 corn. For GT corn only. Target 4" or smaller weeds. Adding atrazine allows use on certain broadleaf weeds up to 10". Do not mix with EC formulations of grass herbicides as severe corn injury may occur. 1-2 qt NIS/100 gal plus 8.5-17 lb AMS/100 gal may be used.* Note 4.
HARNESS MAX	40-55 fl oz	55-64 fl oz	*<3% OM:* 55-64 fl oz *≥3% OM:* 64-75 fl oz	Set boom spray height at least 15" above canopy for over-the-top applications. Do not make a second application of within 14 days of first application. If this or other mesotrione-containing product was used PRE, only 40 fl oz/A of this product may be applied. Max. 0.24 lb mesotrione a.i./A/year. Max. 2 applications of all mesotrione-containing products/year.
HARNESS *Roundup Ready rate*	1.25-1.75 pt 1.5 pt	1.75-2.25 pt 1.5 pt	1.75-2.75 pt 1.5 pt	Apply up to 11" corn. Cultivate or rotary hoe if weeds are emerged to improve performance. See timing restrictions for tank mix partners. Note 2. 1.5 pt/A is the Roundup Ready rate for tank mixes with Roundup on Roundup Ready Corn 2.
HARNESS XTRA ‡ *Roundup Ready rate*	1.8 qt 1.2 qt	1.8-2.3 qt 1.2 qt	2-2.3 qt 1.2 qt	Apply up to 11" corn and before weeds reach 2-leaf. Notes 1,2,3. 1.2 qt/A is the Roundup Ready rate for tank mixes with Roundup on Roundup Ready Corn 2.
HARNESS XTRA 5.6L ‡ *Roundup Ready rate*	1.4-1.7 qt 1.5 qt	1.7-2.6 qt 1.5 qt	2.3-3 qt 1.5 qt	Use lower rates on soils with <3% O.M. Apply up to 11" corn. Notes 1,2,3. 1.5 qt/A is the Roundup Ready rate for tank mixes with Roundup on Roundup Ready Corn 2.
HERBIVORE/ PERMIT	**All soil textures:** 0.67-1.33 oz			Add 1-2 qt NIS or 0.5 gal HSOC-COC /100 gal + 2-4 lb/A AMS.* Apply to corn from spike to layby. Use 1-1.33 oz/A for larger weed sizes. For nutsedge use 1.33 oz/A. Add 28%N according to tank mix partner instructions for improved control of certain weeds. See label for state restrictions. Notes 4,8.
HERBIVORE/PERMIT + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	**All soil textures:** 0.67 oz + 1.5-3 pt or 0.83-1.67 lb			Add 0.5 gal HSOC-COC/100 gal + 2 lb/A AMS.* Broadcast to corn up to 12" tall. Antagonism may occur on larger broadleaves. Notes 1,4,8.
HERBIVORE/PERMIT + ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** or MAESTRO 2EC or ***2,4-D LV4***	**All soil textures:** 0.67 oz + 2-8 fl oz or 0.5-1 pt or 4-8 fl oz			Add 1-2 qt NIS/100 gal.* Broadcast or drops up to 8". Over 8" drops only. Notes 4,8. Up to 36" corn. Use directed spray over 8" corn. Broadcast up to prior to tassel emergence. Broadcast up to 8" tall. Over 8" drops only, to prior to tassel emergence.
HONCHO K6	SEE ROUNDUP POWERMAX 3			
HORNET	**All soil textures:** 2-5 oz			Add 1 qt NIS or 0.5 gal HSOC-COC/100 gal.* Apply when broadleaf weeds are under 8" tall and to corn up to V6 or 20" (use drops up to 36"). Use higher rates for 6-8" weeds. Can use 4 oz/A on spike stage corn or for biennial and perennial weed control. Do not apply if corn has been previously treated with Counter 20G or Thimet 20-G. 28% N or AMS may help under dry conditions.* Supplemental label OK, ND, SD, TX (exp. date not given) for aerial application for broadleaf weed control. Supplemental label most states (exp. date not given) for tank mixtures with Callisto and atrazine. Note 4.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
HORNET + AIM EC/SHARK EW or ***ATRAZINE 4L*** ‡ or ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** or CALLISTO/***INCINERATE*** + ***ATRAZINE*** ‡	**All soil textures:** 2-5 oz + 0.5 fl oz or 1-2 pt or 2-4 oz or 0.75 oz + 0.25 lb a.i.			See above Hornet restrictions. Apply up to V6 or 20" corn. Add NIS.* Apply up to 12" corn. Note 1. Apply up to V6 or 20" or up to 36" with drop nozzles. Use HSOC-COC with 28%N or AMS with NIS with dicamba, and HSOC-COC or NIS wiht atrazine.* Apply up to 12" corn. Add COC+UAN or AMS.* Apply up to 16" or V5 corn. Include HSOC-MSO + UAN or AMS.*
IMPACT or ARMEZON	**All soil textures:** 0.75-2 fl oz or 0.75-1 fl oz			Add 0.5 gal HSOC-MSO or HSOC-COC + 2.5 gal 28%N/100 gal or 8.5 lb AMS/100 gal.* Apply Armezon alone to VE-V8 corn or 45 days PRE HARVEST. Apply Impact up to 45 days PHI. Apply up to 12" corn in atrazine tank-mixes. May be tank-mixed with other herbicides registered for use in corn, with the exception of tank mixes or sequential uses of mesotrione herbicides - see current label (Callisto/ Incinerate, Lexar EZ, Lumax EZ). May be applied after isoxaflutole(Balance Flexx) if ≤0.0625 lb a.i./A (2 oz/A Balance Flexx) is used. Do not apply more than 6 fl oz/A/365 days of Capreno for corn. Use NIS* with growth regulator tank mixes in cold, wet or hot, humid conditions for Impact. Include atrazine for best performance.
IMPACT or ARMEZON + ATRAZINE 90DF ‡ or CAPRENO	**All soil textures:** 0.75-2 fl oz or 0.75-1 fl oz + 0.25-1.5 lb a.i. or 3 fl oz			Add 0.5 gal HSOC-MSO or HSOC-COC + 2.5 gal 28%N/100 gal or 8.5 lb AMS/100 gal.* Apply Armezon alone to VE-V8 corn or 45 days PRE HARVEST. Apply Impact up to 45 days PHI. Apply up to 12" corn in atrazine tank-mixes. May be tank-mixed with other herbicides registered for use in corn, with the exception of tank mixes or sequential uses of mesotrione herbicides - see current label (Callisto/ Incinerate, Lexar EZ, Lumax EZ). May be applied after isoxaflutole(Balance Flexx) if ≤0.0625 lb a.i./A (2 oz/A Balance Flexx) is used. Do not apply more than 6 fl oz/A/365 days of Capreno for corn. Use NIS* with growth regulator tank mixes in cold, wet or hot, humid conditions for Impact. Include atrazine for best performance.
IMPACTZ ‡	**All soil textures:** 8-10.7 fl oz			Add 0.5 gal HSOC-MSO + 2.5 gal 28%N/100 gal or 8.5 lb AMS/100 gal.* Apply up to 12" corn or 45 days PHI. May be tank-mixed with other herbicides registered for use in corn, with the exception of tank mixes or sequential uses of Group 27 herbicides - see current. Max. 10.7 fl oz/A/growing season.
IMPACT CORE *< 3% O.M.* *≥ 3% O.M.*	 20-24 fl oz 22-28 fl oz	 28-34 fl oz 28-34 fl oz	 30-36 fl oz 34-40 fl oz	See label application setback restrictions for wells. Up to 2 sequential applications. 14-day application interval. Max. 40 fl oz/A/year. Max. 3 lb/A acetochlor a.i. from all sources/A/season.
INCINERATE	SEE CALLISTO			
KEYSTONE LA NXT ‡	1.8 qt	1.8-2.3 qt	2-2.3 qt	Apply up to 11" corn and before weeds reach 2-leaf. Notes 1,2,3.
KEYSTONE NXT ‡	1.4-1.7 qt	1.7-2.6 qt	2.3-3 qt	Use lower rates on soils with < 3% O.M. Apply up to 11" corn. Notes 1,2,3.
KOCHIAVORE	Do not use	1-1.5 pt	1-1.5 pt	V3-V5, broadcast or band, drops after V6 but not from 2 weeks before tasseling to dough stage. Do not use atrazine, crop oils or other adjuvants, such as NIS. Application during high moisture and temperatures may cause crop injury. Do not cultivate for 7-10 days after application. Limit of 1 POST application/season. Maximum 3 pt/A/season.
KYRO	**All soil textures:** 35-60 fl oz			Most effective when applied to actively growing weeds ≤4" in height. For listed grass weeds use min. 45 fl oz/A. See label for tank mix info. See label for max. use rates, especially if using other products in tank-mix containing a.i.s similar to those in Kyro.
LAUDIS	**All soil textures:** 3 fl oz			Add 0.5 gal HSOC-MSO/100 gal.* Apply up to V9 on FIELD and POP, V7 on SWEET corn. Apply with HSOC-MSO* for maximum weed control at 0.5 gal/100 gal (or other MSO at 1 gal/100 gal, but not less than 1.25 pt/A) or HSOC-COC at 0.5 gal/100 gal and 28%N (1.5 qt/A) or AMS (8.5 lb/100 gal).* Apply up to 6" broadleaves and 3-6" grasses. Add Laudis before AMS and other products.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
LAUDIS + ***ATRAZINE 4L*** ‡ or CAPRENO or MAESTRO 2EC or glyphosate or LIBERTY ULTRA or LIBERTY 280 SL/***TOTAL SL***	**All soil textures:** 3 fl oz + 1 pt or 3 fl oz or 6 fl oz/A or see label or 15 fl oz or 22 fl oz			See adjuvant comments for Laudis alone. Apply up to 12" corn. Do not apply more than 6 fl oz/A Capreno per 365 days. Tank mix where atrazine use is restricted. Roundup Ready corn only. Use only AMS at 0.5 lb/A. 2ee (exp. date not given) for use with MSO or surfactant. 2ee several states (exp. date not given) for tank mix with glyphosate from VE-V8 in FIELD corn. Use 2 fl oz/A Laudis and 1.5 lb/A AMS.* LibertyLink corn only. 2ee several states (exp. date not given) for tank mix with Status at 5-10 oz in V2-V9 SEED corn. 2ee several states (exp. date not given) for tank mix with dicamba from VE-V9 or 36" tall FIELD corn.
LEXAR EZ ‡ (alone or) + glyphosate or LIBERTY ULTRA or LIBERTY 280 SL/ ***TOTAL SL***	**All soil textures:** 3-3.5 qt + 17-35 fl oz or 15 fl oz 22 fl oz			Apply up to 12" corn and broadleaf weeds <5" and up to 12" glyphosate tolerant corn when mixed with glyphosate or up to 12" LL corn when mixed with Liberty 280SL. Add 0.25%v/v NIS or 1%v/v COC (0.5% v/v HSOC-COC).* COC may cause temporary crop response. Do not add nitrogen sources (AMS or UAN). Include 8.5 lb AMS/100 gal when mixed with glyphosate or 1.5-3 lb/A AMS with Liberty Ultra/Liberty 280 SL/Total/Total 2.3/Total SL.* May be tank mixed with Basis Blend to control emerged grasses. Do not apply to corn treated with Counter 20G or tank mix with OP or carbamate insecticides. Do not apply more than 3.5 qt/A Lexar EZ or 2.5 lb/A atrazine or 3.75 lb/A s-metolachlor per year. Do not apply postemergence to SWEET or POP corn. Notes 1,3,4.
LIBERTY ULTRA or LIBERTY 280 SL or ***TOTAL SL***/CHEETAH or ***TOTAL/TOTAL 2.3***	**All soil textures:** LibertyLink corn only field/silage 19-29 fl oz, sweet 14.7 fl oz or field/silage 32 fl oz, sweet 22 fl oz or field/silage 29-43 fl oz, sweet 22 fl oz or field silage 22 fl oz, sweet 20 fl oz			Use only on LibertyLink corn. Add 1.5-3 lb AMS/A (8.5-17 lb/100 gal) or use Class Act Brands.* See label for tank mix rates specific to each product; tank mix with atrazine or other corn herbicides for residual control. Additional surfactant or crop may increase crop response. Products containing Glufosinate require sunlight for activity. Apply between dawn and 2 hr before sunset for best control of lambsquarter and velvetleaf. Provides control of glyphosate resistant volunteer corn. Do not make POST applications if Total or Total 2.3 was used for burndown. Apply in at least 15 GPA of water with 80° or 110° nozzles using 30-60 PSI or greater depending on nozzle used. Maimum Liberty Ultra 58 fl oz/A/yr. on field, silage; 30 fl oz/A/year on sweet corm. Maximum Liberty 280 SL/Total SL/Cheetah 87 fl oz/A/year on field, silage; 44 fl oz/A/year on sweet. Maximum Total/Total 2.3 44 fl oz/A/year on field, silage; 40 fl oz/A/year on sweet corn. Prior to applications of Liberty Ultra, refer to section 12.0 of the product label titled Endagered and threatened species protections requirements. You must follow all directions and restrictions contained in any applicable ESA bulletins for the area where you are applying Liberty Ultra.
LIBERTY ULTRA or LIBERTY 280 SL or ***TOTAL SL***/CHEETAH or ***TOTAL/TOTAL 2.3*** + ***ATRAZINE 4L*** ‡/ ***ATRAZINE 90DF*** ‡ or BICEP II MAGNUM ‡/ BICEP II MAGNUM FC ‡ or CALLISTO/***INCINERATE*** or LAUDIS	**All soil textures:** field/silage 19-29 fl oz, sweet 14.7 fl oz or field/silage 32 fl oz, sweet 22 fl oz or field/silage 29-43 fl oz, sweet 22 fl oz or field silage 22 fl oz, sweet 20 fl oz + 1-3 pt or 0.55-1.6 lb or 1.6-2.6 qt + 1.5-3 lb AMS or 1-3 fl oz or 2-3 oz			Use only on LibertyLink corn. See Liberty Ultra/Liberty 280SL above. Do not make POST applications if Total or Total 2.3 is used for burndown. Apply up to 12" corn. Note 1. Apply up to 5" corn. Note 1. Apply up to 30" corn. Apply up to V9 for field or POP; up to V7 for SWEET.
LUMAX EZ ‡ *<3% O.M.* *≥3% O.M.*	**All soil textures:** 2.7 qt 3.25 qt			Apply up to 12" corn and broadleaf weeds <3". Add 0.25%v/v NIS or 1% v/v COC.* COC may cause temporary crop response. Do not add nitrogen sources (AMS or UAN). May be tank mixed with Basis Blend to control emerged grasses. Lumax EZ may be tank mixed with glyphosate, or Roundup brands and Liberty Ultra/Liberty 280 SL/Total SL/Total/Total 2.3. Follow adjuvant recommendations of the glufosinate or glyphosate tank mix partner. Do not apply to corn treated with Counter 20G or tank mix with OP or carbamate insecticides. Do not apply more than 3.25 qt/A/year Lumax EZ or 2.5 lb/A/year atrazine or 3.75 lb/A/year s-metolachlor. Do not apply POST to SWEET or POP corn. Notes 1, 3, 4.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
MAESTRO 2EC	**All soil textures:** 1 pt : emergence and up 1.5 pt: 4-leaf stage and up 2 pt: chemigation rate			May be used from corn emergence up to prior to tassel. Apply early to small weeds. Temporary leaf burn can occur under warm, humid conditions. May be tank mixed with many other herbicides.
MAVERICK	**All soil textures:** 14 fl oz: Post emergence			Apply POST up to V6 or 18 inches with adjuvant (see label). See label for sequential applications, drop nozzle applications and tank mixes. Do not apply POST to yellow POP. Max. 2 applications/A/year (one PRE and one POST). Min. 21-day retreatment interval. Max. 18 fl oz/A/year on coarse soils. Max. 32 fl oz/A/year on medium and fine soils (combination of PRE and POST applications). Max 14 fl oz/A/year POST. See label for aerial application state restrictions.
OUTLOOK	12-18 fl oz	14-21 fl oz	14-21 fl oz	Apply up to 12" corn before weeds emerge. Lay-by application from 12-36" FIELD, SEED and POP corn. Use drop nozzles from 30-36". May use lower rates for POST, see label.
PEAK	**All soil textures:** 0.5-1 oz			Add 1 qt NIS or 0.5 gal HSOC-COC/100 gal.* Apply to 4-30" corn, drop nozzles 20" or V6 to 30". Certain broadleaf weed control including POST and residual control of burcucumber. Note 4.
PERMIT	**All soil textures:** 2/3 - 1 1/3 oz (field and seed) 2/3-1 oz (pop and sweet)			Apply over-the-top or with drop nozzles from spike through labyby stage. Up to 2 applications, total not to exceed 2.66 oz/A/season.
PERMIT PLUS	**All soil textures:** 0.75 oz			Add 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal + 2-4 qt/A 28%N or 2-4 lb/A AMS.* Apply to V2-V6 corn hybrids with relative maturity of >88 days and broadleaf weeds 1-12".
PERPETUO	**All soil textures:** 6-10 fl oz			Apply from 2-leaf through V6. Use drop nozzles as needed (with 0.5 gal HSOC-COC/A*) so spray is directed beneath canopy when leaves prevent proper spray coverage of weeds, minimizing exposure of corn leaves to spray. Avoid direct spray into whorl. May be tank-mixed; see label.
POAST	**All soil textures:** Up to 1.5 pt or 2.25 pt			Apply up to the onset of pollen shed. Poast-Protected corn only.
PROWL H2O	SEE FRAMEWORK 3.3 EC			
PYTHON	**All soil textures:** 0.46-0.93 oz			Add 1 qt NIS/100 gal + 2.5% v/v UAN or 2-4 lb/A AMS.* Apply to FIELD corn up to 20" or through V6. Apply to 1-8" velvetleaf. COC or MSO may be used.* See label for extended PRE rates.
REALM Q	**All soil textures:** 4 oz			Add 0.5 gal HSOC-COC/100 gal + 2 qt UAN or 2 lb AMS.* Apply up to 20" FIELD corn. Do not apply to >20" or ≥V7 corn. May tank mix with glyphosate, glufosinate and other herbicides. Contains a safener to reduce crop injury. Do not mix with Basagran, foliar OP insecticides, or use on fields with Counter 20G. Apply to 1-2" grass and <5" broadleaves.
RESICORE/RESICORE REV *< 3% O.M.* *≥ 3% O.M.*	 2.25 qt 2.5 qt	 2.5 qt 2.75 qt	 2.75 qt 3 qt	Do not apply >3.25 qt/A/year. Up to 11" corn for Resicore, and 24" for Resicore REV. Apply to broadleaf weeds <3". Do not apply POST to yellow popcorn. Add 0.25% v/v NIS or 1% v/v COC* COC may cause temporary crop injury to emerged corn. Do not add MSO, UAN, or AMS if corn is emerged, except for AMS with glyphosate or glufosinate tank mixtures.* May be tank mixed with products such as Accent Q and Steadfast Q to control emerged grasses. Do not apply to corn that has received an at-plant application of phorate or terbufos. Do not apply POST in tank mixtures with organophosphate or carbamate insecticides and do not make POST applications of organophosphate or carbamate insecticides within 7 days before or after a Resicore application.
RESOLVE Q	**All soil textures:** 1.25 oz			Provides residual control of annual grasses and small-seeded broadleaf weeds. Apply up to 20" (V6). Do not apply to corn >20" or with 7 collars, whichever is more restrictive. May tank mix with glyphosate or glufosinate. NIS, COC, MSO and UAN/AMS are labeled. Contains a safener to reduce crop injury. Do not mix with Basagran or rimsulfuron. Note 4.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
RESOURCE (alone or) + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡ or ROUNDUP or ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** or SPIRIT or LIBERTY 280 SL/ ***TOTAL SL***	**All soil textures:** 4-8 fl oz (2-8 fl oz tank mix) + 1-2 pt or 0.6-1.2 lb or See label or 0.5 pt or 1 oz or See label			Apply alone to 2-10 leaf FIELD corn. Add 0.5 pt/A HSOC-COC and 2-2.5 lb AMS/A to Resource alone broadcast.* For late treatment of velvetleaf, use drop nozzles with Resource at 4 oz/A (6"), 6 oz/A (8") and 8 oz/A (10") with 1 pt of HSOC-COC + 2-2.5 lb AMS.* 8 oz/A rate with drops only. Nitrogen fertilizer is recommended for velvetleaf. Apply from 2-leaf stage to 12" high corn. Use 0.5 pt/A HSOC-COC* with atrazine. May add 2.5 lb AMS. Note 1. Roundup Ready corn only. May use other glyphosate herbicides: Cornerstone brands, Roundup brands, or others at labeled rates. Reduce Resource rate to 2-4 oz/A (see label). Apply from 2-leaf stage to 36" high corn. (Not over 10 leaves). Over 8" use 2-4 oz Resource with drop nozzles. See label for adjuvants. Note 5. LibertyLink corn only.
REVULIN Q	**All soil textures:** 3.4 - 4 oz			For control of emerged weeds use COC; weed control better with COC compared to a NIS.* Yellow POP or SWEET corn use NIS. Up to 20" or up to V6. Directed up to 30". SEED, POP < 20" or up to V5. SWEET > 18" or V6.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			Add 8.5-17 lb AMS/100 gal or WC+NIS.* May use other glyphosate products at greater or lesser volumes; see individual labels. Apply only to Roundup Ready Corn 2 VE-V8 or 30" alone. Drop nozzles are recommended if corn is >24" tall to ensure proper spray coverage. Apply on 30-48" Roundup Ready Corn 2 with drop nozzles. See individual labels for single in crop maximums. Most applications are generally too early for best control of perennials. Full rate will suppress perennial weeds like hemp dogbane, common milkweed, field bindweed, Johnsongrass and quackgrass. For improved control, follow with a sequential treatment when these perennial weeds are >6" tall or with a PRE-harvest application. Many residual herbicide Supplemental labels allow reduced rates. Apply early POST with labeled or reduced rates of residual herbicides including Atrazine, Charger products, Confidence/Tremor NXT/Harness, or Confidence Xtra/Tremor ATZ Lite NXT/Harness Xtra.
RUGGED	**All soil textures:** 0.5-1 pt: annuals 1 pt: perennials			Acid formulation of 2,4-D. Apply over-the-top during 2-5 leaf stage of corn, up to 8", and to small broadleaf weeds. Do not apply just after leaves have unfolded. May be applied with drops to corn 8" tall up to 14 days prior to tasseling. Corn becomes brittle after spraying 2,4-D; do not cultivate for 7-10 days after application. Maximum 1 application.
SEQUENCE	**All soil textures:** 2.5 - 3.5 pt			Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply to VE-V8 or 30" (glyphosate tolerant) corn. Use drop nozzles up to 48" corn. See label for states and counties. Avoid application into whorls of plant. Do not exceed 3.5 pt/A/application or 5 pt/A/season. Do not exceed 3.9 pt/A/season from all Sequence and Dual Magnum applications. Do not exceed 1.5 pt/A/season POST from all Sequence and glyphosate applications.
SHARK EW	SEE AIM EC			
SINATE	**All soil textures:** 21-28 fl oz			LibertyLink corn only. Do not apply within 30' of a native plant community. Apply before weeds exceed maximum labeled size. Max. 28 fl oz/A/year for field corn, 21 fl oz/A/year for sweet corn. Do not use post-harvest if used in-season. Do not use nitrogen solutions as spray carriers.
SPIRIT (alone or) + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡ or ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	**All soil textures:** 1 oz + 1-4 pt or 0.55-2.2 lb or 2 oz			Add 0.5-2 pt/A HSOC-COC or 0.75-2 pt/A HSOC-MSO + 2-4 qt/A 28% N or 2-4 lb/A AMS.* Broadcast to FIELD and SEED corn 4-20" tall from 20-24" use drop nozzles. POP directed from 10-24". Soybean rotation restrictions are 10 months south of I-80 interstate highway and 18 months north of I-80. Use 2-4 pt/A adjuvant with Sterling Blue, 1-4 pt/A with Atrazine and 1-2 pt/A for Spirit alone.* Maximum height for Atrazine is 12", Sterling Blue/Clarifier/Clarity/Dicamba Max 4 12" broadcast, 24" with drops. Notes 1,4,7.
STARANE NXT	**All soil textures:** 14 fl oz: up to and including V5 21-27.4 fl oz: V4 - V5			Rate dependent on weed to be controlled or suppressed. Use 27.4 fl oz/A rate for susceptible weeds growing under less than optimal conditions where Starane NXT + atrazine cannot be used.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
STARANE ULTRA/ STAREDOWN	**All soil textures:** 0.4 pt			Apply to VE-V5 corn (V4 for SWEET), or as directed spray beyond V5 (V4 for SWEET). Apply to weeds up to 8". May be tank mixed with other herbicides unless prohibited by tank mix partner label. Use tank mix partner adjuvant system. Do not make more than 2 applications or apply more than 0.7 pt/A/crop season.
STATUS	**All soil textures:** 5-10 oz			Apply to 4-36" corn (V2-V8). Include 0.25% v/v NIS or 0.5-1 pt HSOC-COC or 0.75-1 pt HSOC-MSO/A.* Include 5 qt 28% N or 5-17 lb AMS/100 gal. Use 2.5-5 oz/A Status in tank mixes. Contains a safener that reduces potential for crop injury from dicamba. Dissolve Status before adding AMS. Status will suppress grasses <3" tall. Note 5.
STEADFAST Q	1.5 oz			Add 0.5 gal HSOC-COC or HSOC-MSO/100 gal + 2 qt/A 28%N or 2-4 lb/A AMS.* Apply up to 20" or through V6 corn, whichever is most restrictive. See label for tank mixes. Apply when night temperature >40°F and daytime temperature <92°F to maximize performance and minimize potential for crop injury. 2% v/v COC or MSO may be used under arid conditions.* Note 4.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	Early Post - 0.5 pt	Early Post - 1 pt	Early Post - 1 pt	EARLY POST. Corn up to 8" high, not exceeding 5 true leaves. DO NOT ADD 2,4-D. Surfactant may be added under dry conditions. Add UAN for velvetleaf.* Note 5.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	**All soil textures:** Late Post - 0.5 pt			LATE POST. Apply to corn 8-36" tall or 15 days prior to tasseling, whichever comes first. DO NOT apply to corn over 24" tall or if nearby soybeans are over 10" tall or in bloom. For best control, apply when weeds are <3" tall. Note 5.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** + ***2,4-D AMINE 4; LV4; LV6*** or ***ATRAZINE 90DF*** ‡ or ***ATRAZINE 4L*** ‡	**All soil textures:** 0.5 pt + 0.25 pt or 1.4-2.2 lb or 1.25-2 qt			With 2, 4-Ds, apply to corn 8-36" tall. Use drop nozzles (directed spray) with 2,4-D when corn leaves prevent proper coverage or when sensitive crops are growing nearby. Do not apply to corn over 24" tall or if nearby soybeans are over 10"tall or in bloom. Apply with Atrazine up to 12" corn. May also be applied with Dual II Magnum, Harness, Outlook, or Prowl. Notes 1,5.
STINGER	**All soil textures:** 0.25 pt: annuals 0.67 pt: perennials			Apply to actively growing broadleaves VE to 24" tall FIELD and POP, 18" tall SWEET. Apply only to POP and SWEET for processing. See label for additional timing and application recommendations. Treat Canada thistle 6-8" in height or diameter, or to pre-bud stage. Do not cultivate prior to treatment or 14-20 days after.
STINGER HL	**All soil textures:** 0.15 - 0.3 pt: annuals 0.3 - 0.4 pt: perennials			Apply to actively growing broadleaves VE to 24" tall FIELD and POP, 18" tall SWEET. Apply only to POP and SWEET for processing. See label for additional timing and application recommendations. Treat Canada thistle 6-8" in height or diameter, or to pre-bud stage. Do not cultivate prior to treatment or 14-20 days after.
STOREN *≤3% O.M.* *>3% O.M.*	Do not use	2.1 qt 2.4 qt	2.1 qt 2.4 qt	POST in field and seed corn only to V8 stage. Apply before broadleaf weeds reach 3" in height and labeled grasses reach 2" in height. Irrigation or significant rainfall is needed within 7 days after PP/ PRE to avoid decreased weed control. See label for use of OP or carbamate insecticides after POST applications. Do not apply POST with liquid fertilizers. Do not apply POST to yellow POP or SW. Do not use in white POP or ornamental corn. Max. 2.4 qt/A/application. Min. 140-day application interval. Do not apply to corn past V8 stage.
SURESTART II	SEE THREESIDUAL			
SURPASS NXT *Roundup Ready rate*	1.25-1.75 pt 1.5 pt	1.75-2.25 pt: medium 1.5 pt	1.75-2.75 pt 1.5 pt	Apply up to 11" corn. Do not apply early POST to SWEET corn. Cultivate or rotary hoe if weeds are emerged to improve performance. See timing restrictions for tank mix partners. Note 2. Roundup Ready rate for tank mixes with glyphosate-containing products on Roundup Ready corn; see label.
THREESIDUAL/ SURESTART II/ TRIPLEFLEX II	**All soil textures:** 1.5-2 pt			Apply up to 11" corn. Does not control emerged grasses. Do not tank mix with liquid OP insecticides or with Basagran herbicide due to the risk of crop injury. See Technical Bulletin MN, WI, IL, IA for SureStart II (exp. date not given) 10.5 month rotation interval to certain SWEET corn varieties.
TOTAL/***TOTAL 2.3***/ ***TOTAL SL***	SEE LIBERTY 280 SL			

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
TREMOR NXT	SEE CONFIDENCE			
TREMOR ATZ LITE NXT ‡	SEE CONFIDENCE XTRA			
TREMOR ATZ NXT ‡	SEE CONFIDENCE XTRA 5.6L			
TRIPLEFLEX II	SEE THREESIDUAL			
TRIVOLT ‡ ≤2% O.M. >2% O.M.	 10 fl oz 12 fl oz	 12 fl oz 12 fl oz	 12 fl oz 12 fl oz	May be applied to corn from spiking through the 2-leaf collar growth stage. In addition to soil residual, it will provide POST control of newly emerged weeds. Requires use of Supplemental label in MN, WI. See label for state-specific restrictions. Note 4.
TRUST/TREFLAN HFP	0.75-1 pt	1-1.5 pt	1.5-2 pt	Apply to corn from 2 true leaf stage up to 30". May be tank mixed with atrazine. Culti-spray. Note 9.
VIDA	**All soil textures:** 0.5 - 1 fl oz			Apply up to V4. Do not apply to Sweet Corn. Do not make more than 2 applications or exceed 1 fl oz/A. Do not apply directly to the whorl when using drops. Do not use Crop Oil Concentrate with application.
WARRANT	1.5-2 qt	1.5-2.75 qt	1.5-3 qt	Apply to VE-30" field/seed/pop. Drop nozzles recommended from 24-30". See label for rate and soil O.M. Apply before weed emergence. Aerial application in select states; see label. Warrant is a microencapsulated formulation.
WEEDAR 64 or WEEDONE 638 or WEEDAR XHL	**All soil textures** (do not use on very light, sandy soil): 0.5-1 pt or 0.66-1 pt or 4.3-10.5 fl oz			From VE-8". If >8" us drop nozzles. Do not apply from Tassel to dough stage. Delay cultivation for 8-10 days. Hybrids vary in tolerance to 2,4-D, espcially SW; consult technical service providers for 2,4-D tolerance information. Max. 1 POST application/crop cycle. Max. per crop cycle, incl. PP,PRE and PH:6 pt/A Weedar 64, 8.5 pt/A Weedone 638, 64 fl oz/A Weedar HXL
WIDEMATCH	**All soil textures:** 1.33 pt			Apply to VE-V5 corn, or as directed spray beyond V5. Apply to weeds up to 8". May be tank mixed with other herbicides unless prohibited by tank mix partner label. Use tank mix partner adjuvant system. Do not make more than 2 applications or apply more than 2.66 pt/A/season.
YUKON	**All soil textures:** 4-8 oz			Add 1-2 qt NIS/100 gal.* Broadcast from spike to 20" and directed or drop nozzles from 20-36" corn. Apply to small weeds for best results. Note 4.
YUKON + ***ATRAZINE 4L*** ‡	**All soil textures:** 4-8 oz + 1.5-3 pt			Apply up to 36" corn. Drop nozzles from 20-36" corn. Apply up to 12" corn when mixed with atrazine. Antagonism may occur in larger broadleaves. Note 1. Certain hybrids may be susceptible to injury. Include HSOC-COC with Atrazine tank mix.*
ZIDUA SC	1.75-4.5 fl oz	2.5-5 fl oz	3.25-6.5 fl oz	Broadcast spray from spiking to V8 using Zidua SC. See labels for max. annual application rates dependent on soil texture. Zidua SC (pyroxasulfone) has a low water solubility and requires multiple rain events for activation. Note 6.
2,4-D AMINE 4 or ***2,4-D LV4*** or ***2,4-D LV6*** or ***SHREDDER E-99***	**All soil textures** - Annuals: 0.5-1 pt Amine 4 or 0.5 pt LV4 or 0.33 pt LV6 or 0.33-0.67 pt E-99 **All soil textures** - Perennials: 1 pt Amine 4 or 0.75-1 pt LV4 or 0.67 pt LV6 or 0.67 pt E-99			Apply over-the-top during 2-5 leaf stage of corn, up to 8", to small broadleaf weeds. Do not apply just after leaves have unfolded. May be applied with drops to corn 8" tall up to 14 days prior to tasseling for Amine 4, LV4 or LV6 and prior to tasseling for E-99. Use 0.33-0.67 pt/A E-99 up to 8" corn. Up to 1 pt/A E-99 above 8"as directed spray. Corn becomes brittle after spraying 2,4-D; do not cultivate for 7-10 days after application. Maximum 1 application.

See notes and footnotes at end of table.

HERBICIDE APPLICATION RATES *continued*

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
				PREHARVEST
AIM EC	**All soil textures:** 1-2 fl oz			PREHARVEST. Add 0.5 gal HSOC-COC/100 gal.* PHI 3 days. For FIELD corn, SEED, POP, SWEET corn for processing and fresh market. Apply to mature crop. Do not feed or graze for 14 days.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 32 fl oz or Up to 24 fl oz			PREHARVEST. Add 8.5-17 lb AMS/100 gal, include NIS, WC+NIS as needed.* Apply to GT corn. For conventional corn use up to 3 qt/A or 4.5 pt/A by ground and up to 2 qt/A or 1.5 qt/A by air. Apply when grain moisture is 35% or less and black layer has formed. Not recommended on SEED corn because of reduced seed germination or vigor. PHI 7 days.
GRAMOXONE SL 3.0 ‡	**All soil textures:** 0.8-1.3 pt			PREHARVEST. Add 2 pt NIS /100 gal.* Use 2 pt/A or 1.3 pt/A for mature weeds or weeds greater than 18". Apply after the corn is mature and black layer has formed. Use 2 pt NIS/100 gal by air. PHI 7 days. corn is mature and black layer has formed. Use 2 pt NIS/100 gal by air. PHI 7 days.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			PREHARVEST. Add 8.5-17 lb AMS/100 gal, or WC+NIS.* May use other glyphosate products at greater or lesser volumes; see individual labels. See label for PREHARVEST rates for corn that is not GT. Apply when grain moisture is 35% or less and black layer has formed. Not recommended on SEED corn because of reduced seed germination or vigor. PHI 7 days.
RT 3	**All soil textures:** Up to 64 fl oz			PREHARVEST. Add 8.5-17 lb AMS/100 gal, or WC+NIS.* Up to 44 fl oz/A by air. Apply when grain moisture is 35% or less and black layer has formed. Not recommended on SEED corn because of reduced seed germination or vigor. PHI 7 days. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY and in specific counties in KS, MN, NE, NM, OK.
RUGGED	**All soil textures:** 1-2 pt			PREHARVEST. For FIELD and POP corn, apply after silks are completely brown (dent stage) to suppress perennial broadleaves, decrease weed seed production, and control tall weeds and vines that interfere with harvest.
SHARK EW	**All soil textures:** 1-2 fl oz			Rate depends on target weeds; see label. Max. 2 fl oz/A/season including all application timings/ methods. Do not apply when conditions favor drift or wind is >10 mph.
WEEDAR 64 or WEEDONE 638 or WEEDAR XHL	**All soil textures** (do not use on very light, sandy soil): 3 pt or 1.5-2.5 pt or 32 fl oz			After dent stage. Use high rate for weeds unders stress. Max. 1 PH application/crop cycle. Apply after corn is in hard dough (or denting) stage. Do not apply preharvest to sweet corn. Max. per crop cycle, incl. PP, PRE, and PH: 6 pt/A Weedar 64, 8.5 pt/A Weedone 638, 64 fl oz/A Weedar HXL.
2,4-D AMINE 4/LV4 or ***LV6*** or ***SHREDDER E-99***	**All soil textures:** 1-2 pt or 0.66-1.33 pt or Up to 2 pt			PREHARVEST. For FIELD and POP corn, apply after silks are completely brown (dent stage) to suppress perennial broadleaves, decrease weed seed production, and control tall weeds and vines that interfere with harvest.

[1] Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay,sandy clay, clay loam, clay.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

NOTE 1: Do not exceed maximum rate of atrazine allowed per year. These combination products contain the following amounts of atrazine: Bicep II Magnum/Charger MAX ATZ; – Bicep Lite II Magnum/ Charger MAX ATZ Lite (each qt) 0.4175 lb; – Callisto Xtra (each 24 oz) 0.6 lb; – Confidence Xtra or Tremor ATZ Lite NXT (each qt) 0.625 lb; – Confidence Xtra 5.6L or Tremor ATZ NXT (each qt) 0.425 lb; – Degree Xtra (each qt) 1.34 lb; – Harness Xtra 5.6L (each qt) 0.625 lb; – Harness Xtra 6L (each qt) 0.425 lb; FulTime NXT (each qt) 0.335 lb; – Keystone NXT (each qt) 0.625 lb; – Keystone LA NXT (each qt) 0.425 lb; – Lexar EZ (each qt) 0.44 lb; – Lumax EZ (each qt) 0.23 lb.

NOTE 2: Do not add 2,4-D POST.

NOTE 3: Do not exceed maximum rate of atrazine allowed per year. These combination products contain the following amounts of atrazine: Bicep II Magnum/Charger MAX ATZ – Bicep Lite II Magnum/Charger MAX ATZ Lite (each qt) 0.4175 lb; – Callisto Xtra (each 24 oz) 0.6 lb; – Confidence Xtra or Tremor ATZ Lite NXT (each qt) 0.625 lb; – Confidence Xtra 5.6L or Tremor ATZ NXT (each qt) 0.425 lb; – Degree Xtra (each qt) 1.34 lb; – Harness Xtra 5.6L (each qt) 0.625 lb; – Harness Xtra 6L (each qt) 0.425 lb; FulTime NXT (each qt) 0.335 lb; – Keystone NXT (each qt) 0.625 lb; – Keystone LA NXT (each qt) 0.425 lb; – Lexar EZ (each qt) 0.44 lb; – Lumax EZ (each qt) 0.23 lb..

NOTE 4: See insecticide restrictions in table on the next page.

NOTE 5: Under conditions favoring drift, add 4 oz InterLock, 6.4 oz of Masterlock by ground and 4 oz by air, 4-6 oz. Placement per acre after pesticides are added but before complete filling of spray tank.

NOTE 6: Be sure that boom height for all is such that sulfonylureas spray is not concentrated in the whorl. Check with seed corn supplier or local representative for a listing of such"susceptible"varieties.

NOTE 8: Crop injury possible if cold weather occurs before or after application.

NOTE 9: POST-PLANT INCORPORATED (CULTI-SPRAY OR LAYBY) For full-season grass control should combine a preplant soil herbicide(s) with post-plant application of Prowl H2O or Framework 3.3 EC (pendimethalin) or Treflan (trifluralin). Post-plant incorporated treatments are designed to enhance late- season control of grasses, including fall panicum, shattercane, crabgrass, woolly cupgrass, wild proso millet and field sandbur. Uniform incorporation in surface soil is required. Prowl (pendimethalin) and Trust (trifluralin) applications will not control emerged broadleaf or grassy weeds. Field must be cultivated and all emerged weeds destroyed prior to application. Cultivate sweep or rolling cultivator operated to throw at least 1"of soil over the base of the crop plants. After application in 10 gallons or more water per acre, incorporate within 24 hours to a depth of 1-2"with sweep or rolling cultivator, or with overhead sprinkler irrigation.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

HERBICIDE-INSECTICIDE RESTRICTIONS

Herbicide	SOIL APPLIED ORGANOPHOSPHATE *(OP)* INSECTICIDE				SOIL APPLIED NON-OP INSECTICIDE			
			Aztec 4.67G[a] ‡/Aztec HC[a] ‡					
	Counter 20G[b] ‡	Thimet 20-G ‡	Furrow	Band	Smart Choice ‡	Index ‡	Force products ‡	Tundra LFC ‡ Capture LFR ‡
nicosulfuron and/or rimsulfuron								
ACCENT Q	UCI [c]	UCI [c]	Yes	Yes	Yes	Yes	Yes	Yes
ALLUVEX	UCI [g]	UCI [c]	Yes	Yes	Yes	Yes	Yes	Yes
BASIS[e]	UCI [c]	UCI [c]	Yes	Yes	Yes	Yes	Yes	Yes
BASIS BLEND[f]	UCI [g]	UCI [c]	Yes	Yes	Yes	Yes	Yes	Yes
CRUSHER	UCI [g]	UCI [c]	Yes	Yes	Yes	Yes	Yes	Yes
LEADOFF	UCI [g]	UCI [c]	Yes	Yes	Yes	Yes	Yes	Yes
MATRIX	UCI [g]	UCI [c]	Yes	Yes	Yes	Yes	Yes	Yes
REALM Q	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
REQUIRE Q	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
REVULIN Q	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
RESOLVE BRANDS[e]	UCI	UCI	Yes	Yes	Yes	Yes	Yes	Yes
STEADFAST BRANDS	No	UCI	Yes	Yes	Yes	Yes	Yes	Yes
STOUT	No	UCI	Yes	Yes	Yes	Yes	Yes	Yes
primisulfuron and/or prosulfuron								
PEAK	No	TCI	TCI	TCI	Yes	Yes	Yes	Yes
SPIRIT	No	TCI	TCI	Yes	Yes	Yes	Yes	Yes
flumetsulam								
PYTHON WDG	No	No	TCI *	Yes	Yes	Yes	Yes	Yes
THREESIDUAL/SURESTART II/TRIPLEFLEX II *(Pre)*	No	No	No	Yes	Yes	Yes	Yes	Yes
THREESIDUAL*/SURESTART II/TRIPLEFLEX II (Post)*	No	No	TCI	TCI	Yes	Yes	Yes	Yes
HORNET *(Pre)*	No	No	No	Yes	Yes	Yes	Yes	Yes
HORNET *(Post)*	No	No	TCI	TCI	Yes	Yes	Yes	Yes
halosulfuron								
HERBIVORE or PERMIT or YUKON	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
mesotrione								
ACURON BRANDS	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
CALIBRA	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
CALLISTO BRANDS/INCINERATE *(Post)*	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
HALEX GT/ACURON GT *(Post)*	SCI	SCI	SCI	SCI	Yes	Yes	Yes	Yes
HARNESS MAX	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
LUMAX EZ ‡/LEXAR EZ ‡ *(Post)*	No	TCI	TCI	TCI	Yes	Yes	Yes	Yes
MAVERICK	SCI	No	Yes	Yes	Yes	Yes	Yes	Yes
REALM Q	No	No	Yes	Yes	Yes	Yes	Yes	Yes
RESICORE/RESICORE REV *(Post)*	No	No	TCI	TCI	Yes	Yes	Yes	Yes
SOLSTICE	No	No	TCI	TCI	Yes	Yes	Yes	Yes
saflufenacil								
SHARPEN	No	No	Yes	Yes	Yes	Yes	Yes	Yes
VERDICT/***TESTIFY***	No	No	Yes	Yes	Yes	Yes	Yes	Yes
saflufenacil + Pyroxasulfone								
SURTAIN	No	No	Yes	Yes	Yes	Yes	Yes	Yes
tembotrione + dicamba								
DIFLEXX DUO	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

See notes and footnotes at end of table.

Herbicide	SOIL APPLIED ORGANOPHOSPHATE *(OP)* INSECTICIDE				SOIL APPLIED NON-OP INSECTICIDE			
			Aztec 4.67G[a] ‡/Aztec HC[a] ‡					
	Counter 20G[b] ‡	Thimet 20-G ‡	Furrow	Band	Smart Choice ‡	Index ‡	Force products ‡	Tundra LFC ‡ Capture LFR ‡
thiencarbazone								
CAPRENO	No	No	Yes	Yes	Yes	Yes	Yes	Yes
CORVUS ‡	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
thifensulfuron or tribenuron								
ALLUVEX	UCI[g]	UCI[c]	Yes	Yes	Yes	Yes	Yes	Yes
BASIS BLEND[f]	UCI[g]	UCI[c]	Yes	Yes	Yes	Yes	Yes	Yes
CRUSHER	UCI[g]	UCI[c]	Yes	Yes	Yes	Yes	Yes	Yes
LEADOFF	UCI[g]	UCI[c]	Yes	Yes	Yes	Yes	Yes	Yes
PANOFLEX	UCI[e]	UCI[e]	Yes[e]	Yes	Yes	Yes	Yes	Yes
thiencarbazone-methyl								
TRIVOLT	UCI[g]	UCI[c]	Yes	Yes	Yes	Yes	Yes	Yes

No – Do not use this herbicide if this soil applied insecticide was previously applied.
Yes – No restrictions.
UCI – Using this herbicide on corn previously treated with this insecticide may result in unacceptable crop injury.
SCI – Servere crop injury can occur with Counter 20G.
TCI – Using this herbicide on corn previously treated with this insecticide may result in temporary corn injury.
Foliar-OP = Dimate or Malathion.
[a] Aztec 4.67G and Aztec HC labels have no herbicide restrictions.
[b] May be applied to field corn at cultivation 7 days after application of ALS herbicides.
[c] Using this herbicide on corn previously treated with this insecticide may result in unacceptable crop injury, particularly on low (<4%) organic matter soils.
[e] Do not apply within 60 days of crop emergence where an OP was used in-furrow; or PP or PRE within 60 days of an OP insecticide.
[f] Do not apply within 45 days of crop emergence where an OP insecticide was applied. Do not apply Counter 20G within 60 days of a PP or PRE application.
[g] Do not apply certain OP insecticides within 30-60 days of PP or PRE application; see individual label.
* Do not place Aztec 4.67G or Aztec HC in-furrow with Python WDG.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED INSECTICIDES

INSECTICIDE	LABELED CROP (Pre-Harvest Intervals for grain or fresh ear in days)				RATE PER ACRE	AT PLANTING INSECTS: PP, PPI OR PRE (SOIL TREATMENTS)												AFTER PLANTING INSECTS (RESCUE)					
	FIELD	POP	SEED	SWEET		ARMYWORM	BILLBUG	CORN ROOTWORM LARVAE	CUTWORM	FLEA BEETLE LARVAE	NEMATODE	SEED CORN BEETLE	SEED CORN MAGGOT	STALK BORER, COMMON or LESSER	SYMPHYLAN	WHITE GRUB	WIREWORM	ARMYWORM, TRUE	ARMYWORM, FALL	ARMYWORM, YELLOW-STRIPED	BILLBUG	CHINCH BUG	CORN EARWORM
AGRI-MEK SC ‡				Y(7)	1.75-3.5 fl oz																		
ARCTIC 3.2 EC ‡	Y(30)	Y(30)	Y(30)	Y(1)	4-6 fl oz or 0.3-0.6 fl oz/1000' row: F,P,S	●		●	●					●				●	●	●			
					4-6 fl oz: F,P,S													●	●	●			●
					2-4 fl oz: F,P,S																		
					4-8 fl oz: SW														●				●
ASANA XL ‡	Y(21)	Y(1)	Y(1)	Y(1)	0.45 fl oz/1000' row				●														
					5.8-9.6 fl oz: F,P,S													●				●	●
					5.8-9.6 fl oz: SW													●	●	●		●	●
					7.8-9.6 fl oz: F,P,S																		
					2.9-5.8 fl oz																		
AVAUNT				Y(3)	2.5-3.5 fl oz														●				●
AVAUNT EVO				Y(3)	2.5-3.5 fl oz														●				●
AZTEC 4.67G ‡ or AZTEC HC ‡	Y(0)	Y(0)	Y(0)	Y(0)	3 oz or 1.5 oz/1000' row			●	●			●	●			●	●						
BAYTHROID XL ‡	Y(21)	Y(21)	Y(21)	Y(0)	0.12-0.16 fl oz/1000' row; 2.0-2.8 fl oz: F,P,S								●			●S	●						
					0.8-1.6 fl oz																		
					1.6-2.8 fl oz													●		●		●	●
					2.1-2.8 fl oz																		
					2.8 fl oz														●				
BESIEGE ‡	Y(21)	Y(21)	Y(21)	Y(1)	5-10 fl oz																		●
					6-10 fl oz														●	●			
					10 fl oz																	●	
BIFEN 2 AG GOLD ‡/ **TUNDRA EC** ‡/ BRIGADE 2EC ‡	Y(30)	Y(30)	Y(30)	Y(1)	0.3 fl oz/1000' row			●															
					0.15-0.3 fl oz/1000' row	●			●			●	●			●	●						
					PPI: 3-4 fl oz: F,P,S	●			●				●			●	●						
					PRE: 2.56 fl oz: F,P,S	●			●					●									
					2.1-6.4 fl oz													●	●	●		●	●
					5.12-6.4 fl oz																		
BLACKHAWK	Y(28)	Y(28)	Y(28)	Y(1)	1.1-3.3 oz													●	●				
					2.2-3.3 oz																		●

See notes and footnotes at end of table.

AFTER PLANTING INSECTS (RESCUE)																	COMMENTS AND RESTRICTIONS
CORN LEAF APHID	CORN ROOTWORM BEETLE/LARVAE	CUTWORM	EUROPEAN CORN BORER - 1ST GEN.	EUROPEAN CORN BORER - 2ND GEN.	FLEA BEETLE	GRASSHOPPER	HOPVINE BORER	JAPANESE BEETLE	SOD WEBWORM	SOUTHERN CORN LEAF BEETLE	SOUTHWESTERN CORN BORER	SPIDER MITE	STALK BORER, COMMON/LESSER	STINKBUG	WESTERN BEAN CUTWORM	F - field; P - popcorn; S - seed corn; SW - sweet corn; PHI - preharvest interval days for fodder, forage, stover or grazing
												●				Must be mixed with non-ionic activator type wetting, spreading and/or penetrating spray adjuvant approved for sweet corn. PHI 7 for forage/stover. Minimum 10 GPA by ground, 2 GPA by air. Minimum 7-day application interval. Maximum 7 fl oz (0.038 lb a.i.)/A/year
																At-plant (band, T-band or in-furrow), PPI, PRE or after-plant control as indicated. After-plant in minimum 10 GPA by ground, 2 GPA by air; may be applied through sprinkler irrigation. F,P,S: 7-day retreatment interval; maximum 18 fl oz (0.45 lb a.i.)/A/cutting; PHI 0 for forage, 30 for fodder/stover. SW: Minimum 3-day retreatment interval; maximum 32 fl oz (0.8 lb a.i.)/A/season.
	●	●	●	●	●		●		●		●		●			
															●	
	●	●	●	●	●		●						●			
																At-plant: Apply as band, T-band or in-furrow in minimum 3 GPA using minimum 4" band. May be applied through sprinkler irrigation. Maximum, including at-plant and foliar applications: F,S 0.25 lb a.i./A/season; P,SW 0.5 lb a.i./A/season.
●	●	●			●	●		●			●		●			
●	●	●	●	●	●	●					●		●			
			●	●												
															●	
			●												●	Apply from whorl through tassel push. PHI 35 for forage/fodder. May be applied through sprinkler irrigation.
			●	●											●	For application through tassel push only. PHI 35 days for fodder and stover. REI 14 days for hand harvesting. Max. 14 oz/A/crop. Max. 14 oz/A/crop. Max.42 oz/A/year. 3-day min. application interval. May be applied by sprinkler irrigation; see label.
																For use in specific states; see label. Band, T-band, or in-furrow. Optimum control by band or T-band. Must be soil incorporated to depth of at least 1". For applications in no-till corn where runoff drains into adjacent or neighboring aquatic sites, apply as in-furrow or T-band only; for applications within 20 yards of aquatic sites, apply as in-furrow only. Maximum 0.15 lb a.i./A/crop season.
																At-plant F,P,S: White grub suppressed at 2.5-2.8 fl oz/A. F,P,S: Up to 11.2 oz/A/crop; PHI 21 for fodder, 0 for green forage. SW: Up to 28 fl oz/A/crop; PHI 0 for forage. Minimum 10 GPA by ground, 2 GPA by air. May be applied through sprinkler irrigation.
		●			●											
	●		●	●				●	●	●	●		●	●	●	
						●										
		●													●	PHI 1 for grazing/forage, 21 for fodder/silage for meat and dairy animals. Hopvine, Southern Corn Leaf Beetle only listed for F,P,S. Spider Mite only listed for SW.
●S	●		●	●	●	●	●	●			●	●	●	●		
										●						
																Cultivation within 10' of a water body prohibited to allow for growth of a vegetative filter strip. Minimum 10 GPA by ground, 2 GPA (5 GPA for mites in TX,NM,OK,AZ) by air. May be applied through sprinkler irrigation. F,P,S maximum 0.3 lb a.i./A/season, SW maximum 0.2 lb a.i./A/season, inclulding all other applications of bifenthrin products.
●	●	●	●	●	●	●		●	●	●	●		●	●	●	
												●				
			●	●												Armyworms: Use 1.1-3.3 oz/A for fall and true armyworms, 2.2-3.3 oz/A for beet armyworm. Armyworms and European corn borer: Applications should be timed to coincide with peak egg hatch. May be applied through sprinkler irrigation. PHI 28 for fodder, 7 for forage.
											●				●	

LABELED INSECTICIDES *continued*

INSECTICIDE	LABELED CROP (Pre-Harvest Intervals for grain or fresh ear in days) FIELD	POP	SEED	SWEET	RATE PER ACRE	AT PLANTING INSECTS: PP, PPI OR PRE (SOIL TREATMENTS) ARMYWORM	BILLBUG	CORN ROOTWORM LARVAE	CUTWORM	FLEA BEETLE LARVAE	NEMATODE	SEED CORN BEETLE	SEED CORN MAGGOT	STALK BORER, COMMON or LESSER	SYMPHYLAN	WHITE GRUB	WIREWORM	AFTER PLANTING INSECTS (RESCUE) ARMYWORM, TRUE	ARMYWORM, FALL	ARMYWORM, YELLOW-STRIPED	BILLBUG	CHINCH BUG	CORN EARWORM
CAPTURE LFR ‡ / ***TUNDRA LFC*** ‡	Y(30)	Y(30)	Y(30)	Y(1)	0.2-0.78 fl oz/1000' row	●			●			●	●	●		●	●						
					0.39-0.98 fl oz/1000′ row	●		●															
					PPI: 4-5.3 fl oz	●			●			●	●			●	●						
					PRE: 3.4 fl oz	●			●			●		●									
					2.8-8.5 fl oz (Capture LFR only)													●	●	●		●	●
					6.8-8.5 fl oz (Capture LFR only)																		
CAPTURE 3RIVE 3D ‡	Y(0)	Y(0)	Y(0)	Y(0)	0.23-0.92 fl oz/1000′ row; 4-16 fl oz				●														
					0.46-0.92 fl oz/1000′ row; 8-16 fl oz	●		●				●	●	●		●	●						
COMITE ‡/COMITE II ‡	Y(30)	Y(30)	Y(30)	Y(30)	32-48 fl oz/18-54 fl oz																		
CORAGEN	Y(14)	Y(14)	Y(1)	Y(1)	3.5-7.5 fl oz													●	●				●
					2-5 fl oz																		
COUNTER 20G ‡	Y(0)	Y(0)	Y(0)	Y(60)	4.5-6 oz/1000′ row		●	●	●S	●	●	●	●	●S	●	●	●				●		
					6 oz/1000′ row																●		
DELTA GOLD ‡	Y(21)	Y(21)		Y(1)	1.5-1.9 fl oz: F,P													●	●	●		●	●
					1.5-2.4 fl oz: SW																		●
					1-1.5 fl oz																		
DIMATE 4E/ DIMETHOATE 4EC	Y(28)	Y(28)			0.67-1 pt																		
DIPEL ES	Y(0)	Y(0)	Y(0)	Y(0)	1.5-2.5 pt																		
					2-4 pt													●	●	●			●
ELEVEST ‡	Y(30)	Y(30)	Y(30)	Y(1)	4.8-9.6 fl oz																	●	
					5.6-9.6 fl oz													●	●	●			●
					7.7-9.6 fl oz																		
ENTRUST SC	Y(28)	Y(1)	Y(1)	Y(1)	1.5-6 fl oz													●	●	●			
					3-6 fl oz																		●
ETHOS ELITE LFR ‡	Y(0)	Y(0)	Y(0)	Y(0)	0.49-0.98 fl oz/1000' row			●															
					0.2-0.98 fl oz/1000′ row	●			●			●	●	●		●	●						
					PPI: 4-5.3 fl oz	●			●			●	●			●	●						
					PRE: 3.4 fl oz	●			●			●		●									

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(RESCUE)*																	COMMENTS AND RESTRICTIONS
CORN LEAF APHID	CORN ROOTWORM BEETLE/LARVAE	CUTWORM	EUROPEAN CORN BORER - 1ST GEN.	EUROPEAN CORN BORER - 2ND GEN.	FLEA BEETLE	GRASSHOPPER	HOPVINE BORER	JAPANESE BEETLE	SOD WEBWORM	SOUTHERN CORN LEAF BEETLE	SOUTHWESTERN CORN BORER	SPIDER MITE	STALK BORER, COMMON/LESSER	STINKBUG	WESTERN BEAN CUTWORM	F - field; P - popcorn; S - seed corn; SW - sweet corn; PHI - preharvest interval days for fodder, forage, stover or grazing
																See individual labels for specific target insects and rates. Cultivation within 10' of a water body prohibited to allow for growth of a vegetative filter strip. At-plant: Apply as T-band over open furrow or in-furrow with seed. For army cutworm, stalkborer, cutworm spp., true armyworm or armyworm spp., may also apply in band over row on soil surface, or broadcast (3.4-13.6 fl oz/A). Foliar: Apply in minimum 2 GPA by air, 10 GPA by ground. F,P,S maximum 0.3 lb a.i./A/season, SW maximum 0.2 lb a.i./A/season, incluilding all other applications of bifenthrin products.
●	●	●	●	●	●	●		●	●	●	●			●	●	
												●				
																For use in a 3RIVE 3D system only. Must be applied in-furrow with seed. Maximum 0.2 lb a.i./A/season at-plant. F,P,S: Maximum 0.3 lb a.i./A/season, SW: Maximum 0.2 lb a.i./A/season: Includes all other applications of bifenthrin products.
												●				See labels for high infestation rates, early/mid-late season rates, or single application rates. May be applied through sprinkler irrigation.
			●	●							●				●	May be applied through sprinkler irrigation. Minimum 10 GPA by ground, 5 GPA by air. Grasshopper: See label for application timing and adjuvant recommendations.
						●										
																ALS-inhibiting herbicides should not be used with at-plant. Corn rootworm and nematode (see label for species) suppression only at rates < 6 oz/1000' row. Only a single at-plant, POST incorporated or cultivation-time treatment may be used. Maximum 6.5 lb/A. PHI 30 for grazing/forage.
	●															
●S	●		●	●				●	●		●		●	●		Minimum 5 GPA by ground, 2 GPA by air. F,P: PHI 12 for forage. SW: PHI 1 for feed, PHI 21 for stover.
●S	●		●	●				●	●		●		●	●		
		●			●	●										
●	●					●						●				Maximum 1 pt/A/year. PHI 14 for forage. Grasshopper control: 1 pt/A at 20-40 GPA by ground, ≥1 GPA by air. Do not apply during pollen-shed period shed if bees are visiting the area.
		●	●	●					●		●				●	Minimum 5 GPA by ground, apply in 6-8" band directly over whorls. Minimum 2-10 GPA by air.
	●	●			●	●		●		●				●	●	Max. 3 applications/A/year for F, P, S. Max. 2 applications/A/year for SW. Max. 2 sequential applications before rotating to different MOA. Max. 0.2 lb ai/A of chlorantraniliprole and 0.3 lb ai/A of bifenthrin/A/year. Min. 7-day retreatment interval for F, P; 1 day for S, SW. See label for timing notes. Min. 10 GPA by ground, 2-5 GPA by air for F, P, S, and 5 GPA for SW (see label re. adjuvant options). Grasshopper control improves with addition of MSO at 1% v/v. Coverage is essential for control of mites. To control most ear-attaching pests, apply when silking begins and repeat as necessary.
			●	●							●		●			
												●				
			●	●												Scout for European corn borer and armyworms to monitor egg laying and hatch. For earworm, 1-2 day retreatment schedule may be necessary at silking. PHI 28 for fodder, 7 for forage. F: Maximum 12 fl oz (0.188 lb a.i.)/A/year, all uses. S,P,SW: Maximum 29 fl oz (0.45 lb a.i.)/A/year, all uses. May be applied by sprinkler irrigation.
											●				●	
																At plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed, or broadcast; see label for guidance. F,S,P max. 0.3 lb bifenthrin a.i./A/season and SWmax. 0.2 lb bifenthrin a.i./A/season, all uses - incluilding all other applications of bifenthrin products. Product contains fungicide; see Corn Disease Control and label for diseases suppressed at indicated rates.

LABELED INSECTICIDES *continued*

INSECTICIDE	LABELED CROP (Pre-Harvest Intervals for grain or fresh ear in days) FIELD	POP	SEED	SWEET	RATE PER ACRE	AT PLANTING INSECTS: PP, PPI OR PRE (SOIL TREATMENTS) ARMYWORM	BILLBUG	CORN ROOTWORM LARVAE	CUTWORM	FLEA BEETLE LARVAE	NEMATODE	SEED CORN BEETLE	SEED CORN MAGGOT	STALK BORER, COMMON or LESSER	SYMPHYLAN	WHITE GRUB	WIREWORM	AFTER PLANTING INSECTS (RESCUE) ARMYWORM, TRUE	ARMYWORM, FALL	ARMYWORM, YELLOW-STRIPED	BILLBUG	CHINCH BUG	CORN EARWORM
ETHOS XB ‡	Y(30)	Y(30)	Y(30)	Y(1)	0.39-0.98 fl oz/1000' row			●															
					0.2-0.98 fl oz/1000' row	●			●			●	●	●		●	●						
					PPI: 4-5.3 fl oz	●			●			●	●			●	●						
					PRE: 3.4 fl oz	●			●			●		●									
					2.8-8.5 fl oz													●	●	●		●	●
					6.8-8.5 fl oz																		
ETHOS 3D ‡	Y(0)	Y(0)	Y(0)	Y(0)	0.52-1.05 fl oz/1000' row			●															
					0.21-1.05 fl oz/1000' row	●			●			●	●	●		●	●						
FASTAC CS ‡	Y(30)	Y(30)	Y(30)	Y(3)	0.15 fl oz/1000' row				●														
					1.8-3.8 fl oz: F,P,S																		●
					1.3-2.8 fl oz: F,P,S																		
					3.2-3.8 fl oz: F,P,S													●	●	●		●	
					2.7-3.8 fl oz: F,P,S																		
					2.2-3.8 fl oz: SW																	●	
					2.8-3.8 fl oz: SW													●	●	●			●
FORCE 6.5G ‡	Y(0)	Y(0)	Y(0)	Y(0)	1.8-2.3 oz/1000' row			●	●			●	●	●		●	●						
					1.4-1.8 oz/1000' row				●														
					1.8-2.3 oz/1000' row		●S																
FORCE 10G HL ‡	Y(0)	Y(0)	Y(0)	Y(0)	1.25-1.5 oz/1000' row		●S	●				●	●	●		●	●						
					1-1.25 oz/1000' row				●														
FORCE EVO ‡	Y(0)	Y(0)	Y(0)	Y(0)	0.46-0.57 fl oz/1000' row			●	●			●	●	●		●	●						
							●S																
GRIZZLY TOO ‡	Y(21)	Y(21)	Y(21)	Y(1)	0.33 fl oz/1000' row			●	●			●	●	●		●	●						
					0.96-1.6 fl oz: F,P,S																		●
					1.28-1.92 fl oz: F,P,S													●	●	●			
					1.92 fl oz: F,P,S																	●	
					1.28-1.92 fl oz: SW																		

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(RESCUE)*																COMMENTS AND RESTRICTIONS
CORN LEAF APHID	CORN ROOTWORM BEETLE/LARVAE	CUTWORM	EUROPEAN CORN BORER - 1ST GEN.	EUROPEAN CORN BORER - 2ND GEN.	FLEA BEETLE	GRASSHOPPER	HOPVINE BORER	JAPANESE BEETLE	SOD WEBWORM	SOUTHERN CORN LEAF BEETLE	SOUTHWESTERN CORN BORER	SPIDER MITE	STALK BORER, COMMON/LESSER	STINKBUG	WESTERN BEAN CUTWORM	F - field; P - popcorn; S - seed corn; SW - sweet corn; PHI - preharvest interval days for fodder, forage, stover or grazing
																Cultivation within 10' of a water body prohibited to allow for growth of a vegetative filter strip. F,S,P: Maximum 0.3 lb bifenthrin a.i./A/season, all uses. SW: Maximum 0.2 lb bifenthrin a.i./A/season, all uses. F,P,S maximum 0.3 lb a.i./A/season, SW maximum 0.2 lb a.i./A/season, inclulding all other applications of bifenthrin products. Product contains fungicide; see Corn Disease Control and label for diseases suppressed at indicated rates. PHI 30 days F, P, S, 1 day for SW for grazing or cut treated crops for feed.
●	●	●	●	●	●	●		●	●	●	●		●	●	●	
												●				
																For use in a 3RIVE 3D system only. Insecticide and Fungicide. Apply in-furrow with seed. In areas of heavy Corn Rootworm pressure a multi-approach system may be needed. Max. 0.2 lb/A/season of bifenthrin a.i. as an at-plant application. Field corn: Max. 0.3 lb/A/season bifenthrin a.i. including all application methods. Sweet corn: Max. 0.2 lb/A/season bifenthrin a.i. including all application methods.
																Do not apply >11.4 fl oz (0.075 lb a.i.)/A/season, including at-plant and foliar. F,P,S: PHI 30 for stover, 60 for forage; at-plant in furrow, band or T-band using minimum 4" band; after plant minimum 10 GPA by ground, 2 GPA by air. SW: PHI 3 forage/grazing; minimum 3- to 5-day application interval; minimum 20 GPA by ground, 2 GPA by air.
	●														●	
		●														
●			●	●	●	●	●	●	●	●	●		●	●		
	●	●			●			●								
●			●	●		●										
																At-plant: In-furrow, banded or T-banded (see label for application-specific instructions). T-banded granules must be incoroporated to 1". Wireworm and white grub control best with in-furrow treatment. First-year cutworm" use 1.4-1.8 oz/1000' row banded or T-banded. Billbug and chinch bug suppression apply as banded or T-banded.
																For applications in no-till corn where runoff drains into adjacent or neighboring aquatic sites, apply as in-furrow. At-plant: In furrow, banded or T-banded (billbug, chinchbug - banded or T-banded only; cutworm - banded or T-banded only on first year corn). Do not apply as T-band unless incorporated to 1". May also obtain rootworm control with application at cultivation within 30 days after seedling emergence. Do not follow at-plant application with lay-by application; use Force 10G HL only once/crop. Maximum 3.27 lb (0.327 lb a.i.)/A/year.
																For applications in no-till corn where runoff drains into adjacent or neighboring aquatic sites, apply as in-furrow. At-plant: In furrow or T-banded (see label for application-specific instructions; billbug, chinchbug - T-banded only). Do not apply as T-band unless incorporated to 1". Wireworm and white grub control best with in furrow treatment. Maximum 20 fl oz (0.327 lb a.i.)/A/year. Make only one application/year.
																At-plant: In furrow, banded or T-banded. F,P,S: Maximum 7.68 fl oz/A/crop, at-plant and foliar uses. SW: Minimum 2 GPA by air; maximum 30.72 fl oz/A/crop, at-plant and foliar uses. PHI 1 for forage/feed, 21 for fodder/silage to meat and dairy animals.
		●													●	
●	●		●	●	●	●	●	●	●		●		●	●		
										●						
●	●	●	●	●	●	●		●	●		●	●		●	●	

LABELED INSECTICIDES *continued*

INSECTICIDE	LABELED CROP (Pre-Harvest Intervals for grain or fresh ear in days) FIELD	POP	SEED	SWEET	RATE PER ACRE	AT PLANTING INSECTS: PP, PPI OR PRE (SOIL TREATMENTS) ARMYWORM	BILLBUG	CORN ROOTWORM LARVAE	CUTWORM	FLEA BEETLE LARVAE	NEMATODE	SEED CORN BEETLE	SEED CORN MAGGOT	STALK BORER, COMMON or LESSER	SYMPHYLAN	WHITE GRUB	WIREWORM	AFTER PLANTING INSECTS (RESCUE) ARMYWORM, TRUE	ARMYWORM, FALL	ARMYWORM, YELLOW-STRIPED	BILLBUG	CHINCH BUG	CORN EARWORM
HERO ‡	Y(30)	Y(30)	Y(30)	Y(0)	2.6-6.1 oz: F,P,S																		
					4-10.3 oz: F,P,S	●			●				●	●		●	●	●	●	●		●	●
					10.3 oz: F,P,S																		
					4-10.3 oz: SW													●	●	●		●	●
					10.3 oz: SW																		
INDEX ‡	Y(0)	Y(0)	Y(0)	Y(0)	0.44-0.72 fl oz/1000' row				●				●		●	●	●						
					0.65-0.72 fl oz/1000' row			●															
INTREPID 2F	Y(21)	Y(21)	Y(21)	Y(3)	4-16 fl oz: F,S,SW													●					
					4-8 fl oz: P													●					
INTREPID EDGE	Y(28)		Y(1)	Y(3)	4-12 fl oz													●					
					8-12 fl oz																		●
LAMBDA-CY AG ‡	Y(21)	Y(21)	Y(21)	Y(1)	0.66 fl oz/1000' row			●	●			●	●	●		●	●						
					1.92-3.20 fl oz: F,P,S																		●
					2.56-3.84 fl oz: F,P,S													●	●	●			
					3.84 fl oz: F,P,S																	●	
					2.56-3.84: SW														●	●		●	●
LANNATE LV ‡	Y(21)	Y(21)	Y(21)	Y(0)	0.75-1.5 pt													●	●				●
					1.5 pt																		
MALATHION 5	Y(7)			Y(5)	1.6 pt													●	●	●			
MALATHION 5EC	Y(7)	Y(5)		Y(5)	1.5 pt: F; 1.6 pt: SW													●	●	●			●
MALATHION 8 FLOWABLE	Y(7)			Y(5)	0.61 pt																		
					1 pt																		
MICROTHIOL DISPERSS	Y(0)				8-15 lb																		
MUSTANG MAXX ‡	Y(7)*	Y(7)*	Y(7)*	Y(3)	0.16 fl oz/1000' row: F,P,S				●														
					1.28-2.8 fl oz: F,P,S																		
					1.76-4 fl oz: F,P,S																		●
					2.72-4 fl oz: F,P,S																		
					3.2-4 fl oz: F,P,S													●	●	●		●	
					2.24-4 fl oz: SW																	●	
					2.8-4 fl oz: SW													●	●	●			●
NURIZMA	Y(0)	Y(0)	Y(0)	Y(0)	0.05-0.07 fl oz/1000' row			●					●			●	●						

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(RESCUE)*																	COMMENTS AND RESTRICTIONS
CORN LEAF APHID	CORN ROOTWORM BEETLE/LARVAE	CUTWORM	EUROPEAN CORN BORER - 1ST GEN.	EUROPEAN CORN BORER - 2ND GEN.	FLEA BEETLE	GRASSHOPPER	HOPVINE BORER	JAPANESE BEETLE	SOD WEBWORM	SOUTHERN CORN LEAF BEETLE	SOUTHWESTERN CORN BORER	SPIDER MITE	STALK BORER, COMMON/LESSER	STINKBUG	WESTERN BEAN CUTWORM		F - field; P - popcorn; S - seed corn; SW - sweet corn; PHI - preharvest interval days for fodder, forage, stover or grazing
		●			●	●	●						●		●		Cultivation within 10' of a water body prohibited to allow for growth of a vegetative filter strip. F,P,S: Maximum 41.2 oz/A/season, at-plant and foliar uses; PHI 30 for grazing/feed/ stover, 60 for forage. SW: Maximum 27.39 oz/A/season; PHI 3 for grazing/feed. F,P,S maximum 0.3 lb a.i./A/season, SW maximum 0.2 lb a.i./A/season, including all other applications of bifenthrin products. May be applied by sprinkler irrigation.
●	●		●	●				●	●	●	●			●*			
												●					
●	●	●	●	●	●	●		●	●	●	●		●	●*	●		
												●					
																	Must be applied in-furrow at planting via microtubes or spray nozzles directed into furrow, behind planter furrow openers and in front of press wheels such that product is covered with soil; do not apply using T-band or banded applications; use water as carrier in min. 2 GPA. Max. one application/year. 2ee (exp. date not given): use directions for direct injection using a fertilizer carrier.
			●	●							●				●		F,S: Minimum 5 GPA by ground or air. P,SW: Minimum 10 GPA by ground or air. Do not apply >64 fl oz (1 lb a.i.)/A/year. SW: PHI 21 for dry fodder, 3 for forage.
			●	●							●				●		
			●	●							●				●		F: Maximum 32 fl oz/A/year, 3 applications/year. S,SW: Maximum 51 fl oz/A/year, 6 applications/year. Not for use in AZ,CA. S: PHI 28 for fodder, 7 for forage. SW: PHI 21 for dry fodder, 3 for forage.
																	At-plant: In furrow, banded or T-banded. F,P,S: Maximum 15.36/A/crop, at-plant and foliar uses; see label for maximums at specific corn growth stages. SW: Minimum 2 GPA by air; maximum 61.44 fl oz/A/crop, at-plant and foliar uses. PHI 1 for forage/feed, 21 for fodder/ silage to meat and dairy animals.
		●															
●S	●		●	●	●	●	●	●	●		●		●	●			
										●							
●S	●	●	●	●	●	●		●	●		●	●S	●	●			
●	●		●	●	●												F,P,S maximums: 5 applications/crop; 7.5 pt/A/crop; no more than 2 applications prior to tassle push. SW maximums: 28 applications/crop; 21 pt/A/crop. Certain SW varieties susceptible to injury. PHI 21 for stover, 3 for forage.
		●												●			
●						●		●				●					Maximum 2 applications/year. Minimum application interval: 7 days for F, 5 days for SW. Japanese beetle control for SW only.
	●					●											Maximum 2 applications/year. Minimum application interval: 7 days for F, 5 days for P,SW.
●	●					●											Injury may occur in whorl and silk stages. Maximum 2 applications/year. Minimum application interval: 7 days for F, 5 days for SW.
								●									
												●					Apply when mites first appear. Product is a fungicide with insecticidal properties; see label for diseases controled/suppressed at indicated rates.
																	At-plant: In furrow, banded or T-banded. F,P,S: PHI 7 for stover/forage. SW: PHI 3 for grazing/ forage. F,P,S maximum 16 fl oz (0.01 lb a.i.)/A/season, SW maximum 24 fl oz (0.15 lb a.i.)/A/ season, inclulding all other applications.
		●													●		
											●						
●	●		●	●	●	●	●	●	●	●			●	●			
	●	●			●			●									
●			●	●		●					●						
																	In-furrow use only via spray nozzles or microtubes into open furrow; must be covered with soil immediately after application. Min. 5 GPA spray volume/acre. Max. 0.0445 lb a.i./A/ application and or /year, including seed treatments. 2ee all labeled states (exp. 12/2026) for 3 GPA reduced application volume/acre in-furrow.

LABELED INSECTICIDES *continued*

INSECTICIDE	LABELED CROP (Pre-Harvest Intervals for grain or fresh ear in days) FIELD	POP	SEED	SWEET	RATE PER ACRE	AT PLANTING INSECTS: PP, PPI OR PRE (SOIL TREATMENTS) ARMYWORM	BILLBUG	CORN ROOTWORM LARVAE	CUTWORM	FLEA BEETLE LARVAE	NEMATODE	SEED CORN BEETLE	SEED CORN MAGGOT	STALK BORER, COMMON or LESSER	SYMPHYLAN	WHITE GRUB	WIREWORM	AFTER PLANTING INSECTS (RESCUE) ARMYWORM, TRUE	ARMYWORM, FALL	ARMYWORM, YELLOW-STRIPED	BILLBUG	CHINCH BUG	CORN EARWORM
OBERON 2 SC	Y(30)	Y(30)		Y(5)	5.7-16 fl oz																		
ONAGER	Y(30)			Y(28)	12-24 fl oz																		
OUTREACH SC	Y(0)	Y(0)		Y(0)	6-10 fl oz.						●												
PYGANIC EC 1.4$_{II}$	Y(0)			Y(0)	16-64 fl oz													●	●	●	●	●	●
PYGANIC EC 5.0$_{II}$	Y(0)			Y(0)	4.5-15.61 fl oz													●	●	●	●	●	
RADIANT SC	Y(28)	Y(1)	Y(1)	Y(1)	3-6 fl oz													●	●				●
					1.5-2 qt																		
					2 qt																		
RIDGEBACK	Y (30)	Y (30)	Y (30)	Y (7)	4.5-13.8 fl oz													●	●	●		●	●
					11.0-13.8 fl oz																		
					13.8 fl oz																		
SIVANTO 200 SL/ SIVANTO PRIME	Y(21)	Y(21)	Y(21)	Y(7)	7-10.5 fl oz or 7-14 fl oz																		
SMART CHOICE HC ‡	Y(0)	Y(0)	Y(0)	Y(0)	1-1.67 oz/1000' row				●				●		●	●	●						
					1.5-1.67 oz/1000' row			●															
STEWARD EC	Y(14)		Y(14)		6-11.3 fl oz														●	●			●
					9.2-11.3 fl oz																		
THIMET 20G ‡	Y(30)			Y(30)	4.5-6 oz/1000' row			●	●	●		●	●			●	●					●	
VANTACOR	Y(14)	Y(14)	Y(1)	Y(1)	1.7-2.5 fl oz	●			●					●									
					1.2-2.5 fl oz													●	●				●
					0.7-1.7 fl oz																		
WARRIOR II ‡	Y(21)	Y(21)	Y(21)	Y(1)	0.33 fl oz/1000' row			●	●			●	●	●		●	●						
					0.96-1.6 fl oz: F,P,S																		●
					1.28-1.92 fl oz: F,P,S													●	●	●			
					1.92 fl oz: F,P,S																	●	
					1.28-1.92 fl oz: SW																		

See notes and footnotes at end of table.

AFTER PLANTING INSECTS (RESCUE)																	COMMENTS AND RESTRICTIONS
CORN LEAF APHID	CORN ROOTWORM BEETLE/LARVAE	CUTWORM	EUROPEAN CORN BORER - 1ST GEN.	EUROPEAN CORN BORER - 2ND GEN.	FLEA BEETLE	GRASSHOPPER	HOPVINE BORER	JAPANESE BEETLE	SOD WEBWORM	SOUTHERN CORN LEAF BEETLE	SOUTHWESTERN CORN BORER	SPIDER MITE	STALK BORER, COMMON/LESSER	STINKBUG	WESTERN BEAN CUTWORM		F - field; P - popcorn; S - seed corn; SW - sweet corn; PHI - preharvest interval days for fodder, forage, stover or grazing
												●					Maximum 17 fl oz (0.27 lb a.i.)/A. Minimum 10 GPA by ground, 5 GPA by air. F,P: PHI 5 for forage/silage; SW: PHI 5 for forage/silage, 30 for stover. May be applied by sprinkler irrigation.
												●					Only one application/year. May be applied by sprinkler irrigation. F: 15-20 GPA by ground, minimum 5 GPA by air; PHI 30 for forage and stover. SW: May only be applied in Western U.S. (see label); minimum 20 GPA by ground, 10 GPA by air; PHI 28 for forage.
																	At planting: apply In furrow or chemigation (drip/trickle irrigation systems only) for management of 11 species of nematodes in corn. Contains a live bacteria, apply within 24 hrs of mixing. Water or liquid fertilizer are acceptable carriers. Adequate agitation and resuspension in the spray tank is critical.
●			●	●	●	●		●	●					●			OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
●					●	●		●	●					●			OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
			●	●							●				●		Maximum applications/year: 3 for F; 6 for P,S,SW. May be applied by sprinkler irrigation. PHI 3 for forage/fodder.
			●	●													
		●															
●	●	●	●	●	●	●		●		●	●				●		Treat in accordance with local economic thresholds. Use higher rate for heavy pest populations. 14-day min. application interval. Do not graze or use for feed within 30 d for F,S,P; 1 d for SW. Do not apply if heavy rainfall is imminent. Max. 27.6 fl oz/A/year.
												●					
														●			
●																	Min. application interval 7 days. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL. Do not apply >28 fl oz/A/year Sivanto 200 SL/Sivanto prime. PHI 7 days for grazing/feeding harvested forage.
																	Apply in-furrow at-plant; do not apply as surface band behind the press wheel. Max. one application/year.
	●		●	●		●		●S			●				●		5-day minimum retreatment interval. Do not make >2 applications/A/crop. Do not apply >22.6 fl oz/A/year. Armyworm: Includes Beet Armyworm. Corn Earworm: Control only for treated foliage and silks (new growth will not be protected with a single application).
														●S			
	●																Maximum one application/crop/season. At-plant: Do not apply in-furrow. After-plant: Control corn rootworm at cultivation by applying granules to base of plants ahead of cultivation shovels; control of chinch bug nymphs at cultivation limited to AK, CO, KS, LA, MS, NE, OK, TN, TX.
																	No more than 4 applications/A/crop. Maximum 5.1 fl oz (0.2 lb a.i.)/A/crop. Min. application interval 7 for F,P; 1 for S,SW. For grasshopper control, add MSO at 1 gal/100 gal, applied when populations reach economic thresholds; see label for timing.
			●	●		●					●				●		
						●											
																	At-plant: In furrow, banded or T-banded. F,P,S: Maximum 7.68 fl oz/A/crop, at-plant and foliar uses. SW: Minimum 2 GPA by air; maximum 30.72 fl oz/A/crop, at-plant and foliar uses. PHI 1 for forage/feed, 21 for fodder/silage to meat and dairy animals.
		●													●		
●	●		●	●	●	●	●	●	●		●		●	●			
										●							
●	●	●	●	●	●	●		●	●		●	●		●	●		

LABELED INSECTICIDES *continued*

INSECTICIDE	LABELED CROP (Pre-Harvest Intervals for grain or fresh ear in days) FIELD	POP	SEED	SWEET	RATE PER ACRE	AT PLANTING INSECTS: PP, PPI OR PRE (SOIL TREATMENTS) ARMYWORM	BILLBUG	CORN ROOTWORM LARVAE	CUTWORM	FLEA BEETLE LARVAE	NEMATODE	SEED CORN BEETLE	SEED CORN MAGGOT	STALK BORER, COMMON or LESSER	SYMPHYLAN	WHITE GRUB	WIREWORM	AFTER PLANTING INSECTS (RESCUE) ARMYWORM, TRUE	ARMYWORM, FALL	ARMYWORM, YELLOW-STRIPED	BILLBUG	CHINCH BUG	CORN EARWORM
XPEDIENT PLUS V ‡	Y(0)	Y(0)	Y(0)	Y(0)	0.15-0.6 fl oz/1000' row	●			●			●	●	●		●	●						
					0.3-0.74 fl oz/1000' row			●															
					3-4 fl oz PPI: F,P,S	●			●				●			●	●						
					2.56 fl oz PRE: F,P,S	●			●					●	●								
ZEAL SC	Y(21)	Y(21)	Y(21)	Y(21)	11.5-34.6 fl oz																		
ZIRONAR	Y(0)	Y(0)	Y(0)	Y(0)	6-12 fl oz						●												

Products may control/suppress many other insects; see label.
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions in Insect Management Guidelines.
F - field; P - popcorn; S - seed corn; SW - sweet corn; PHI - preharvest interval days
Y - Yes crop is labeled.
PPI - Preplant incorporated..

PP - Preplant.
PRE - Preeemergence
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

AFTER PLANTING INSECTS *(RESCUE)*																	COMMENTS AND RESTRICTIONS
	CORN LEAF APHID	CORN ROOTWORM BEETLE/LARVAE	CUTWORM	EUROPEAN CORN BORER - 1ST GEN.	EUROPEAN CORN BORER - 2ND GEN.	FLEA BEETLE	GRASSHOPPER	HOPVINE BORER	JAPANESE BEETLE	SOD WEBWORM	SOUTHERN CORN LEAF BEETLE	SOUTHWESTERN CORN BORER	SPIDER MITE	STALK BORER, COMMON/LESSER	STINKBUG	WESTERN BEAN CUTWORM	F - field; P - popcorn; S - seed corn; SW - sweet corn; PHI - preharvest interval days for fodder, forage, stover or grazing
																	Cultivation within 10' of a water body prohibited to allow for growth of a vegetative filter strip. At-plant: Apply as 5- to 7-inch T-band over open furrow, or in-furrow with seed (or banded over soil surface/broadcast for army cutworm, armyworms, stalk borer, cutworms or true armyworm). F,P,S maximum 0.3 lb a.i./A/season, SW maximum 0.2 lb a.i./A/season, inclulding all other applications of bifenthrin products.
													●				Apply in minimum 20 GPA by ground, 3 GPA by air. Use rate below minimum may result in poor control and contribute to resistance development. Coverage is essential for good control. Use of higher water volume will assure good coverage. One application per year.
																	Apply in minimum 3 GPA by ground. Early season protection of seedling injury. Also a fungicide (see Corn Diseases section).

INSECTICIDES AT PLANTING BAND OR IN-FURROW

After-plant labeled crops, insects, rates, methods and restrictions differ; see label

PRODUCT	***ARCTIC 3.2EC*** ‡	AZTEC 4.67 ‡ or AZTEC HC ‡ *(apply AZTEC HC with SMARTBOX)*	BAYTHROID XL ‡	***BIFEN 2 AG GOLD****** ‡/ ***TUNDRA EC*** ‡/ BRIGADE 2EC*** ‡	CAPTURE LFR *** ‡/ ***TUNDRA LFC****** ‡	CAPTURE 3RIVE 3D ‡	COUNTER 20G ‡	ETHOS 3D** ‡	ETHOS XB/ ETHOS ELITE** ‡	FASTAC CS ‡
CHEMICAL CLASSIFICATION ****	PYR	OP-PYR	PYR	PYR	PYR	PYR	OP	PYR	PYR	PYR
FORMULATED AS...	Liquid	Granular	Liquid	Liquid	Liquid	Liquid	Granular	Foaming Liquid	Liquid	Liquid
LABELED FOR AT-PLANT USE ON										
FIELD CORN	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
POPCORN	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
SWEET CORN	NO	YES	YES	YES	YES	YES	YES	YES	YES	NO
SEED CORN	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
LABELED APPLICATION METHODS										
PLANTING – 7″BAND	YES	YES	YES	YES	YES	YES	YES	NO	YES	NO
PLANTING –T-BAND	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES
PLANTING – IN-FURROW	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
CULTIVATION – OVERTOP	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
CULTIVATION – BASAL	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO
RESTRICTIONS										
CONTACTWITH SEED	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
MAX.# APPLICATIONS/YEAR:	NR	1	4	NR	NR	NR	1	a.i.-based	NR	NR
DAYS BEFORE										
FODDER-STOVER / GRAZING-FORAGE LIVESTOCK	0/0	NR	21/0	30/30	NR	NR	30/30	NR	NR	30/60
SOIL INSECTS LABELED FOR CONTROL OR SUPPRESSION – RATE/ACRE OR RATE/1000′ ROW *(30″ rows)*										
INSECT *some insects best controlled by specific banding, placement or incorporation/cultivation; see label*	fl oz/1000′	oz/1000'	fl oz/A	fl oz/1000′	fl oz/A	fl oz/1000′	oz/1000′	fl oz/1000′	fl oz/1000′	oz/1000′
ARMYWORM	0.3-0.6			0.15-0.3	3.4-13.6	0.23-0.92		0.21-1.05	0.2-0.98	
BILLBUG							4.5-6.0			
C.ROOTWORM LARVAE	4.0-8.0 fl oz/A*	3.0 or 1.5		0.3	6.8-17	0.46-0.92	6	0.52-1.05	0.39-0.98	
CUTWORM	0.3-0.6	3.0 or 1.5		0.15-0.3	3.4-13.6	0.23-0.92	4.5-6.0	0.21-1.05	0.2-0.98	0.15
FLEA BEETLE LARVAE							4.5-6.0			
LESSER C.STALK BORER	0.3-0.6				3.4-13.6		4.5-6.0	0.21-1.05	0.2-0.98	
NEMATODE							4.5-6.0			
SEED CORN BEETLE		3.0 or 1.5		0.15-0.3		0.23-0.92	4.5-6.0	0.21-1.05	0.2-0.98	
SEED CORN MAGGOT		3.0 or 1.5	2.0-2.8	0.15-0.3	3.4-13.6	0.23-0.92	4.5-6.0	0.21-1.05	0.2-0.98	
SYMPHYLAN							4.5-6.0			
WHITE GRUB		3.0 or 1.5	2.5-2.8	0.15-0.3	3.4-13.6	0.23-0.92	4.5-6.0	0.21-1.05	0.2-0.98	
WIREWORM		3.0 or 1.5	2.0-2.8	0.15-0.3	3.4-13.6	0.23-0.92	4.5-6.0	0.21-1.05	0.2-0.98	
RATE/ACRE – BASED ON ROW SPACING										
ROW SPACING	fl oz	lb	fl oz	fl oz	fl oz	fl oz	lb	fl oz	fl oz	oz/1000′
40″	4.0-6	2.45 or 1.23	1.6-2.1	2-3.9	5.2	3.0-12.0	4.9	2.78-13.7		1.8
38″	4.1-6	2.58 or 1.29	1.7-2.2	2.1-4.1	5.4	3.2-12.7	5.2	2.9-14.4		2.1
36″	4.4-6	2.72 or 1.36	1.7-2.3	2.2-4.4	5.7	3.3-13.4	5.4	3.1-15.2		2.2
34″	4.6-6	2.89 or 1.45	1.8-2.5	2.3-4.6	6.1	3.5-14.1	5.6	3.2-16.2		2.3
32″	4.9-6	3.06 or 1.53	2-2.6	2.5-4.9	6.5	3.8-15	6.1	3.4-17.1		2.5
30″	6.0	3.27 or 1.63	2.1-2.8	2.6-5.12	6.8	4.0-16	6.5	3.7-18.3	3.4-17	2.6
22″		NO	2.8	3.6-6.5	8.522	5.5-16	NO	5-18.3		3.6
20″		NO	2.8	3.9-6.5	8.522	6.0-16	NO	5.5-18.3		3.8

NR = Not restricted.

* 24c, 2ee or Supplemental label.

** Product contains fungicide (see Corn Disease Control and label for diseases controlled/suppressed at indicated rates).

INSECTICIDES AT PLANTING BAND OR IN-FURROW *continued*

	FORCE 6.5G ‡	FORCE 10G HL ‡	FORCE EVO ‡	***GRIZZLY TOO*** ‡	INDEX ‡	***LAMBDA-CY AG*** ‡	NURIZMA	MUSTANG MAXX ‡	SMARTCHOICE HC ‡ *(apply with SMARTBOX)*	THIMET 20G ‡	WARRIOR II ‡	XPEDIENT PLUS V ‡
	PYR	PYR	PYR	PYR	OP-PYR	PYR	DIA	PYR	OP-PYR	OP	PYR	PYR
	Granular	Granular	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Granular	Granular	Liquid	Liquid
	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES
	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES
	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES
	YES	YES	YES	YES	NO	YES	NO	YES	NO	YES	YES	YES
	YES	YES	YES	YES	NO	YES	NO	YES	NO	NO	YES	YES
	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	YES	YES	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO
	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES
	1	1	1	NR	1	NR	1	4	1	1	NR	NR
	NR	NR	NR	21/21	NR	21/1	NR	7/7	NR	30/30	21/21	NR
	oz/1000′	oz/1000'	fl oz	fl oz/1000′	fl oz/1000'	fl oz/1000′	fl oz/1000′	fl oz/1000′	oz/1000'	oz/1000′	fl oz/1000′	fl oz/1000′
			0.46-0.57									0.15-0.6
	1.8-2.3	1.25-1.5	0.46-0.57									
	1.8-2.3	1.25-1.5	0.46-0.57	0.33	0.65-0.72	0.66	0.05-0.07		1.5-1.67	4.5-6	0.33	0.3-0.74
	1.8-2.3	1-1.25		0.33	0.44-0.72	0.66		0.16	1-1.67		0.33	0.15-0.6
			0.46-0.57							4.5-6		
	1.8-2.3	1.25-1.5		0.33		0.66					0.33	0.15-0.6
			0.46-0.57									
	1.8-2.3	1.25-1.5	0.46-0.57	0.33		0.66				4.5-6	0.33	0.15-0.6
	1.8-2.3	1.25-1.5		0.33	0.44-0.72	0.66	0.05-0.07		1-1.67	4.5-6	0.33	0.15-0.6
			0.46-0.57		0.44-0.72				1-1.67			
	1.8-2.3	1.25-1.5	0.46-0.57	0.33	0.44-0.72	0.66	0.05-0.07		1-1.67	4.5-6	0.33	0.15-0.6
	1.8-2.3	1.25-1.5	0.46-0.57	0.33	0.44-0.72	0.66	0.05-0.07		1-1.67	4.5-6	0.33	0.15-0.6
	lb	lb	fl oz	fl oz	fl oz	fl oz		fl oz	lb	lb	fl oz	fl oz
				4.3	5.8-9.4	8.6		1.92	0.8-1.4	3.7-4.9	4.3	
			6.5-8.0	4.6		9.1				3.9-5.2	4.55	
	1.3-2.0	0.9-1.4	7.0-8.5	4.8	6.4-10.5	9.6	0.7-1.0		0.9-1.5	4.1-5.4	4.8	
			7.1-8.8	5.05	6.8-11.1	10.1	0.8-1.0		1-1.6	4.3-5.8	5.05	
				5.4		10.8				4.6-6.1	5.4	
	1.5-2.5	1.1-1.6	8.0-10.0	5.75	7.7-12.5	11.5	0.9-1.1	2.88	1.1-1.8	4.9-6.5	5.75	2.56-12.8
	2.0-3.4	1.5-2.2	11.0-13.5	5.75	10.5-17.1				1.5-2.5	NO		
	2.3-3.8	1.6-2.5	12.0-15.0	5.75	11.5-18.8		1.3-1.7	3.84	1.6-2.7	NO		

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

*** May be used with liquid fertilizer

**** Chemical classification abbreviations, PYR = Synthetic Pyrethroid; OP = Organo Phosphate, DIA = Diamide.

MANAGEMENT WORKSHEET FOR EUROPEAN CORN BORER

EUROPEAN CORN BORER – To decide whether it will be profitable to treat a field to control 1st generation corn borers, the following information is needed: ***1.*** Average percentage of plants with whorl feeding; ***2.*** Average number of live larvae per infested plant; ***3.*** Expected yield per acre; ***4.*** Value of grain per bushel; ***5.*** Cost per acre for insecticide treatment. Enter these data into the worksheet below to calculate the gain or loss for applying an insecticide to control corn borer.

MANAGEMENT WORKSHEET FOR FIRST-GENERATION CORN BORER

_____ %(Expressed as a decimal) of 100 Plants Infested x _____ Average No. Borers/Infested Plant = _____ Borers/Plant
(determined by checking whorls from 10 plants)

_____ Borers/Plant x 5-7 % Yield Loss/Borer* = _____ % Yield Loss

_____ % Yield Loss x _____ Expected Yield (Bu/A) = _____ Bu/A Loss

_____ Bu/A x $ _____ Price/Bu = _____ Loss/A

$_____ Loss/A x _____ % Control = $ _____ Preventable Loss/A

(0.7-0.9 for granules)

(0.4-0.7 for sprays)

(0.75-0.95 for insectigation)

$_____ Preventable Loss/A - $_____ Cost of Control/A =

$_____ Gain (+) or Loss (-) per acre if treatment is applied.

* Infestation Period	
Early Whorl	5.5% Loss
Late Whorl	4.4% Loss
Pretassel	6.6% Loss

To determine whether it will be profitable to treat a field to control 2nd generation corn borers, the following information is needed: ***1)*** Average number of ECB egg masses per plant; ***2)*** Crop maturity; ***3)*** Expected yield per acre; ***4)*** Value of corn per bushel; ***5)*** Cost per acre for insecticide treatment. Enter these data into the worksheet below.

MANAGEMENT WORKSHEET FOR SECOND-GENERATION CORN BORER

_____ Number of Egg Masses/Plant x 2 Borers/Egg Mass* = _____ Borers/Plant
(cumulative counts, taken 7 days apart)

_____ Borers/Plant x 3-4.4 % Loss/Borer** = _____ % Yield Loss

_____ % Yield Loss x _____ Expected Yield = _____ Bu/A Loss

_____ Bu/A x $ _____ Price/Bu = _____ Loss/A

$_____ Loss/A x 0.6-0.8 (0.7-0.9 insectigation) Control = $_____ Preventable Loss/A

$_____ Preventable Loss/A - _____ Cost of Control/A =

** Infestation Period	
Pollen Shed	4.0% Loss
Kernel Set	3.0% Loss
Dough	2.0% Loss
Does not include yield loss due to stalk breakage or ear drop.	

* Assumes survival rate of 2 borers/egg mass.

$_____ Gain (+) or Loss (-) per acre if treatment is applied.

For best results, treatment should be applied soon after egg hatch to kill the young larvae before they bore into the plant. The larvae begin tunneling into the stalks about 10 days after hatching. Occasionally, two treatments may be necessary for satisfactory control if egg laying extends over a 3- to 4-week period.





MANAGEMENT WORKSHEET FOR BLACK CUTWORM

_____ Yield Loss Factor (Table 1) X

_____ % (expressed as a decimal) of Plants cut X

_____ Expected Yield X

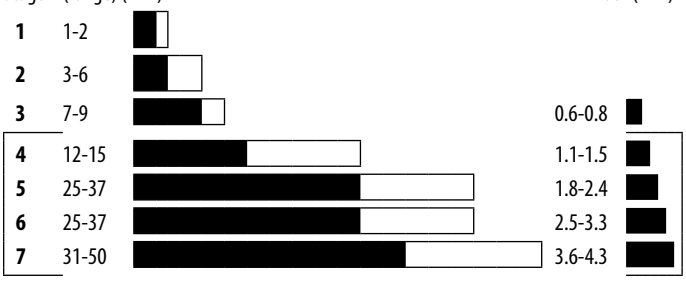
_____ price per bushel.

	Approximate Days Left to Feed	Average moisture conditions Number of leaves (collar visible)					Inadequate Moisture conditions Number of leaves (collar visible)				
Average Instar		1	2	3	4	5	1	2	3	4	5
3	21	2.4	1.8	0.8	0.7	0.7	1.6	1.2	0.4	0.4	0.2
5	14	1.2	1.4	0.6	0.3	0.3	0.8	0.9	0.3	0.2	0.2
6	5	0.7	0.2	0.1	0.1	0.1	0.5	0.2	0.1	0.0	0.0

Yield Loss Factors

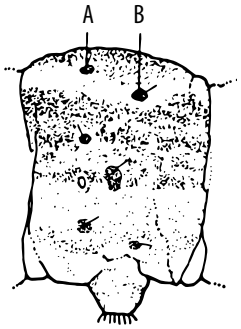
1. Determine instar of larvae present. **2.** Determine the average number of leaves per plant. **3.** Assess soil moisture conditions: a) adequate – soil moisture not limiting, rain forecast within 24 to 48 hours; b) inadequate – top three to four inches of soil very dry, rain not forecast for two to four days. **4.** Use the adjacent table to determine yield loss factor. **5.** Use the adjacent formula and calculate yield loss. **6.** If the result is larger than the cost of insecticide treatment per acre, an insecticide treatment is warranted.

Instar stage can be determined using the following figure of body length and head - capsule width of black cutworm larvae.



Adapted from University of Illinois

COMPARISON OF DINGY AND BLACK CUTWORMS



Abdominal Segment

DINGY CUTWORM

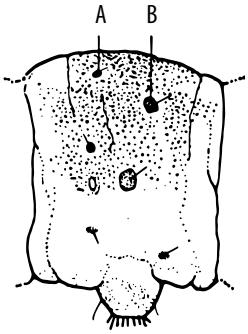
Overwinters as small larva.

Associated with legumes.

Pale gray to reddish brown with mottled pigmentation.

Light gray V-shaped markings on back.

Tubercles A and B of about equal size.



Abdominal Segment

BLACK CUTWORM

Doesn't overwinter in Northern States; migrates.

Found on many crops, particularly in flooded or weedy areas.

Light gray to nearly black with skin granulations.

Indistinct pale stripe on back.

Tubercle A much smaller than tubercle B.

INSECT MANAGEMENT GUIDELINES





ARMYWORMS FALL, TRUE, YELLOW STRIPED: For fall armyworms, Herculex I hybrids have provided some protection. **ETs:** treat whorl stage of corn when 25% of plants have 2 or more larvae or 75% of plants are infested with 1 larva. Ground sprays directed over the row are more effective than broadcast treatments. Treat tasseled corn if defoliation enters the ear zone and larvae are still present on plants or underground debris. Treat only infested portion of field. Problems are expected to increase with reduced tillage when grassy weed control is not adequate. Migration into corn from surrounding grain or grassy areas may be controlled with border treatments if detected promptly. Use higher rate for larger larvae. **SWEETCORN ET:** treat when 25-30% of plants have 2 or more worms or 75% of plants have 1 or more worms. Migrating army worms: Treat a couple of swaths ahead of the infestation in the direction of movement to form a barrier strip. Treat when tassels are just beginning to emerge.



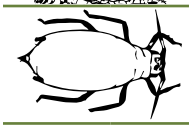
BILLBUG: Damage occurs early in season usually in low lands near creeks. The adults destroy the growing point in the stalks just below or above the growing point. Infested plants become twisted and distorted. Usually associated with nutsedge infested areas. Cruiser and Poncho seed treatments are labeled.



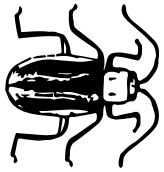
CHINCH BUG: Refrain from planting corn in wheat stubble or adjacent to wheat fields. Treat border rows at the start of migration. In treating infested fields or border rows, use drop nozzles, high gallonage, and direct spray on either side of the plants near the base. Be aware that there may be state emergency exemptions (EE) labels. Another option is to drill or plant a 50 ft barrier strip of sorghum or sudan between corn and wheat. This will temporarily reduce the amount of migration into the corn and concentrate on spraying this barrier. **False chinch bugs:** Adults and nymphs are similar in appearance to chinch bug but gray to brown in color. Somewhat easier to control than true chinch bug not included on any insecticide label. Cruiser and Poncho seed treatments provide early season control.



CORN EARWORM: Damage occurs June to frost. Use of an insecticide to control ear damage in corn is impractical in field corn. Control difficulty is great as moths lay eggs on freshly emerged silks.



CORN LEAF APHID: **Corn Belt ET:** on whorl or pre-tassel stage corn, if colonies are present on 50% of plants and the crop is under stress; 3 weeks before tasseling, 15 or more aphids per whorl; 30 or more aphids 2 weeks before tasseling. If treatment is considered, it should be applied before tassels emerge. **SWEETCORN ET:** apply during late whorl to early tassel if 50% of plants have light to moderate infestations (50-400 aphids/plant) and plants are drought stressed. May treat if corn is not drought stressed when aphid density exceeds 400/plant.



CORN ROOTWORM BEETLE: **Corn Belt ET:** control when silk clipping is occurring on 25-50% of plants during pollen shed. Can interfere with pollination by chewing silks to less than 1/2" in length. **Great Plains ET:** 8-10 beetles per plant when 0% of the silks have emerged. Once silks are brown, treatment is not necessary. Controlling rootworms to prevent egg laying and controlling beetles to prevent silk clipping do not overlap in time. Beware of spidermite outbreaks when foliar insecticides are applied for rootworm control in Great Plains. Do not apply foliar insecticides during bees' normal foraging hours. **SWEETCORN ET:** when an average of 5 or more beetles per silk mass are found during the first week of pollen shed, before 75% silking, control may be necessary. Another management threshold uses silk clipping. When silk clipping is occurring on 25 to 50% of the plants during pollen shed, control would be justified. If few or no rootworm beetles were present in the field the previous year, or if sweetcorn was grown in the field the previous year and a regular spray schedule was followed during silking, there is less chance of a damaging infestation.

Control for next year **ET:** Use of a soil-applied insecticide the following year may be economical if beetles exceed the following levels. Average number of beetles per plant in corn expected to produce an economical loss in corn the following year.* *Multiply thresholds by 50% for ear zone counts.

Average Number of Rootworm Beetles Per Plant

Multiply by 0.5 for ear zone counts. The whole-plant sampling method has proven to be more reliable than ear zone counts.

Plants/Acre	Continuous Corn	First Year Corn
20,000	0.90	0.68
24,000	0.75	0.56
28,000	0.64	0.48
32,000	0.56	0.42



CUTWORM: See management worksheet on the following page. Late planting, early infestations of weeds , especially winter annuals such as chickweed, prior to planting and an abundance of crop residue attract cutworm egg laying. Controlling emerged weeds 8 or more days prior to planting allows vegetation to dry out and larvae starve before corn emerges. Preventive planting time soil insecticide treatments provide erratic control. Usually cutworms are best controlled by prompt rescue treatments after plants are up and early damage signs detected. Dry soil reduces effectiveness of sprays. If soil is crusted, use higher rate and GPA. Spray in early evening, if possible. For black cutworm, Herculex I hybrids have provided some protection. **Black cutworm ET:** Black cutworm larva begin cutting at 4th instar stage. Plants that are cut below ground are less likely to survive. (% plants wilted or cut) 2-3% if larvae 0.5 - 0.75" long or 5% if larvae 1.0" long. ETs are lowered with corn prices over historical levels. If corn is $5-6, lower ET from 2-3% to 1% cutting for black cutworm larva <3/4" and from 5% to 2-3% for 1" larva. **Sandhill cutworm -** Rescue treatments are less effective than for black cutworm. Apply at planting insecticides in-furrow or T-band. **SWEETCORN ET:** begin scouting as corn emerges and continue until mid-June. Treat when 3-6% of the plants are cut and small larvae (<3/4") are present.



EUROPEAN CORN BORER FIRST GENERATION: Scout earliest planted fields during moth flight and into egg laying and early - hatching period. Hybrids with tolerance to leaf and sheath-collar feedings are becoming available. Ear droppage is becoming less common even though significant loss can occur. Timing of treatment is critical. Tendency is to treat too late. ECB survival is weather dependent. Scouting should begin when extended leaf height is 17 inches. Granular formulations are preferred for management of ECB in whorl stage of corn. **ET:** use "Management Worksheet" earlier in this section.



EUROPEAN CORN BORER SECOND GENERATION: Scout fields at green silk and first pollen shed when second flight begins. Use – previous "Management Worksheet". Try to prevent stalk and leaf sheath tunneling for maximum net return. Field corn infested at blister stage may be past effective treatment. Granular formulations are more effective than liquid formulations of the same product when comparing control of later generations of ECB. Be aware of spider mite species and their mite and insect predators when managing ECB control.



FLEA BEETLE: **ET:** 4-5 beetles per plant from corn emergence to 4-leaf stage and leaves are severely damaged and plants are being killed. Also, see seed treatment section. **SWEETCORN ET:** use resistant varieties for Stewart's Wilt which is vectored by the beetle.



GRAPE COLASPIS: A 1/8" grub-like larva that prunes roots. Rootworm insecticides are generally ineffective. Smart Choice 5G is labeled for control. Cruiser seed treatment also is labeled. No effective rescue treatment. Larva overwinter in the soil.



GRASSHOPPER: **Corn Belt ET:** 8-14 hoppers per square yard within field or 21-40 in field margins or if clipping silks, ear tip damage, or defoliation has progressed above the ear. Treat when hoppers are small. **Great Plains ET:** 5 to 8 per square yard are present during the period from just before pollination until pollination is complete. Use high rates when controlling large hoppers.



HOP VINE BORER: Where repeated infestations occur along field margins, fence rows or waterways, apply Arctic 3.2 EC, Warrior II, or Grizzly Too at the high rate used for cutworm when stand loss is first noticed. Spray before larva bores into plant. Within fields, spot treat grassy trouble spots at emergence. Long term elimination of infield trouble spots depends on control of grassy weeds (e.g. quack grass, wirestem muhly, woolly cupgrass). Corn rootworm insecticides will not prevent stand loss.



JAPANESE BEETLE: **ET:** treatment during silking if 3 or more beetles/ear are present and pollination <50% complete or silks are clipped to < 0.5". Adult ID aid is five prominent white tufts of hair on margins of wing covers.



NEMATODE: Nematode feeding on corn can stunt plants and cause leaves to turn pale green or yellow and wilt. Damage is rarely field wide, more often occurring in patches that have non-discrete edges that fade into healthy-looking plants. Nematode damage can occur on all soil textures. Continuous corn favors nematode survival. Nematicides should be used only when soil analysis shows high numbers of parasitic nematodes. Check with laboratory on sampling procedures and timing. Currently only Counter 20G banded or in-furrow is labeled to provide limited control. Also, see Avicta Duo Corn seed treatment.



SEED CORN BEETLE: Apply seed treatment containing imidacloprid (Gaucho), thiamethoxam (Cruiser), or clothianidin (Poncho), if a banded or in-furrow insecticide is not used.



SEED CORN MAGGOT: Apply seed treatment containing imidacloprid (Gaucho), thiamethoxam (Cruiser), or clothianidin (Poncho), if a banded or in-furrow insecticide is not used. Most common in fields with decaying organic residue that attracts fly (spring tilled sod or manure).



SLUGS: SLUGS: Slugs are invertebrates. Lay eggs in moist concealed locations on and under plant debris. Cool moist conditions and plant residues are favorable for slug development. Damage corn by rasping stem and leaf tissue. They are capable of consuming young plants. To find them you will have to dig in the planter slot as well as search through plant residue. They do not actively feed during the day but you should be able to find dried, silver-to-white slime trails on damaged leaves. Metaldehyde bait is the material registered for slug control. Research indicates that while these baits are effective, continuance of climatic conditions favorable to slugs will result in sporadic control. Deadline Bullets and Deadline M-Ps (metaldehyde pellets) are another treatment: cost >$30/A.



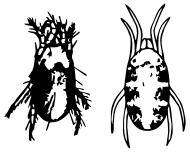
SOD WEBWORM: **ET:** None developed. Refer to cutworm thresholds.



SOUTHERN CORN LEAF BEETLE: Gray to bronze adult (3/16"). Shield behind the head has 3 "teeth" on each side. Chews holes in leaves or notches on margins in spring. Most common in no-till or following sod. Cruiser and Poncho are labeled for early season control. ET: no economic threshold established but 25% of seedlings with leaf feeding or 3% stem feeding suggested.



SOUTHWESTERN CORN BORER: Bt corn hybrids with resistance throughout the plant provides some control. YieldGard and Herculex I hybrids have provided season long protection. **ET:** scout fields to verify egg laying – first application when 50% adult emergence then make second application 14 days later. Treat before larva bores into plant. Egg mass has 2-3 orange-red lines. Treat when 20- 25% of plants have eggs or small larvae. Second generation feeding is most damaging.



SPIDER MITES: Banks grass mite is easier to control than 2-spotted mite. Generally, registered miticides will not control 2-spotted spider mite in tassel-stage corn in Texas. Dimate only gives temporary suppression of mite populations. Repeat applications are not recommended if the first failed to give reasonable control. Insecticides give reasonable control. Insecticides applied for corn borers can kill mite predators. **Spider mite ET:** Treatment should be based on how long the field has been infested, mite density including eggs, mite location on the plant, moisture conditions and plant symptoms. Foliar insecticides are recommended from R1 to R4 (slilking to dough) when plants have mites at or around the ear leaf and 15-20% leaf discoloration. Note: With aerial application use 3-5 GPA of spray. **Great Plains ET:** prior to dent = 15-20% or more of the total leaf area is covered with active mite colonies and moderate damage is apparent.

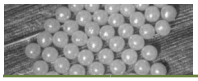


STALK BORER, COMMON OR LESSER: Insects over-winter in grassy field margins. Grasses should be killed with glyphosate (11 days) or with Gramoxone SL 3.0 (3-5 days) and insecticide applied after the interval indicated following herbicide treatment but before borers enter corn plants. Insecticide treatment only reduces, not eliminates, stand loss. Long term elimination of in-field trouble spots requires control of grassy weeds. Corn rootworm insecticides at planting will not prevent stand loss. Border row infestations will occur as worms migrate from grass terraces and fence lines. Scout these areas at 1,300-1,400 degree days (Base 41° F) and treat between 1,400 and 1,700 degree days. Mowing or burndown of grass will initiate movement. Current Bt hybrids offer no protection.



STINKBUG: **ET:** Seedling corn - treat when corn emerging from poorly closed seed slots show feeding damage. Corn <2' tall: treat if 10% of plants have >1 stink bugs. Pre-silk: treat if 5% of plants infested. Grain fill to hard dough: 10% of plants infested.





WESTERN BEAN CUTWORM: Chances of control will be reduced if applications are delayed till silks turn brown. Apply before larva bores into stalks or ear. Hybrids with Herculex, Herculex Xtra and Smart Stax provide control - see page 76. **Great Plains ET:** 8% of field corn plants (5% of seed or popcorn plants, 4% for processing sweet corn) are infested with newly hatched and/or eggs on upper surface of upper-most leaves or look for larvae in the tassel. ET based on $2/bu corn.





WHITE GRUBS: Row crop damage is generally worse the first and second year after a sod or forage crop. Use in-furrow treatments of Aztec 4.67G, Aztec HC, Capture/Tundra/Bifen 2 AG Gold, Warrior II, Grizzly Too, Force 6.5G, Force 10G HL, Force Evo, Smart Choice 5G, or Counter 20G. Do not confuse annual grubs which do little or no damage with True grubs which cause severe injury. True grubs have two rows of parallel bristles on the underside of the tip the abdomen (raster). White Grub Species Identification: The potential for crop injury depends on the species of white grub present. The true white grub as the May Beetle will cause corn injury. The other two species shown will rarely cause injury unless corn is planted early. To determine which species is present in the field, one must look at the "raster" area at the tail-end of the grub. True white grub has a "zipper." Fields near cottonwoods or willows may have increased risk of grubs. See at-planting treatments at the beginning of this section and seed treatment section. Texas ET: 1 sq ft soil sample contains 1 grub; if grubs exceed more than 2/sq ft, broadcast insecticide.



WIREWORM: Wireworm control must be accomplished at planting time because rescue treatments are ineffective. Wireworms start their movement upward to germinating seeds as the soil temperature rises to 55°F and migrate down from the root system into the cool soil as the temperature exceeds 75°F. Two to six years may be required to complete their life cycle. Row crop damage is generally worse the first and second year after a sod or forage crop. Research indicates best control involves the use of an insecticide seed treatment plus an in-furrow treatment. Light infestations can be controlled with thiamethoxam, or imidacloprid seed treatments. Wireworm potential can be assessed using "Bait Station Technique"; however, it is very labor intensive. An average of one wireworm per station represents an economic infestation and a planting time control treatment should be considered. See At-Planting table in beginning of this section or seed treatment section.

FUNGICIDE	FIELD CORN	POPCORN	SEED CORN	SWEET CORN	DISEASES: AFLATOXIN PRODUCING FUNGUS	ANTHRACNOSE	BACTERIAL STALK ROT	EYE SPOT	GRAY LEAF SPOT[1]	HELMINTHOSPORIUM LEAF BLIGHT[1]	NORTHERN CORN LEAF BLIGHT[1]	NORTHERN CORN LEAF SPOT[1]	PHYSODERMA BROWN SPOT	RHIZOCTONIA	RUST (PUCCINIA GENERA)[2,3]	SOUTHERN CORN LEAF BLIGHT	TAR SPOT	YELLOW LEAF BLIGHT
ABSOLUTE MAXX	Y	Y	Y	Y		●		●	●	●	●				●	●		
ACTINOVATE AG	Y	Y	Y	Y										●S				
ADASTRIO/FORCIVO[5]	Y	Y	Y	Y		●		●	●		●	●	●		●	●	●	
AFFIANCE	Y	Y	Y			●		●	●		●	●			●	●	●*	
AFLA-GUARD GR	Y	Y		Y	●													
ALTIPRO	Y	Y	Y			●		●	●	●	●	●	●		●	●	●	
APROACH	Y		Y	Y		●	●	●	●		●	●	●		●		●*	●
APROACH PRIMA	Y		Y			●		●	●		●	●	●		●	●	●*	●
BADGE SC/BADGE X2	Y	Y	Y	Y			●											
BRAVO ULTREX/BRAVO WEATHER STIK or ***PRAIZ***			Y	Y						●					●			
CHAMPION++	Y	Y	Y	Y		●												
DELARO 325 SC	Y	Y	Y	Y		●		●	●	●	●	●	●		●	●	●*	
DELARO COMPLETE	Y	Y	Y	Y		●		●	●	●	●	●	●		●	●	●	
DITHANE F-45 RAINSHIELD		Y		Y		●		●		●	●	●	●		●	●		●
DOMARK 230 ME	Y	Y	Y					●							●		●*	
ELATUS				Y		●		●	●		●	●						●
ETHOS ELITE LFR ‡[4]	Y	Y	Y	Y										●S				
ETHOS XB ‡[4]	Y	Y	Y	Y										●S	●S	●S		
ETHOS 3D ‡[4]	Y	Y	Y	Y										●S				
EVITO 480 SC	Y		Y			●		●	●		●	●			●	●		
EVITO T	Y		Y	Y		●		●	●		●	●			●	●		
EVERLON/PRIAXOR	Y	Y	Y	Y		●		●	●		●	●	●		●	●		●
HEADLINE SC	Y	Y	Y	Y		●		●	●		●	●	●		●	●		●
HEADLINE AMP	Y	Y	Y	Y		●		●	●		●	●	●		●	●		●
KOCIDE 3000	Y	Y	Y	Y			●											
LUCENTO	Y	Y	Y					●	●		●	●	●		●	●	●*	
MANZATE MAX	Y	Y	Y	Y					●	●					●			
MANZATE PRO-STICK	Y	Y	Y	Y					●	●					●			
MINUET	Y	Y	Y	Y										●				
MIRAVIS NEO	Y	Y	Y	Y		●		●	●		●	●	●		●	●	●	●
ONSET 3.6L	Y	Y	Y	Y					●		●	●			●	●		
PENNCOZEB 75DF	Y	Y	Y	Y		●			●	●					●			
PROLINE 480 SC	Y	Y	Y	Y	●	●		●	●		●	●			●	●		
PROSARO PRO 400 SC	Y	Y	Y			●		●	●	●	●	●			●	●	●	
QUILT XCEL/AFRAME PLUS	Y	Y	Y	Y	●	●		●	●	●	●	●	●		●	●	●*	
REVYLOK	Y	Y	Y	Y		●			●		●	●			●	●	●•	
REVYTEK	Y	Y	Y	Y		●		●	●		●	●	●		●	●	●	●
RUSTEASE	Y		Y					●	●	●	●	●			●	●		
SERENADE ASO	Y	Y	Y	Y										●	●	●		
STRATEGO YLD/***PROTEGAM YLD***	Y	Y	Y	Y		●		●	●	●	●	●	●		●	●		
TETRABAN	Y	Y		Y		●		●	●		●	●		●	●	●		
TOPAZ/TILT	Y	Y	Y	Y				●	●	●	●	●			●	●		
TOPGUARD	Y	Y	Y					●	●		●	●			●			●
TOPGUARD EQ	Y	Y	Y			●		●	●		●	●			●	●	●*	

See notes and footnotes at end of table

LABELED FUNGICIDES *continued*

FUNGICIDE	FIELD CORN	POPCORN	SEED CORN	SWEET CORN	DISEASES: AFLATOXIN PRODUCING FUNGUS	ANTHRACNOSE	BACTERIAL STALK ROT	EYE SPOT	GRAY LEAF SPOT[1]	HELMINTHOSPORIUM LEAF BLIGHT[1]	NORTHERN CORN LEAF BLIGHT[1]	NORTHERN CORN LEAF SPOT[1]	PHYSODERMA BROWN SPOT	RHIZOCTONIA	RUST (PUCCINIA GENERA)[2,3]	SOUTHERN CORN LEAF BLIGHT	TAR SPOT	YELLOW LEAF BLIGHT
TRIVAPRO	Y	Y	Y	Y		●		●	●	●	●	●	●		●	●	●	●
VELTYMA	Y	Y	Y	Y		●		●	●		●	●	●		●	●	●	●
XYWAY 3D	Y	Y	Y			●*			●		●		●*		●	●	●*	
XYWAY LFR	Y	Y	Y	Y		●S*			●		●		●*		●	●	●*	
ZIRONAR	Y	Y	Y	Y										●				

Products may control/suppress many other diseases; see label and Fungicide Resistance Management in the Technical Information section

● - control; ●S - suppression

* - 24c, 2ee or Supplemental label; see Comments and Restrictions in Disease Treatment Guidelines

[1] These diseases are caused by various **Helminthosporium fungi.** To reduce incidence, plant resistant hybrids, use tillage to bury crop residues and rotate crops. Application of fungicide is most economical for seed corn or other high value corn.

[2] Spores of rust (Puccinia genera) are carried in southerly winds.

[3] To reduce incidence, plant resistant hybrids. Tillage and crop rotation are not effective.

[4] Product contains insecticide (see Corn Insect Control and label for diseases controlled/suppressed at indicated rates).

[5] For Adastrio and Forcivo, only Adastrio has a 24c label for Tar Spot.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

DISEASE MANAGEMENT GUIDELINES

ANTHRACNOSE	Leaf blight and stalk rot disease. Fungus survives in corn debris and infected seed. Control includes resistant hybrids, rotation to non-grass crops, tillage and clean seed.
RUSTS	Primarily a problem only in susceptible in-breds. Favored by cool temperature (61-77 °F), and high humidity. Not controlled by crop rotation or tillage.
GRAY LEAF SPOT	Wet leaves for 11-13 hours favor infection. Control with resistant hybrids, rotation to non-grass crops or tillage to bury crop residue.
LEAF BLIGHTS AND SPOT	Wet leaves for 6-12 hours with temperatures between 66-80°F degrees favor infection. Control with resistant hybrids, rotation to non-grass crops or tillage to bury crop residue.
EYE SPOT	Control with resistant hybrids. Use crop rotation or tillage to bury crop residue.
FROGEYE LEAF SPOT	Use resistant varieties.Tillage and crop rotation reduce survival of spores. Spray fungicides from R2-R5.
PHYTOPTHORA	Control with tolerent varieties and crop rotation to non-legume crops. Disease favored by warm, wet soils.

Fungicide application at the VT/R1 stages of corn is generally most effective. Applications as late as R3 are less effective.

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops*	Rate/Acre	PHI *(grain-ear)*	G/F	Comments/Restrictions
ABSOLUTE MAXX	F,P,S SW	5-6 fl oz	21 7	21/36 7/49	Apply when disease first appears. For optimum disease control, the lowest labeled rate of a spray surfactant, such as MasterLock or PowerLock may be tank-mixed.
ACTINOVATE AG	F,P,S,SW	1-12 oz	0	0	At-plant or in-furrow: 1-3 oz/A in 10-200 GPA. Foliar: 3-12 oz/A in 10-150 GPA; reapply every 7-14 days; best results with spreader-sticker (adjuvant).
ADASTRIO/FORCIVO	F,P,S,SW	7-9 oz	13	7/30	Max. single application 9 fl oz/A. Max. 2 applications/year. Max. 18 fl oz/A/year. Do not use adjuvant after V8 and prior to VT. PHI 7 days for forage, 30 days for stover/grain of F,P; 14 days for SW.
AFFIANCE	F,P,S	10-17 fl oz	7	21/NL	Application between V4-V8: Early season disease control/suppression; if disease pressure develops later in season, apply again between VT-R3. Application between V8-R3: Apply prior to disease development; a second application may be made no fewer than 7 days later; do not exceed 17.06 fl oz/A/year. Make no more 2 applications/year, or more than 2 sequential applications before switching MOA. Do not tank mix with adjuvant or COC between V8 and VT. May be applied by air or chemigation. 2ee several states (exp. date not given) for control of tar spot at 10-17 fl oz/A.
AFLA-GUARD GR	F,P,S	Up to 20 lb	NR	NR	Apply between V10-V12 and R1 by ground or air.
ALTIPRO	F,S,P	4-6 fl oz: Early Season 8-12 fl oz	14	Forage, 7	For Early Season control of anthracnose, eyespot and grayleaf spot, apply Altipro as a broadcast foliar spray at V4 (4 leaf collar) to V7 (7 leaf collar) growth stages when conditions are favorable for disease development. For season-long control of these diseases and the diseases listed, apply a sequential treatment of Altipro at 8.0 -12.0 fl. oz./ acre from VT (lowest branch on the tassel is visible but the silks have not yet emerged) through R2 (blister) growth stages. Ground: Apply in a minimum application volume of 10 gallons/Acre. Aerial: Apply in a minimum application volume of 2 gallons/Acre. Minimum retreatment interval is 7 days. DO NOT exceed 5 applications per year of this product at the high rate (12.0 fl. oz). The inclusion of an adjuvant in the spray tank, for applications made through V8 (the collar of the eighth leaf is visible) and after tassel emergence (VT) is advised.
APROACH	F,S,SW	3-4 fl oz (Low rate) or 6-12 fl oz (High rate)	7	0/NL	Low rate: Make a single application between V4 to V7 for early season disease control/suppression. High rate: Make additional 6 to 12 fl oz applications at 7- to 14-day intervals. For best results apply between VT to R3 and make applications prior to disease development. Use higher rate and shorter interval with high disease pressure. Make no more than 2 sequential applications before switching MOA. Do not tank mix with adjuvant or COC between V8 and VT. Do not exceed 36 fl oz/A/crop. May be applied by air or chemigation. 2ee (exp. date not given) for control of tar spot at 6-12 fl oz/A.
APROACH PRIMA	F,S	3.4-6.8 fl oz	30	21/NL	Apply lower rate early season for preventative control/suppression. Apply rate range prior to disease development, using higher rate and shorter interval when disease pressure is high. Do not tank mix with adjuvant or crop oil between V8 and VT. Do not exceed 6.8 fl oz/A/crop. May be applied by air or chemigation. 2ee (exp. date not given) for control of tar spot at 3.4-6.8 fl oz/A.

See notes and footnotes at end of table

Fungicide	Labeled Crops*	Rate/Acre	PHI *(grain-ear)*	G/F	Comments/Restrictions
BADGE SC/BADGE X2	F,P,S,SW	0.5-2.5 lb	NL	NL/NL	Begin treatment when conditions first favor disease development and repeat every 7 to 10 days. Maximum 15 lb/A/year.
BRAVO ULTREX/ BRAVO WEATHER STIK or ***PRAIZ***	S,SW	0.7-1.8 lb or 0.75-2 pt	14	NO/NO	Use sufficient water for adequate coverage. Repeat at 4- to 7-day intervals or as needed for control. Do not apply to processing sweet corn. May be applied by air or chemigation.
CHAMPION++	F,P,S,SW	0.5-1.75 lb	0	NL/NL	Max. 14 lb/A/year. Begin applications when disease first appears. Min. treatment interval 7-10 days.
DELARO 325 SC	F,P,S	4-6 fl oz: Early Season 8-12 fl oz: Season Long	14	0/14	Early Season: Control anthracnose, eyespot and gray leaf spot, with broadcast foliar spray at V4-V7 when conditions are favorable for disease development. For season-long control of these and other listed diseases, apply a sequential treatment at 8-12 fl oz/A from VT through R2. Or apply when disease first appears and continue on 7- to 14-day interval if disease presists. Do not tank mix with adjuvants between V8 and VT. Maximum 24 fl oz/A/year. May be applied by air or chemigation. 2ee several states (exp. date not given) for control of tar spot at 8-12 fl oz/A.
DELARO COMPLETE	F,P,S SW	4-12 fl oz 8 fl oz	14 0	14/14 0/14	4-6 fl oz/A for early season control of anthracnose, eyespot and gray leaf spot as foliar spray at V4-V7. 8-12 fl oz/A for season-long control as sequential from VT-R2. Adjuvant recommended for applications through V8 and after VT. Min. application interval 14 d. Min. 10 GPA by ground, 2 GPA by air. Max. 24 fl oz/A/year in F, P, S; 32 fl oz/A/year in SW. See label for important resistance information. Does not control Physoderma brown spot in SW corn.
DITHANE F-45 RAINSHIELD	P,S,SW	1.2 qt	7	NO/NO	Start applications when disease symptoms first appear and, depending on severity of infection, continue on a 4- to 14-day schedule. Use sufficient water for thorough coverage. Start applications when disease first appears and repeat at 4- to 7-day intervals. East of the Mississippi River, AR and LA, do not apply more than 18 qt/A/crop. West of the Mississippi River, except AR and LA, do not apply more than 6 qt/A/crop to livestock. May be applied by air or chemigation.
DOMARK 230 ME	F,P,S	4-6 fl oz	NR	NR/NR	Early (V4-V8) or Late (VT-R3) application. Maximum 1 application/year. Do not tank mix with adjuvants between V8 and VT. May be applied by air or chemigation. 2ee many states (exp. date not given) for control of tar spot at 4-6 fl oz/A.
ELATUS	SW	5-7.3 oz	7	NL/NL	Apply prior to disease onset when conditions are conducive for disease. Apply no closer than 14 days apart. Resistance management: No more than 2 applications before switching to non-Group 7 or 11 fungicide. See label for recommended use of adjuvants/surfactants. Do not apply more than 14.6 oz/A/year, or more than 0.136 lb a.i./A/year of benzovindiflupyr-containing products, or 2.0 lb a.i./A/year of azoxystrobin- containing products. May be applied by chemigation.
ETHOS ELITE LFR ‡	F,P,S,SW	At-plant: 0.28-0.98 fl oz/1000' row PPI: 4.0-5.3 oz PRE: 3.4 fl oz	NL	NL	At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed, or broadcast; see label for guidance. Suppression of "Damping off," seedling blights, and root or crown diseases caused by Pythium, Rhizoctonia, Fusarium, or Phytophtora. Product contains insecticide; see Corn Insect Control and label for insects controlled at indicated rates.
ETHOS XB ‡	F,P,S,SW	At-plant: 3.4-17 fl oz PPI/PRE: 3.5-5.3 fl oz Foliar: 2.8-8.5 fl oz	30,1	30,1	Can be mixed with liquid fertilizer. Also controls seedling diseases: Fusarium, Phytophthora, Pythium, Rhizoctonia. Product contains insecticide; see Corn Insect Control and label for insects controlled at indicated rates. PHI 30 days F, P, S, 1 day for SW for grazing or cut treated crops for feed.
ETHOS 3D ‡	F,P,S,SW	0.21-1.05 fl oz/1000' row	NL	NL/NL	For use in a 3RIVE 3D system only. Can be mixed with liquid fertilizer. Apply in-furrow with seed. Field corn: Max. 0.3 lb/A/season bifenthrin a.i. including all application methods. Sweet corn: Max. 0.2 lb/A/season bifenthrin a.i. including all application methods. Supression of "Damping off," seedling blights, and root or crown diseases caused by Fusarium, Phytophthora, Pythium, Rhizoctonia. Product contains insecticide. See Corn Insect Control and label for insects controlled at indicated rates.
EVERLON/PRIAXOR	F,P,S SW	4-8 fl oz	21 7	7/NL 7/NL	Apply prior to when conditions favor disease development and continue on 7- to 14-day schedule. Maximum 16 fl oz/A/season. Maximum 2 applications before rotating to another mode of action. No adjuvants allowed after V8 and prior to VT stage corn, unless grower/user contacts the adjuvant source for advice and confirmation that the adjuvant has been tested and proven to be safe for application. Always follow most restrictive label. May be applied by air.
EVITO 480 SC	F,S SW	2-5.7 fl oz 2-3.8 fl oz	30 7	NL/NL 23/7	Maximum 2 applications, no later than R4. Use 0.16-0.24 fl oz/1000'row for rhizoctoria. May be applied by air or chemigation.

See notes and footnotes at end of table

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops*	Rate/Acre	PHI *(grain-ear)*	G/F	Comments/Restrictions
EVITO T	F,S SW	4-9 fl oz	36 7	NL/7 7/49	Maximum 2 applications, no later than R4 field or seed corn. May be applied by air or chemigation.
HEADLINE SC	F,P,S,SW	6-12 fl oz; 0.1-0.8 fl oz/1000' row	7	NL/NL	Apply prior to disease development and continue at 7- to 14-day intervals if needed. COC or adjuvant may be used. No adjuvants allowed after V8 and prior to VT stage corn. In-furrow 0.1 to 0.8 fl oz/1000' row in 2.5 GPA of water. Do not apply more than 12 fl oz/A. May be applied by air or chemigation.
HEADLINE AMP	F,P S SW	10-14.4 fl oz	20 7 7	7/20 7/7 7/NL	Apply prior to disease development and continue at 7- to 14-day intervals if needed. No adjuvants allowed after V8 and prior to VT stage corn. NIS, HSOC-COC, HSOC-MSO and/or drive control agents may be used when allowed. May be applied by air or chemigation.
KOCIDE 3000	F,P,S,SW	0.5-1.75 lb	NL	NL/NL	Begin when diseases first appear and repeat every 7-10 days or as needed. May be applied by air or chemigation.
LUCENTO	F,P,S	3-5.5 fl oz	30	10/30	Apply by ground, air or sprinkler irrigation from onset of disease to R4. 7- to 14-day min. application interval. Use surfactant for optimum control. Max. 2 applications/year. Max. 11 fl oz/A year. REI for 5 days for detasseling, 12 hr for other activities. Do not use adjuvant after V8 and prior to VT. Do not apply after R4 (early dough). Max. 2 sequential applications/year before alternating to fungicide from another FRAC group other than 7 and 3.
MANZATE MAX	F,S P,SW	0.8-1.2 qt	40 7	NL/NL NO/NL	Start when disease first appears. A spreader stricker may be used for better coverage/weatherability. F,S: Repeat at 4- to 14-day intervals. P,SW: Repeat at 4- to 7-day intervals; east of the Miss. River (including AR and LA), do not apply more than 18 qt/A/crop; west of the Miss. River (except AR and LA), do not apply more than 6 qt/A/crop. May be applied by air or chemigation.
MANZATE PRO-STICK	F P,S,SW	1.5 lb	40 7	NL/NL NL/NL	Start when disease first appears and repeat at 4- to 7-day intervals. P,SW: east of the Miss. River (including AR and LA), do not apply more than 22.5 lb/A/crop; west of the Miss. River (except AR and LA), do not apply more than 7.5 lb/A/crop. May be applied by air or chemigation.
MINUET	F,P,S,SW	3-6 fl oz	0	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS NEO	F,P,S SW	13.7 fl oz	30 14	30	Early application in F, P, S: V4-V8. Late-season application in F, P, S: When disease first appears or at VT or R1; if conditions for disease persist, apply 7-14 days later. SW: Begin applications prior to disease development, and continue on 7- to 14-day interval. Max. 44.5 fl oz/A/year. Max. 3 applications/year at max. application rate. F, P, S: Max. 2 applications/season. Apply by ground, air, or sprinkler irrigation. An adjuvant may be used, except in F, P, S after V8 and prior to VT. Do not make >2 applications of this or other Group 7, 3, 11 fungicides before rotating to a fungicide in different groups.
ONSET 3.6L	F,P,S SW	4-6 fl oz	36 7	21/36 7/49	Apply as a protective spray when weather is favorable for disease and repeat at 7- to 14-day intervals.
PENNCOZEB 75DF	F,S P,SW	1-1.5 lb	40 7	NL/NL NO/NO	May be applied by air or chemigation. F,S: Start application at the onset of disease and repeat as needed; do not apply more than 16 lb/season. P,SW: Apply in sufficient water for thorough coverage; start applications when disease first appears and repeat at 4- to 7-day intervals; East of the Miss. River (including AR and LA), do not apply more than 24 lb/A/crop; West of the Miss. River (except AR and LA), do not apply more than 8 lb/A/crop.
PROLINE 480 SC	F,P,S	5.7 fl oz	14	0/14	Apply at the first sign of disease and repeat on a 7- to 14-day interval. Maximum 22.8 fl oz/A/crop. May be applied by air or chemigation.
PROSARO PRO 400 SC	F,P,S	10.3 fl oz	21	21/36	Apply when diseases first appear. Max. 41.2 fl oz/A in min. 10 GPA by ground or 2 GPA by air. Max. 2 sequential applications for Group 7 products before rotating to different MOA. Min. 14-day application interval. See label for max. lbs a.i./A/year regardless of formulation. See label for adjuvant use related to crop growth stage.
QUILT XCEL/AFRAME PLUS	F,P,S SW	10.5-14 fl oz	30 14	30/30 14/NL	Apply when disease first appears. Use 10.5-14 fl oz for gray leaf spot, rust, anthracnose, ear rot, and eye spot. Do not apply adjuvants after V8 and prior to VT. May be applied for early season disease control and plant performance benefits from V4-V8 at 10.5 fl oz. May be applied by air or chemigation.

See notes and footnotes at end of table

Fungicide	Labeled Crops*	Rate/Acre	PHI *(grain-ear)*	G/F	Comments/Restrictions
REVYLOK	F,P,S SW	4.5-6.5 fl oz	21	21	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. F,P,S: 14-day min. application interval. SW: 7- to 14-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
REVYTEK	F,P,S SW	8-15 fl oz	21	21	Max. 15 fl oz/A/application. Max. 2 applications/A/year. Max. 30 fl oz/A/year. F,P,S: 14-day min. application interval. SW: 7- to 14-day application interval. See label for adjuvant use limitations.
RUSTEASE	F,S	3.5-6.8 fl oz	30	NL/NL	Apply when disease first appears. Second application may be made 7-14 days later. No more than 2 applications of this or any other Group 11 fungicide/year. May be applied by air or chemigation. PHI 21 days for silage.
SERENADE ASO	F,P,S,SW	0.5-2 qt	0	0/0	Bacillus subtilis is a biological fungicide. Soil drench, shanked-in, side-dress, injected and in-furrow at any time, or foliar spray. Adjust application interval as needed based on disease pressure. 2ee all states except NH (exp. date not given) for control of Rhizoctonia spp., Pythium spp. and Fusarium spp. in-furrow at 0.5-1 qt/A. May be applied by air or chemigation.
STRATEGO YLD/ ***PROTEGAM YLD***	F,P,S SW	2-5 fl oz	14 0	0/14 0/14	F,P,S- Apply 2-5 fl oz/A as a broadcast foliar spray at V4-V7 and in SW at 4-5 fl oz/A when conditions are favorable for disease development. For season-long control of labeled diseases apply a sequential treatment at 4-5 fl oz/A from VT through R2. F,P,S-Max 10 fl oz/A/season, SW-Maximum 20 fl oz; 2 sequential applications. Do not apply adjuvants after V8 and prior to VT stage corn. May be applied by air or chemigation.
TETRABAN	F,P,S,SW	0.4-0.8 fl oz/1000' row; 6-15.5 fl oz	7	NL/NL	For soil borne/seedling disease control, see label. For gray leaf spot, apply at onset of disease; a second application may be required 14 days later. For all other diseases, apply by ground, air or irrigation prior to disease development and continue every 7- to 14-days following resistance managemnet guidelines. No more than 2 sequential applications of this or other Group 11 fungicides before alternating with a non-Group 11 fungicide. F,S: No more than 2 applications/season.
TOPAZ/TILT	F,P,S SW	2-4 fl oz: leaf blight 4 fl oz: others	30 14	30/30 14/NL	Apply when disease first appears and reapply at 7- to 14-day intervals. Do not apply to field or seed corn after silking. Maximum application 16 oz/A/year. Use a minimum of 5 GPA aerial or 20 GPA by ground. For Topaz, use a minimum of 2 GPA aerial and 10 GPA by ground. May be applied by air or chemigation.
TOPGUARD	F,P,S	7-14 oz	7	0/7	Apply preventatively when conditions are favorable for disease development. Do not apply more than 14 oz/A in a single application. Apply no later than the R4 (early dough) stage. Do not make more than 2 applications per year. Do not apply more than 28 oz/A per year. No adjuvants allowed after V8 and prior to VT stage. May be applied by air .
TOPGUARD EQ	F,P,S	5-7 fl oz	7	NL/NL	Begin applications when disease first appears, then as needed on 7- to 10-day interval. Do not apply after R4 (early dough stage). No more than 2 applications/season. Adjuvant may be used prior to V8 and after VT. 2ee IL, IN, IA, MI, MN, OH, and WI (exp. 12/2027) for control of Tar Spot at 5-7 oz/A.
TRIVAPRO	F,P SW	13.7 fl oz	30 14	NL/NL NL/NL	F,P,S: Apply V4-V8 for early-season disease control; continue on 14-day interval; later season when disease first appears and as favorable conditions persist; continue on 14-day interval; avoid use of adjuvants or other additives after V8 and prior to VT (see label). SW: Begin applications prior to disease development, continue on 14-day interval; adjuvant may be added at recommended rates. Make no more than 2 applications in a row before alternating to a fungicide not in Group 7 or 11. May be applied by air or chemigation. Yellow leaf blight control in SW only.
VELTYMA	F,P,S,SW	7-10 fl oz	21	21	Max. 10 fl oz/A/application. F,P,S: Max 2 applicaitons/year at 10 fl oz/A; max. 20 fl oz/A/year; 14-day min. application interval. SW: Max. 3 applications/year at 10 fl oz/A, or 4 applications/A/year at 7 fl oz/A; max. 30 fl oz/A/year; 7- to 14-day application interval. See label for adjuvant use limitations.
XYWAY 3D	F,S,P	5.8-11.8 fl oz	NR	NL/NL	For use in a 3RIVE 3D system only. At-plant in furrow. Use lower rates under light to moderate pest pressure. 2ee all registered states except TX (exp. 3/2028) for suppression of Tar Spot.

See notes and footnotes at end of table

Fungicide	Labeled Crops*	Rate/Acre	PHI *(grain-ear)*	G/F	Comments/Restrictions
XYWAY LFR	F,P,S,SW	0.44-0.87 fl oz/1000' row 7.6-15.2 fl oz	NR	NL/NL	See 2ee (exp. 12/2027; exp. TX 12/2025) for "At-Plant Off the Seed" instructions. Max. 0.228 lb a.i./A/year including at-plant plus foliar applications. See label for important resistance management information. 2ee registered states except TX (exp 3/2028) For suppression of Tar Spot.
ZIRONAR	F,P,S,SW	6-12 fl oz	NR	NR	Apply in minimum 3 GPA by ground. Early season protection of seedling injury. Also a nematicide (see Corn Insects section).

* F – field, S – seed, P – pop, SW – sweet corn.
G/F – grazing-forage/fodder-stover interval days.
NL – no grazing or feeding information on label.
NO – do not graze or feed.
NR - no restrictions.
PHI – preharvest interval days.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

FOLIAR SPRAY EFFICACY[1]

Fungicide	Anthracnose Leaf Blight	Common Rust	Eyespot	Gray Leaf Spot	Northern Leaf Blight	Southern Rust	Tar Spot [2]
ALTIPRO	U	**E**	U	**E**	**E**	U	G-**VG**
AFFIANCE	U	G-**VG**	U	G-**VG**	G-**VG**	G	G
APROACH	**VG**	**VG-E**	**VG**	F-**VG**	**VG**	G	G
APROACH PRIMA	U	U	U	**E**	**VG**	G	G-**VG**
DELARO 325 SE	**VG**	**E**	**VG**	**E**	**VG**	G-**VG**	G-**VG**
DELARO COMPLETE	U	U	U	**E**	**VG**	G-**VG**	**VG**
DOMARK 230 ME	U	U	U	**E**	**VG**	G	G
EVERLON/PRIAXOR	U	**VG**	U	**VG**	**VG-E**	**VG**	G-**VG**
HEADLINE	**VG**	**E**	**E**	**E**	**VG**	**VG**	NL
HEADLINE AMP	U	**E**	**E**	**E**	**VG**	G	G-**VG**
LUCENTO	U	U	U	**VG-E**	**VG**	**VG**	G
MIRAVIS NEO	U	U	U	**E**	**VG-E**	**VG**	G-**VG**
ONSET	NL	U	NL	U	**VG**	F	NL
PROLINE 480 SC	U	**VG**	**E**	U	**VG**	G	NL
QUILT XCEL/AFRAME PLUS	**VG**	**VG-E**	**VG-E**	**E**	**VG**	**VG**	G-**VG**
REVYTEK	U	U	U	**VG-E**	**VG-E**	**VG**	**VG**
STRATEGO YLD/ ***PROTEGAM YLD***	**VG**	**E**	**VG**	**E**	**VG**	G	NL
TETRABAN/QUADRIS	**VG**	**E**	**VG**	**E**	G	**VG**	NL
TOPAZ/TILT	NL	**VG**	**E**	G	G	F	NL
TOPGUARD EQ	U	F	U	**VG**	G-**VG**	G-**VG**	G-**VG**
TRIVAPRO	U	U	U	**E**	**VG**	**E**	G-**VG**
VELTYMA	U	U	U	**VG-E**	**VG-E**	**VG**	**VG**
XYWAY LFR/XYWAY 3D	NL	U	NL	G	**VG**	NL	NL

Efficacy ratings: — = Does not occur or missing rating. P = poor. F = fair. G = good. VG = very good. E = excellent. NL = not labeled for use against this disease. U = unknown efficacy or insufficient data to rank product.

[1] Source: Efficacy Ratings From Purdue Extension CPN-2011-W (2023)

[2] If Tar Spot is not listed as a controlled disease on the Section 3 label, product use and control may be linked to a Section 2ee label. Check 2ee labels carefully for use in specific states.

HERBICIDE PERFORMANCE RATINGS

Rating reflects burndown activity only; not residual control. Minimum interval from application to planting: 0-30 days, or more depending on product. See Application Timing table.

KEY
9-10 = EXCELLENT
8 = GOOD
7 = FAIR
<6 = POOR
N = NONE
U = UNKNOWN

BURNDOWN HERBICIDE (RATE)	Site of Action[A]	GRASSES									
		Barnyardgrass	Bluegrass, Annual**	Carolina Foxtial & Little Barley**	Crabgrass	Downy Brome**	Foxtail	Foxtail Barley	Ryegrass, annual**	Sandbur, Field	Wheat, winter**
AFFORIA *(2.4 oz)*	14,2,2	U	U	U	U	U	U	U	U	U	U
AUTHORITY XL + ***2,4-D*** *(3 oz + 1 pt)*	2,14,4	7	U	U	7	U	U	U	U	U	U
AUTHORITY XL + ***2,4-D*** + GLYPHOSATE* *(4-6.4 oz + 1 pt + 2 pt)*	2,14,4,9	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
AUTUMN SUPER 51 WDG *(0.5 oz)*	2,2	N	N	N	N	N	N	N	N	N	N
CLOAK EX + ***2,4-D LV4*** *(1.1-3.3 oz + 1 pt)*	2,4	4	2	2	2	2	4	2	2	2	2
COMMAND 3ME *(1.5 pt)*	13	6	1	U	6	5	6	4	6	6	6
CORNERSTONE 5 PLUS/GLYPHOSATE* + AIM EC *(12 fl oz + 0.5 oz)*	9,14	**10**	**10**	**8**	**9**	**10**	**9**	**9**	**9**	**10**	**10**
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***2,4-D LV4*** *(12 fl oz + 1 pt)*	9,4	**10**	**10**	**8**	**9**	**10**	**10**	**9**	**9**	**10**	**10**
CORNERSTONE 5 PLUS/GLYPHOSATE* + CLOAK EX *(16 fl oz + 1.1-3.3 oz)*	9,2	**10**	**10**	**8**	**9**	**10**	**9**	**9**	**10**	**10**	**10**
CORNERSTONE 5 PLUS/GLYPHOSATE* + ***DIMETRIC EXT*** or ***DIMETRIC LIQUID*** *(12 fl oz + 2-4 oz* or *4-8 fl oz)*	9,5	**10**	**10**	**8**	**9**	**10**	**9**	**8**	**10**	**10**	**10**
CORNERSTONE 5 PLUS/GLYPHOSATE* + PURSUIT *(12 fl oz + 4 fl oz)*	9,2	**10**	**10**	**9**	**9**	**10**	**10**	**9**	**9**	**10**	**9**
CORNERSTONE 5 PLUS/GLYPHOSATE* + SCEPTER 70 DG *(12 fl oz + 2.8 oz)*	9,2	**10**	**10**	**8**	**9**	**10**	**9**	**9**	**10**	**10**	**10**
DIMETRIC EXT or ***DIMETRIC LIQUID*** *(2-4 oz* or *4-8 fl oz)*	5	6	U	**9**	**9**	**8**	U	U	**8**	5	U
ELEVORE + GLYPHOSATE + 2,4-D LV *(1 fl oz + 32-40 fl oz + 11.4 fl oz)*	4,9,4	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
ENLIST ONE + GLYPHOSATE *(1.0-2.0 pt + 2 pt)*	4,9	**10**	**10**	**8**	**9**	**10**	**10**	**9**	**9**	**10**	**10**
ENLIST DUO *(3.5-4.75 pt)*	4,9	**10**	**10**	**8**	**9**	**10**	**10**	**9**	**9**	**10**	**10**
FIERCE XLT + 2,4-D LV4 + CORNERSTONE 5 PLUS* *(3.75-5.25 oz + 1 pt + 2 pt)*	2,14,15,4,9	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
GRAMOXONE SL 3.0 ‡ *(1.3 pt)*	22	7	**9**	**8**	**8**	7	**8**	7	7	7	6
GRAMOXONE SL 3.0 ‡ + CLOAK EX *(1.3 pt + 1.1-3.3 oz)*	22,2	**8**	**9**	**8**	**8**	7	7	7	6	7	6
GRAMOXONE SL 3.0 ‡ + ***DIMETRIC EXT*** or ***DIMETRIC LIQUID*** *(1.3 pt + 2-4 oz or 4-8 fl oz)*	22,5	**9**	**10**	**9**	**8**	**8**	**8**	**9**	6	**8**	6
GRAMOXONE SL 3.0 ‡ + LOROX DF/LINEX 4L *(1.3 pt + 1.5 lb DF)*	22,5	**9**	**9**	**9**	**8**	7	**9**	**8**	6	**8**	7
GRAMOXONE SL 3.0 ‡ + PURSUIT *(1.3 pt + 4 fl oz)*	22,2	**8**	**9**	**9**	**8**	**8**	**9**	**9**	7	**8**	6
GRAMOXONE SL 3.0 ‡ + SCEPTER 70 DG *(1.3 pt + 2.8 oz)*	22,2	7	**8**	**9**	**8**	7	7	**8**	6	7	6
LEADOFF + ***2,4-D*** *(1.5 oz + 1 pt)*	2,4	**8**	**9**	3	7	1	**9**	2	**8**	6	7
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH *(19-29 fl oz* or *29-43 fl oz)*	10	**8**	6	**9**	**9**	U	**8**	7	6	**8**	6
MAULER + 2,4-D LV4 + CORNERSTONE 5 PLUS* *(3-3.75 fl oz + 6 fl oz + 1 pt + 2 pt)*	14,15,5,4,9	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
PANOFLEX *(0.3-0.6 oz/A)*	2	N	N	N	N	N	N	N	N	N	N
PURSUIT *(4 fl oz)*	2	6	5	U	6	2	**8**	7	1	6	1
SEQUENCE *(2.5 pt)*	9,15	**10**	**10**	**10**	**10**	**10**	**10**	**9**	**10**	**10**	**10**
SHARPEN *(1 fl oz)*	14	N	N	N	N	N	N	N	N	N	N
VALOR SX or VALOR EZ/PANTHER SC + ***2,4-D LV4*** + GLYPHOSATE *(3 oz* or *3 fl oz + 1 pt + 2 pt)*	14,9,4	**10**	**10**	**8**	**9**	**10**	**10**	**9**	**9**	**10**	**10**
VALOR XLT + ***2,4-D LV4*** + GLYPHOSATE *(3-5 oz + 1 pt + 2 pt)*	2,14,9,4	**10**	**10**	**9**	**10**	**10**	**10**	**9**	**10**	**10**	**10**
VERDICT/***TESTIFY*** *(5 fl oz)*	14,15	N	N	N	N	N	N	N	N	N	N
ZIDUA PRO *(4.5 fl oz)*	15,2,14	6	5	U	6	2	**8**	7	1	6	1
2,4-D LV4 *(1 pt)*	4	N	N	N	N	N	N	N	N	N	N

[A] Site of Action described in Technical Information section.
* May use other glyphosate products at greater or lesser volumes; see individual labels for Roundup PowerMAX 3; WeatherMAX/Honcho K6/Credit Xtreme/Cornerstone Plus.

** As a winter annual, these are best controlled in fall or early spring.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																															
	Alfalfa	Bittercress/Sibara**	Canada Thistle	Chickweed**	Clover, Red	Cover, Sweet	Cutleaf/Evening Primrose**	Daisy Fleabane	Dandelion	Hairy Vetch	Henbit (Purple Deadnettle)**	Horseweed (Marestail)**	Knotweed, Tall	Kochia	Kochia, Triazine Resistant	Lambsquarters, Common	Mousetail**	Mustard, Annual/Winter Annual**	Mustard, Wild	Pennycress**	Pigweed	Prickly Lettuce**	Purslane Speedwell**	Ragweed, Common	Ragweed, giant	Russian Thistle	Shepherds Purse**	Smartweed, Annual	Sunflower	Velvetleaf	Virginia Pepperweed**	Wild Buckwheat
	U	U	8	8	U	U	U	U	9	U	9	8	U	8	8	9	U	8	8	9	9	U	U	8	U	U	9	9	8	U	U	8
	7	9	7	8	7	6	8	8	8	8	8	9	7	9	9	10	8	10	9	10	10	9	10	10	10	9	10	8	10	10	8	8
	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	8	U	8	8	U	5	U	7	8	6	8	9	7	7	7	9	U	9	9	9	8	8	U	9	U	8	9	8	9	8	U	7
	U	9	6	10	7	U	7	8	8	8	9	8	6	6	6	8	U	9	9	9	9	9	9	9	9	7	9	9	9	9	9	6
	4	U	U	1	3	3	7	U	3	3	1	2	6	8	8	6	2	U	6	6	U	6	6	6	U	6	6	7	5	9	6	U
	5	8	8	10	5	4	7	5	7	6	9	9	9	10	10	10	9	10	10	10	10	8	10	9	9	10	10	8	9	10	8	8
	6	9	8	10	6	6	9	6	8	7	9	9	9	9	9	9	10	10	10	10	9	9	10	9	9	9	10	9	10	10	9	6
	3	9	7	10	4	3	7	5	8	5	9	8	9	8	8	8	10	10	10	10	10	10	10	10	8	10	10	9	10	9	9	6
	4	9	7	10	5	4	7	5	7	7	9	8	10	8	7	8	10	10	10	10	8	9	10	9	8	10	10	8	10	8	9	7
	4	9	8	10	4	3	8	U	8	7	9	9	10	9	9	9	9	10	9	10	9	9	9	9	8	10	10	10	10	10	9	6
	3	8	7	10	4	3	5	5	7	7	9	8	10	9	9	9	10	10	10	10	9	8	9	10	7	10	10	9	10	9	9	6
	U	9	4	9	5	5	5	U	U	6	8	6	6	5	5	U	U	8	8	8	5	U	7	U	U	8	7	8	8	9	U	U
	7	9	9	9	8	8	10	9	10	10	10	10	10	10	10	10	9	9	9	9	9	9	9	9	9	9	6	9	10	10	10	8
	6	9	8	10	6	6	9	6	8	7	9	9	9	9	9	9	10	10	10	10	9	9	10	9	9	9	10	9	10	10	9	6
	6	9	8	10	6	6	9	6	8	7	9	9	9	9	9	9	10	10	10	10	9	9	10	9	9	9	10	9	10	10	9	6
	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	4	9	5	9	4	4	7	5	5	7	9	6	9	9	9	8	10	10	10	10	7	7	6	8	7	6	9	6	10	8	9	6
	4	9	5	10	4	4	7	U	7	7	9	9	10	9	9	10	10	10	10	10	9	10	8	10	8	7	10	9	10	8	9	6
	4	9	8	10	4	4	8	U	5	7	9	7	10	10	9	9	10	10	10	10	10	8	6	9	9	10	10	8	10	9	9	6
	4	9	5	10	4	4	7	U	6	U	8	8	10	10	9	10	10	10	10	10	10	10	U	8	7	10	7	6	10	9	8	9
	4	9	7	10	4	4	7	U	5	7	9	7	9	9	9	8	10	10	10	10	9	8	6	8	7	9	10	9	10	9	9	6
	4	9	5	10	4	4	7	U	5	7	9	7	9	9	9	9	8	10	10	10	9	8	6	9	7	9	10	7	10	8	9	6
	8	9	7	9	7	7	9	6	9	7	9	7	6	8	8	9	U	9	9	9	9	8	U	8	8	6	9	9	9	9	9	7
	U	7	U	9	6	6	8	6	7	6	7	8	8	8	9	U	10	U	10	9	9	U	10	9	8	8	8	10	8	8	U	7
	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	4	U	8	10	P	P	U	U	9	8	7	5	U	N	N	9	U	9	9	9	7	8	7	5	3	7	9	9	8	8	U	7
	1	U	6	8	2	2	5	8	8	8	7	4	3	6	6	5	U	8	5	8	9	7	3	6	6	6	8	8	8	9	9	6
	5	8	8	10	5	5	8	5	7	7	9	9	9	9	9	9	10	10	10	10	10	9	10	9	9	9	10	8	9	10	10	8
	7	U	8	7	7	7	8	9	8	7	7	9	9	8	8	9	9	9	9	10	8	9	8	8	8	10	10	9	8	10	8	9
	9	9	9	10	8	8	9	9	9	10	10	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	10	9	9	10	8	8	9	9	9	10	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	9	10	10	10	10
	7	U	8	7	7	7	8	9	9	7	8	9	8	9	9	9	9	9	9	9	9	9	7	9	9	9	9	9	9	9	9	9
	7	8	8	9	7	8	8	9	9	7	8	8	8	9	9	9	U	9	9	9	9	10	7	9	9	9	10	9	10	10	8	9
	5	9	5	5	7	6	7	6	7	7	4	7	6	6	6	9	8	10	9	9	8	8	7	9	8	9	8	7	10	8	7	6

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

			GRASSES																
PP OR PRE HERBICIDE (A.I.S)	Crop Tolerance	Site of Action[A]	Barnyardgrass	Crabgrass	Fall Panicum	Foxtail, Giant/Green	Foxtail, Yellow	Goosegrass	Johnsongrass (Seedling)	Quackgrass	Sandbur, Field	Shattercane	Signalgrass, Broadleaf	Volunteer Corn	Wild Oat	Wild Proso Millet	Wirestem Muhly	Wooly Cupgrass	Yellow Nutsedge
AFFORIA *(flumioxazin + thifensulfuron + tribenuron)*	G	14,2,2	P/F	P/F	P/F	P/F	N	P/F	U	U	U	U	P/F	U	P	U	U	U	U
ANTHEM FLEX *(carfentrazone + pyroxasulfone)*	G	14,15	**E**	**E**	**E**	**E**	**E**	**G/E**	P	N	P/F	P	**G**	P	P	F	N	F	F/**G**
ANTHEM MAXX *(fluthiacet + pyroxasulfone)*	G	14,15	**E**	**E**	**E**	**E**	**E**	**G/E**	P	N	P/F	P	**G**	P	P	F	N	F	F/**G**
AUTHORITY ASSIST *(sulfentrazone + imazethapyr)*	G/E	14,2	P/F	F	F	F/**G**	F/**G**	P	F	N	N	P/F	N	P	P	P	N	P	**G**
AUTHORITY ELITE *(s-metolachlor + sulfentrazone)*	E	15,14	**E**	**E**	**E**	**E**	**G/E**	P	P	P	P	P	P	P	P	P	P	P	**G**
AUTHORITY FIRST DF/SONIC *(sulfentrazone + cloransulam)*	G/E	14,2	P/F	F	F	F	P/F	P	P	N	N	N	N	P	P	N	N	P	**G**
AUTHORITY SUPREME/AUTHORITY EDGE *(pyroxasulfone + sulfentrazone)*	E	15,14	**E**	**E**	**E**	**E**	**E**	**E**	F	N	**G**	F	**G**	N	**G**	F	N	F	**G**
AUTHORITY XL *(sulfentrazone + chlorimuron)*	G/E	14,2	P/F	P/F	F	P/F	P/F	P	P	N	P	N	P	P	P	N	N	N	**G**
BOUNDARY 6.5EC/***PRESIDUAL*** *(s-metolachlor + metribuzin)*	G	15,5	**G/E**	**E**	**E**	**E**	**E**	**G/E**	P/F	P	F	P/F	F/**G**	P	P	F	U	F	F/**G**
CHARGER MAX/DUAL II MAGNUM/EVERPREX *(s-metolachlor)*	E	15	**G/E**	**E**	**E**	**E**	**E**	**G/E**	P	N	F	P	**G**	P	P	F	N	F	F/**G**
CLOAK EX *(chlorimuron + tribenuron)*	G/E	2,2	P/F	P/F	P/F	F	F	U	P	N	N	N	U	P	N	N	N	N	F
COMMAND 3ME *(clomazone)*	E	13	**E**	**E**	**E**	**E**	**E**	**E**	P	N	**G**	F	**E**	P/F	F	F	N	F	P
DIMETRIC CHARGED *(flumioxazin + metribuzin)*	G/E	14,5	F	F	F	F	F	F	P	P	P	P	F	N	P	P	P	P	P
DIMETRIC EXT/DIMETRIC LIQUID/MAULER *(metribuzin)*	F	5	F	F	F	F	F	P/F	P	P	P	P	P	P	P	P	P	P	P
ENVERSA *(acetochlor)*	E	15	**G/E**	**G/E**	**G/E**	**G/E**	**G/E**	U	U	U	F	F	U	N	F	U	U	**G**	U
ENVIVE/ENLITE *(chlorimuron + flumioxazin + thifensulfuron)*	F/G	2,14,2	P	F	P/F	F	F	F	F	U	P	P	F	U	U	U	U	P	P/F**
FIERCE EZ *(flumioxazin + pyroxasulfone)*	G	14,15	**G/E**	**E**	**E**	**G/E**	**G/E**	**G**	F	P	F	F	**G**	P	F	**G**	P	**G**	F
FIERCE XLT *(flumioxazin + pyroxasulfone + chlorimuron)*	G	14,15,2	**E**	**E**	**E**	**E**	**E**	**G**	F	P	F	F	**G**	F	F	**G**	F	**G**	**G**
FIRSTRATE *(cloransulam)*	E	2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P/F
FRAMEWORK 3.3 EC/PROWL H2O *(pendimethalin)*	E	3	**E**	**E**	**E**	**E**	**E**	**E**	P	P	**G/E**	**G**	**G/E**	P/F	F	F	P	**E**	P
LOROX DF/LINEX 4L *(linuron)*	F	5	F	F	F	F	F	F	P	N	P	P	F	P	P	P	N	P	P
MAULER *(flumioxazin + pyroxasulfone + metribuzin)*	G	14,15,5	**E**	**E**	**E**	**E**	**E**	**G**	**G**	P	F	F	**G**	P	F	**G**	P	**G**	F
OUTLOOK *(dimethenamid-p)*	E	15	**E**	**E**	**E**	**E**	**E**	**G/E**	P	N	P/F	P	**G**	P	P	F	N	F	F/**G***
PERPETUO *(pyroxasulfone + flumiclorac pentyl ester)*	G	14,15	**E**	**E**	**E**	**E**	**E**	**G/E**	P	N	P/F	P	**G**	P	P	F	N	F	F/**G**
PREFIX *(s-metolachlor + fomesafen)*	E	15,14	**G/E**	**E**	**E**	**E**	**E**	F	F	P	P/F	PP	F/**G**	F	P	F	N	P/F	F
PYTHON *(flumetsulam)*	E	2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P
SCEPTER 70 DG *(imazaquin)*	G	2	F	F	F	F	F	P/F	F	P	F	F	P/F	F	F	F	P	F	P
SONALAN *(ethalfluralin)*	G	3	**E**	**E**	**E**	**E**	**E**	**E**	P	P	**G/E**	**G**	**E**	P/F	F	F	P	**G**	P
SONIC BOOM *(sulfentrazone + metribuzin)*	G/E	14,5	P/F	F	P/F	F	P/F	P	P	N	N	N	N	P	P	P	N	P	F/**G**
SPARTAN 4F *(sulfentrazone)*	G/E	14	P	P/F	P/F	P/F	P/F	P	P	N	N	N	P	P	P	P	N	P	**G**
SURVEIL *(flumioxazin + cloransulam)*	G/E	14,2	P/F	P/F	P/F	P/F	P/F	P	P	N	P	N	P	N	N	P	P	P	N
TENDOVO *(s-metolachlor + metribuzin + cloransulam)*	G/E	15,5,2	**G/E**	**E**	**E**	**E**	**E**	**G/E**	P/F	P	F	P/F	F/**G**		P	F	U	F	F/**G***
TRUST/TREFLAN HFP *(trifluralin)*	E	3	**E**	**E**	**E**	**E**	**E**	**E**	**G**	P	**E**	**G/E**	**E**	P/F	F	F	P	**E**	P
VALOR SX/VALOR EZ/PANTHER SC *(flumioxazin)*	G/E	14	F	F	F	F	F	F	P	N	P	N	F	N	N	P	N	P	N
VALOR XLT *(flumioxazin + chlorimuron)*	G/E	14,2	F	F	F	F	F	F	P	N	P	N	F	F	N	P	N	P	F
VERDICT/***TESTIFY*** *(saflufenacil + dimethenamid-p)*	E	14,15	**E**	**E**	**E**	**E**	**E**	P	P	P	P/F	P	P	P	P/F	F	P	F	F*
WARRANT *(acetochlor)*	E	15	**E**	**E**	**G/E**	**G/E**	**G**	**G**	N	N	F	F	**G**	F	P	F/**G**	U	F	F
WARRANT ULTRA *(acetochlor + fomesafen)*	E	15,14	**E**	**E**	**G/E**	**G/E**	**G**	**G**	**G**	N	F	F	**G**	F	**G**	**G**	**G**	F	F
ZIDUA SC *(pyroxasulfone)*	G	15	**E**	**E**	**E**	**E**	**E**	**G/E**	P	N	P/F	P	**G**	P	P	F	N	**G**	F/**G***
ZIDUA PRO *(saflufenacil + imazethapyr + pyroxasulfone)*	E	15,14,2	**E**	**E**	**E**	**E**	**E**	**G/E**	P	N	P/F	P	**G**	P	P	F	N	F	F/**G***

[A] Site of Action described in Technical Information section.
* Control improved with soil incorporation.
** For Enlite, lambsquarter, morningglory, and common ragweed = G; giant ragweed = P/F; sunflower = F; nutsedge = P.

BROADLEAVES																												
Bindweed	Buffalobur	Burcucumber	Canada Thistle	Cocklebur	Copperleaf, Hophornbeam	Hemp Sesbania	Horsenettle	Jerusalem Artichoke	Jimsonweed	Kochia	Lambsquarters, Common	Morningglory, Annual	Mustard	Nightshade, Black	Pigweed	Prickly Sida	Ragweed, Common	Ragweed, Giant	Russian Thistle	Sicklepod	Smartweed, Annual	Spurred Anoda	Sunflower	Velvetleaf	Venice Mallow	Waterhemp Spp.	Wild Buckwheat
U	U	U	P	U	U	G	U	U	G	G	G/E	G	G/E	G/E	G/E	G/E	G	F	F/G	F	F	U	P	F	G/E	G	P/F
N	P	P	N	P	P/F	P	N	N	F	G	F	F	P	G/E	G	N	P	P	P/F	P/F	P	P	P	E	P	E	P
N	P	P	N	P	P/F	P	N	N	F	G	F	F	P	G/E	G	N	P	P	P/F	P/F	P	P	P	E	P	E	P
F	F	F	P	F	F/G	P/F	P	P	G	E	E	G/E	G/E	G/E	E	F/G	F	F	G/E	P/F	G/E	F	F	G	F	G/E	F
P	U	U	P	P	U	U	N	P	P/F	E	E	F/G	F	G/E	E	G	F	P	G	U	G	U	P	P/F	U	E	P/F
F	F	F	P	G	G	P/F	P	P	G	G	E	G	G	G/E	E	F/G	E	G/E	E	P/F	G/E	P	G/E	G/E	E	G/E	P
N	P	P	P	P	F	P	P	P	G	E	E	G	F/G	E	E	G	G	P	E	F	G	G/E	P	G/E	F	E	F
F	F	F	F	G/E	G	G	P	P	E	E	E	G/E	E	E	E	G	G/E	G	E	G	G/E	G/E	G/E	G/E	G/E	E	F/G
P	F	P	P	F	F/G	E	N	P	F	F	E	P	F	G	E	F	G	F	F/G	F/G	G	E	F	F	G	G/E	F
N	P	P	N	P	P	P	N	N	P	P	F	P	P	G	G	P	P	P	P	P	P	P	P	P	P	G	P
U	U	F	F	G	P	P	P	U	G	G	E	P	G	P	G	F	F/G	F	F	U	G	U	G	G	F	F	P
P	P	P	N	P/F	P/F	P	N	P	G	G/E	G	P	P	P/F	P	E	G	P	F	P/F	G	E	P	E	E	P	P
P	F	P/F	P	F	G/E	E	N	P	G	E	E	F/G	G/E	G/E	E	E	E	P/F	G	G	G	E	F	G	E	G/E	F
P	F	P/F	P	F	G/E	E	N	P	G	G	E	P	G/E	P	E	E	E	P/F	G	F/G	G	E	F	G	E	G	F
U	U	U	U	P	U	U	U	U	U	U	G	U	U	G/E	E	F	P	P	U	U	F	U	U	P	U	G/E	U
U	U	P/F	U	G/E	G	G	U	U	E	G	G/E**	G/E**	G/E	G/E	G/E	G	G/E**	F**	G	F	G/E	U	E**	G	G	G	P
P	G	F	N	P	G/E	G/E	P	P	E	G	E	F/G	E	E	E	E	F/G	F	G	G/E	G	E	P	F/G	E	E	F/G
F	G	G	N	G	E	E	P	G	E	G	E	E	E	E	E	E	E	G	E	G/E	E	E	G	E	E	E	E
P	F	F	P	G/E	P/F	N	P	P	G/E	P	G/E	G	G	P	G/E	P/F	E	G/E	F	P/F	G	P	E	G	E	P	P
P	P	P	N	P	P	P	N	N	P	G	G	P	P	P	G	P	P	P	F	P	P	P	P	P	P	G	P
P	P	P	N	P	F	P	N	N	G	F	E	P	E	F	E	G	E	P	U	P	G	P	P	F	G	G	G
U	U	U	U	F	U	E	U	U	E	E	E	G	E	E	E	E	G	F/G	G	U	U	E	U	E	E	E	G
N	P	P	N	P	P/F	P	N	N	P	P	F	P	P	G	G	N	P	P	P	P/F	P	P	P	P	P	G	P
N	P	P	N	P	P/F	P	N	N	F	G	F	F	P	G/E	G	N	P	P	P/F	P/F	P	P	P	E	P	E	P
P/F	F	P/F	P	P	P	P	P/F	F	F	P/F	F/G	P	E	G/E	G/E	P	F/G	F	P	U	F	U	F	F	F	G	P
P	F	P	P	F	F	P	N	P	F	G	G/E	P	E	F/G	E	E	F/G	P	G/E	P/F	G/E	P	F/G	G/E	E	G	P
P	F	F	P	G/E	F	P	N	P	G	P	E	F	E	G	E	E	G/E	F	U	F	G	F	E	F	F	P	P
P	P	P	N	P	P	P	N	N	P	G	G	P	P	F	G	P	P	P	F	P	P	P	P	P	P	G	P
P	P	P/F	P	F	G/E	G	P	F	G/E	E	E	G/E	G/E	G/E	E	G	G	F	G	U	G/E	G	F	F/G	G	E	P/F
F	U	P	N	P	F/G	P/F	P	P	F/G	G/E	E	G/E	P/F	G/E	G	F/G	P/F	P	E	U	F	U	P	F	F	G/E	P
P	G	F	P	E	G	G	P	P	G/E	G	E	G/E	E	E	E	G	E	E	F/G	G	G/E	G	E	E	E	G/E	P
P	F	F	P	G/E	F/G	E	P	P	G/E	P/F	G/E	F/G	G	/G	E	F	G/E	G/E	F/G	F/G	G	E	G/E	F/G	G/E	G/E	F
P	P	P	N	P	P	P	N	N	P	F/G	G	P	P	P	G	P	P	P	F	P	P	P	P	P	P	G	P
P	F	N	N	N	G/E	G	P	P	G/E	G	G/E	F/G	G/E	G/E	E	G	F/G	P	F/G	G	F	E	P	F	G/E	G/E	F
P	G	G	N	G	E	G	P	G	E	G	E	G	E	E	E	E	E	G	G	G	G	E	G	G	G/E	G/E	G
U	E	F	P	G/E	U	U	P	F	G/E	G	E	G	E	E	E	G	E	G	E	U	E	U	E	E	G	E	E
N	U	N	N	P	U	U	U	U	P	F	G/E	F	P	G	E	P	G	F	F	U	F	U	U	P	U	F	N
F/P	F	P	F	F	G	G	P	F	G	G	G/E	G	E	E	E	P	G/E	F	G	U	F	F/P	U	P	F/G	G	F
N	P	P	N	P	P/F	P	N	N	P	G	F	P	P	G	G	N	P	P	P	P/F	P	P	P	P	P	E	P
P/F	E	F	P	G	G	P	P	G	F	E	E	F	E	E	E	E	G	G	G	P	E	F/G	F/G	E	G	E	F

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	Crop Tolerance	Site of Action[A]	GRASSES														
			Barnyardgrass	Crabgrass	Fall Panicum	Foxtail, Giant/Green	Foxtail, Yellow	Johnsongrass (Seedling)	Quackgrass	Sandbur, Field	Shattercane	Volunteer Corn**	Wild Oat	Wild Proso Millet	Wirestem Muhly	Woolly Cupgrass	Yellow Nutsedge
POST HERBICIDE *(a.i.s)*																	
ANTHEM MAXX *(fluthiacet-methyl + pyroxasulfone)*	G	14,15	**E**	**E**	**E**	**E**	**E**	P	N	P/F	P	P	P	F	N	F	F/**G**
ASSURE II/TARGA *(quizalofop)*	E	1	**E**	**E**	**E**	**E**	**G/E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**G**	**G/E**	P
AVALANCHE ULTRA *(acifluorfen)*	F/G	14	P/F	P	P/F	P/F	P	P	P	P	P	P	P	P	P	P	P
BASAGRAN *(bentazon)*	E	6	N	N	N	N	N	N	N	N	N	N	N	N	N	N	**G**
BEYOND XTRA *(imazamox)*	G/E	2	**G**	F/**G**	**G**	**G/E**	**G**	**G**	F	F	**E**	**G**	**G**	**G**	F	F	P
BUTYRAC 175/***2,4-DB 175***/BUTYRAC 200/***2,4-DB 200*** *(2,4-DB)*	F	4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CLASSIC *(chlorimuron)*	E	2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	**G**
COBRA *(lactofen)*	F	14	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
CORNERSTONE 5 PLUS/GLYPHOSATE* *(glyphosate)*	E	9	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**G/E**	F
ENLIST DUO or ENLIST ONE + GLYPHOSATE [Enlist soybeans only] *(2,4-D choline + glyphosate)*	E	9,4	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	F
ENLIST ONE [Enlist soybeans only] *(2,4-D choline)*	E	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
FIRSTRATE *(cloransulam)*	E	2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P
FLEXSTAR/***AGENT 1.88*** *(fomesafen)*	G	14	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
FLEXSTAR GT 3.5 *(fomesafen + glyphosate)*	G/E	14,9	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	F
FUSILADE DX *(fluazifop)*	E	1	**E**	**E**	**E**	**G/E**	**G/E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	P
FUSION *(fluazifop + fenoxaprop)*	E	1,1	**E**	**G/E**	**E**	**E**	**E**	**G/E**	**G**	**G/E**	**E**	**E**	**E**	**E**	**G**	**G/E**	P
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH [LibertyLink soybeans only] *(glufosinate)*	E	10	F	**G**	**G**	**E**	F/**G**	F	F	F	**G**	**G**	**G**	**E**	F/**G**	**G/E**	P
PERPETUO *(pyroxasulfone + flumiclorac pentyl ester)*	G	14,15	**E**	**E**	**E**	**E**	**E**	P	N	P/F	P	P	P	F	N	F	F/**G**
PHOENIX *(lactofen)*	F	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
POAST *(sethoxydim)*	E	1	**E**	**E**	**E**	**E**	**E**	**G**	F	**E**	**E**	**E**	**G/E**	**E**	**G**	**E**	P
PURSUIT *(imazethapyr)*	E	2	F/**G**	F/**G**	F	**G**	F/**G**	**G**	P	P/F	**E**	P	P	P/F	F	P	P
REFLEX *(fomesafen)*	G	14	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
RESOURCE *(flumiclorac-pentyl)*	E	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
RESOURCE + GLYPHOSATE *(flumiclorac-pentyl + glyphosate)*	E	14,9	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**G/E**	F
SCEPTER 70 DG *(imazaquin)*	E	2	P	P	P	P	P	P	P	P	P	**E**	P	P	P	P	P
SECTION THREE/***CLEANSE*** *(clethodim)*	E	1	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	P
SEQUENCE *(glyphosate + s-metolachlor)*	G	9,15	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	F
STORM *(bentazon + acifluorfen)*	F	6,14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	F
SYNCHRONY XP [non STS] *(chlorimuron + thifensulfuron)*	E	2,2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	F
WARRANT ULTRA *(acetochlor + fomesafen)*	E	15,14	**E**	**E**	**G/E**	**G/E**	**G**	**G**	N	F	F	F	**G**	**E**	**G**	F	F

[A] Site of Action described in Technical Information section.
** Will not control volunteer Roundup Ready corn.
*** Palmer amaranth tends to be less susceptible to POST herbicides than many pigweeds species.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																															
	Bindweed, Field	Bindweed, Hedge	Buffalobur	Burcucumber	Canada Thistle	Cocklebur	Copperleaf, Hophornbeam	Dock, Curly	Hemp Dogbone	Horsenettle	Jerusalem Artichoke	Jimsonweed	Kochia	Lambsquarters, Common	Milkweed, Common	Milkweed, Honeyvine	Morningglory, Annual	Mustard	Nightshade, Black	Pigweed***	Pokeweed	Prickly Sida	Ragweed, Common	Ragweed, Giant	Russian Thistle	Smartweed, Annual	Smartweed, Swamp	Sunflower	Velvetleaf	Venice Mallow	Waterhemp Spp.	Wild Buckwheat
	N	N	P	P	N	P	P/F	N	N	N	N	F	**G**	F	N	N	F	P	**G**	**G**	N	N	P	P	P/F	P	N	P	**E**	P	**E**	P
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	P/F	F	F	P/F	P	F/**G**	**E**	U	U	P/F	F	**E**	P/F	P/F	U	P	**G**	**E**	**G/E**	**E**	U	P	**G/E**	F/**G**	P	**G/E**	P	F/**G**	P/F	F	**E**	F/**G**
	P	P/F	P	P	**G**	**E**	P	P	P	P	F	**E**	F	F	P	P	F	**E**	P	P	P	F/**G**	F/**G**	F	P	**E**	U	**G/E**	**G/E**	**E**	P	F
	P	P	F	F	P/F	**G/E**	P/F	P	P	F	F/**G**	**G**	**G**	**G**	P	P	F/**G**	**E**	**E**	**E**	U	P	F/**G**	F/**G**	**G**	**G**	U	**E**	**G/E**	F/**G**	P	F
	P	P	U	P	P/F	**G**	P	U	U	P	U	P	P/F	**G**	U	U	**G**	F	F	F	U	P	P	P	P/F	P	P	P/F	P	P	P	P
	P/F	P/F	F	**G**	P/F	**E**	P	P/F	P	P	F/**G**	**G/E**	P	P	P/F	F	F	**E**	P	**G/E**	P/F	P	**G**	F	P	**G/E**	U	**E**	**G**	P	P	P
	P	F	F	F	P	**G**	**E**	U	P/F	P	F	**E**	**G**	P/F	P/F	P	F/**G**	**G**	**G/E**	**E**	U	P/F	**E**	**G**	P	F	P/F	F	F	F	**E**	P/F
	F/**G**	**G**	**G**	**G**	**G**	**E**	F/**G**	P/F	F/**G**	**G**	**G**	**E**	**G**	**G/E**	F	F	F	**E**	**G**	**E**	F/**G**	F/**G**	**G/E**	**G/E**	F/**G**	**G/E**	F	**E**	**G**	**E**	**G**	F
	F/**G**	**G**	**G**	**G**	**G**	**E**	**G**	F	F/**G**	F/**G**	**G**	**E**	**G**	**E**	F	F	**E**	**E**	**E**	**E**	F/**G**	**G**	**E**	**E**	F/**G**	**G/E**	F	**E**	**E**	**G**	**E**	F
	F	F	P	P	F	**E**	**G**	F	P/F	F	F/**G**	F	F	**G**	F	F	**E**	**E**	F	**G**	F/**G**	**G**	**G**	**G**	F	P	P/F	F/**G**	**G**	**G**	**G**	P
	P	P	F	P/F	F	**E**	F	U	U	P	P	**G**	P	P	U	U	**G**	**E**	P	P	U	P	**E**	**E**	P	**G/E**	U	**E**	**G/E**	**E**	P	P
	P/F	P/F	**G**	F	P/F	F/**G**	**E**	U	P	P	F	**E**	F	P/F	P	U	**G**	**E**	**G/E**	**E**	U	N	**G/E**	**G**	P	**G/E**	U	F	**G**	F/**G**	**E**	F
	F/**G**	**G**	**G**	**G**	**G**	**E**	**E**	P/F	F/**G**	**G**	**G**	**E**	**E**	**G/E**	F	F	**G**	**E**	**G/E**	**E**	F/**G**	F/**G**	**G/E**	**G**	F/**G**	**G/E**	F	F	**G/E**	**E**	**G**	**E**
	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	F	F	**G**	F/**G**	F	**G/E**	**G**	U	P/F	U	F	**E**	**G**	**G**	P/F	P	**G/E**	**E**	**E**	**G/E**	P/F	**G**	**G/E**	**G/E**	**G**	**G/E**	P	**E**	**E**	**E**	F/**G**	F/**G**
	N	N	P	P	N	P	P/F	N	N	N	N	F	**G**	F	N	N	F	P	**G**	**G**	N	N	P	P	P/F	P	N	P	**E**	P	**E**	P
	P	P/F	F	F	P	**G**	**E**	U	P	P	P/F	**G/E**	P/F	P	P	P	F	**G**	**G/E**	**E**	U	N	**G/E**	F/**G**	P	P/F	P/F	P/F	P/F	F	**E**	P
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	P	P	F	P/F	P	**G/E**	P	P/F	P	F	F/**G**	**G**	**G**	P/F	P	P	F/**G**	**E**	**E**	**E**	U	P	F	F	**G**	**G**	U	**G**	**G/E**	F	P	P/F
	P/F	F	F	P/F	P	F/**G**	**E**	U	P	P/F	F	**G/E**	P/F	P/F	P	U	**G**	**E**	**G**	**G/E**	U	P	**G**	F/**G**	P	**G**	U	F	F	F/**G**	**E**	P
	N	N	N	F	N	P/F	P	N	N	N	N	F	N	P/F	N	N	F	N	N	F	N	F	F	P/F	P	P	N	P	**E**	N	F	N
	F/**G**	**G**	**G**	**G**	**G**	**E**	F/**G**	P/F	F/**G**	**G**	**G**	**E**	**G/E**	**E**	F	F	**G**	**E**	**G**	**E**	F/**G**	**G**	**E**	**G/E**	F/**G**	**G/E**	F	**E**	**E**	**E**	**E**	**G**
	P	P	P	P	P	**E**	P	U	P	P	P	P	P	P	P	P	P	P	P	**E**	P	P	P	P	U	P	P	**E**	P	P	P	F
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	G	**G**	**G**	**G**	**G**	**E**	**E**	F/**G**	F/**G**	**G**	**G**	**E**	**G**	**G**	F	F	F	**E**	**G**	**E**	F/**G**	F/**G**	**G**	**G**	F/**G**	**G**	F	**E**	**G**	**E**	**G**	F
	P/F	F	F	P	**G**	**G/E**	**E**	P	P	P/F	F	**E**	F	F	P	P	**G/E**	**E**	**G/E**	**E**	P	F/**G**	**E**	F/**G**	P	**E**	P	**G/E**	F	**E**	F	F/**G**
	P	P	P	**G**	P	**E**	P	P/F	P	P	F	**G/E**	F	**G**	P/F	P	F/**G**	**E**	P	**E**	P	P	**G/E**	F	F	**G/E**	U	**G/E**	**G/E**	P/F	P	P
	F	P	F	P	F	**G**	**G**	U	P	P	F	**G**	**G**	**E**	P	U	**G**	**E**	**G/E**	**E**	U	P	**G/E**	**G**	**G**	**G**	U	**G**	**G**	F/**G**	**G/E**	F

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HERBICIDE ADJUVANT RECOMMENDATIONS

HERBICIDE	SPRAY ADJUVANTS[1]									
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]	
AFFORIA	1-2 qt/100 gal					or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
AGENT 1.88	2-4 qt/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	
AIM EC/ANTHEM FLEX/SHARK EW (burndown)	1 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
AIM EC/SHARK EW (post-directed)	1 qt/100 gal									
AIM EC/SHARK EW (post-directed: dry conditions)	1 qt/100 gal									
ANTHEM MAXX	1 qt/100 gal	or	1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
ASSURE II/TARGA	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
ASSURE II + ***BASAGRAN/***FLEXSTAR/ ***AGENT 1.88***							1 gal/100 gal	or	0.5 gal/100 gal	
ASSURE II + CLASSIC	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
AUTHORITY FIRST DF/SONIC	1-2 pt/100 gal					or	1.2 gal/100 gal	or	0.6 gal/100 gal	
AUTHORITY XL	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
AUTUMN SUPER 51 WDG			1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
AVALANCHE ULTRA	1-2 pt/100 gal		1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
AVALANCHE ULTRA + ASSURE II/ ***BASAGRAN***/CLASSIC/FUSILADE/ FUSION/SCEPTER 70 DG/***2,4-DB***	1-2 pt/100 gal									
AVALANCHE ULTRA + ***BASAGRAN***/ POAST/RESOURCE/***SECTION THREE***			1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
AVALANCHE ULTRA + BEYOND XTRA/ CONCERT/FIRST RATE/PINNACLE/ PURSUIT	1-2 pt/100 gal									
BASAGRAN			0.5-2 pt/A	or	0.5-1 pt/A	or	0.5-2 pt/A	or	0.5-1 pt/A	
BASAGRAN + ***AVALANCHE ULTRA*** + POAST			1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt /A	or	0.5-1 pt/A	
BASAGRAN + CLASSIC/CONCERT/ FIRSTRATE/PINNACLE	1-2 pt/100 gal									
BASAGRAN + ***2,4-DB***										
BASAGRAN 5L	1-2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
BASAGRAN 5L + ***AVALANCHE ULTRA*** + POAST			1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt /A	or	0.5-1 pt/A	
BEYOND XTRA	1 qt/100 gal		1-2 gal/100 gal	or	0.5 gal/100 gal	or	1-2 gal/100 gal	or	0.5 gal/100 gal	
BEYOND XTRA + POAST			1-2 gal/100 gal	or	0.5 gal/100 gal	or	1-2 gal/100 gal	or	0.5 gal/100 gal	
CLASSIC ALONE or WITH ***AGENT 1.88***/ FLEXSTAR/REFLEX/FIRSTRATE	2 pt/100 gal		1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
CLASSIC + ***AVALANCHE ULTRA***	1-2 pt/100 gal									
CLASSIC + PHOENIX	2 qt/100 gal									
CLASSIC + COBRA (4-6 oz)							2 qt/100 gal	or	1 qt/100 gal	
CLASSIC + GLYPHOSATE PRODUCTS	1 qt/100 gal									
CLEANSE/SELECT MAX	1 qt/100 gal	or	1qt/A	or	1 pt/A	or	1qt/A	or	1 pt/A	
CLOAK EX	1-2 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
COBRA	1 qt/100 gal	or	1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A	
CORNERSTONE PLUS/CORNERSTONE 5 PLUS										

See notes and footnotes at end of table.

FERTILIZER ADDITIVES						NOTES
	28%N		AMS DRY[6]		CLASS ACT BRANDS[7]	
						COC[1] required unless tank mix doesn't allow COC, then use NIS. Use higher rate under arid conditions.
+	2.5 gal/100 gal	or	10 lb/100 gal		✓	(For Agent) Use NIS in Region 1 and East of Interstates 79 and 77 for Regions 2 and 3.
+	2-4 gal/100 gal	+	2-4 lb/A		✓	Burndown.
+	1-2 qt/A					
+	2-4 qt/A	or	2-4 lb/A			
+	2-4 qt/A	or	2-4 lb/A			For burndown or post broadleaf control.
+	2-4 qt/A	or	2-4 lb/A		✓	Up to 2 % COC[1] or 1% HSOC-COC[1] in arid conditions.
+	2-4 qt/A	or	2-4 lb/A			
					✓	
						Burndown.
+	1-2 qt/A	or	2.5 lb/A			For improved burndown.
+	1.5-2 qt/A	or	1.5-3 lb/A			
					✓	
+	2-4 pt/A	or	1-2 lb/A			
+/or	2-8 pt/A	or	1-2.5 lb/A			
+	1-2 qt/A	or	17 lb/100 gal		✓	Rates of adjuvants vary depending on application scenario.
+	2-4 pt/A	or	1-2 lb/A			
+	2-4 pt/A	or	1-2 lb/A		✓	
					✓	
or	1.25 - 2.5 gal/100 gal	or	8.5-17 lb/ 100 gal		✓	
+	1-2 qt/A	or	labeled			
					✓	Additives may cause some leaf burn.
+	10 lb/100 gal	or	labeled			
					✓	
+	2-4 qt/A	or	2-4 lb/A		✓	
		+	4.25-17 lb/100 gal		✓	
+	1 qt/A	or	2-5 lb/A			
			8.5-17 lb/100 gal			
		+	2 .5-4 lb/A			
			8.5-17 lb/100 gal			NIS, COC & MSO rates are dependent on relative humidity.
					✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.

HERBICIDE ADJUVANT RECOMMENDATIONS *continued*

HERBICIDE	SPRAY ADJUVANTS[1]									
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]	
CREDIT XTREME										
CRUSHER	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal /100 gal	
DISTINCT	1 qt/100 gal	or	1.5-2 pt/A	or	0.75-1 pt/A					
ELEVORE			0.5-1 gal/100 gal	or	0.5 gal/100 gal	or	0.5-1 gal/100 gal	or	0.5 gal/100 gal	
ENLITE/ENVIVE	1 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
FIERCE EZ/FIERCE MTZ/FIERCE XLT	1 qt/100 gal	or	1 qt/A	or	1 pt/A	or	1 qt/A	or	1 pt/A	
FIRSTRATE	1-2 pt/100 gal	or	1.2 gal/100 gal	or	0.6 gal/100 gal	or	1.2 gal/100 gal	or	0.6 gal/100 gal	
FIRSTRATE + GLYPHOSATE PRODUCTS										
FIRSTSHOT SG	1-2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
FLEXSTAR	1-2 qt/100	or	2-4 qt/100 gal	or	1-2 qt/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	
FLEXSTAR GT 3.5	1-2 qt/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	
FUSILADE DX	1-2 qt/100 gal					or	2-4 qt/100 gal	or	1-2 qt/100 gal	
FUSILADE DX + ***AVALANCHE ULTRA***	2 pt/100 gal					or	2-4 qt/100 gal	or	1-2 qt/100 gal	
FUSILADE DX + ***BASAGRAN***/ FLEXSTAR/REFLEX	2-4 pt/100 gal					or	2-4 qt/100 gal	or	1-2 qt/100 gal	
FUSILADE DX + CLASSIC	2 pt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
FUSILADE DX + GLYPHOSATE							1 qt/100 gal	or	1 pt/100 gal	
FUSION	1-2 qt/100 gal					or	2-4 qt/100 gal	or	1-2 qt/100 gal	
FUSION + ***2,4-DB***							2-4 qt/100 gal	or	1-2 qt/100 gal	
FUSION + GLYPHOSATE							1 qt/100 gal	or	1 pt/100 gal	
GRAMOXONE SL 3.0 ‡	2 pt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
HARMONY EXTRA SG	0.5-4 pt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
HERBIVORE	1-2 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
KYBER PRO	1 qt/100 gal	or	1 qt/A	or	1 pt/A	or	1 qt/A	or	1 pt/A	
LEADOFF	1 qt/100 gal	or	2 qt/100 gal	or	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal /100 gal	
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/ ***TOTAL 2.3***/***TOTAL SL***/CHEETAH										
PANOFLEX	0.5-4 pt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
PANOFLEX + ***2,4-D***/MCPA	1 pt/100 gal									
PANOFLEX + ***2,4-D***/MCPA/DICAMBA	1-2 pt/100 gal									
PANOFLEX + GLYPHOSATE	1-2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	
PERPETUO			1 pt/A	or	0.5 pt/A	or	1 pt/A	or	0.5 pt/A	
PHOENIX	1-2 pt/100 gal	+	1 pt/A	or	0.5 pt/A					
PHOENIX + FIRSTRATE/CLASSIC/ RESOURCE/SYNCHRONY STS/***CLEANSE***	1-2 pt/100 gal									
PHOENIX + BEYOND XTRA/PURSUIT/ SCEPTER 70 DG	2 qt/100 gal									
PHOENIX + ***2,4-DB***/BASAGRAN	1qt/100 gal									
PHOENIX + GLYPHOSATE PRODUCTS										

See notes and footnotes at end of table.

	FERTILIZER ADDITIVES					NOTES
	28%N		AMS DRY[6]		CLASS ACT BRANDS[7]	
					✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
+	2 qt/A	or	2 lb/A		✓	Double adjuvant/fertilizer under arid conditions.
+	5 qt/100 gal	or	5 lb/100 gal		✓	
+	1-2 qt/A	or	2-2.5 lb/A			Burndown.
			8.5-17 lb/100 gal			
+	2-4 qt/A	or	2-4 lb/A		✓	Use COC[1] or MSO[1] under dry conditions.
+	1-2.5 gal/100 gal	or	8.5 lb/100 gal		✓	
					✓	
					✓	Use NIS in Region 1 and East of Interstates 79 and 77 for Regions 2 and 3.
+	1-2.5 gal/100 gal	or	8.5-17 lb/100 gal			
+	4 qt/A					
+	4 qt/A				✓	NIS, COC[1], and MSO[1] may be added for difficult weeds or adverse conditions.
						Use 1 pt/A COC or NIS by air.
		+	8.5-17 lb/100 gal		✓	See label for COC use and Fusilade DX rate.
		+	8.5-17 lb/100 gal		✓	
						Use 2 pt/A Preference by air.
or	2-4 qt/A	or	2-4 lb/A		✓	COC or MSO for burndown.
+	2-4 qt/A	or	2-4 lb/A		✓	Preplant burndown (fall application). Preemergence, preplant and postemergence in STS soybeans only.
+	1-2 qt/A	or	2-4 lb/A		✓	
			8.5-17 lb/100 gal			
+	2 qt/A	or	2 lb/A		✓	
					✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
						Use 2% COC under arid conditions and MSO if specified by local FMC literature.
						Or add 0.125 - 0.5% v/v of COC + 0.125-0.25% NIS
+	2-4 qt/A	or	2-4 lb/A		✓	
+	1-2 qt/A	or	2-2.5 lb/A			Use of spray grade nitrogen source is optional.
		+	2 lb/A		✓	
			2-4 lb/A		✓	
	2.5 lb/A					

HERBICIDE ADJUVANT RECOMMENDATIONS *continued*

HERBICIDE	SPRAY ADJUVANTS[1]									
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]	
POAST/POAST PLUS			1.5 pt/A	or	0.75 pt/A	or	2 pt/A	or	1 pt/A	
PURSUIT	1 qt /100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1.25 gal/100 gal	or	0.75 gal/100 gal	
PURSUIT + POAST							1.25 gal/100 gal	or	0.75 gal/100 gal	
REFLEX	1-2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	
RESOURCE			1 qt/A	or	1 pt/A	or	1 qt/A	or	1 pt/A	
ROUNDUP POWERMAX 3	1-2 qt/100 gal									
RT 3										
RUGGED	1 qt/100 gal						1 qt/100 gal	or	0.5 gal/100 gal	
SADDLE-UP	2-4 pt/100 gal					or	1 qt/A	or	0.5 qt/A	
SCEPTER 70 DG	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal	
SECTION THREE			1 qt/A	or	1 pt/A	or	1 qt/A	or	1 pt/A	
SELECT MAX	1 qt/100 gal	or	1 qt/A	or	1 pt/A	or	1 qt/A	or	1 pt/A	
SEQUENCE										
SHARPEN			1 pt/A	or	0.75 pt/A					
SPITFIRE	2-4 pt/100 gal					or	1 qt/A	or	0.5 qt/A	
STORM	1-2 pt/100 gal					or	1-2 pt/A	or	0.5-1 pt/A	
STORM + ***BASAGRAN***	1-2 pt/100 gal									
STORM + ***BASAGRAN***/RESOURCE							1-2 pt/A	or	0.5-1 pt/A	
STORM + ASSURE II/BEYOND XTRA/ CLASSIC/CONCERT SP/FIRSTRATE/ FUSILADE/FUSION/PINNACLE/ PURSUIT/RELIANCE/SCEPTER 70 DG	1-2 pt/100 gal									
STORM + ASSURE II/FUSILADE/ FUSION/POAST/SYNCHRONY STS							1 pt/A	or	0.5 pt/A	
SURVEIL - BURNDOWN	1-2 pt/100 gal					or	1.2 gal/100 gal	or	0.6 gal/100 gal	
SYNCHRONY XP (non STS soybeans)	1-2 qt/ 100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
TRIVENCE	1-2 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
VALOR SX/VALOR EZ/PANTHER SC	1 qt/100 gal	or	1 qt/10 0 gal	or	1 pt/100 gal	or	1 qt/100 gal	or	1 pt/100 gal	
VALOR XLT	1 qt/100 gal					or	1-2 pt/A	or	0.5 pt/A	
VARISTO	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1-2 gal/100 gal	or	0.5 gal/100 gal	
VERDICT/***TESTIFY***			1 pt/A	or	0.75 pt/A					
VIDA	1 qt/100 gal					or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	
WARRANT ULTRA	1-2 qt/100 gal					or	0.5-1 gal/100 gal	or	0.25-0.5 gal/100 gal	

See notes and footnotes at end of table.

FERTILIZER ADDITIVES						NOTES
	28%N		AMS DRY[6]		CLASS ACT BRANDS[7]	
+	4-8 pt/A	or	2.5 lb/A		✓	
+	1.25-2.5 gal/100 gal	or	12-15 lb/100 gal		✓	
	12-15 lb/100 gal				✓	
						Use MSO for control of Giant Ragweed in Regions 2 and 3.
		+	8.5-17 lb/100 gal		✓	
					✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
					✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
+/or	2-4 qt/A					
		+	8.5-17 lb/100 gal		✓	
		+	2.5-4 lb/A			
					✓	See GLYPHOSATE AND GLUFOSINATE ADJUVANT RECOMMENDATIONS table in this section.
+	1.25-2.5 gal/100 gal	or	8.5-17 lb/100 gal			
+/or	2-4 qt/A					
or	4-8 pt/A	or	2.5 lb/A		✓	
+	4-8 pt/A	or	2.5 lb/A			
	4-8 pt/A	or	2.5 lb/A			
+	2-4 pt/A	or	1-2 lb/A			
		+	17 lb/100 ga		✓	
+	2-4 qt/A	or	2-4 lb/A		✓	COC[4] or MSO[2] for burndown.
+	1-2 qt/A	or	2-2.5 lb/A		✓	Use higher rate under arid conditions.
		+	8.5-17 lb/A			
or	2.5 gal/100 gal	or	12-15 lb/100 gal			To achieve consistent weed control, adjuvant + fertilizer are required. May cause crop leaf burn, especially at high T and humidity, but new growth is normal and vigor not reduced.
+	1.25-2.5 gal/100 gal	or	8.5-17 lb/100 gal			Crop oil concentrate for burndown only.

HERBICIDE	SPRAY ADJUVANTS[1]									
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]	
ZIDUA PRO			1 gal/100 gal	or	0.5 gal/100 gal					

Always refer to product label for specific information.

[1] When rate ranges are given for adjuvants, higher rates are recommended under dry conditions. See specific label for details.

[2] Use a quality MSO like Noble.

[3] Use a quality HSOC-MSO like Optify HSMSO or Destiny HC. HSOC-MSOs are generally used at half the labeled MSO rates.

[4] Use a quality COC like Valcheck COC.

[5] Use a quality HSOC-COC like Optify HSCOC or Superb HC. HSOC-COCs are generally used at half the labeled COC rates. Do not use Superb HC at less than 1 pt/A at < 12.5 GPA. Contact the herbicide manufacturers representative to verify that they will allow its use.

	FERTILIZER ADDITIVES					NOTES
	28%N		AMS DRY[6]		CLASS ACT BRANDS[7]	
	+ 1.25-2.5 gal/100 gal	or	8.5-17 lb/100 gal			MSO-based adjuvant must contain at least 60% methylated seed oil. Do not use <1pt/A of MSO with low-volume (<12.5 GPA) aerial or ground applications.

[6] Liquid Ammonium Sulfate (8-0-0-9) Equivalency: 3 qt liquid ~ 2.5 lb dry, 5 gal liquid = 17 lb dry.
[7] Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
[8] See Glyphosate and Glufosinate Adjuvant Recommendations for additional information on all glyphosate and glufosinate products.

L- labeled, but may not be the best choice because of crop tolerance or weed control issues. Consult product representatives or product label.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

GLYPHOSATE/GLUFOSINATE ADJUVANT RECS

Herbicide	FERTILIZER ADDITIVES			ADJUVANT			
	AMS Dry		AMS Liquid		Class Act NG		Class Act Flex
CHEETAH	1.5-3 lb/A	or	2.5-5 gal/100 gal		2.5 gal/100 gal***	or	1-4 gal/100 gal
CORNERSTONE PLUS	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal	or	*/**	or	1-4 gal/100 gal
CORNERSTONE 5 PLUS	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal	or	*/**	or	1-4 gal/100 gal
CREDIT XTREME	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal		*	or	1-4 gal/100 gal
HONCHO K6	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal		2.5 gal/100 gal	or	1-4 gal/100 gal
LIBERTY ULTRA	1.5-3 lb/A	or	2.5-5 gal/100 gal		2.5 gal/100 gal***	or	1-4 gal/100 gal
LIBERTY 280 SL	1.5-3 lb/A	or	2.5-5 gal/100 gal		2.5 gal/100 gal***	or	1-4 gal/100 gal
ROUNDUP POWERMAX 3	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal		*	or	1-4 gal/100 gal
ROUNDUP WEATHERMAX	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal		2.5 gal/100 gal	or	1-4 gal/100 gal
RT 3	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal	or	2.5 gal/100 gal***	or	1-4 gal/100 gal
SEQUENCE	8.5-17 lb/100 gal	or	2.5-5 gal/100 gal		2.5 gal/100 gal**/***	or	1-4 gal/100 gal
TOTAL/TOTAL 2.3/TOTAL SL	1.5-3 lb/A	or	2.5-5 gal/100 gal		2.5 gal/100 gal***	or	1-4 gal/100 gal

* WC + NIS at 5 qt/100 gal.
** May be used if approved by manufacturers' representative.
*** To ensure maximum activity, add additional AMS to Class Act NG (2.5%).

GPA	3 LB/AMS/A	1.5 LB/AMS/A
	(LB AMS/100 GAL TO ADD AT INDICATED GPA)	
20	6.5	-
17	9.2	0.3
16	10.3	0.9
15	11.5	1.5

	DRIFT CONTROL AND DEPOSITION AID							NIS
		InterLock		MasterLock		PowerLock		AccuDrop	Preference
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	1-2 qt/100 gal
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	
	+	4-6 fl oz/A	or	6.4 fl oz/A	or	5-8 fl oz/A	or	3 fl oz/A	

POSTMERGENCE APPL. RATES AND BROADLEAF/SEDGE SIZES

BROADLEAF/ SEDGE	*AGENT 1.88*		ANTHEM MAXX		*AVALANCHE ULTRA*		*BASAGRAN*		BASAGRAN 5L		CLASSIC		COBRA		FIRSTRATE	
	# of leaves	Rate pt/A	Ht in	Rate oz/A	Ht in	Rate pt/A	Ht in	Rate pt/A	Ht in	Rate pt/A	Ht in	Rate oz/A	# of leaves	Rate fl oz/A	# of leaves	Rate fl oz/A
BUFFALOBUR	—	—	—	—	2*	1.5	—	—	—	—	—	—	4	12.5	—	—
BURCUCUMBER	—	—	2 3	3.5-4.5 5-6	—	—	—	—	—	—	2-3* 2-6*	0.66 0.75	4	12.5	2-4* *(6")*	0.3
COCKLEBUR	2 4	1.3 1.6	—	—	2	1.5	4 6 10 12-24*	1 1.5 1.5 2-3	4 6 10	0.8 1.2 1.6	6 8 12	0.5 0.66 0.75	4 5	8 10	4-8 *(10")*	0.3
JIMSONWEED	2 4 6 8	0.75 1 1.3 1.6	2 2	3.5-4.5 5-6	4 6	1 1.5	4 6 10	1 1.5 2	4 6 10	0.8 1.2 1.6	4 5 6	0.5 0.66 0.75	4	12.5	2-4 *(4")*	0.3
KOCHIA	—	—	2 2	3.5-4.5 5-6	—	—	—	—	—	—	—	—	6	10	—	—
LAMBSQUARTERS	2*	1-1.6	2 3	3.5-4.5 5-6	2	1.5	1 2	1 2	1 1.5 2	0.8 1.2 1.6	—	—	—	—	—	—
MARESTAIL *(Horseweed)*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MORNINGGLORY, ANNUAL	2-6 *(see label)*	0.75-1.6	2 3	3.5-4.5 5-6	2 4	1 1.5	4	2-3	4 6	1.2 1.6	2 3 4	0.5 0.66 0.75	2-4 *(see label)*	12.5	2-4 *(4")*	0.3
NIGHTSHADE, BLACK	2 4	0.75 1-1.6	2* 2	3.5-4.5 5-6	<2 2	1 1.5	—	—	—	—	—	—	5 6	10 12.5	—	—
NUTSEDGE, YELLOW	*	1.6	—	—	—	—	6-8 Repeat	2	8	1.2-1.6	3 4	0.5 0.75	—	—	8"	0.3
PIGWEED SPECIES *(May Include Palmer Amaranth - See Label)*	2* 4 6	0.75 1 1.3-1.6	2* 4	3.5-4.5 5-6	< 4	1	—	—	—	—	2 3 4	0.5 0.66 0.75	6 6 6	8 10 12	—	—
PRICKLY SIDA *(Teaweed)*	Cotyledon*	1.6	—	—	—	—	3 4	1.5 2	3 4	1.2 1.6	—	—	4	12.5	—	—
RAGWEED, COMMON	2 4 6	0.75 1-1.3 1.6	—	—	2 3	1 1.5	3	2	3	1.6	3 4	0.66 0.75	4 6	10 12.5	4-6 *(8")*	0.3
RAGWEED, GIANT	4 *(see label)*	1.3-1.6	—	—	<2 3	1 1.5	6	2	6	1.6	4 6	0.66 0.75	4	12.5	4-6 *(10")*	0.3
SICKLEPOD	Cotyledon*	1.6	—	—	—	—	—	—	—	—	1-3	0.66	—	—	<2"	0.3
SMARTWEED, PENNSYLVANIA	2* 4 6	0.75 1-1.3 1.6	2* 2	3.5-4.5 5-6	4 6	1 1.5	4 6 10	1 1.5 2	6 10	1.2 1.6	2 3 4	0.5 0.66 0.75	4*	12.5	2-4 *(6")*	0.3
SUNFLOWER	2	1.6	—	—	—	—	3 5 8	1 1.5 8	5 8	1.2 1.6	5 6 8	0.5 0.66 0.75	2	12.5	4-8 *(12")*	0.3
VELVETLEAF	2 4	1.3 1.6	6 6	3.5-4.5 5-6	—	—	2 6 12*	1 0.75 3	2 5	1.2 1.6	4 *(add N)*	0.66	4*	12.5	2-4 *(6")*	0.3
VENICE MALLOW	2 4 6	0.75 1-1.3 1.6	—	—	—	—	2 4	1.5 2	2 4	1.2 1.6	—	—	4	12.5	2-4 *(3")*	0.3
WATERHEMP	2* 2 6	0.75 1-1.3 1.6	2* 2	3.5-4.5 5-6	<4 4	1 1.5	—	—	—	—	—	—	4 6	10 12.5	—	—
WILD BUCKWHEAT	—	—	2* 2*	3.5-4.5 5-6	<2*	1.5	5	2	—	—	—	—	—	—	—	—
WILD MUSTARD	2 4 6 8	0.75 1 1.3 1.6	—	—	2-3 4	1 1.5	2 4 8	0.8 1.5 2	—	—	4 5 6	0.5 0.66 0.75	6	12.5	2-4 *(2")*	0.3

See notes and footnotes at end of table.

BROADLEAF/ SEDGE	FLEXSTAR GT 3.5 *(Roundup Ready soybeans only)*		***HERBIVORE***		PHOENIX *(may require addition of COC - see label)*	
	Ht in	Rate pt/A	Ht in	Rate oz/A	Ht in	Rate fl oz/A
BUFFALOBUR	—	—	—	—	4	12.5
BURCUCUMBER	—	—	1-3* 4-12*	0.67 1	4	12.5
COCKLEBUR	4 6 8	3.5 4.5 5.3	1-9 9-14	0.67	2 4	12.5 12.5
JIMSONWEED	4 6 8	3.5 4.5 5.3	—	—	2 4	8 12.5
KOCHIA	—	—	1-3 3-6*	0.67 1	2	12.5
LAMBSQUARTERS	4 6 10	3.5 4.5 5.3	1-2*	0.67	—	—
MARESTAIL *(Horseweed)*	—	—	—	—	—	—
MORNINGGLORY, ANNUAL	3 3 4	3.5 4.5 5.3	1-3*	1	2	12.5
NIGHTSHADE, BLACK	4 6 8	3.5 4.5 5.3	—	—	2 3 4	8 10 12.5
NUTSEDGE, YELLOW	—	—	4-12* 4-12	0.67 1	—	—
PIGWEED SPECIES *(May Include Palmer Amaranth - See Label)*	4 4, 6 6	3.5 4.5 5.3	1-3 4-6	0.67 1	3 4	12.5 12.5
PRICKLY SIDA *(Teaweed)*	2 4	3.5 4.5	—	—	2	12.5
RAGWEED, COMMON	4 5 6 *(see label)*	3.5 4.5 5.3	1-9 9-12	0.67 1	4 5 6	8 10 12.5
RAGWEED, GIANT	4 8 *(see label)*	3.5 5.3	1-3 4-6	0.67 1	3 4	8 10
SICKLEPOD	4	5.3	—	—	—	—
SMARTWEED, PENNSYLVANIA	4 6 8	3.5 4.5 5.3	1-2	0.67	—	—
SUNFLOWER	4 6 8	3.5 4.5 5.3	1-12 12-15	0.67 1	2	12.5
VELVETLEAF	4 6 8	3.5 4.5 5.3	1-9 9-12 *(add N)*	0.67 1	—	—
VENICE MALLOW	4 6	4.5 5.3	1-3 4-12	0.67 1	2	10
WATERHEMP	2 4 6 *(see label)*	3.5 4.5 5.3	—	—	4 5 6	8 10 12.5

See notes and footnotes at end of table.

BROADLEAF/ SEDGE	FLEXSTAR GT 3.5 *(Roundup Ready soybeans only)*		***HERBIVORE***		PHOENIX *(may require addition of COC - see label)*	
	Ht in	Rate pt/A	Ht in	Rate oz/A	Ht in	Rate fl oz/A
WILD BUCKWHEAT	—	—	—	—	—	—
WILD MUSTARD	6 8 10	3.5 4.5 5.3	4-6	1-1.3	2 4	8 12.5

BE SURE TO USE THE PROPER ADJUVANTS AS RECOMMENDED ON THE HERBICIDE LABEL.
* Suppression only.
— No control or weed not on label.

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

POSTMERGENCE APPL. RATES AND BROADLEAF/SEDGE SIZES *continued*

BROADLEAF/SEDGE (products are not included in this table if labeled rate controls all listed weeds at the same height)	REFLEX *(geography dependent - see label)*		RESOURCE		SCEPTER 70 DG		SYNCHRONY XP *(STS-designated soybeans)*		***TOTAL/TOTAL 2.3/ TOTAL SL*** *(LibertyLink soybeans only)*		WARRANT ULTRA		VARISTO	
	# of leaves	Rate pt/A	# of leaves	Rate fl oz/A	Ht in	Rate oz/A	Ht in	Rate oz/A	Ht in	Rate fl oz/A	# of leaves	Rate fl oz/A	Ht in	Rate fl oz/A
BUFFALOBUR	—	—	—	—	—	—	6*	0.75-1.25	6 7	22 29	—	—	—	—
BURCUCUMBER	4 6	1 1.5	—	—	—	—	3	0.75-1.25	6 10	22 29	—	—	—	—
COCKLEBUR	2 4	1.25 1.5	3*	8	8 12	1.4 2.8	3 8	0.375 0.75-1.25	6 14	22 29		48-70	4 4 2-8	16 21 27
JIMSONWEED	4 6 8	1 1.25 1.5	4	8	—	—	3 5	0.375 0.75-1.25	6 10	22 29	4 6	50 60	4 6	16-27 27
KOCHIA	—	—	—	—	—	—	3*	0.75-1.25	4 6	22 29	—	—	3*	21-27
LAMBSQUARTERS	2*	1.25	3*	8	—	—	4	0.75-1.25	4 6	22 29	2	50-60	1.5 2-5 *(see label)*	21 27
MARESTAIL *(Horseweed)*	—	—	—	—	—	—	2 5	0.375 0.75-1.25	—* 6-12	22 29	—	—	—	—
MORNINGGLORY, ANNUAL	2 4	1 1.5	—	—	—	—	2 3	0.375 0.75-1.25	6 8	22 29	2-4	50-60	3	27
NIGHTSHADE, BLACK	4	1	—	—	—	—	—	—	4 6	22 29	4	50-60	3	16-27
NUTSEDGE, YELLOW	—	—	—	—	—	—	3	0.75-1.25	—	—	—	—	3*	21
PIGWEED SPECIES *(May Include Palmer Amaranth - See Label)*	4 6	1 1.5	2* 3	*(redroot)* 8 6	12 6	2.8 2.8	8	0.75-1.25	3 4	22 29	4 6	50 60	3 4	16-27 27
PRICKLY SIDA *(Teaweed)*	—	—	3 4	6 8	—	—	—	—	4 5	22 29		48-70	3	27
RAGWEED, COMMON	4 6	1 1.5	4 6	6 8	—	—	4	0.75-1.25	6 10	22 29	4	50-60	3*	27
RAGWEED, GIANT	4	1.25	—	—	—	—	4	0.75-1.25	6 12	22 29	— 4	50 60	3*	27
SICKLEPOD	—	—	—	—	—	—	3	0.75-1.25	4 6	22 29	—	—	—	—
SMARTWEED, PENNSYLVANIA	4 6	1 1.5	—	—	—	—	4 8	0.375 0.75-1.25	6 14	22 29	4	50-60	4 6	16-21 27
SUNFLOWER	2	1.5	—	—	4 8	1.4	4 8	0.375 0.75-1.25	6 10	22 29	—	—	3 2-8	16-21 27
VELVETLEAF	2 4	1.25 1.5	6 8 10 30	4 6 8 12	—	—	4 8	0.375 0.75-1.25	3 4	22 29	—	—	2 3	16 21-27
VENICE MALLOW	4 6	1 1.5	—	—	4 8	1.4 2.8	3*	0.75-1.25	6 8	22 29	4	50-60	2 1-4	16-21 27
WATERHEMP	2 4	1 1.5	—	—	—	—	—	—	5	29	2	50-60	—	—
WILD BUCKWHEAT	—	—	—	—	—	—	—	—	6 7	22 29	—	—	3	27
WILD MUSTARD	4 6 8	1 1.25 1.5	—	—	—	—	5	0.75-1.25	4 6	22 29	4 6	50 60	3	16-27

BE SURE TO USE THE PROPER ADJUVANTS AS RECOMMENDED ON THE HERBICIDE LABEL.
* Suppression only.

— No control or weed not on label.
Herbicide-resistant biotypes are not controlled.

GRASSES *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	ASSURE II/ TARGA		FLEXSTAR GT 3.5 *(Roundup Ready soybeans only)*		FUSILADE DX *(reduced rates, other info - see label)*		FUSION [b]		SELECT MAX		***SECTION THREE***		***TOTAL/ TOTAL 2.3 / TOTAL SL*** *(LibertyLink sobyeans only)*		VARISTO	
	Ht in	Rate fl oz/A	Ht in	Rate pt/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A
ANNUALS																
BARNYARDGRASS	2-6	8-10	6 10 12	3.5 4.5 5.3	2-3	12 12	2-4	8 *(see label)*	2 to 8	9 to 16	2-8	4-5.33	3 5	22 29	3 3*	27 21
BROADLEAF SIGNALGRASS	2-6	10	8 10	3.5 4.5	2-4	12	2-4	8-10	2 to 6	9 to 16	2-6	4-5.33	3 5	22 29	2-5	27
CRABGRASS	2-6	8-10	12	3.5	1-2	12	1-4	8	2 to 6	9 to 16	2-6	4-5.33	3 5	22 29	3*	21-27
DOWNY BROME	—	—	—	—	2-6	8	2-6	6	2 to 6	9 to 16	2-6	4-5.33	—	—	3	21-27
FALL PANICUM	2-6	7-8	6 10	3.5 4.5	2-6	12	2-6	8	2 to 8	9 to 16	2-8	4-5.33	3 5	22 29	2-6	27
FOXTAIL, GIANT	<4 2-8	5-8 7-8	18	3.5	2-6	12	2-8 16 *(rescue)*	7 *(see label)* 8-14	2 to 12	9 to 16	2-12	4-5.33	6 12	22 29	3	21-27
FOXTAIL, GREEN	2-4	7-8	18	3.5	2-4	12	2-4	8 *(see label)*	2 to 8	9 to 16	2-8	4-5.33	6 12	22 29	3	21-27
FOXTAIL, YELLOW	2-4	7-8	18	3.5	2-4	12	2-4	8 *(see label)*	2 to 8	9 to 16	2-8	4-5.33	3 4	22 29	3	21-27
JOHNSONGRASS, SEEDLING	2-8	5-8	12 18	3.5 4.5	2-8 2-4 *(see label)*	6 8	2-8	6	4 to 10	9 to 16	4-10	4-5.33	3 5	22 29	4-8	27
SANDBUR, FIELD	2-6	7-8	—	—	2-4	12	2-4	8	2 to 6	9 to 16	2-6	4-5.33	* 2	22 29	—	—
SHATTERCANE	6-12	5-8	12 16	3.5 4.5	6-12	6	6-12	6	6 to 18	9 to 16	6-18	4-5.33	6 8	22 29	3	21-27
TEXAS PANICUM	2-4 2-4 *(see label)*	8 10	10 18	3.5 4.5	2-8	12	2-8	8	2 to 6	9 to 16	2-6	4-5.33	4 6	22 29	—	—
VOLUNTEER CEREALS	2-6	7-8	12-24 *(see label)*	3.5	2-6 2-4 *(see label)*	8 12	2-6	8	2 to 6	9 to 16	2-6	4-5.33	4 5	22 29	3	21-27
VOLUNTEER CORN	6-18 18-30	5 *(see label)* 8	24	3.5	12-24 12-18 *(see label)*	6 12	12-24	6 *(see label)*	<12 12-24 24-36	6 9 12	<12 12-24 24-36	2.67-4 4-5.33 5.33-6	10 12	22 29	2-8	21-27
WILD OATS	2-6	7-8	18	3.5	2-6 2-4 *(see label)*	8 12	2-6	8	2 to 6	9 to 16	2-6	4-5.33	3 4	22 29	3	21-27
WILD PROSO MILLET	2-6	5-8	12 16	3.5 4.5	4-8	6	4-8 16 *(rescue)*	6 8-14	2 to 10	9 to 16	2-10	4-5.33	6 7	22 29	3	27
WOOLLY CUPGRASS	2-4 *(see label)*	9-10	12	3.5	2-4	12	2-4 16 *(rescue)*	8 8-14	2 to 8	9 to 16	2-8	4-5.33	6 12	22 29	2-4*	27

See notes and footnotes at end of table.

POSTEMERGENCE APPL. RATES AND GRASS SIZES *continued*

GRASSES *(products are not included in this table if labeled rate controls all listed weeds at the same height)*	ASSURE II/ TARGA		FLEXSTAR GT 3.5 *(Roundup Ready soybeans only)*		FUSILADE DX *(reduced rates, other info - see label)*		FUSION [b]		SELECT MAX		***SECTION THREE***		***TOTAL/ TOTAL 2.3 / TOTAL SL*** *(LibertyLink sobyeans only)*		VARISTO	
	Ht in	Rate fl oz/A	Ht in	Rate pt/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A	Ht in	Rate fl oz/A
PERENNIALS																
JOHNSONGRASS *(Rhizome)* - 1ST	*(see label)* 10-24	10-12	—	—	see	see	8-18	10-12	12-24	12-32	12-24	5.33-	—	—	3*	21-27
REGROWTH - 2ND	—	—	—	—	label	label	6-12	8	6-18	9-24	6-18	10.67 4-5.33	—	—	3	21-27
QUACKGRASS-1ST	6-10	10-12	—	—	6-10	12	6-10	12	4-12	12-32	4-12	5.33-	—	—	3	21-27
REGROWTH - 2ND	—	—	—	—	<10	8	10	8	4-12	12-32	4-12	10.67 5.33- 10.67	—	—	—	—
WIRESTEM MUHLY-1ST	4-8	8-10	—	—	4-12	12	4-12	12	4-8	12-32	4-8	5.33-	—	—	—	—
REGROWTH - 2ND	—	—	—	—	4-12	12	4-12	10	4-8	12-32	4-8	10.67 5.33- 10.67	—	—	—	—

BE SURE TO USE THE PROPER ADJUVANTS AS RECOMMENDED ON THE HERBICIDE LABEL.
* Suppression only.
— No control or weed not on label.

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

When both broadleaf weeds and grasses are a problem after crop emergence, it is necessary to use both a broadleaf herbicide and a grass herbicide. Sometimes these can be applied together in a tank mix; other times, they should be applied separately; one following the other — sequentially. Sequential applications should be made when the weeds and grasses are not at the correct stage for treatment at the same time; or if the grasses to be controlled include rhizome johnsongrass, quackgrass, volunteer corn, wild oats and volunteer cereals. If weeds and grasses are small and about the same size, and perennial grasses are not a problem, then a tank mix may save time and application costs. Higher rates of the grass herbicide are often required if tank mixed. The following table outlines the sequential spray applications that are labeled for postemergence broadleaf and grass herbicides. Sequential applications do not have to be labeled by the manufacturer for growers to use them (unless specifically prohibited). However, performance may suffer, and manufacturers may not be liable for failure of performance when unlabeled treatments are made. **Glyphosate Antagonisms:** Several herbicides can reduce grass and broadleaf control of glyphosate in tank mixes; particularly with low rates of glyphosate in burndown and glyphosate tolerant soybean situations. Grass control is often reduced more than for broadleaves.

Interval A applied First	Herbicide A	Herbicide B	Interval B applied First
7 days	***AVALANCHE ULTRA***	Assure II/Targa	24 hours
7 days	***AVALANCHE ULTRA***	Fusilade DX	3-5 days
7 days	***AVALANCHE ULTRA***	Fusion	2-3 days
7 days	***AVALANCHE ULTRA***	***SECTION THREE***/ ***CLEANSE***	24 hours
7 days	***BASAGRAN***	ASSURE II/TARGA	24 HOURS
24 hours	***BASAGRAN***	FUSILADE DX	24 hours
AWGR	***BASAGRAN***	FUSION	2-3 days
AWGR	***BASAGRAN***	***SECTION THREE***/ ***CLEANSE***	24 hours
AWGR	***BASAGRAN*** + ***AVALANCHE ULTRA***	ASSURE II/TARGA	24 hours
NL	***BASAGRAN*** + ***AVALANCHE ULTRA***	FUSILADE DX	NL
AWGR	***BASAGRAN*** + ***AVALANCHE ULTRA***	FUSION	2-3 days
AWGR	***BASAGRAN*** + ***AVALANCHE ULTRA***	***SECTION THREE***/ ***CLEANSE***	24 hours
7 days	CLASSIC	ASSURE II/TARGA	24 hours
NL	CLASSIC	FUSILADE DX	7 days
7 days	CLASSIC	FUSION	2-3 days
7 days	CLASSIC	***SECTION THREE***/ ***CLEANSE***	24 hours
AWGR	COBRA	ASSURE II/TARGA	24 hours
AWGR	COBRA	FUSILADE DX	24 hours
AWGR	COBRA	FUSION	2-3 days
AWGR	COBRA	***SECTION THREE***/ ***CLEANSE***	24 hours
7 days	FIRSTRATE	GRASS HERBICIDES	7 days
AWGR	FLEXSTAR/AGENT 1.88	ASSURE II/TARGA	2-3 days
AWGR	FLEXSTAR/***AGENT 1.88***	FUSILADE DX	2-3 days
NL	FLEXSTAR/***AGENT 1.88***	FUSION	NL
AWGR	FLEXSTAR/***AGENT 1.88***	***SECTION THREE***/ ***CLEANSE***	2-3 days
7 days	PURSUIT or BEYOND XTRA	ASSURE II/TARGA	3 days
7 days	PURSUIT or BEYOND XTRA	FUSILADE DX	3 days
7 days	PURSUIT or BEYOND XTRA	FUSION	2-3 days
7 days	PURSUIT or BEYOND XTRA	***SECTION THREE***/ ***CLEANSE***	3 days
AWGR	REFLEX	ASSURE II/TARGA	2-3 days
AWGR	REFLEX	FUSILADE DX	3-5 days
AWGR	REFLEX	FUSION	2-3 days
AWGR	REFLEX	***SECTION THREE***/ ***CLEANSE***	2-3 days
7 days	RESOURCE	***SECTION THREE***/ ***CLEANSE***	24 hours
7 days	SCEPTER 70 DG	ASSURE II/TARGA	3 days
7 days	SCEPTER 70 DG	FUSILADE DX	3 days
7 days	SCEPTER 70 DG	FUSION	2-3 days
7 days	SCEPTER 70 DG	***SECTION THREE***/ ***CLEANSE***	3 days
7 days	STORM	OTHER	24 hours

This chart is intended to be a guide only. Always READ and FOLLOW product labels.
NL – Not labeled or warranted by either manufacturer.
AWGR: After weeds' new leaf growth resumes (usually about 7 days).

HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Comments/Restrictions	Do Not Till		GPA[2]		Rainfast (hrs.)	Interval (Days)[1]		
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
AFFORIA	PP PRE	Fall through Spring, do not till after fall applications. 2.5 oz/A up to 3 days after planting and prior to emergence; >2.5 to 3.75 oz/A 7 days prior to planting.	–	–	10-15	5	1	NO	NO	NR
AGENT 1.88		SEE FLEXSTAR								
AIM EC/SHARK EW	PP POST PH	PP Burndown to actively growing weeds up to 4" or to rosettes <3" across. Broadcast or directed to V3-V10 to actively growing weeds up to 4" or to rosettes <3" across. Up to 3 days before harvest to actively growing weeds up to 4" or to rosettes <3" across.	–	–	10	3		NO	NO	 V10 3
ANTHEM FLEX	PP PPI PRE	Fall Burndown: Apply when soil temperatures at 4" are sustained <55°F and before the ground freezes. Incorporate into upper 1-2" up to 14 days before planting. Seed should be planted a minimum of 1" deep.	–	–	10	3	1-4	NO	NO	NR
ANTHEM MAXX	PP PRE POST	FALL burndown - soil < 55°F, not to exceed 2 inch incorporation if tilled. PP 15-45 days before planting. Soybean seed must be planted a minimum of 1 inch deep to avoid crop injury risk. May be applied through the sixth trifoliate (V6) leaf stage.	–	–	5-10	3	–	NO	NO	60
ASSURE II/TARGA	PP POST	For burndown of emerged small grasses prior to planting. Up to 80 days before harvest.	7	7	10-15	3-5		NO	NO	80
AUTHORITY ASSIST	PP PRE	Up to 45 days before planting. May incorporate 2". Fall prior to soybeans. Up to 3 days after planting, but before soybeans are emerged.	–	–	10-40	NO	–	NO	NO	NR
AUTHORITY ELITE/ BROADAXE XC	PP,PPI,PRE	FALL after harvest soil <55°F at 4" certain states. PP,PPI: Only no-till and minimum till systems only in certain states. PPI to 2". PRE: Apply up to 3 days after planting.	–	–	10	5	–	30	30	NR
AUTHORITY EDGE	PP PPI PRE	Fall Burndown: Apply after crop harvest when soil temperatures at 4" are sustained <55 °F and before the ground freezes. Do not exceed 2" incorporation depth if tilled after application. Incorporate into the upper 1-2" of soil surface. May be applied prior to and up to 3 days after planting. Plant crop seeds a minimum of 1" deep.	–	–	10	5	–	NR	NR	NR
AUTHORITY FIRST DF/ SONIC	PPI PP PRE	Incorporate into top 1-3 inches of seedbed Burndown Apply up to 3 days after planting	–	–	10-40	NO	–	NO	NO	65
AUTHORITY XL	PP PRE	Fall after harvest. Spring up to 60 days before planting. PPI 2". Within 3 days after planting, but before crop emerges.	–	–	10-40	5	1	NO	NO	NR
AUTHORITY SUPREME	PP,PRE PPI	Before planting and <3 days after planting. Do not apply if sprouts are close to surface or after crop emergence. Incorporate 1-2" (but not >2") before planting.			10	5		NR	NR	NR
AUTUMN SUPER 51 WDG	PP	After fall harvest but at least 60 days before planting.	–	–	10	NO	2	NR	NR	NR
AVALANCHE ULTRA	POST	Up to 50 days before harvest.	5	7	10-20	5-10	4	NO	NO	50
BASAGRAN	POST	Up to harvest.	5	7	10-20	10	4	30	30	NR
BASAGRAN 5L	POST	Apply to actively growing weeds.	5	7	10-20	5	4	30	30	30
BEYOND XTRA	POST	Apply to small weeds and before soybeans bloom.	–	7	10	5	1	0	0	0
BOUNDARY 6.5EC/ ***PRESIDUAL***	PP PRE POST	Up to 30 days before planting, 14 days if PPI (2"). Before crop emergence. To GT soy in tank mix with glyphosate, or alone in specific states (see label): Directed application to plants ≥8" tall in 8-10" band	– –	– –	10 10-20	2		40 NO	40 NO	NR 75
BROADAXE XC		SEE AUTHORITY ELITE								

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Comments/Restrictions	Do Not Till		GPA[2]		Rainfast (hrs.)	Interval (Days)[1]		
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
BUTYRAC 175/ ***2,4-DB 175***/ BUTYRAC 200/ ***2,4-DB 200***	PP	For emerged broadleaves, before crop emergence.	–	–	10	5		60	60	60
	PRE	Before crop emergence.								
	POST	Broadcast in southern states only7-10 days before bloom to mid-bloom; see label. Directed spray elsewhere; see label.					6			
CHARGER MAX/ ***CHARGER BASIC***	PP	Up to 30 days before planting (single appl.) or 45 days (split appl.). In Northern Corn Belt only, (see label) apply in fall when soil temp. is less than 55°F, before freeze-up. May PPI 2" within 14 days of planting. Dual IIG Magnum is not labeled for aerial.	–	–	10	2		30	30	90
	PRE	Before crop emergence.	–	–						
	POST	Preharvest Interval (PHI): Do not apply within 90 days of harvest.						NO	NO	90
CHEETAH		SEE LIBERTY 280 SL								
CLARIFIER/CLARITY		SEE STERLING BLUE								
CLASSIC	POST	After first trifoliate to 60 days before soybean maturity.	7	7	10	3-5	1	NO	NO	60
CLEANSE	PP	Burndown in certain states. See label for replant restrictions.	7	7	5-40	3-10	1	NO	NO	60
	POST	Up to 60 days before harvest.								
CLOAK EX	PP	After fall harvest up to 7-14 days before planting.	–	–	20	3	2	NO	NO	NR
COBRA	PP	Before planting.	7	7	20-30	7-10	0.5	NO	NO	45
	PRE	Before crop emergence.								
	POST	Up to 45 days before harvest. Best timing 2-3 weeks after planting.								
COMMAND 3ME	PP	Up to 30 days before planting.	–	–	10-40	NO	–	NO	NO	NR
	PRE	Before crop emergence.	–	–						
CORNERSTONE PLUS/ ***CORNERSTONE 5 PLUS***	PRE	Burndown before soybean emergence.	–	3	3-40	3-15		NR	NR	NR
	POST	Cracking through flowering-Roundup Ready soybeans only.	–	3			RE	56	56	14
	POST	Spot treatment, prior to initial pod set. No more than 10% of acreage.	–	–				14	14	NR
	POST	Selective equipment.	–	–				14	14	7
	PH	Harvest aid conventional soybeans. After all pods set and have lost green color.	–	–				25	25	7
	PH	Harvest aid Roundup Ready. After all pods set and have lost green color.	–	–				14	14	14
CRUSHER/LEADOFF	Burndown	FALL after harvest up to 0 days (Bolt soybeans), or 30-60 days depending on rate.	–	–	15	5	–	30	30	30
DICAMBA MAX 4		SEE STERLING BLUE.								
DIMETRIC CHARGED	EPP,PP,PRE	Fall and spring PP burndown and fallowseeded programs. Fall timing by Region; see label. PP broadcast or banded application during planting or PRE up to 3 days after planting; do not till.	–	–	10-40	7-10	1	40	40	NR
DIMETRIC EXT/ ***DIMETRIC LIQUID***	PP	See labels for Special Precautions. 2ee Dimetric EXT/Dimetric Liquid for many states (exp. date not given) for FALL application.	–	–	10-40	2-10		40	40	NR
	PRE	Surface apply before crop emergence.								
	POST	Directed only in south and southeast.								
DISTINCT	PP	Preplant to emerged broadleaves. Minimum 30 days and 1" precipitation before planting. See label for restrictions. FALL after corn, soybean, or cotton harvest.	–	–	3-50	NO	4	NO	NO	NR
DUAL II MAGNUM/ DUAL MAGNUM/ DUAL II G MAGNUM	PP	Up to 30 days before planting (single appl.) or 45 days (split appl.). In Northern Corn Belt only, (see label) apply in fall when soil temp. is less than 55°F, before freeze-up. May PPI 2" within 14 days of planting. Dual II G Magnum is not labeled for aerial.	–	–	10	2		30	30	75
	PRE	Before crop emergence.	–	–						
	POST	Pre Harvest interval is 75 days. Do not apply Dual II G Magnum post emerge.						NO	NO	75
ELEVORE	PP	14 days before planting, after weed emergence.	–	–	8	5+	1	NL	NL	NL
ENLIST DUO	Burndown	30 days prior to planting - non-enlist soybean; up to emergence - Enlist soybean. See "New Herbicides for Herbicide Tolerant Soybeans Traits" page for more information.	–	–	10-15	NO	24	NO	NO	30
	POST	Enlist tolerant soybeans only - up to R2 growth stage	–	–						

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Comments/Restrictions	Do Not Till		GPA[2]		Rainfast (hrs.)	Interval (Days)[1]		
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
ENLIST ONE	Burndown	30-15 days prior to planting - non-enlist soybean; up to emergence - Enlist soybean. See "New Herbicides for Herbicide Tolerant Soybeans Traits" page for more information.	–		10-15	NO	24	N	N	30
	POST	Enlist tolerant soybeans only - up to R2 growth stage								
ENVERSA	PP, PRE	Pre plant and Pre to crop and prior to weed emergence. Aerial application allowed in selected states only, refer to the product label for listed states.	–	–	10	3-15	–	NO	NO	NR
	POST	POST to crop and prior to weed emergence.								
ENLITE	PP	Fall Oct. 15 or later when soil <50 °F at 2" or spring prior to planting.	–	–	10	5	1	NO	NO	NR
	PRE	Up to 3 days after planting but before crop emerges or cracking stage.								
ENVIVE	PP	Fall Oct. 15(central, Nov 15 in south) or later when soil <50 °F at 2" or spring prior to planting.	–	–	10	5	1	NO	NO	NR
	PRE	Up to 3 days after planting but before crop emerges or cracking stage.								
EVERPREX		SEE CHARGER BASIC								
EXPRESS	PP	Burndown prior to soybean. Do not plant for 14 days after application.	–	–	5-20	3	4	NO	NO	NR
FIERCE EZ/FIERCE MTZ	PP	Fall or spring early PP 7-30 days before planting.	–	–	15	7-10	1	NO	NO	NR
	PRE	Apply within 3 days after planting and prior to soybean emergence.								
FIERCE XLT	PP	See label for geographic restrictions. Fall <50 °F soil temperature at 2" depth; or spring burndown.	–	–	10-30	5-10	1	NO	NO	NR
	PRE	Apply within 3 days after planting and prior to soybean emergence.								
FIRSTRATE	PP	Up to 28 days before planting, 0-14 preferred. May PPI 1-3".	–	–	10	3-5		25	NR	70
	PRE	Apply within 2 days after planting, prior to crop emergence.								
	POST	VE to prior to 50% flowering.					2			
FIRSTSHOT SG	PP	Apply more than 7 days before planting.	–	–	5	5		NO	NO	NR
FLEXSTAR/***AGENT 1.88***/REFLEX	PP	Flexstar/Agent 1.88 - PP or PRE. Reflex - Up to 14 days before planting.	7	7	10-20	5-10	1	NO	NO	45
	POST	Early to actively growing weeds.								
FLEXSTAR GT 3.5	PP	Before planting.	–	–	15-20	5		NO	NO	45
	PRE	Prior to crop emergence.								
	POST	To glyphosate tolerant soybeans only.					RE			
FRAMEWORK 3.3 EC/ PROWL H2O	PP	PPI up to 60 days before planting; PP surface up to 15 days before planting (45 days if tank mixed or as sequential). In fall, surface or PPI prior to ground freeze in Northern area only.	–	–	10	5		NR	NR	NR
	PRE	Up to 2 days after planting (south of I-80) except in IN,MI,OH.	–	–						
FRONT ROW	POST	Anytime prior to 50% flowering.	–	–	10-40	3	2	NO	NO	70
FUSILADE DX	POST	Apply up to 60 days PHI.	7	7	5-40	5	1	NO	NO	60
FUSION	POST	Before bloom.	7	7	5-40	5-10	1	NO	NO	pre bloom
GRAMOXONE SL 3.0 ‡	PP	Burndown.	–	3	10-20	5		early pod	early pod	NR
	PRE	Before soybean emergence.								
	POST	Directed spray to small weeds on soybeans >8" tall.					0.5	NO	NO	NR
	PH	Harvest-aid on indeterminate varieties: Apply when at least 65% seed pods are mature brown or when seed moisture is 30% or less. Determinate varieties when plants are mature, 50% of leaves dropped, rest yellowing. Also on soybeans grown for research, field trials and seed production under agreement with registrant (PHI 3 days grain; do not graze or harvest for forage or hay; do not use for food or feed).						NO	NO	15
HARMONY EXTRA SG	PP	Apply at least 7 days before planting.	–	–	5	2-5	4	NO	NO	NR
HERBIVORE	PP	Fall burndown after harvest until ground freeze. Broadleaf winter annual control requires contact with emerged weeds and soil surface. STS varieties only in spring to actively growing weeds from 21 days before planting until cracking.	–	–	10	3-15	–	30	30	88
	PRE POST	STS varieties only unless prohibited by supplier, from V1-R2.								

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Comments/Restrictions	Do Not Till		GPA[2]		Rainfast (hrs.)	Interval (Days)[1]		
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
KYBER PRO	PP	Fall or spring early PP 7-30 days before planting.	–	–	10-30	7-10	1	40	40	40
	PRE	Apply within 3 days after planting and prior to soybean emergence.								
LEADOFF		SEE CRUSHER								
LIBERTY ULTRA/ LIBERTY 280 SL/ ***TOTAL*/*TOTAL 2.3*/ *TOTAL SL***/CHEETAH	PP	Burndown.	5	7	15-40	10		NO	NO	70
	PRE	Prior to crop emergence, unless LibertyLink.								
	POST	LibertyLink soybeans to emerged weeds from emergence up to R1, up to but not including bloom or R1 Growth stage.					4			
LOROX DF/LINEX 4L	PP	Up to 30 days in no-till, min. till or stale seed bed.								
	PRE	Before crop emergence.	–	–	15	NO		NO	NO	NR
MAULER	PRE	Surface apply before crop emergence.	–	–	10-40	2-10		40	40	NR
OUTLOOK	PP	Up to 45 days before planting. May PPI 1-2" within 14 days of planting. Fall application to medium/fine soils with >2.5% O.M. Apply after Oct. 1 but before freeze-up. Northern states only.	–	–	5	2		NO	NO	NR
	PRE	Before crop emergence.								
	POST	Up to fifth trifoliate.					2			
PANOFLEX	PP	PP or Post-harvest burndown. At 0.3 oz/A rate, delay planting 1 day; 8 days on light soils or high pH (>7.9).	–	–	5-20	2-5	4	NR	7	NR
PANTHER SC		SEE VALOR SX								
PERPETUO	PP,PRE	Burndown and prior to crop emergence.	–	–	15	7	1	NO	NO	60
	POST	Up to V6 plus tank mix partner.								
PHOENIX	POST	Up to 45 days before harvest but not after R6.	7	7	15-20	5-10	2	NO	NO	45
POAST	POST	Up to 75 days before harvest.	5	7	5-20	5-10	1	NO	NO	75
PREFIX	PP	Apply before planting. Up to 15 days before planting in no- or reduced-till.	–	–	10	5		NO	NO	NR
	PRE	May PPI 2" within 7 days of application. Apply prior to crop emergence.								
	POST	From cracking through 3rd trifoliate.					1			90
PRESIDUAL		SEE BOUNDARY 6.5EC								
PROWL H2O		SEE FRAMEWORK 3.3 EC								
PURSUIT	PP	Up to 45 days before planting. May PPI 1-2" within 7 days of application.	–	–	10	5	1	NO	NO	85
	PRE	Before crop emergence.	–	–						
	POST	Before weeds exceed 3" or 85 days before harvest and before soybeans bloom.	–	7			1			
PYTHON	PP	EPP FALL or Spring. PP up to 30 days before planting. May PPI 2-3".	–	–	10-40	NO		NO	NO	85
	PRE	Before crop emergence.								
REFLEX		SEE FLEXSTAR/AGENT 1.88.								
RESOURCE	POST	Up to 60 days before harvest.	–	–	15	7-10	1	NO	NO	60
ROUNDUP WEATHERMAX; POWERMAX 3/CREDIT XTREME/HONCHO K6	PRE	Burndown: Before soybean emergence.	–	3	3-30	3-15		NR	NR	NR
	POST	Cracking through full flowering (R2): Roundup Ready/RR2 soybeans only.					RE	56	56	14
	POST	Spot treatment - no more than 10% of acreage prior to initial pod set.			3-40	3-15		NR	NR	NR
	POST	Selective equipment.						56	56	7
	PH	After all pods set and have lost green color. PHI 14 days RR/RR2 soybeans.						14,25: see label	14,25: see label	7
RT 3	PP	Prior to planting.	–	10	3-40	3-15	RE	NO	NO	NR
	PRE	Before crop emergence.								
	PH	Apply after pods have set and lost all green color.						25	25	7
RUGGED	PP	Apply to emerged broadleaves ≥15 days before planting for 1 pt/A and ≥30 days for 2 pt/A.	–	7	10	2	6	NR	NR	NR
SADDLE-UP/SPITFIRE	PP	> 15 days before planting (may be applied in fall PH, fallow or into crop stubble).	0	7	10	2	4	NR	NR	NR
SCEPTER 70 DG	PP	Incorporate up to 30 or 45 days before planting based on Region; see label.	–	–	10	5		NO	NO	90
	PRE	Before crop emergence.	–	10						
	POST	Up to 90 days before harvest.	–	10			3			
SECTION THREE	POST	Up to 60 days before harvest.	–	–	5-40	3-10	1	NO	NO	60

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Comments/Restrictions	Do Not Till		GPA[2]		Rainfast (hrs.)	Interval (Days)[1]		
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
SELECT MAX	PP	Burndown in certain states. See label for replant restrictions.	7	7	5-40	3-10	1	NO	NO	60
	POST	Up to 60 days before harvest.								
SEQUENCE	PRE	Before crop emergence.		3	10-40	3-15		30	NR	NR
	POST	Apply from cracking up through 75 days before harvest on Roundup Ready soybeans.					S	NO	NO	75
SHARPEN	PP	FALL after prior crop harvested. Spring 1-2 fl oz. Interval depends on rate, see label. EPP through planting.	–	–	5-15	3	1	65	65	NR
	PRE	Before cracking stage or crop emergence.								
	PH	Physiological maturity up to 3 days before harvest.								
SHREDDER E-99		SEE 2,4-D								
SONALAN	PP	PPI 2-3" up to 21 days before planting. Incorporate < 2 days of application.	–	–	5	NO		NO	NO	NR
SONIC		SEE AUTHORITY FIRST								
SONIC BOOM	PP	Fall through spring. Fall, Apply after September 30, north of Interstate 90 and October 15, north of Interstate 40. Apply when soil temperatures are below 55°F. Do not apply to frozen soils. For preplant incorporated before planting or preemergent, do not incorporate deeper than 2 inches.	–	–	10	5		NO	NO	NO
	PRE	From 30 days before planting to 3 days after planting. Application after crop emergence will cause severe crop injury.								
SPARTAN 4F	PP	Fall ≤ 55 °F soil temperature – after Sept. 30 north of I-90 and Oct. 15 north of I-70. Do not apply in fall south of I-70.			10	5		NR	NR	NR
	PPI	PPI up to 2".								
	PRE	Apply up to 3 days after planting.					6			
SPARTAN CHARGE	PP	Prior to planting.	–	–	10	5	–	NR	NR	NR
	PRE	Up to 3 days after planting and before soybean emergence.								
SPITFIRE	PP	Saddle-Up > 30 days before planting; Spitfire >7 days before planting (may be applied in fall PH, fallow or into crop stubble).	0	–	5-40	3-10	4	NR	NR	NR
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	PP	To control emerged weeds prior to planting. Sterling Blue/Clarifier/ Clarity: Delay planting 14 days for 8 oz/A; 28 days for 16 oz/A and following >1" precip or irrigation. Dicamba Max 4: Delay planting 30 days/pint/A in areas with >30" rainfall, or 45 days/pint/A in areas with <30" rainfall; see label. FALL post harvest or fallow.	–	–	3-50	1-10	4	NR	NR	NR
	PH	After pods have mature brown color and 75% of leaves dropped.						NO	NR	14
STORM	POST	Apply to small actively growing weeds.	5	7	10-50	5-10	4	NO	NO	50
SURVEIL	PP	Fall burndown (see label for states, regional programs, application dates), spring burndown, spring broadcast. Up to 14 days before planting.	–	NO	15	5-10	2	NO	NO	NL
	PRE	Apply within 3 days after planting (do not incorporate with tillage or reduced soil residual weed control may result).								
SYNCHRONY XP	PP	FALL Northern Region. 0-45 days prior to planting or PRE before crop emergence for burndown.	7	7	10-25	3-5		NO	14	60
	POST	Non-STS soybeans: Anytime after 1st trifoliate. STS and BOLT soybeans: After crop emergence to 60 days before harvest.					1			
TENDOVO	PPI	Incorporate to a uniform 2-inch depth. Use the higher rate range, soil incorporation may reduce weed control.	–	–	10	2	–	40	40	75
	PP	Tendovo Herbicide may be applied up to 30-45 days before planting. For applications earlier than 30 days before planting the high rate in the rate range may be needed for extended residual control.								
	PRE	Follow up with a planned postemergence weed control treatment.								
TOTAL/***TOTAL 2.3***/ ***TOTAL SL***		SEE LIBERTY 280 SL								
TRIVENCE	PP	Fall through Spring, do not till after fall applications.	-	-	10-15	5	1	NO	NO	NR
	PRE	Up to 3 days after planting.								

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Comments/Restrictions	Do Not Till		GPA[2]		Rainfast (hrs.)	Interval (Days)[1]		
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
TRUST/TREFLAN HFP	PP PPI	Fall, from Oct. 15 to Dec. 31 (See label). Incorporate within 1 day at 2-3". PPI after Jan 1 up to planting.	–	–	5-40	5-10		NR	NR	NR
VALOR SX/VALOR EZ/ PANTHER SC	PP PRE	Do not till after application. Apply up to 3 days after planting but before crop emerges.	–	–	10-15	5-10	1	NO	NO	NR
VALOR XLT	PP PRE	See label for geographic restrictions. Fall <50 °F soil temperature at 2" depth but no later than Oct.15; or spring burndown. Apply up to 3 days after planting, but before soybeans emerge.	–	–	10-30	5-10	1	NO	NO	NR
VARISTO	POST	Before bloom stage and to provide residual activity. Weed control at cool temperatures improves by delaying application for 48 hours from the time temperature is >50 °F if it was <50 °F for ≥10 hours.	5	7	10-20	5	4	30	30	NR
VERDICT/***TESTIFY***	PP PRE	FALL after crop harvest, prior to killing frost. Spring before planting. PRE prior to crop emergence or cracking stage.	–	–	3	3	1	NO	NO	NR
VIDA	PP POST	After planting prior to emergence. Up to V6 plus tank mix partner.	–	–	10	5	1	7	7	70
WARRANT	PP,PRE POST	Before crop emergence. POST to crop and prior to weed emergence.	–	–	10	3-15		NO	NO	NR
WARRANT ULTRA	PP,PRE POST	Crop injury may result if post-application conditions cause stress (cold, wet soils). Apply before growth stage R2 (optimum is between V2-V3).	– –	– –	10 15	5-10 NO	– –	NR NO	NR NO	NR 45
WEEDAR 64/WEEDONE 638/WEEDAR XHL	PP	Apply 15-30 days before planting depending on rate	–	–	10	2	–	–	–	–
ZIDUA SC	PP PP PPI PRE POST	FALL use on coarse, medium or fine soils at rates listed for PP timing. Spring up to 45 days before planting. PPI 1-2" up to 14 days before planting. Before crop emergence and applied before weed seed emergence. Zidua SC: Apply up to V6 leaf stage.	–	–	5	3	–	NR	NR	NR
ZIDUA PRO	PP PRE	FALL burndown in conventional, reduced-till or no-till. Early PP through PRE for burndown and/or residual weed control prior to soybean emergence in conventional, reduced-till or no-till. See label for preplant interval based on soil texture and O.M.	0-30	–	5	3	1	NO	NO	85
2,4-D LV4; LV6; AMINE 4, SHREDDER E-99	PP	Up to 1 pt LV4, 0.7 pt LV6, 0.67 pt E-99: At least 7 days before planting. Up to 1 pt of Amine 4, up to 2.1 pt LV4, 1.33 pt LV6, up to 1.33 pt Shredder E-99: At least 15 days. Up to 2 pt Amine 4: At least 30 days before planting. Apply by ground in 10 GPA for Amine 4.	–	7	3,10	2		NO	NO	NR

Consult current labels for verification and specific tillage equipment since depth settings vary from desired depth of incorporation. Incorporation is not required for many of these herbicides

[1] Application Timing and Interval. Consult current labels for verification and specific tillage equipment since depth settings vary from desired depth of incorporation. Incorporation is not required for many of these herbicides.

[2] Includes labeled minimum or range.

EPP - Early preplant surface, unless otherwise specified
PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
PH - Preharvest
PGR - Plant growth regulator
POST - Postemergence
NR - No restrictions
NO - Not permitted
NL - No related information on label
RE - Heavy rainfall soon after application may require retreatment.
Y - Permitted

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

FALL APPLICATION (FALL)

Certain herbicides are labeled for fall application. A fall herbicide application may be beneficial if it eliminates the need for a burndown application in the spring and soil erosion is not a problem. Fall applications could also benefit drying of the soil in the spring and could reduce the need for tillage before planting.

EARLY PREPLANT (EPP OR PP)

EARLY PREPLANT treatments generally provide an option to the use of nonselective herbicides such as Gramoxone SL 3.0 or glyphosate formulations. These involve applying residual herbicides 10-30 days prior to planting. The objective is to apply the herbicide prior to the germination of summer annual weeds, especially grasses. It is important to use herbicides with adequate residual control. In the southern regions of soybean production, applications earlier than two weeks before planting often do not provide sufficient residual weed control. A split application with 60-70% of the rate applied early preplant and a second increment at planting can be used. Split application gives more consistent weed control particularly with short-residual materials or where heavy rains or delayed planting occurs. The planting time application can also control weeds in the row where the soil has been disturbed by the planter.

PREPLANT INCORPORATED (PPI)

Soil-applied herbicides are incorporated to reduce dependence on irrigation or rainfall, provide appropriate placement of herbicide, and reduce herbicide loss from photodecomposition and volatization.

PREEMERGENCE (PRE)

Apply at, or as soon after planting as possible, and before weed and crop emergence. If adequate rainfall (or irrigation) – 0.5" on coarse to 1" on finer soils – does not fall within 4-5 days after application of an unincorporated herbicide, then a uniform, shallow cultivation, as with a rotary hoe, will increase the effectiveness of the herbicide.

DOUBLE CROP WEED CONTROL

A significant percentage of double-crop soybeans is grown in rotation with winter wheat. Research suggests a different weed control approach with herbicides is necessary for double-crop soybeans.

Soybeans are produced in a double-crop system with conventional or no-tillage methods. The recommendations that follow can be used for either tillage system. However, no-tillage weed control will require the use of a preemergence application of a "burn-down" herbicide to control weeds. You should use Gramoxone or glyphosate formulations if weeds are less than 6 inches tall at the time of planting. You should use glyphosate if weeds are taller than 6 inches or you have rhizome johnsongrass infesting the field at the time of planting.

Preemergence herbicides or postemergence herbicides are the two herbicide strategies used to control weeds in soybeans. Preemergence applications often must be followed with postemergence herbicide applications to control weed escapes. Research indicates you should strongly consider a postemergence-only approach to weed control in double-crop soybeans (following a preemergence "burn-down" application if needed at the time of planting). The postemergence approach is more successful in a double-crop system because of the lower rainfall amounts in late June and July when double-crop soybeans are planted. Lack of rainfall will frequently result in poor "activation" of preemergence herbicides. In addition, if rainfall is low, weeds may not germinate which will eliminate the need to apply postemergence herbicides at all. Experience suggests low weed germination will occur about 1 in 3 years (Missouri data).

If you choose to use a preemergence herbicide program you should consider only using short residual herbicides such as Charger Max, Lorox DF/Linex 4L, Dimetric EXT/ Dimetric Liquid/Mauler, Dual II Magnum, Outlook, or Valor XLT. These herbicides are less likely to have carryover problems for crop rotation than some of the newer long residual herbicides. Be aware that crop rotation intervals are extended for many herbicides if they are applied late in the summer. Check the label or the crop rotation guide in this book for more information.

The preemergence and no-till programs listed in this guide will work in double-crop soybeans if you will also follow the above suggestions. Postemergence herbicide listings in this guide will perform the same in any system. However, be aware that postemergence herbicide performance is reduced during the hot, dry weather frequently encountered during late summer. Be sure to use the higher rates listed and the proper additives.

Planting soybeans in narrow or drilled rows has several advantages in double-crop soybeans. One of the major advantages is faster canopy closure which enhances weed control by shading the soil and preventing late weed germination. We strongly recommend you use narrow (less than 15 inches) or drilled rows when growing double-crop soybeans.

SOIL TEXTURES

Where herbicide rates on the following pages are based on coarse, medium or fine-textured soils, such classes are understood to include: COARSE: Sand, Loamy sand, Sandy loam. MEDIUM: Loam, Silt, Silt Loam. FINE: Silty clay loam, Silty clay, Sandy clay loam, and Sandy clay, Clay loam, Clay. Soils with LOW organic matter, use low end of rate range; with HIGH organic matter, use high end rate range.

Source: Adapted from Univ. Missouri Crop Pest Management Guide.

Herbicide	Comments/Restrictions
AFFORIA	See Burndown Herbicides
ANTHEM FLEX	See Preplant or Preemergence Herbicides
ANTHEM MAXX	See Preplant or Preemergence Herbicides
AUTHORITY ASSIST	See Preplant or Preemergence Herbicides
AUTHORITY EDGE	See Preplant or Preemergence Herbicides
AUTHORITY ELITE	See Preplant or Preemergence Herbicides
AUTHORITY XL	See Preplant or Preemergence Herbicides
AUTHORITY SUPREME	See Preplant or Preemergence Herbicides
AUTUMN SUPER 51 WDG	See Burndown Herbicides
CHARGER BRANDS	See Preplant or Preemergence Herbicides
CLOAK EX	See Burndown Herbicides
CRUSHER	See Burndown Herbicides
DIMETRIC CHARGED	See Burndown Herbicides; also see Fallow Section
DIMETRIC EXT/DIMETRIC LIQUID	See Burndown Herbicides
DISTINCT	See Burndown Herbicides
DUAL BRANDS	See Preplant or Preemergence Herbicides
ENLITE	See Burndown Herbicides
ENVIVE	See Burndown Herbicides
FIERCE EZ/FIERCE MTZ/FIERCE XLT	See Burndown Herbicides
FRAMEWORK 3.3EC	See Preplant or Preemergence Herbicides
GLYPHOSATE BRANDS	See Burndown Herbicides
GRAMOXONE SL 3.0 ‡	See Burndown Herbicides
KYBER PRO	See Burndown Herbicides
LEADOFF	See Burndown Herbicides
MAULER	See Burndown Herbicides
OUTLOOK	See Preplant or Preemergence Herbicides
PANOFLEX	See Burndown Herbicides
PANTHER SC	See Burndown Herbicides
PROWL H2O	See Preplant or Preemergence Herbicides
PYTHON	See Preplant or Preemergence Herbicides
SADDLE-UP/SPITFIRE	See Preplant or Preemergence Herbicides
SCEPTER 70 DG	See Preplant or Preemergence Herbicides
SEQUENCE	See Burndown Herbicides
SHARPEN	See Burndown Herbicides
SONIC BOOM	See Preplant or Preemergence Herbicides
SPARTAN BRANDS	See Preplant or Preemergence Herbicides
STERLING BLUE/CLARIFIER/CLARITY/***DICAMBA MAX 4***	See Burndown Herbicides
SURVEIL	See Preplant or Preemergence Herbicides
SYNCHRONY XP	See Burndown Herbicides
TRUST/TREFLAN HFP	See Preplant or Preemergence Herbicides
VALOR SX/VALOR EZ	See Burndown Herbicides
VALOR XLT	See Burndown Herbicides
VERDICT/***TESTIFY***	See Preplant or Preemergence Herbicides
ZIDUA SC	See Preplant or Preemergence Herbicides
2,4-D BRANDS	See Burndown Herbicides

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BURNDOWN	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AFFORIA	**All soil textures:** 2.5-3.75 oz			Fall or Spring Burndown: 2.5 oz/A 3 days after planting and prior to emergence >2.5 to 3.75 oz/A 7 days prior to planting. Do not apply to cracking soybeans.
AGENT 1.88	SEE FLEXSTAR			
AIM EC/SHARK EW	**All soil textures:** Up to 1.5 fl oz			Add 0.5-1 gal HSOC-COC/100 gal.* Apply in tank mixes with glyphosate, 2,4-D, Gramoxone SL 3.0. Speeds activity, and broadens spectrum of control. Burndown only, no residual. Add to tank before other herbicides. Rate depends on target weeds; see label. Max. 1.5 fl oz/A/season including all application timings/methods. Do not apply when conditions favor drift or wind is >10 mph.
ANTHEM FLEX, ANTHEM MAXX	SEE PREPLANT OR PRE SECTION			
ASSURE II/TARGA or FUSION or ***CLEANSE*** or ***SECTION THREE***	**All soil textures:** 2.5-5 fl oz or 4-8 fl oz or 3-8 fl oz or 2.67-5.33 fl oz			For control of emerged annual grasses prior to planting soybeans. Apply these low rates to small grass no taller than 2-3" and before grass tillers. See label for addition of crop oil concentrate and tank mix partners such as 2,4-D.
AUTHORITY FIRST DF/ AUTHORITY EDGE/AUTHORITY SUPREME/AUTHORITY XL	SEE PREPLANT OR PRE SECTION			
AUTUMN SUPER 51 WDG	**All soil textures:** 0.3-0.5 oz			Add 0.5 HSOC-COC or HSOC-MSO/100 gal + 1.5-2 qt/A UAN or 1.5-3 lb/A AMS.* Apply in FALL before ground freezes or in spring 60 days or more before planting soybeans. Apply to broadleaves <3" and grasses <1". 2ee several states (exp. date not given) for FALL application at 0.3 oz/A on soils with pH 7-8 with adjusted plant back restrictions in no-till and conservation tillage. Do not apply on soils with pH >8.
CHEETAH	SEE LIBERTY 280 SL			
CLARIFIER/CLARITY	SEE STERLING BLUE			
CLEANSE	SEE ASSURE II			
CLOAK EX	**All soil textures:** 1.1-3.3 oz			Apply only in medium and fine soils of 1.5-4% OM. On soils with no soil pH restrictions: 1.1 oz/A in central region and 1.1-1.65 oz/A in southern region. On soils with composite soil pH of 7 or less: 1.5-3.3 oz/A in central region and >1.65-3.3 oz/A in southern region. For best results add 2,4-D LV6. See label for region categories.
COBRA	**All soil textures:** 8-19 fl oz			Control certain broadleaves. Do not incorporate. Do not exceed a total (PRE and POST) of 25 fl oz/A/season. See restrictions in POST section.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 48 fl oz or up to 36 fl oz: annuals Up to 5 qt or Up to 7.5 pt: perennials			Add 8.5-17 lb AMS/100 gal, include AMS-Water Conditioner and NIS as needed.* May use other glyphosate herbicides: Cornerstone brands, Roundup brands or others at labeled rates. Most perennials are controlled better in fall than spring. Delay tillage 3 days after spraying annuals and 7 days for perennials. May add additional surfactant for burndown.
CRUSHER or LEADOFF	**All soil textures:** 1-1.8 oz or 1.5-2.7 oz			FALL after harvest when ground is not frozen to 0 days before planting (Bolt soybeans) or 60 days before planting if Crusher applied at >1 oz/A or Leadoff at >1.5 oz/A, or 30 days before planting if Crusher applied at 1 oz/A or Leadoff at 1.5 oz/A. See label for timing and other considerations for Crusher use FL, GA and Leadoff use in AL, FL, GA.
DICAMBA MAX 4	SEE STERLING BLUE			
DIMETRIC CHARGED	SEE PREPLANT OR PREEMERGENCE; SEE ALSO FALLOW SECTION			
DIMETRIC EXT or ***DIMETRIC LIQUID***	**All soil textures:** PP burndown or PRE - 2-5.3 oz or 0.25-0.66 pt			Apply up to 30 days before planting. 2ee many states (exp. date not given) for FALL application of Dimetric EXT at 4-12 oz/A or Dimetric Liquid at 0.66-2 pt/A. Note 1.
DISTINCT	**All soil textures:** 2-4 oz			Add 1 qt NIS/100 gal + 5 qt 28% N or 5 lb AMS/100 gal.* Apply for control of emerged broadleaf weeds prior to planting soybean. Following an application of Distinct, and a minimum of 1" rainfall or overhead irrigation, a waiting interval of 30 days is required before planting. Do not use in areas with less than 25" rainfall. For FALL applications, apply 2-8 oz/A when weeds are in the 2-4 leaf stage and prior to frost.
ELEVORE (alone or) + GLYPHOSATE + ***2,4-D LV6***	**All soil textures:** 1 fl oz + 32 fl oz + 11.4 fl oz			FALL and SPRING. Up to 14 days prior to planting. Include MSO or COC at 1%v/v.* No residual. Apply on actively growing weeds.

See notes and footnotes at end of table.

BURNDOWN *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
ENLITE	**All soil textures:** 2.8-4.25 oz			Add NIS or COC or MSO.* Apply PP in fall or spring prior to planting. For burndown of 1-3" annual broadleaf weeds. Enlite is a better choice on lighter soils than Envive. Plant at least 1.5" deep. Use up to 3 days after planting but before crop emerges or cracking stage. Do not use where flufenacet, metolachlor, alachlor, or dimethenamid have recently been applied PRE. See label for geographic use regions and insecticide restrictions.
ENLIST DUO	**All soil textures:** 3.5-4.75 pt			SPRING. Non-Enlist tolerant soybean - apply 30 days prior to planting. Enlist tolerant soybeans - apply before emergence. See "New Herbicides for Herbicide Tolerant Soybeans Traits" page for more information.
ENLIST ONE	**All soil textures:** 1.0-2.0 pt			SPRING. Non-Enlist tolerant soybean – 1 pt/A no less than 7 days or up to 2.0 pt/A not less than 14 days prior to planting soybean. Enlist E3 Soybean – apply 2 pt/A. See "New Herbicides for Herbicide Tolerant Soybeans Traits" page for more information.
ENVIVE	**All soil textures:** 2.5-5.3 oz			Add NIS or COC or MSO.* Apply PP in fall or spring prior to planting for burndown of annual broadleaf weeds <3" or perennials <6". Use up to 3 days after planting but before crop emerges or cracking stage. Do not use where flufenacet, metolachlor, alachlor, or dimethenamid have recently been applied PRE. See label for geographic use regions, soil pH, and insecticide restrictions.
EXPRESS	**All soil textures:** 0.25-0.5 oz			Add 0.5-1 gal HSOC-COC or HSOC-MSO/100 gal; NIS may be used; COC or MSO at 1-2% v/v; UAN/AMS may be added.* At 0.3-0.5 oz/A do not plant for at least 7 days. At 0.25 oz/A do not plant for at least 1 day. On sandy or sandy loam or soil with pH > 7.9, extend planting by 7 days.
FIERCE EZ or FIERCE MTZ	**All soil textures:** 6-9 fl oz or 1-1.5 pt: FALL 6-7.5 fl oz or 1-1.5 pt: SPRING			FALL apply in field that will be planted the following spring. SPRING burndown, EPP, PP: Apply in minimum 15 GPA. PRE: Within 3 days after planting and prior to soybean emergence. Do not use in same field where alachlor, metolachlor, dimethenamid or flufenacet were used.
FIERCE XLT	**All soil textures:** 3.75-5.25 oz			FALL or when soil temps fall below 50°F at a 2" depth. Spring EPP through planting. Do not use in same field where alachlor, metolachlor, dimethenamid or flufenacet were used. See label for rates and restrictions in Midwest and Southern Region states.
FIRSTRATE	**All soil textures:** 0.3-0.6 oz			For burndown, apply in tank-mixes with glyphosate and/or 2,4-D for improved control of emerged horseweed/marestail. Soil residual will aid in control of later germinating weeds. Add HSOC-COC or NIS + 28% N for burndown.* Weed control may be reduced in high O.M. soils.
FIRSTSHOT SG	**All soil textures:** 0.5-0.8 oz			When applied at 0.5 oz/A wait 3 days before planting. All other rates wait 7 days before planting. In light soils, or soil pH >7.9, extend 7 additional days. May use 0.5-0.6 oz in tank mixes. Do not exceed 1 oz total if sequential application. Include MSO, COC, NIS plus UAN or AMS.**
FLEXSTAR/***AGENT 1.88***	**All soil textures:** 0.75-1.6 pt			Add 1-2 qt HSOC-COC/100 gal + 2.5 gal 28%N or 10 lb AMS/100 gal, or WC+NIS.* PP or PRE. Flexstar/Agent 1.88 may be used only in certain areas. Follow label restriction by geographic regions. See conditions and restrictions map at the end of this section. Note 1.
FLEXSTAR GT 3.5	**All soil textures:** Up to 2.68-5.3 pt			Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP or PRE prior to crop emergence. NIS, COC, or MSO may be included for emerged weeds.* Rate depends on geographic regions. See the map at the end of this section and label for additional restrictions.
GRAMOXONE SL 3.0 ‡ *1-3" weeds* *3-6" weeds* *6" weeds*	**All soil textures:** 1.3-2 pt 2-2.7 pt 2-2.7 pt			Add 1 pt NIS/100 gal.* PP or PRE before crop emergence. Contact herbicide. Mix with clean water or fluid fertilizer, but not suspension or high phosphate fertilizer. When using less than 20 GPA, flat fan nozzles must be used and weed height should not exceed 6".
GRAMOXONE SL 3.0 ‡ + ***2,4-D LV4; LV6***	**All soil textures:** SEE GRAMOXONE SL 3.0 ABOVE + 0.35-0.95 lbs a.i.			See above comments. Apply 2,4-D ester at 0.35-0.475 lb a.i./A at least 7 days prior to planting and 0.475-0.95 lb a.i./A at least 30 days prior to planting.
HARMONY EXTRA SG	**All soil textures:** 0.45-0.9 oz			Apply at least 7 days prior to planting soybeans.
KYBER PRO	**All soil textures:** 1-1.5 pt: FALL 1-1.5 pt: SPRING			FALL apply in field that will be planted the following spring. SPRING burndown, EPP, PP: Apply in minimum 15 GPA. PRE: Within 3 days after planting and prior to soybean emergence. Do not apply if soybeans ar cracking the soil surface. Do not use in same field where alachlor, metolachlor, dimethenamid or flufenacet were used. Do not apply in conjunction with soil-applied organic phosphate pesticides

See notes and footnotes at end of table.

BURNDOWN *(continued)*	**Rate/Acre**			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
LEADOFF	SEE CRUSHER			
LIBERTY ULTRA or LIBERTY 280 SL or ***TOTAL SL***/CHEETAH or ***TOTAL/TOTAL 2.3***	**All soil textures:** 19-29 fl oz or 32-43 fl oz or 29-43 fl oz or 29-36 fl oz			Burndown or prior to crop emergence to emerged weeds. May include AMS or Class Act brands.** Do not make POST applications if Total or Total 2.3 is used for burndown.
PANOFLEX	**All soil textures:** 0.3-0.6 oz			Apply burndown treatment when weeds have emerged and actively growing. Apply at 3 oz/A ≥ 1 day before planting and 7 days before planting for 3-6 oz. On light textured soils or pH >7.9 extend time to planting 7 additional days. Include NIS, COC or MSO plus UAN/AMS.**
PANTHER SC	SEE VALOR SX			
PERPETUO	8 fl oz	10 fl oz	10 fl oz	Apply in combination with labeled burndown herbicides to control emerged weeds prior to crop emergence. Max. 8 fl oz/A/application and 8 fl oz/A/year on coarse soils. Max. 10 fl oz/A/application and 10 fl oz/A/year on medium and fine soils. Max. 1 application/year.
REFLEX	**All soil textures:** 0.75-1.5 pt			Add 1-2 qt HSOC-COC/100 gal + 2.5 gal 28%N or 10 lb AMS/100 gal.* Up to 14 days before planting in Regions 1,2,3,4. Reflex may be used only in certain areas. Follow label restriction by geographic regions. See conditions and restrictions map at the end of this section. Note 1.
RESOURCE	**All soil textures:** 2-4 fl oz			Tank mix with glyphosate and 2,4-D for increased speed and weed spectrum, especially for wild buck wheat, morningglory species, and velvetleaf. Include 1 pt/A HSOC-COC + 2-2.5 lb/A AMS.**
ROUNDUP POWERMAX; POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			Add 8.5-17 lb AMS/100 gal, or WC+NIC.* May use other glyphosate products at greater or lesser volumes; see individual labels. Use flat fan nozzles. Tank mixing with residual herbicides can cause antagonism. Understand tank mix interactions. Most perennials are controlled better in fall than in the spring.
RT 3	**All soil textures:** 16-32 fl oz			Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP or PRE. Apply before or after planting but prior to crop emergence. May tank mix with several PRE products. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY and in specific counties in KS, MN, NE, NM, OK.
RUGGED	**All soil textures:** 1-2 pt			To control emerged broadleaf weeds. Do not till soil for at least 7 days after application. Do not use on sandy soils. Plant at least 1.5" deep. Can add COC* or surfactant. Delay planting ≥ 7 daysfor 1 pt and ≥ 15 days for 2 pt.
SEQUENCE	**All soil textures:** 2.5-4 pt			Add 8.5-17 lb AMS/100 gal.* FALL on soils with >2.5% O.M. Apply when 4" soil temperature is 55 °F and falling. May incorporate 2-3". Do not apply to frozen ground. Apply after September 30 in ND, SD, MN, WI, and north of Route 30 in IA. Apply after October 15 north of Route 91 in NE and south of Route 30 in IA. Apply after Oct. 31 north of Route 136 in IL. Rates vary depending on tillage/soil type and may require tank mix.
SHARPEN	**All soil textures:** 1-2 fl oz			Add 0.75 pt HSOC-MSO/100 gal + 8.5-17 lb AMS/100 gal or 1.25-2.5 gal UAN/100 gal.* FALL 1-2 fl oz after the prior crop is harvested; for reduced or no-till soybean. SPRING 1-2 fl oz/A apply to actively growing broadleaf weeds prior to crop emergence or cracking stage. Short residual control of some broadleaf weeds. PP interval varies depending on use rate. PP interval is different if sharpen is tank mixed or sequentially applied with a Group 14 herbicide. Do not apply within 30 days of at-plant OP or carbamate insecticides.
SHREDDER E-99	SEE 2,4-D.			
SONIC	SEE PREPLANT OR PRE SECTION			
SPARTAN CHARGE *<1.5% O.M.* *1.5-3% O.M* *>3% O.M..*	 5.75-7.75 fl oz 7.75-8.5 fl oz 8.5 fl oz	 7.75-8.5 fl oz 8.5 fl oz 8.5 fl oz	 8.5 fl oz 8.5 fl oz 8.5 fl oz	Apply alone or with other herbicides or liquid fertilizers as burndown or PP or PRE within 3 days of planting. Use lower rate in range for soils with pH>7.0. Max. 8.5 fl oz/A/12-month period of first application. Do not use on soils classified as sand w/ O.M.<1%.
STERLING BLUE/ ***CLARIFIER***/CLARITY or ***DICAMBA MAX 4***	**All soil textures:** 0.25-1 pt or 0.5-2 pt			SPRING. Sterling Blue/Clarifier/Clarity: Delay planting 14 days/0.5 pt and 28 days/1 pt; must have ≥1" rain or irrigation; do not use in areas <25" annual rainfall. Dicamba Max 4: Delay planting 30 days/1 pt/A in areas with >30" rainfall, or 45 days/1 pt/A in areas with <30" rainfall; see label. FALL post harvest or fallow.

See notes and footnotes at end of table.

BURNDOWN *(continued)*	**Rate/Acre**			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
SYNCHRONY XP	**All soil textures:** 0.375-0.75 oz			FALL tank mix with Express for fall burndown of 3-inch dandelion, can apply with 2,4-D or dicamba and can be applied up to 45 days before planting. SPRING may tank mix with glyphosate and be applied up to 30 days before planting or prior to emergence after planting. See pre-plant section for more directions.
TOTAL*/*TOTAL 2.3*/*TOTAL SL	SEE LIBERTY 280 SL			
TRIVENCE *Central Region* *pH ≤7* *pH >7* *Southern Region* *pH ≤7* *pH >7*	 6-7.25 oz 6 oz 6-8.7 oz 6-9 oz	 6-8.7 oz 6 oz 6-10 oz 6-9 oz	 6-10 oz 6 oz 6-10 oz 6-9 oz	Central Region: DE,IL,IN,IA (E of Route 63 or S of I-80), KS,MD,MI,MO (except bootheel), OH,PA,VA,WV,WI (S of I-90 between LaCrosse and Madison and S of I-94 between Madison and Milwaukee). Southern Region: AL (except 'Black Belt'), FL,GA,KY,LA,MO (Bootheel), MS (exept 'Black Belt'), NC,OK,SC,TN,TX (E of 183). Do not exceed 6 oz in central regions where pH >7. Do not use in MI,NY and WI when pH >7.6. Do not apply to crackingand 9 oz in south soybean or after soybean emergence.
VALOR SX or VALOR EZ/PANTHER SC	**All soil textures:** 2-3 oz or 2-3 fl oz			FALL. Can apply up to 4 oz/A with 4 month rotation interval. Can tank mix with combination of glyphosate, 2,4-D and appropriate adjuvants. Rate is more weed dependent than for soil texture. SPRING apply before planting, at-planting or up to 3 days after planting. Can apply 1-3 fl oz/A with other burndown products. Do not incorporate or leave in the tank overnight. Do not tank mix with products with acetochlor, flufenacet, metolachlor or dimethenamid within 14 days of planting soybeans, unless planted under no-till or minimum till.
VALOR XLT	**All soil textures:** 3-5 oz			PP or PRE. PP fall October 15 or later, soil temperature <50 °F at 2" or in spring prior to planting. PRE up to 3 days after planting and before crop emerges. Do not incorporate. Do not incorporate or leave in the tank overnight. Follow cleaning instructions on label. Plant soybeans ≥1.5". Do not use >2.5 oz on soils with composite pH over 6.8. 2.5 oz/A provides weed suppression only. See label for several restrictions in mid-western states. Do not tank mix with products containing acetochlor, fluthiamide, metolachor, dimethenamid or alachlor or severe soybean injury may result. Rate depends on weed species, soil type, and O.M. For burndown, include 1-2 pt/A COC or 0.25% v/v NIS plus 8-17 lb/100 gal AMS. Follow cleaning instructions on label.
VIDA	**All soil textures:** 0.5-2 fl oz			Allow minimum of 30 days between applications.
WEEDAR 64 or WEEDONE 638 or WEEDAR XHL	**All soil textures:** Option 1: 0.75-1.0 pt or 1.0-1.33 pt or 8.5-10.6 fl oz Option 2: >1.0-2.0 pt or 1.33-2.66 pt or 10.6-21 fl oz			Use Option 1 not less than 15 days prior to planting (higher rate in range on larger weeds or if perennials are present). Use Option 2 not less than 30 days prior to planting, when weeds are actively growing. See individual product labels for max. number of PP applications/option/crop cycle.
ZIDUA SC/ZIDUA PRO	SEE PREPLANT OR PREEMERGENCE SECTION			
2,4-D ***AMINE 4:*** *15 days preplant* *30 days preplant* ***LV4:*** *7 days preplant* *15 days preplant* ***LV6:*** *7 days preplant* *15 days preplant* ***SHREDDER E-99:*** *7 days preplant* *15 days preplant*	 Up to 1 pt 1-2 pt Up to 1 pt 1-2.1 pt Up to 0.7 pt Up to 1.33 pt 0.5-0.67 pt 0.67-1.33 pt	 Up to 1 pt 1-2 pt Up to 1 pt 1-2.1 pt Up to 0.7 pt Up to 1.33 pt 0.5-0.67 pt 0.67-1.33 pt	 Up to 1 pt 1-2 pt Up to 1 pt 1-2.1 pt Up to 0.7 pt Up to 1.33 pt 0.5-0.67 pt 0.67-1.33 pt	PP ONLY to control emerged broadleaf weeds. To avoid crop injury apply at specified PP intervals. Do not till soil for at least 7 days after application. Do not use on sandy soils (and with less than 1% organic matter for E-99). Plant at least 1.5" deep. Ester dissipates faster than amine providing greater crop safety. Do not graze or feed hay, forage or fodder. Can add COC or surfactant. Can tank mix with Gramoxone SL 3.0, Roundup, Assure II, Fusion, Poast, Cleanse or other labeled PP herbicides.

See notes and footnotes at end of table.

PREPLANT OR PREMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AFFORIA	SEE BURNDOWN SECTION			
AGENT 1.88	SEE BURNDOWN SECTION			
AIM EC	SEE BURNDOWN SECTION			
ANTHEM FLEX				PP, PPI, PRE, Fall. PP up to 45 days prior to planting. PRE up to soybean cracking and emergence. For early PP applications use higher rate by soil type. Soybean seed should be planted min. 1" deep and furrow should be closed. Do not apply POST. Max. 3.8 fl oz/A/application and per year on coarse soils. Max. 5.45 fl oz/A/application and max. 6.4 fl oz/A/year on medium soils. Max. 6.4 fl oz/A/application and per year on fine soils. 14-day min. retreatment interval. Include NIS, COC, MSO or silicone-based surfactants in burndown.*
EPP	2.75-3.8 fl oz	4-5 fl oz	5-6.4 fl oz	
PP,PPI,PRE <1% O.M.	2-2.75 fl oz	2.75-4 fl oz	4-5.5 fl oz	
PP,PPI,PRE 1-3% O.M.	2.25-3.8 fl oz	2.75-5.5 fl oz	4.5-6.4 fl oz	
PP,PPI,PRE >3% O.M.	3.8 fl oz	4-5.5 fl oz	4.5-6.4 fl oz	
ANTHEM MAXX				FALL. Apply after Oct 1. If controlling weeds germinating in the fall or winter annual weeds do not exceed 2" incorporation if tilled after application. Use highest rate within soil type. Broadcast surface apply to minimum or no tillage fields after crop harvest when soil temperature at 4" is <55 °F and before ground freezes (see label). EPP 15-45 days prior to planting. For EPP and reduced tillage (no-till/high residue), use higher labeled rate by soil type. PP,PRE. Soybean seed must be planted ≥1 inch to avoid injury. On coarse soils do not apply more than a maximum cumulative amount of 3.4 oz/A. On other soils other than coarse, do not apply more than a maximum cumulative of 5.7 oz/A.
Fall Conventional, Min., or No-Till	No	4.5-5 fl oz	5-7.5 fl oz	
EPP	2.5-3.25 fl oz	3.5-4.5 fl oz	4.5-5.5 fl oz	
PP or PRE <1% O.M.	2-2.5 fl oz	2.5-3.5 fl oz	3.5-4.5 fl oz	
PP or PRE 1-3% O.M.	2-3.25 fl oz	2.5-4.75 fl oz	4-5 fl oz	
PP or PRE >3% O.M.	3.25 fl oz	3.5-4.75 fl oz	4-5.5 fl oz	
ASSURE II/TARGA	SEE BURNDOWN SECTION			
AUTHORITY ASSIST				PP, PPI, or PRE. FALL to crop stubble. PP up to 45 days prior to planting. Use highest rates if greater than 30 days. PPI ≤2". PRE up to 3 days after planting, but before soybeans emerge. Use higher rates for pH <7, and lower rates for pH >7. May include COC or MSO for burndown.* 2ee most states (exp. date not given) for tank mix with Sharpen.
1-2% O.M.	6-8 fl oz	8-10 fl oz	10-12 fl oz	
> 2-4% O.M.	8-10 fl oz	10-12 fl oz	12 fl oz	
AUTHORITY EDGE				On coarse soils do not apply > max. cumulative amount of 9.42 fl oz/A. On medium and fine soils do not apply > max. cumulative amount of 15.7 fl oz/A. FALL: May be broadcast after crop harvest when soil temperatures at 4" are sustained at <55 °F and before the ground freezes. Do not apply to frozen soils. Plant seeds a min. 1" depth.
PP,PPI,PRE <1.5% O.M.	5.9-7.9 fl oz	7-10 fl oz	9-12 fl oz	
PP,PPI,PRE 1.5-3% O.M.	6.9-8.8 fl oz	8-11 fl oz	10-13 fl oz	
PP,PPI,PRE >3% O.M.	7-9.4 fl oz	9-12 fl oz	12-15.7 fl oz	
AUTHORITY ELITE/BROADAXE XC				PP, PPI, or PRE. Fall to stubble in no-till and conservation tillage, soil <55° F at 4". Apply after Sept 30 in ND,SD,MN,WI and north of Rte 30 in IA. After Oct 15 north of Rte 91 in NE and south of Rte 30 in IA. After Oct 31 north of Rte 136 in IL. Do not apply south of I-70. PP on medium to fine soils in no-till and minimum tillage systems in certain states. PPI and PRE up to 3 days before planting. For coarse soils, maximum up to 14 days before planting. PPI 2". For soils with pH >7.2, use lowest rate specified for OM and texture. Do not use on soils with <1% OM. Maximum 38.7 fl oz/A/crop year. 2ee for Authority Elite and BroadAxe XC in most states (exp. date not given) for tank mix with Sharpen.
< 1.5% O.M.	19-25 fl oz	25-32 fl oz	25-32 fl oz	
1.5-3% O.M.	25 fl oz	25-32 fl oz	25-32 fl oz	
>3% O.M.	25 fl oz	25-32 fl oz	32-38.7 fl oz	
AUTHORITY FIRST DF/SONIC	**All soil textures:**			PP,PPI,PRE. Can apply 3.2 as part of a planned 2-pass program. May include NIS or COC for burndown.*
≤ 3% O.M.	6.45 oz			
>3% O.M.	8 oz			
AUTHORITY XL				PP, PPI, or PRE. Fall to stubble in no-till and conservation tillage. PP up to 60 days before planting. PPI 2". PRE up to 3 days after planting but before crop emerges. See label for reduced rates as part of a planned program. Do not use in CO, WY, ND, NY, SD or west of Hwy 281 and north of Hwy 30 in NE. Do not use full rates in DE, IA, MD, MN, NJ, VA, WI, WV. See label for reduced rates of 3-5 fl oz/A as part of a two pass program, pH,other herbicide, geographic and insecticide restrictions. May include NIS,COC,or MSO for burndown. 2ee MI (exp. not given) for control of cocklebur, jimsonweed, lambsquarters and pigweed at 3.2 oz/A. 2ee most states (exp. date not given) for tank mix with Sharpen. Supplemental label (exp. date not given) for rotational guidelines in geographic areas based on pH.
0.5-2% O.M.	5-6 oz	6.5-7.5 oz	7-8 oz	
> 2-4% O.M.	6-7 oz	7-8 oz	8-9.6 oz	

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AUTHORITY SUPREME				PP, PRE or PPI. Higher rates for soils with pH <7.2. Do not apply >6.9 fl oz/A/ year on coarse soils or >11.5 fl oz/A/year on medium and fine soils. Rainfall and/ or irrigation of ≥0.5" prior to weed emergence may be needed for activation - see label. Verify sensitivity of crop variety with local Extension. FALL: Authority Supreme may be broadcast after crop harvest when soil temperatures at the 4" depth are sustained at <55 °F and before the ground freezes to control weeds in minimum or no tillage fields planted the following spring. Do not apply to frozen soils.
<1.5% O.M.	6-6.9 fl oz	6-9.8 fl oz	7-11.5 fl oz	
1.5-3% O.M.	6-6.9 fl oz	6-9.8 fl oz	8-11.5 fl oz	
>3% O.M.	6 fl oz	7-9.8 fl oz	8-11.5 fl oz	
AUTUMN SUPER 51	SEE BURNDOWN SECTION			
BOUNDARY 6.5EC/ ***PRESIDUAL***				PP, PPI, or PRE. Apply in reduced tillage up to 30 days prior to planting, otherwise, apply PP or PPI 0-14 days before planting. Apply with Gramoxone SL 3.0, Roundup WeatherMax or 2,4-D LVE for burndown. May use 1.5-1.8 pt/A when followed by a planned POST. See label for restrictions on high pH or sandy soils. Do not use more than 1.5 pt/A on soils with pH >7. Notes 3,8. FALL. 24c for Boundary 6.5EC in KY (exp. 10/2026), OK (exp. 12/2026) for FALL control of glyphosate-resistant Italian ryegrass prior to soybean or corn planting the following spring.
Planned Sequential	1.5-1.8 pt	1.5-1.8 pt	1.5-1.8 pt	
No/Minimum-till	1.2-2.1 pt	2.1-3 pt	2.7-3.6 pt	
Conventional-till	1.2-1.8 pt	1.8-2.4 pt	2.4-3 pt	
BROADAXE XC	SEE AUTHORITY ELITE			
CHARGER BASIC/ DUAL MAGNUM/***CHARGER MAX***/DUAL II MAGNUM/ EVERPREX				EPP up to 14 days before planting on coarse soils, 45 days before planting on medium/fine soils. Split apply 2/3 rate if 30-45 days PP and remainder at planting. Use a single or split application 0-30 days PP. PPI 0-14 days before planting. PRE before weeds emerge. May be fall applied in after Sept. 30 in IA, and after Oct 31 north of Rt 136 in IL. Do not use on coarse soils in Fall. Soil temperature must be <55 °F and before soil freeze up (see label). Notes 5,7.
FALL Min. or No-till, >2.5% O.M.	–	1.67-2 pt	2 pt	
EPP Minimum or No-till	1.33 pt	1.67 pt	2 pt	
PPI or PRE <3% O.M.	1-1.33 pt	1.33-1.67 pt	1.33-1.67 pt	
PPI or PRE ≥3% O.M.	1.33 pt	1.33-1.67 pt	1.67-2 pt	
CLARIFIER/CLARITY	SEE BURNDOWN SECTION (STERLING BLUE)			
CLEANSE	SEE BURDOWN SECTION			
CLOAK EX	SEE BURNDOWN SECTION			
COMMAND 3ME				PP or PRE. Surface applied treatment from 30 days before planting to just prior to crop emergence. Avoid Drift! Clean sprayer thoroughly after using. Applicator training required in Wisconsin. Do not apply within 1200 ft of sensitive areas described on label. Use drift retardant if needed.
Northern area	2-2.67 pt	2-2.67 pt	2-2.67 pt	
Southern area	2.67-3.33 pt	2.67-3.33 pt	2.67-3.33 pt	
COMMAND 3ME (see above for Northern/Southern rates)				See Command 3ME.
+	+	+	+	
DUAL II MAGNUM or	0.8-1 pt or	1-1.33 pt or	1.33-1.67 pt or	Apply 0-14 days before planting.
OUTLOOK or	10-18 fl oz or	14-20 fl oz or	16-21 fl oz or	Apply 0-14 days before planting.
DIMETRIC EXT or	0.25-0.33 lb or	0.33-0.5 lb or	0.5-0.67 lb or	Apply 0-10 days before planting. Note 1.
DIMETRIC LIQUID or				Apply 0-10 days before planting. Note 1.
SCEPTER 70 DG	0.5-0.6 pt	0.6-1 pt	1-1.2 pt	
	1.44-2.8 oz	1.44-2.8 oz	1.44-2.8 oz	Apply 0-30 days before planting. See use area map. Note 5.
CORNERSTONE BRANDS	SEE BURNDOWN SECTION			
CREDIT XTREME	SEE ROUNDUP POWERMAX 3 IN BURNDOWN SECTION			
DICAMBA MAX 4	SEE BURNDOWN SECTION (STERLING BLUE)			
DIMETRIC CHARGED EPP, PRE IN CONVENTIONAL, MIN., or NO-TILL (see also Fallow Section)				For additional Burndown options by Region at higher rates, see Fallow Section. May be applied in fall after previous year's crop, or in spring as EPP, Burndown or PRE. Max. 18 fl oz/A/growing season. Do make >1 application/year. Do not irrigate during cracking. Max. 12 fl oz/A on medium and fine soils having calcareous surface area or having pH of 7.5. See label for applications as part of Roundup Ready or Liberty Link program. See label for soybean varieties exhibiting sensitivity to Dimetric Charged.
<1% O.M.	No	No	No	
PP or PRE ≥1-<2% O.M.	No	15 fl oz	18 fl oz	
PP or PRE 2-4% O.M.	12 fl oz	15-18 fl oz	18 fl oz	

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
DIMETRIC EXT				See label for rates on alklaline soils, for additional restrictions (soil pH, soil texture, geography), and for rates in the Mississippi Delta.
<2% O.M.	Do not use	0.5-0.66 lb	0.66-0.83 lb	
2-4% O.M.	0.5 lb	0.66-0.83 lb	0.83-1 lb	
>4% O.M.	0.66 lb	0.83-1 lb	1-1.17 lb	
DIMETRIC LIQUID				See label for rates on alklaline soils, for additional restrictions (soil pH, soil texture, geography), and for rates in the Mississippi Delta.
<2% O.M.	Do not use	1-1.3 pt	1.3-1.6 pt	
2-4% O.M.	1 pt	1.3-1.6 pt	1.6-2 pt	
>4% O.M.	1-1.3 pt	1.6-2 pt	2-2.3 pt	
DISTINCT	SEE BURNDOWN SECTION			
DUAL II MAGNUM	SEE CHARGER BASIC			
DUAL II MAGNUM	1 pt	1-1.33 pt	1.33-1.67 pt	PP, PPI, or PRE. Apply Dual PP within 30 days of planting. PPI within 14 days prior to planting, shallow incorporation. PRE during or just after planting, and within 5 days of last tillage. See application restrictions for other products when tank mixed. Notes 5,6.
+	+	+	+	
	0.33 lb or	0.5 lb or	0.67 lb or	
+				
DIMETRIC EXT or	0.6 pt or	1 pt or	1.2 pt or	Notes 3,9.
DIMETRIC LIQUID or	4 fl oz or	4 fl oz or	4 fl oz or	
PURSUIT or				Performance more consistent PPI. Use Pursuit only once a year. Use 3 oz/A in ND, and north of 210 in MN. Notes 2,7.
SCEPTER 70 DG	2.8 oz	2.8 oz	2.8 oz	See Scepter 70 DG use area map and restrictions at end of section. Notes 2,7.
DUAL IIG MAGNUM	6-8 lb	8-10 lb	8-12 lb	PRE. Apply at or just after planting. See label for band rates.
ELEVORE	SEE BURNDOWN SECTION			
ENLITE/ENVIVE	SEE BURNDOWN SECTION			
ENVERSA	<1.5% OM: 1.25-1.6 qt ≥1.5% OM: 1.25-1.7 qt	<1.5% OM: 1.25-1.7 qt ≥1.5% OM: 1.25-1.9 qt	<1.5% OM: 1.25-1.9 qt ≥1.5% OM: 1.25-2.0 qt	Use the higher rate where heavy weed infestations exist. Application made before weeds emerge or after clean cultivation is necessary as this product will not control emerged weeds. Do not exceed a maximum of 2 quarts per acre (1.5 lb ai/acre) of this product as a single application and 4 quarts (3 lb ai/acre) per acre per year when making a second application.
EXPRESS	SEE BURNDOWN SECTION			
FIERCE EZ or FIERCE MTZ	**All soil textures:** 6-7.5 fl oz or 1-1.5 pint: FALL 6 fl oz or 1.5 pint: SPRING			FALL apply in field that will be planted the following spring. SPRING burndown, EPP, PP: Apply in minimum 15 gallons spray solution/A. PRE: Within 3 days after planting and prior to soybean emergence. Do not use in same field where alachlor, metolachlor, dimethenamid or flufenacet were used.
FIRSTRATE	**All soil textures:**			PP, PPI, or PRE. Use 0.6 oz/A rate on soils with ≤3% O.M. in DE, CT, IA, KS, MO, ME, MI, MN, MO (not bootheel), ND, NE, NH, OH, OK, SD, VT, WI, PA, NY and North of I-64 in IL, IN, KY, WV and VA. Use 0.75 oz/A rate on soils >3% O.M. Use 0.75 oz/A on all soils south of above area. Apply up to 30 days (two weeks preferred) before planting in reduced or no-till.
≤ 3% O.M.	0.6 oz.			
>3% O.M.	0.75 oz			
FLEXSTAR/***AGENT 1.88***	SEE BURNDOWN SECTION			
FLEXSTAR GT 3.5	SEE BURNDOWN SECTION			
FRAMEWORK 3.3 EC or PROWL H2O				PP or PPI FALL. Apply after harvest and prior to ground freeze in states north of I-80 and all of IA, IL, IN, KS, KY, MO, NE, OH, OK, TX. Do not exceed 2.4 pt/A Framework 3.3 EC or 2.1 pt/A Prowl H2O in southern states on soils with <3% O.M. and medium texture.
PP/PPI FALL, PP, PPI <3% O.M.	1.8 pt or 1.5 pt	3 pt or 2.5 pt	3.6 pt or 3 pt	PP. Apply up to 15 days before planting (45 if tank mixed or sequentially). Apply PPI up to 60 days before planting.
PP/PPI FALL, PP, PPI ≥3% O.M.	2.4 pt or 2 pt	3.6 pt or 3 pt	3.6 pt or 3 pt	
PRE <3% O.M.	1.8 pt or 1.5 pt	2.4 pt or 2 pt	2.4 pt or 2 pt	Apply PRE up to 2 days after planting. Do not apply PRE north of I-80, except in MI, IN, OH or unless stated on other labels. Notes 4,9.
PRE ≥3% O.M.	1.8 pt or 1.5 pt	2.4 pt or 2 pt	3 pt or 2.5 pt	
GRAMOXONE SL 3.0 A9	SEE BURNDOWN SECTION			
HERBIVORE	**All soil textures:** 0.66-1.33 fl oz			FALL burndown up to 1.33 fl oz/A, but not >1.33 fl oz/A/year. Spring PP or PRE on STS soybeans only use 0.33 fl oz/A to actively growing weeds from 21 day before planting to cracking.
HONCHO K6	SEE ROUNDUP POWERMAX 3 IN BURNDOWN SECTION			

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
KYBER PRO	**All soil textures:** 1 to 1-1.5 pint: FALL or SPRING			FALL apply in field that will be planted the following spring. SPRING burndown, EPP, PP: Apply in minimum 15 gallons spray solution/A. PRE: Within 3 days after planting and prior to soybean emergence. Do not use in same field where alachlor, metolachlor, dimethenamid or flufenacet were used.
LIBERTY ULTRA/LIBERTY 280 SL	SEE BURNDOWN SECTION			
LOROX DF or LINEX 4L	**All soil textures:** Up to 2 lb or up to 2 pt			PP up to 30 days before planting in all tillage systems or PRE before crop emerges in no-till, minimum-till or stale seed bed. Include COC or NIS for POST burndown.**
MAULER				See label for rates on alklaline soils, for additional restrictions (soil pH, soil texture, geography), and for rates in the Mississippi Delta.
<2% O.M.	Do not use	0.75-1 pt	1-1.25 pt	
2-4% O.M.	0.75 pt	1-1.25 pt	1.25-1.5 pt	
>4% O.M	1 pt	1.25-1.5 pt	1.5-1.75 pt	
OUTLOOK				PP, PPI, or PRE. Apply up to 45 days before planting. 21 fl oz/A for all EPP (15-45 days). EPP not recommended on coarse soils. May split by using 2/3 early and 1/3 at planting. PPI 1-2" up to 14 days before planting. PRE before crop emergence. POST up to fifth trifoliate. Maximum use rate increased to 24 oz/A/year if applied in a split application. May use reduced rates - see label. PP FALL in minimum or no-till. In ND,SD,MN,WI,IA,IL north of Hwy 136, and NE north of Hwy. 91. Apply after Oct. 1 to soils >2.5% O.M. when soil <55 °F and before ground freezes. If tilling, go no deeper than 2-3". Note 7.
Spring				
<3% O.M.	12-14 fl oz	14-18 fl oz	14-18 fl oz	
≥3% O.M.	4-18 fl oz	18-21 fl oz	18-21 fl oz	
Fall	Do not use	Up to 21 fl oz	Up to 21 fl oz	
PREFIX				PP, PPI, or PRE. PP up to 15 days before planting in reduced or no-till. Incorporate 2" with 7 days of planting. Rates depend on region, soil texture, and O.M. Use as a foundation PRE for early season grass and broadleaf control in a RR soybean program. Early season control of common and giant ragweed, waterhemp, lambsquarter, pigweeds (inc. palmer amaranth), teaweed, and most annual grasses. See label for specific application details.
0.5-3% O.M.	2 pt	2 pt	2 pt	
>3% O.M.	2-2.25 pt	2-2.25 pt	2-2.25 pt	
PRESIDUAL	SEE BOUNDARY 6.5EC			
PYTHON	0.8-1 oz	0.89-1.33 oz	0.89-1.33 oz	EPP FALL or spring, PP, PPI, or PRE. In FALL, apply 0.8-1 oz in tank mixes after soil <50 °F and to ≤4" weeds. Incorporate 2-3" or surface apply up to 30 days prior to planting. PRE before soybean emergence. Use high end of rate if soil O.M. >3%. Do not use on peat or muck soils. Do not use if soil pH >7.8, or if soil pH <5.9 and O.M. >5%. Use in labeled tank mixes for improved broadleaf control. Note 5.
RESOURCE	SEE BURNDOWN SECTION			
ROUNDUP WEATHERMAX	SEE BURNDOWN SECTION			
RT 3	SEE BURNDOWN SECTION			
RUGGED	SEE BURNDOWN SECTION			
SADDLE-UP	**All soil textures:** 1.33-2.67 pt			Apply 1.33 pt/A with min. PP waiting interval of 15 days; max. 2 applications/crop cycle. Apply 2.67 pt/A with min. PP waiting interval of 30 days; max. 1 application/crop cycle. See label for additional PP restrictions in areas of little rainfall, and for rainfall activation requirements. Max. 2.5 pt/A/growing season. Do not use on sandy soils. Max. 2.67 pt/A/crop cycle.
SCEPTER 70 DG	**All soil textures:** 2.8 oz			PPI. Apply up to 45 days prior to planting. Use in Midwest: IA,WI,NE,KS (east of US 81), and southern MN plus Region 1 and 2. In some states can be tank mixed with Command 3ME for improved velvetleaf control (see label). Include NIS for burndown of emerged weeds. Notes 2,8.
SELECT MAX	SEE BURNDOWN SECTION			
SEQUENCE	SEE BURNDOWN SECTION			
SHARK EW	SEE AIM EC IN BURNDOWN SECTION			
SHARPEN	SEE BURNDOWN SECTION			
SONALAN HFP				PPI. Apply within 21 days of planting and incorporate 2-3" within 2 days. Inadequate incorporation may result in crop injury. For partial control of black nightshade with 2-pass incorporation.
PPI	1.5-2 pt	2-2.5 pt	2.5-3 pt	
Black Nightshade 2-pass	Do Not Use	3 pt	3.5 pt	
SONALAN HFP + ***DIMETRIC EXT*** or ***DIMETRIC LIQUID***	Do Not Use + 0.33 lb or 0.6 pt	3 pt + 0.5 lb or 1 pt	3.5 pt + 0.67 lb or 1.2 pt	See Sonalan HFP Comments/Restrictions above. Apply within 10 days of planting. Note 1.

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
SONALAN 10G				PPI. Apply with granular applicators and incorporate as soon as possible; a second incorporation should be made 5 days after the first.
PPI	5.5-7.5 lb	7.5-9.5 lb	9.5-11.5 lb	
Fall	Do not use	11.5 lb	13 lb	Fall applications: Apply to standing crop stubble between October and December 31.
SONIC	SEE AUTHORITY FIRST DF			
SONIC BOOM				Do not apply more than 26 fluid ounces (0.45 lb metribuzin + 0.23 lb sulfentrazone) or 1 application per/A/12 month period. Recommended carrier, Water and/or Liquid fertilizer. Apply from 30 days pre plant to up to 3 days after planing. Do not apply after soybeans have emerged. Tank mix for additional control of emerged weeds.
1-2% O.M.	11-14 fl oz	14-21 fl oz	18-23 fl oz	
2-4% O.M.	14-21 fl oz	18-23 fl oz	21-26 fl oz	
SPARTAN CHARGE	SEE BURNDOWN SECTION			
SPARTAN 4F	4.5-10.1 fl oz	6-12 fl oz	8-12 fl oz	PP, PRE or PPI. PPI up to 2". Apply PRE up to 3 days after planting. Rates vary by O.M. and pH. Also labeled PP for fall application. Apply after soil temperature is ≤ 55 °F at 4" depth. Apply after September 30 north of I-90, October 15 north of I-70. Do not apply south of I-70 in fall.
SPITFIRE	**All soil textures:** 1-2.5 pt			Apply 1-1.25 pt/A with min. PP waiting interval of 7 days; if >June 1st, wait 15 days. Apply 1.25-2 pt/A with min. PP waiting interval of 15 days. Apply 2-2.5 pt/A with min. PP waiting interval of 30 days. See label for rainfall activation requirements. Max. 2.5 pt/A/growing season. Do not use in fields having coarse-textured soil with O.M. <1%. Do not apply in geographic areas with avg. annual rainfall <25". Max. 5.2 pt/A/application with 2 applications/year for PH, fallow, crop stubble or set aside use; see label for details.
STERLING BLUE	SEE BURNDOWN SECTION			
SURVEIL	**All soil textures:** 3.5-4.2 oz			PP or PRE. Rate depends on weeds and O.M. Apply up to 14 days before planting or up to 3 days after planting. Do not incorporate. See label for NIS or COC for improved burndown.* Fall apply in labeled tank mixes to control emerged weeds and provide residual weed control in spring. Fall application timing varies by region or before soil temperature is <50 °F. Apply after soil temperature is <50 °F at 2" depth; see label. Do not incorporate or leave in the tank overnight.
SYNCHRONY XP	SEE BURNDOWN SECTION			
TENDOVO	1.20- 1.50 qt	1.50-2.10 qt	1.75-2.35 qt	PP, PPI, or PRE. May be applied up to 30-45 days before planting. Apply in reduced tillage up to 30 days prior to planting, otherwise, apply PP or PPI 0-14 days before planting. Include a labeled tank mix partner for control of emerged weeds. For applications earlier than 30 days before planting use the higher rate in the rate range. Injury to soybean may occur when soils have a calcareious surface area or a pH of 7.5 or higher. Refer to the label for additional precautions. Do not use in California.
TOTAL/***TOTAL 2.3***/***TOTAL SL***	SEE LIBERTY 280 SL IN BURNDOWN SECTION			
TRUST/TREFLAN HFP or TREFLAN TR-10				PPI. Incorporate 2-3" deep within 24 hours of application. Spring (all areas), Fall (northern) apply from October 15 to December 31. In MN, MT, ND, SD, application can begin September 1.
PPI	1 pt or 5 lb	1.5 pt or 7.5 lb	2 pt or 10 lb	
FALL	2 pt or 10 lb	2 pt or 10 lb	2.5 pt or 12.5 lb	FALL application in AL,AR, north FL, GA, LA, MS, southeast MO, NC, OK, SC, TN, TX. In other states, use PPI rates of 1-2 pt/A.
TRUST/TREFLAN HFP	1 pt	1.5 pt	2 pt	PPI. Apply in spring before planting, and incorporate within 24 hours, 2-3" deep. Use alone or in these mixes:
+	+	+	+	
DUAL II MAGNUM or	0.8-1 pt or	1-1.33 pt or	1.33 pt or	Apply within 14 days before planting.
DIMETRIC EXT or	0.33 lb or	0.5 lb or	0.67 lb or	Apply within 10 days before planting. Note 1.
DIMETRIC LIQUID or	0.6 pt or	1 pt or	1.2 pt	Apply within 10 days before planting. Note 1.
OUTLOOK or	10-18 fl oz or	14-20 fl oz or	14-21 fl oz or	Apply within 14 days before planting.
PURSUIT or	4 fl oz or	4 fl oz or	4 fl oz or	Apply within 45 days before planting. Note 7.
SCEPTER 70 DG	2.8 oz	2.8 oz	2.8 oz	Apply within 45 days before planting. See use area map. Notes 2,8.
VALOR SX/VALOR EZ	SEE BURNDOWN SECTION			
VALOR XLT	SEE BURNDOWN SECTION			

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
VERDICT/***TESTIFY***	**All soil textures:**			FALL after crop harvest and prior to killing frost or PP spring prior to planting reduced or no-till soybeans. For Spring PP/PRE add 0.75 pt HSOC-MSO.* PRE prior to cracking stage or crop emergence. Provides burndown and residual control of certain grasses and broadleaf weeds. Minimum of 30 days before planting on coarse (2% O.M.) soils. Do not apply within 30 days of at-plant OP on carbamate insecticides. Do not use in CA. Do not apply with or within 30 days PP of Group 14 herbicides. For EPP enhanced broadleaf weed control apply at 5-10 fl oz/A.
FALL	5-10 fl oz			
Spring PP, PRE	5 fl oz			
WARRANT				PP, PRE. Do not incorporate. POST applications must be made after crop emergence but prior to weed seedling emergence. Emerged weeds will not be controlled. Maximum 4 qt/A/season. If a crop treated with Warrant is lost, soybeans may be replanted immediately, but could result in crop injury.
<1.5% O.M.	1.25-1.6 qt	1.25-1.7 qt	1.25-1.7 qt	
>1.5% O.M.	1.25-1.7 qt	1.25-1.9 qt	1.25-2 qt	
WARRANT ULTRA				Consult label Area Use Maps for maximum application rates. Apply only once per growing season. PP, PRE. Do not incorporate. Emerged weeds not listed on label may require an additional labeled POST herbicide.
<1.5% O.M.	48 fl oz	48-55 fl oz	48-60 fl oz	
>1.5% O.M.	48-60 fl oz	48-65 fl oz	48-70 fl oz	
ZIDUA SC	2.5.3.5 fl oz	3.25-5 fl oz	4-5.75 fl oz	FALL use rates listed for PP timings. PP use higher rates 15-45 days before planting. If weeds are already emerged, include a herbicide with foliar/burndown activity.
ZIDUA PRO	**All soil textures:** 4.5-6 fl oz			FALL burndown and/or residual weed control on all soil types after the prior crop is harvested. Applications must be made prior to the first killing frost. SPRING early PP through PRE. Must allow 30-day minimum PP interval on coarse soils with ≤2% O.M. 4.5 oz/A in ND, MN north of Highway 10. See label for sequential application options with Sharpen.
2,4-D	SEE BURNDOWN SECTION			

[1] Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

NOTE 1: Plant seed 1.5-2″ deep.

NOTE 2: Use no more than one of these products the same year, or injury to following crops may occur: Cloak EX, Classic, Scepter 70 DG, Pursuit or Beyond Xtra.

NOTE 3: Do not use where Atrazine carryover is present, or on calcareous soils, or on soils with a pH of 7.5 or higher. Certain soybean varieties are sensitive to Dimetric EXT, Dimetric Liquid, Mauler and Boundary 6.5EC/Presidual (see product label).

NOTE 4: Do not use on peat or muck.

NOTE 5: PPI treatment is better for nutsedge; PRE is better for black nightshade.

NOTE 7: Do not soil-apply Pursuit in ND or northern MN.

NOTE 8: See herbicide use area map at end of weed control section.

NOTE 9: Do not apply to emerged soybeans.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

The staging system described here (often referred to as the Iowa State staging system) divides plant development into vegetative (V) and reproductive (R) stages (Table 1). Subdivisions of the V stages are designated numerically as V1, V2, V3, through V(n), except the first two stages, which are designated as VE (emergence) and VC (cotyledon stage). The last V stage is designated as V(n) where (n) represents the number for the last node stage of the specific variety. The (n) stage will fluctuate with variety and environmental differences. The eight subdivisions of the R stages are designated numerically with their common names in Table 1.

Table 1. Vegetative and reproductive stages of a soybean plant.*

Vegetative Stages**	Reproductive Stages
VE emergence	R1 Beginning bloom
VC Cotyledon	R2 Full bloom
V1 First-node (unifoliate)	R3 Beginning pod
V2 Second-node	R4 Full pod
V3 Third-node	R5 Beginning seed
I	R6 Full seed
I	R7 Beginning maturity
V(n) nth-node	R8 Full maturity

***This system accurately identifies the stages of a soybean plant. However, all plants in a given field will not be in the same stage at the same time. When staging a field of soybeans, each specific V or R stage is defined only when 50 percent or more of the plants in the field are in or beyond that stage.**

**The V stages (node stages) following VC are defined and numbered according to the uppermost fully developed leaf node. A fully developed leaf node is one that has a leaf above it with unrolled or unfolded leaflets. In other words, the leaflet edges have begun to unroll and are no longer touching. The V3 stage, for example, is defined when the leaflets on the 1st (unifoliolate) through the 4th node leaf are unrolled. Similarly, the VC stage occurs when the unifoliolate leaves have unrolled. The unifoliolate leaf node is the first node or reference point from which to begin counting upward to identify upper leaf node numbers. This node is unique in that the unifoliolate (simple) leaves are produced from it on opposite sides of the stem and are borne on short petioles. All other true leaves formed by the plant are trifoliolate (compound) leaves borne on long petioles, and are produced singularly (from different nodes) and alternately (from side to side) on the stem. The cotyledons, which are considered as modified leaf storage organs, arise opposite on the stem just below the unifoliolate node. When the unifoliolate leaves are lost through injury or natural aging, the position of the unifoliolate node can still be determined by locating the two leaf scars on the lower stem that permanently mark where the unifoliolate leaves had grown. These unifoliolate leaf scars are located just above the two opposite scars which mark the cotyledonary node position. Any leaf scars above the opposite unifoliolate scars appear singularly and alternately on the stem, and mark node positions where trifoliolate leaves had grown.

Table 2. Reproductive stages

R1 Beginning bloom - One open flower at any node on the main stem.

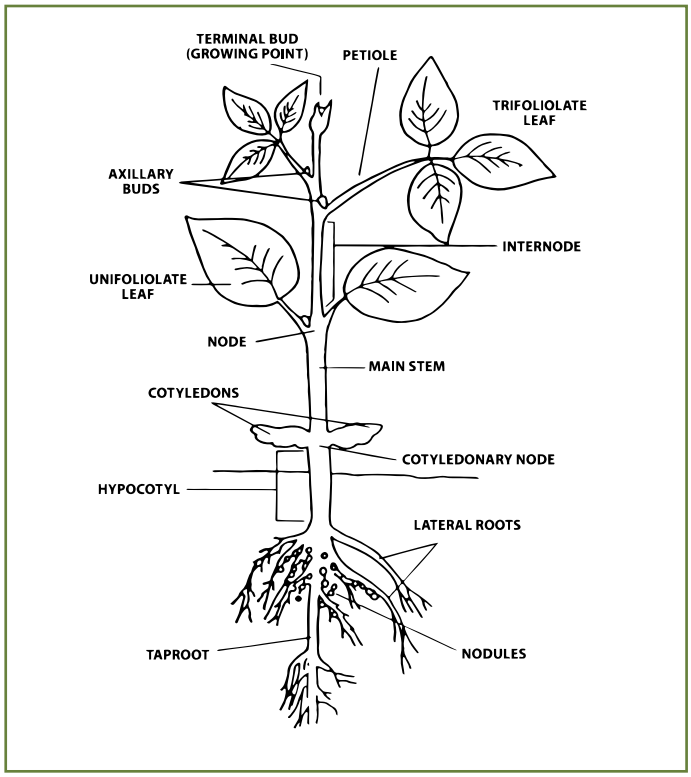
R2 Full bloom - Open flower at 1 of the 2 uppermost nodes on the main stem with a fully developed leaf.

R3 Beginning pod - Pod 3/16" long at 1 of 4 uppermost nodes on main stem with a fully developed leaf.

R4 Full pod - Pod 3/4" long at 1 of 4 uppermost nodes on main stem with a fully developed leaf.

R5 Beginning seed - Seed 1/8" long in a pod at 1 of the 4 uppermost nodes on the main stem with a fully developed leaf.

R6 Full seed - Pod with a green seed that fills a pod cavity at 1 of the 4 uppermost nodes on main stem with fully developed leaf.



Soybean plant at V2 stage.

POSTEMERGENCE HERBICIDES

ADJUVANTS — The choice of a nonionic surfactant (Preference, Optify A and Chemsurf/90), crop oil concentrate (Superb HC, Optify HSOC and Valcheck COC), methylated seed oils (Destiny HC or Optify HSMSO) and/or fertilizer additive depends on environmental conditions, crop and weed size and vigor and other variables. Check herbicide labels for these conditions to prevent poor herbicide performance and/or crop injury.

HERBICIDE APPLICATION TIMING is very important. Weeds and grasses are more easily controlled, with less chemical, when they are small and actively growing. Large crop and weed canopies shelter smaller weeds and prevent the adequate spray coverage that is necessary for contact herbicides to work well. When both broadleaf weeds and grasses are problems after crop emergence, use both a broadleaf herbicide and a grass herbicide. Sometimes these can be applied together, but other times they should be applied separately

CONDITIONS DICTATE THE CHOICE – If weeds and grasses are small and about the same size, and perennial grasses are not a problem, then a TANK MIX will save time and application costs. In some cases, there is an antagonism between the broadleaf herbicide and grass herbicide mixed together, so that it is necessary to increase the rate of the latter. See Broadleaf-Grass Weed Tank Mixes and Sequential Treatments table.

CULTIVATION — Cultivation 7-14 days after a postemergence application can greatly improve the effectiveness of a weed control program. Cultivation during, or within 7 days before or after a foliar herbicide application can result in erratic control. Cultivation severs weed roots and prevents translocation of systemic herbicides to the weed roots. Cultivation during application may create dust which then may reduce the effectiveness of foliar herbicides.

Source: Adapted from ISU.

PP-PPI-PRE APPLICATION TIMING

Preplant Surface | Preemergence Surface | Preplant incorporated and preplant surface

Herbicide	Days before planting (maximum) Fall*	**	45	30	21	14	7	0	PRE	Comments
AFFORIA										NOTES 2,24,25
AIM EC/SHARK EW										
ANTHEM MAXX/ANTHEM FLEX										
ASSURE II/TARGA										NOTE 1
AUTHORITY ASSIST										NOTE 9
AUTHORITY ELITE										NOTES 1,7
AUTHORITY FIRST DF/SONIC										NOTE 9
AUTHORITY EDGE/XL/ELITE/SUPREME				up to 60 days preplant						NOTE 9
AUTUMN SUPER 51 WDG										NOTES 2,20
BOUNDARY 6.5EC/***PRESIDUAL***										
BROADAXE XC/AUTHORITY ELITE										NOTES 7,9
BUTYRAC 175/***2,4-DB 175***/BUTYRAC 200/***2,4-DB 200***										
CLARIFIER/CLARITY/***STERLING BLUE***/***DICAMBA MAX 4***		see label for PP interval based on rate and rainfall								
CLOAK EX										
COBRA										
COMMAND 3ME										
CORNERSTONE										NOTES 1,4
CREDIT XTREME/HONCHO K6										NOTES 1,4
CRUSHER/LEADOFF		rate dependent, see label			Bolt soybeans					NOTE 2
DIMETRIC CHARGED										NOTES 1,2,4,9
DIMETRIC EXT/***DIMETRIC LIQUID***										
DISTINCT										NOTE 14
DUAL MAGNUM/***CHARGER BASIC***/DUAL II MAGNUM/***CHARGER MAX***/EVERPREX			split appl.	single appl.						NOTE 5
ELEVORE										
ENLITE/ENVIVE										NOTE 9
ENVERSA										NOTE 7
EXPRESS										
FIERCE EZ/FIERCE MTZ/FIERCE XLT								w/in 3 days of planting		NOTES 7,21
FIRSTRATE										NOTES 7,8
FIRSTSHOT SG										NOTE 1
FLEXSTAR/***AGENT 1.88***/REFLEX										NOTE 4
FLEXSTAR GT 3.5										NOTES 1,18
FRAMEWORK 3.3 EC/PROWL H2O		60 days PPI		45 days mixed or sequential		15 days				NOTES 10,11
GRAMOXONE SL 3.0 ‡										NOTES 1,4
HARMONY EXTRA SG										NOTE 1
HERBIVORE										NOTE 4
KYBER PRO								w/in 3 d of planting		NOTES 7,21
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH										NOTE 4
LOROX DF/LINEX 4L										NOTES 18,19
MAULER										
OUTLOOK										NOTE 5
PANOFLEX										NOTE 23
PERPETUO										NOTES 1,4
PREFIX										NOTES 1,15
PURSUIT										
PYTHON										
ROUNDUP POWERMAX 3; WEATHERMAX										NOTES 1,4

See notes and footnotes at end of table.

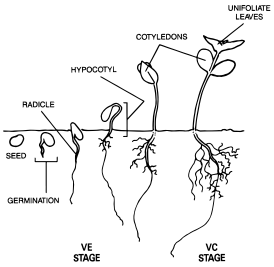
Preplant Surface | Preemergence Surface | Preplant incorporated and preplant surface

Herbicide	Days before planting (maximum)								Comments
	Fall*	**	45	30	21	14	7	0 PRE	
RT 3									NOTES 1,4
RUGGED			2 pt			1 pt			NOTE 1
SCEPTER 70 DG									NOTES 2,12
SEQUENCE									NOTE 14
SHARPEN									NOTE 1
SHREDDER E-99			0.67-1.33 pt			0.5-0.67 pt			
SONALAN									NOTE 6
SONIC BOOM									NOTE 9
SPARTAN 4F									NOTES 9,13
SPARTAN CHARGE									
SPITFIRE									
SURVEIL									NOTE 9
SYNCHRONY XP									
TENDOVO									NOTE 18
TRIVENCE									NOTES 2,9,24
TRUST/TREFLAN HFP									NOTES 6,14
VALOR SX/VALOR EZ									NOTE 9
VALOR SX/VALOR EZ/PANTHER SC									NOTE 9
VALOR XLT									
VERDICT/***TESTIFY***									
WARRANT/WARRANT ULTRA									
WEEDAR 64/WEEDONE 638/WEEDAR XHL			option 2: see label	option 1: see label					
ZIDUA SC									
ZIDUA PRO				30-day minimum PP interval on coarse soils with ≤2% O.M.					
2,4-D AMINE 4			1-2 pt	1 pt, 15 days					
2,4-D LV 4 or ***LV 6***			Up to 2.1 pt or up to 1.33 pt			≤1 pt or ≤0.7 pt			

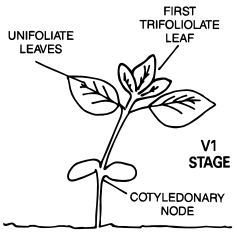
** Days before planting not restricted or specified
* FALL applications may be restricted by temperature, soil characteristics, location, state, and date. See the label for detailed instructions.
NOTE 1: Maximum days PP not defined.
NOTE 2: FALL after harvest, before freezing.
NOTE 4: To emerged weeds, prior to crop emergence.
NOTE 5: FALL, soil temperature < 55° F, and before freeze-up. Northern corn belt states only.
NOTE 6: PPI only.
NOTE 7: PRE days after planting but before soybeans emerge.
NOTE 8: Maximum of 14 days PPI or PP is preferred.
NOTE 9: PRE up to 3 days after planting.
NOTE 10: FALL before soil freeze-up in certain states. PPI up to 60 days or up to 15 or 45 days if surface applied.
NOTE 11: PRE up to 2 days after planting south of I-80.
NOTE 12: Up to 30 days in Region 1.
NOTE 13: FALL after Sept 30 north of I-90, and Oct 15 north of I-70, soil temperature ≤55° F.
NOTE 14: See label for restrictions on location, timing, etc.
NOTE 15: PPI - incorporate with 7 days of application. PP up to 15 days before planting in no- or reduced-tillage.
NOTE 16: Maximum days PPI not defined.
NOTE 18: Prior to crop emergence.
NOTE 19: Preplant for no-till, minimum-till or stale seedbed only.
NOTE 21: Do not irrigate when soybeans are cracking.
NOTE 23: Delay planting 1-14 days after application, depending on rate and soil type.
NOTE 24: Do not till after fall application.
NOTE 25: Apply lowest rate 1 day prior to planting.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

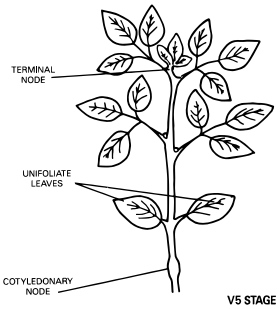
POST APPLICATION TIMING

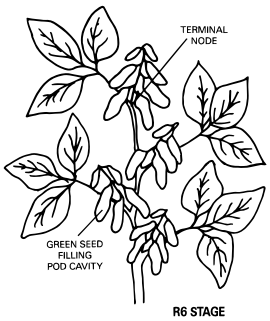
GROWTH STAGES

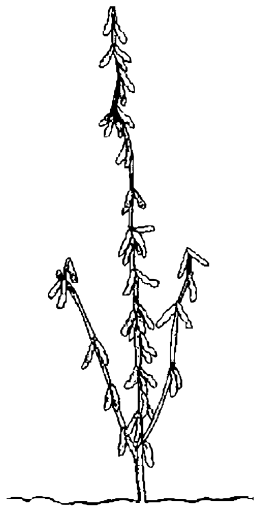


Based on growth stage
Based on days before harvest
Based on multiple factors





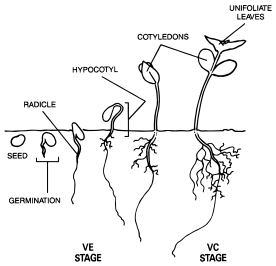


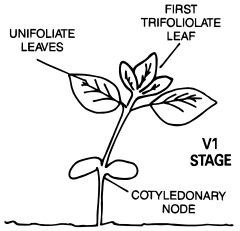


VE		First Trifoliate	8"	Third Trifoliate					7-10 Days Prior to Bloom	Prior to Bloom	90	50% Flowering	80	Full Flowering	60		40		Mature: Pods Set, Green Color Lost	14	7	0 Harvest	Growth Stage or Plant Height / Days Before Harvest
Up to 3rd trifoliate																							CHARGER MAX/DUAL II MAGNUM/PREFIX
Up to 5th trifoliate																							OUTLOOK
Up to 6th trifoliate																							ANTHEM MAXX/PERPETUO/ ZIDUA SC
Prior to bloom																							FUSION/VARISTO
Prior to bloom																							LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH[1]
Up to R2 growth stage - Enlist tolerant soybeans only																							ENLIST DUO/ENLIST ONE
Prior to the R2 (full flower) growth stage																							FIRSTRATE
After soybeans emerged and before R2																							WARRANT/WARRANT ULTRA
After soybeans emerged and before V5 braoadcast, Post directed spray after V5.																							ENVERSA
				>V3-V10 directed only; Harvest Aid up to 3 days before harvest.																			AIM EC/SHARK EW
Up to 90 days before harvest																							SCEPTER 70 DG/***CHARGER BASIC***/DUAL MAGNUM/ EVERPREX
Up to 80 days before harvest																							ASSURE
Up to 75 days before harvest																							POAST/SEQUENCE
VE for STS/BOLT or first trifoliate for non-STS/BOLT, then up to 60 days before harvest																							SYNCHRONY XP
Up to 60 days before harvest																							RESOURCE/***SECTION THREE***/ ***CLEANSE***/FUSILADE DX
Up to 50 days before harvest																							***AVALANCHE ULTRA***
Up to 45 days before harvest																							COBRA/FLEXSTAR GT 3.5[4]/ FLEXSTAR/REFLEX/***AGENT 1.88***

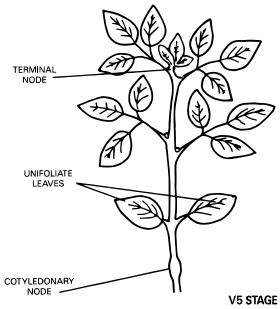
See notes and footnotes at end of table.

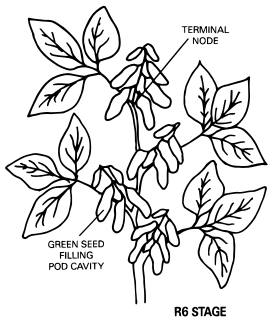
GROWTH STAGES

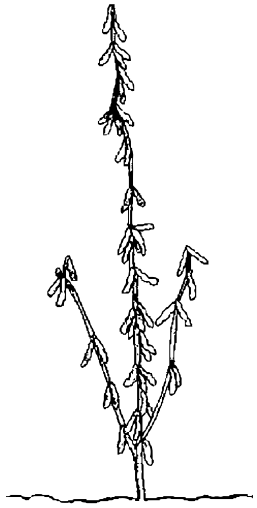




Based on growth stage
Based on days before harvest
Based on multiple factors







VE		First Trifoliate	8"	Third Trifoliate					7-10 Days Prior to Bloom	Prior to Bloom	90	50% Flowering	80	Full Flowering	60		40		Mature: Pods Set, Green Color Lost	14	7	Harvest	Growth Stage or Plant Height / Days Before Harvest
30 days before harvest																							***BASAGRAN***
Before weeds are 3" and prior to bloom																							PURSUIT/BEYOND XTRA
			Directed spray from 8" up to 75 days before harvest																				***BOUNDARY 6.5EC/ PRESIDUAL***
			Directed spray from 8" up to 60 days before harvest (see footnote 3)																				***2,4-DB 200***/BUTYRAC 200/ ***2,4-DB 175***/BUTYRAC 175[3]
Up to 45 days before harvest but not after R6																							PHOENIX
Apply when at least 65% of pods are mature brown or seed moisture is ≤ 30% for indeterminate varieties. Apply when plants are mature, 50% of leaves dropped and the rest are yellow for determinate soybeans. For both, do not apply within 15 days of harvest.																							GRAMOXONE SL 3.0 ‡
Apply after all pods are set and have lost green color. Do not apply within 7-14 days of harvest.																							GLYPHOSATE[2,4]
																			Apply after pods are mature, brown and ≥ 75% leaf drop. PHI 14 days.				***STERLING BLUE***/***CLARIFIER***/ CLARITY

[1] LibertyLink soybeans only.
[2] Cornerstone, Roundup brands, Credit Xtreme/Honcho K6. Harvest interval is 7 or 14 days depending on formulation and if soybeans are Roundup Ready or conventional.
[3] Broadcast in southern states from 7-10 days before bloom up to mid-bloom.
[4] Roundup Ready soybeans only.
[5] Or up to 85 days PHI for Pursuit.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POSTEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AGENT 1.88	SEE FLEXSTAR			
AIM EC/SHARK EW	**All soil textures:** Up to 1.5 fl oz directed only			Add 1 qt NIS/100 gal.* Apply as directed spray only, when crop is >V3 up to V10. Rate depends on target weeds; see label. Max. 1.5 fl oz/A/season including all application timings/methods. Do not apply when conditions favor drift or wind is >10 mph. Do not apply if foliage is wet from dew, rain, or irrigation.
ANTHEM MAXX *≤1% O.M.* *>1% O.M.*	 2-2.5 fl oz 2-3.25 fl oz	 2.5-4.5 fl oz 2.5-4.5 fl oz	 3.25-5.7 fl oz 3.25-5.7 fl oz	May only be applied up to the 6th trifoliate. On coarse soils do not apply more than a maximum cumulative amount of 3.4 oz/A. On other soils, do not apply more than a maximum cumulative of 5.7 oz/A.
ASSURE II/TARGA	**All soil textures:** 5-12 fl oz			Add 0.5 gal HSOC-COC/100 gal.* Use 4-8 fl oz/A for volunteer corn, (8-12 fl oz/A tank mixed with broadleaf herbicides) shattercane, and wild proso millet; 7-8 oz/A for annual grasses; 10 oz/A for quackgrass. In western parts of KS, MT, NE, OK, TX, WY - see rate chart on label. A second application may be necessary for perennials. Use 12 fl oz/A with auxin herbicide tank mixtures.
AVALANCHE ULTRA	**All soil textures:** 1-1.5 pt			Add 1-2 pt NIS/100 gal.* Good coverage of small, actively growing weeds is essential.
AVALANCHE ULTRA + ***BASAGRAN***	**All soil textures:** 0.5-1 pt + 1-2 pt			Add 0.5-1 pt/A HSOC-COC.* For improved velvetleaf control, 28% N may be substituted for COC.*
BASAGRAN	**All soil textures:** 1.5-2 pt			Add 1 pt HSOC-COC.* Good coverage of small, actively growing weeds essential. Two applications needed for Canada thistle and yellow nutsedge. Note 1.
BASAGRAN + FUSILADE DX	**All soil textures:** 1.5-2 pt + 12 fl oz			Add 1-2 qt HSOC-COC/100 gal.* Any application must be made before bloom. Note 1.
BASAGRAN 5L	**All soil textures:** 0.8-1.6 pt			Slight speckling and leaf bronzing may occur under certain conditions but will outgrow conditions in 10 days.
BEYOND XTRA (alone or) + AVALANCHE EXTRA	**All soil textures:** 4-5 fl oz + 8-20 fl oz			Add 1 qt NIS/100 gal or 0.5 gal HSOC-MSO/100 gal or HSOC-COC/100 gal + 2.5 gal 28%N/100 gal or 10 lb AMS/100 gal.* Use 4 oz/A rate of Beyond Xtra only following a soil applied grass herbicide. Combines both foliar and residual action. Apply to 1-3" weeds that are actively growing. Use HSOC-COC for larger weeds or weeds under stress. For improved control of waterhemp or ALS resistant weeds, tank mix with Avalanche Ultra or Cobra. Crop injury and reduced weed control can occur if temperature falls below 50 °F. Notes 2,4.
BOUNDARY 6.5EC/ ***PRESIDUAL*** *0.5-3% O.M.* *> 3% O.M.*	 1.3 pt 1.5 pt	 1.5-2 pt 2 pt	 2 pt 2 pt	POST emergence directed only in AR,LA,MO (bootheel only),MS,TN. 2 pt/A in the Mississippi delta only.
BUTYRAC 175/BUTYRAC 200	SEE 2,4-DB 200			
CHARGER BASIC/ CHARGER MAX	**All soil textures:** 1-1.33 pt			Do not use Charger Max POST if applied PP or PRE. Charger Max up to third trifoliate; Charger Basic from VE not to exceed 1.33 pt/A POST or 2.6 pt/A/year. POST: Preharvest Interval (PHI): Do not apply within 90 days of harvest.
CHEETAH	SEE LIBERTY 280 SL			
CLASSIC	**All soil textures:** 0.5-0.75 oz			Add 1 qt NIS/100 gal.* Do not use in ND, nw MN, or west of US 183 in TX. Apply after first trifoliate leaf is expanded until 60 days prior to harvest. For velvetleaf control, add 2-4 qt/A UAN or 2-4 lb/A AMS.* Under dry conditions, use 1 pt HSOC-COC/100 gal.* Notes 1,3,4.
CLEANSE	All soil textures: 4-16 fl oz			Add 1 pt/A HSOC-COC.* 4-8 fl oz/A for control of annual grasses; 8-16 fl oz/A for perennial grasses, and 4-6 fl oz/A for 12" volunteer corn and 6-8 fl oz/A for 12-24" volunteer corn when actively growing and within heights on label. 1-2 qt/A 28% N or 2.5-4 lb/A AMS may be added. Select 2 EC may be added to glyphosate products to control volunteer Roundup Ready corn: Use 4-6 fl oz/A for up to 12" corn and 6-8 fl oz/A for 12-24" corn; include 1-2 qt HSOC-COC/100 gal or 2 pt NIS/100 gal; or use HSOC-MSO depending on glyphosate formulation.*
COBRA	**All soil textures:** 8-12.5 fl oz			Add 0.5-1 pt HSOC-COC/100 gal (most uses) or 2 pt NIS/100 gal.* Apply when broadleaf weeds are in 2-6 leaf stage and actively growing. Do not apply to stressed crop or in dry weather. Adjuvant recommendations are dependent on relative humidity and weed species. The most used adjuvant rate is 1 pt COC/100 gal.* Labeled at 8-12.5 oz/A in tank mixes. An application at or near first bloom can suppress white mold.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
COBRA + FIRSTRATE + ***SECTION THREE*** or ***CLEANSE*** or PURSUIT or BEYOND XTRA	**All soil textures:** 8-12.5 fl oz + 0.3 oz + 4-6.67 fl oz or 6-10 fl oz or 4 fl oz or 4-5 oz			Add 0.5-1 pt/A HSOC-COC/ + 2.5 lb/A AMS.* May use 0.25-0.5 pt HSOC-MSO* instead of HSOC-COC + AMS, with tank mix containing FirstRate + Cleanse, Section Three or Pursuit. Note 2.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 48 fl oz or 6 fl oz			Add 8.5-17 lb AMS/100 gal, include NIS, Class Act NG, Class Act Flex as needed.* Apply to soybeans designated ROUNDUP READY from cracking stage through flowering stage. Provides effective control of most emerged annual weeds. Best time for control of perennial weeds is often later than for annual weeds. Maximum in-crop use rate is 2 qt/A or 4.5 pt/A.
CREDIT XTREME	SEE ROUNDUP POWERMAX 3			
DIMETRIC EXT or ***DIMETRIC LIQUID***	**All soil textures:** 0.33-0.67 lb or 0.6-1.2 pt			Directed spray in AL, AR, FL, GA, KY, LA, MS, MO, NC, OK, SC, TN, TX. See label for restrictions.
DUAL II MAGNUM/ DUAL MAGNUM	**All soil textures:** 1.0 - 2.0 pt Use the lower rate for coarse textured soils and the higher rate for fine textured soils.			Apply to extent the duration of weed control in soybeans. Do not apply more than 2.0 pt/A in a single postemergence application. More than one postemergence application may be applied, but the total applied to the crop must not exceed 3.9 pt/A/year. Maximum Annual Rate: 3.9 pt/A/year or 3.71 lb ai/A/year of S-metolachlor-containing products. Do not apply within 75 days of harvest.
ENLIST DUO	**All soil textures:** 4.75 pt			Only to Enlist tolerant soybeans. Apply no later than R2. See "New Herbicides for Herbicide Tolerant Soybeans Traits" page for more information.
ENLIST ONE	**All soil textures:** 2 pt			Only to Enlist tolerant soybeans. Apply no later than R2 (full flowering stage). See "New Herbicides for Herbicide Tolerant Soybeans Traits" page for more information.
ENVERSA	<1.5% OM: 1.25-1.6 qt ≥1.5% OM: 1.25-1.7 qt	<1.5% OM: 1.25-1.7 qt ≥1.5% OM: 1.25-1.9 qt	<1.5% OM: 1.25-1.9 qt ≥1.5% OM: 1.25-2.0 qt	Use the higher rate where heavy weed infestations exist. Apply this product postemergence to soybeans and prior to weed emergence. The application should be made after soybeans are completely emerged. The optimum timing and rate of application is when soybeans are V2-V3 at 1.5 qts/acre. If weeds are emerged at application, apply a labeled postemergence herbicide with this product to control the emerged weeds. Do not exceed a maximum of 2 quarts per acre (1.5 lb ai/acre) of Enversa as a single application and 4 quarts (3 lb ai/acre) per acre per year when making a second application.
EVERPREX	**All soil textures:** Do not apply more than 1.33 pt/A per year postemergence.			Preharvest Interval (PHI): Do not apply within 90 days of harvest. The combined total from all applications in the fall plus the spring must not exceed 2.6 pt/A per year or 2.5 lb ai/A per year.
FIRSTRATE	**All soil textures:** 0.3-0.6 oz			Add 2 pt NIS/100 gal or 0.6 gal HSOC-COC/100 gal or HSOC-MSO/100 gal.* Apply prior to R2 (full flower) growth. May be tank mixed with other POST herbicides, unless those labels prohibit. 2.5 gal 28%N/100 gal or 2 lb AMS/A should be added for control of velvetleaf. Always use COC or MSO for applications to weeds under stress. A single application rate of 0.45-0.6 oz/A may be used for especially heavy weed infestations or added residual control. Application rate greater than 0.3 oz/A will increase crop rotational intervals - refer to label.
FLEXSTAR/***AGENT 1.88***	**All soil textures:** 1-1.6 pt			Add 1-2 qt HSOC-MSOC/100 gal or HSOC-COC/100 gal + 2.5 gal 28%N/100 gal or 10 lb AMS/100 gal.* Apply prior to bloom. Follow label restrictions by geographic regions (see conditions and restrictions map). Apply 14-21 days after planting to small broadleaf weeds. With tank mixes see the label for appropriate adjuvant. MSO is preferred over COC.* In Region 1 and parts of Region 2 and 3, NIS at 2-4 pt/100 gal is labeled.* See label for use area maps. 24c SD (exp. 12/2029), ND (exp. 12/2026) for Flexstar at 0.75 pt/A in specific counties west of U.S. Highway 281.
FLEXSTAR/***AGENT 1.88*** + ***BASAGRAN*** or CLASSIC or FIRSTRATE or FUSION or PURSUIT	**All soil textures:** 0.75-1.6 pt + 1-1.5 pt or 0.33-0.5 oz or 0.3 fl oz or 6-10 fl oz or 2-4 fl oz			Add 0.5 gal HSOC-MSO /100 gal + 10 lb AMS/100 gal.* Follow label restrictions by geographic regions (see conditions and restrictions map). Reduce maximum rate of Flexstar/Agent 1.88 to 1 pt/A when used with FirstRate. Flexstar/Agent 1.88 at 6-12 fl oz/A may also be tank mixed with glyphosate products. Flexstar/Agent 1.88 can reduce the performance of POST grass herbicides. Note 2.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
FLEXSTAR GT 3.5	**All soil textures:** Up to 5.3 pt			Add 8.5-17 lb AMS/100 gal or WC+NIS.* POST to glyphosate tolerant soybeans. NIS, COC or MSO may be used for hard to control weeds or adverse conditions.* Adjuvants may increase crop response. Rate depends on geographic region and target weeds. Use up to 5.3 pt/A in Region 1. In ALTERNATE years only: Use up to 4.5 pt/A in Region 3; up to 3.5 pt/A in Region 4; up to 3.5 pt/A in Region 4a no later than June 20th followed by total rainfall + irrigation of 14" if rotating to any crop other than soybeans; and up to 2.68 pt/A in Region 5.
FUSILADE DX	**All soil textures:** 6-12 fl oz			Add 1-2 qt HSOC-COC/100 gal or 1-2 qt NIS/100 gal.* Some large perennial grasses (>4-8") may require up to 24 fl oz. Use 6 fl oz for volunteer corn, 6-8 fl oz in tank mixes with broadleaf herbicides. Maximum 30 fl oz/A/year, and 24 fl oz/A pre-bloom (up to V5). Maximum 6 fl oz bloom to post-bloom (R1). Note 1.
FUSION	**All soil textures:** 6-10 fl oz			Add 1-2 qt HSOC-COC/100 gal or 1-2 qt NIS/100 gal.* Apply to small, actively growing grasses at stages on Fusion label. Use 6 oz for shattercane, volunteer corn when applied alone. Use 8-10 oz/A for other weeds; 8-12 oz/A in tank mixes; up to 14 oz/A for rescue.
HERBIVORE	**All soil textures:** 0.66 fl oz			POST on STS soybeans only (unless prohibited by supplier) use 0.33 fl oz/A to actively growing weeds from 21 day before planting to cracking.
HONCHO K6	SEE ROUNDUP POWERMAX 3			
LIBERTY ULTRA or LIBERTY 280 SL or ***TOTAL SL*** /CHEETAH or ***TOTAL/TOTAL 2.3***	**All soil textures:** LibertyLink soybean only 19-29 fl oz or 32-43 fl oz or 29-43 fl oz or 22 fl oz			Use on LibertyLink soybeans from emergence up to R1 or before bloom. The use of a preemergence residual herbicide or a postemergence residual herbicide tank mixed with Liberty is recommended. A second application may be made, with a minimum of 5 days between application and a seasonal total may not exceed 58 fl oz Liberty Ultra, 87 fl oz/A Liberty 280 SL/ Total SL, or 44 fl oz Total/Total 2.3. Do not make POST applications if Total or Total 2.3 was used for burndown. Products containing Glufosinate require sunlight for activity. Apply between dawn and 2 hours before sunset for best control of Lambsquarter and Velvetleaf. Apply in at least 15 GPA of water with 80° or 110° nozzles using 30-60 PSI or greater depending on nozzle used. Addition of AMS (1.5 -3 lb/A) or WC+NIS to Liberty 280 SL/Total/Total 2.3/Total SL treatments is recommended*. Prior to applications of Liberty Ultra, refer to section 12.0 of the product label titled Endagered and threatened species protections requirements. You must follow all directions and restrictions contained in any applicable ESA bulletins for the area where you are applying Liberty Ultra.
OUTLOOK	**All soil textures:** 12-21 fl oz			Apply from emergence to fifth trifoliate and before weed emergence or tank mix with other products to control emerged weeds.
PERPETUO	8 fl oz	10 fl oz	10 fl oz	Max. 8 fl oz/A/application and 8 fl oz/A/year on coarse soils. Max. 10 fl oz/A/application and 10 fl oz/A/year on medium and fine soils. Max. 1 application/year.
PHOENIX	**All soil textures:** 8-12.5 fl oz			Add 1-2 pt NIS/100 gal + 0.5 pt/A HSOC-COC/100 gal + 2 lb/A AMS.* Apply up to 45 days before harvest but not after R6. May tank mix with 6-8 fl oz/A Cleanse or Section Three, 0.3 oz/A FirstRate, 4 fl oz/A Pursuit or 4-5 fl oz/A Beyond Xtra.
POAST	**All soil textures:** 0.75-1.5 pt			Add 1 pt/A HSOC-COC or 0.75 pt/A HSOC-MSO.* 0.75-1.5 pt/A for annual grasses; 0.5 pt/A for wild proso millet; 1.5 -2.5 pt/A for perennial grasses. Use 1 pt/A in Midwest, South and Northeast and 1.5 pt/A for West and High/Rolling Plains for volunteer corn. Add N for certain grasses. Note 1.
PREFIX	**All soil textures:** 2-2.33 pt			Apply from cracking through third trifoliate soybean. Include NIS if applied alone. Do not use POST if s-metolachlor was applied PP, PPI or PRE. May tank mix with glyphosate herbicides. Include AMS only.
PRESIDUAL	SEE BOUNDARY 6.5EC			
PURSUIT	**All soil textures:** 4 fl oz			Add 1 qt NIS/100 gal or 0.625 gal HSOC-COC/100 gal or 0.5 gal HSOC-MSO/100 gal + 1.25-2.5 gal 28% N/100 gal or 12-15 lbs AMS/100 gal.* Apply when weeds are actively growing and before exceeding 3" tall. Apply prior to bloom stage. In ND and in MN north of Hwy 210, do not exceed 3 fl oz Pursuit. Use HSOC-COC, HSOC-MSO or ethylated seed oil for larger weeds or weeds under stress.* For improved control of common ragweed and waterhemp tank mix with Cobra or Avalanche Ultra. Crop injury and reduced weed control can occur if temperature falls below 50 °F. Notes 2,4.
PURSUIT + ***BASAGRAN*** or ***AVALANCHE ULTRA*** or COBRA	**All soil textures::** 4 fl oz + 1-1.5 pt or 8-20 fl oz or 4-8 fl oz			Add 1 qt NIS/100 gal + 1.25-2.5 gal 28%N/100 gal or 2-4 lb AMS may be substituted for 28% N.* Addition of Avalanche Ultra or Cobra enhances control of common ragweed, pigweed and waterhemp. In ND and in MN north of Hwy. 210, do not exceed 3 fl oz. Note 4. Cobra requires COC or MSO as an adjuvant.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
REFLEX	**All soil textures:** 0.75-1.5 pt			Add 1-2 qt HSOC-COC/100 gal + 2.5 gal 28%N/100 gal or 10 lb AMS/100 gal.* Reflex may be used only in certain areas. Follow label restriction by geographic regions. See conditions and restrictions map at the end of this section. Apply early - usually 14-28 days after planting. Do not add N in Reg. 1. Note 1.
RESOURCE	**All soil textures:** 4-12 fl oz			Add 0.5 pt HSOC-COC.* Resource alone provides excellent control of velvetleaf and control of certain other broadleaves. Resource is labeled for late control of velvetleaf under 24" at 8 fl oz/A and 24-30" tall at 12 fl oz/A. Tank mix with Roundup WeatherMax for broader spectrum weed control and increased speed. See label for morning glory suppression with glyphosate.
RESOURCE + ***CLEANSE*** or CLASSIC 25DG or COBRA or FIRSTRATE or FLEXSTAR/***AGENT 1.88*** or GLYPHOSATE or PURSUIT or SCEPTER 70 DG	**All soil textures:** 2-4 fl oz + 8-16 fl oz or 0.5-0.75 oz or 6-10 fl oz or 0.3 oz or 1 pt or 1-2 lb a.i. or 4 fl oz or 1.4 oz			See Resource label for weeds and sizes controlled. To these tank mixes, add 0.5-1 pt/A HSOC-COC.* To some mixes, addition of UAN or AMS is beneficial. Nitrogen fertilizer is recommended for velvetleaf. See Soybean Herbicide Adjuvant Recommendations. Refer to Resource label for rates and adjuvant. Use 4 oz/A Resource with Cleanse. PHI 60 days.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			Add or WC+NIS.* May use other glyphosate herbicides: Cornerstone brands, Roundup brands or others at labeled rates. Apply to soybeans designated Roundup Ready or Roundup Ready 2 from cracking stage throughout flowering (R2) stage. Provides effective control of most emerged annual weeds. Velvetleaf, morningglory, prickly sida, hemp sesbania, palmer amaranth, lambsquarters, nightshade, smartweed and waterhemp are among the more difficult-to-control annual broadleaf weeds and should be sprayed when small. Best timing for control of perennial weeds is often later than for annual weeds. Roundup provides no soil residual. For early season weed control prior to a POST application of glyphosate, consider a full or reduced rate of a PRE herbicide with soil residual activity. Use of a herbicide with a different mode of action also reduces the potential for the development of weed resistance to glyphosate. Do not apply within 14 days of harvest. Total applications per year at all timings is: Do not exceed 44 fl oz/A for a single application or 2 qt/A for total in-crop applications POST. For control of Roundup Ready volunteer corn add 5-8 fl oz/A Assure II, 6-10 fl oz/A Fusion, 6-8 fl oz/A Fusilade DX, 6-8 fl oz/A Section Three/Cleanse or 0.33-0.6 pt/A of Scepter 70 DG.
SCEPTER 70 DG	**All soil textures:** 1.4-2.8 oz			Add 1 qt NIS/100 gal.* Apply when weeds are actively growing and less than 12" tall. See Scepter 70 DG Use Area Map chart at end of section. Notes 1,4.
SECTION THREE	**All soil textures:** 4-10.67 fl oz			Add 0.5 gal HSOC-COC/100 gal or HSOC-MSO/100 gal.* Annual grasses up to 12", 4-6.5 fl oz/A; perennial grasses up to 12", 6.5-10.67 fl oz/A and volunteer corn up to 12", 2.67-4 fl oz/A; 12-24", 4-6.5 fl oz/A, and 24-36", 6.5-8 fl oz/A. 1-2 qt/A or 2.5-4 lb/A 28-32% UAN or 8.5-17 lb/100 AMS can be added.*
SELECT MAX	**All soil textures:** 6-32 fl oz			Add 2.5 gal WC+NIS/100 gal.* See label for adjuvant recommendations. AMS should be added. Use 6-8 fl oz/A for annual grasses and 12-32 fl oz/A for perennial grasses. Use 6-12 fl oz/A for ≤12" volunteer corn, 9-14 fl oz/A for ≤24", 12-16 fl oz/A for ≤36".
SEQUENCE	**All soil textures:** 2.5-3.5 pt			Add 8.5-17 lb AMS/100 gal.* Apply up to 75 days before harvest on Roundup Ready soybeans.
SHARK EW	SEE AIM EC			
STORM	**All soil textures:** 1.5 pt			Apply to small, actively gowing weeds. Include NIS or COC + UAN/AMS.* 2ee all states except CA,NY,TX (exp. date not given) for control of pigweeds (Palmer amaranth, redroot, prostrate, smooth, and spiny pigweeds) at 1.5 pt/A.
SYNCHRONY XP	**All soil textures:** 0.375 oz			Add 1 qt NIS/100 gal + 0.5-1 gal 28%N/100 gal or 2-4 lb/A AMS.* May be applied to conventional or Roundup Ready soybeans. See the label for geographic use areas. For STS/BOLT soybeans: Apply after soybean emergence but no later than 60 days before soybean maturity. For non-STS/BOLT soybeans: Apply after 1st trifoliate but no later than 60 days before soybean maturity.
TOTAL/TOTAL 2.3/TOTAL SL	SEE LIBERTY 280 SL			
VARISTO	**All soil textures:** 21-27 fl oz			Apply before crop bloom. Adjuvant and fertlizer must be used. Do not make >1 application per season, or ≥27 fl oz/A/season. Rotational crops are by geographic region - see label. 11 fl oz/A aids in control of volunteer canola (1"-3") in ND,MN.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
VIDA	**All soil textures:** 0.5-1 fl oz			Apply at emergence up to V6 growth. Do not use a COC for POST application. Some temporary herbicidal symptoms may appear on the crop.
WARRANT	**All soil textures:** 1.25-2 qt			Encapsulated acetochlor for residual control of weeds (does not control emerged weeds). Apply after soybeans emerged but before R2 stage and prior to weed emergence. See label for rates by texture and O.M.
WARRANT ULTRA *<1.5% O.M.* *>1.5% O.M.*	 48 fl oz 48-60 fl oz	 48-55 fl oz 48-65 fl oz	 48-60 fl oz 48-70 fl oz	Consult label Area Use Maps for maximum application rates. Apply only once per growing season. Do not surface apply using fluid fertilizer carrier. Apply before growth stage R2 (optimum is between V2-V3). Emerged weeds not listed on label may require an additional labeled POST herbicide. May be tank mixed with glyphosate herbicides after emergence of HT soybeans until R2 growth stage to control non-listed weeds 2-4" in height.
ZIDUA SC	1.75-3.5 fl oz	2.5-5 fl oz	3.25-5.75 fl oz	Soybean must be planted at min. 1" depth. Apply Zidua SC from emergence through sixth trifoliate (V6); Coarse soils: Zidua SC max. 3.5 fl oz/A/cropping season (year). All other soils: Zidua SC max. 5.75 fl oz/A/cropping season (year). PHI 0 days.
2,4-DB 200/BUTYRAC 200 or ***2,4-DB 175***/BUTYRAC 175	**All soil textures:** 0.7-1.6 pt or 0.8-1.8 pt 0.7-0.9 pt or 0.8-1 pt			Apply 0.7-1.6 pt/A or 0.8-1.8 pt to 8" or taller soybean as directed band to lower third of soybean. PHI 60 days. Apply 0.7-0.9 pt/A or 0.7-1 pt in southern states from 7-10 days before bloom to mid-bloom. Products may not be registered in all states. Do not use broadcast in IA,IL,IN,KS,KY,MO (except bootheel),MI,MN,NE,ND,OH,SD,WI.
PREHARVEST				
AIM EC/SHARK EW	**All soil textures:** Up to 1.5 fl oz			Apply when crop is mature and grain is starting to dry down. PHI 3 days.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 32 fl oz or 24 fl oz			Add 8.5-17 lb AMS/100 gal; WC+NIS as needed.* Apply after pods have set and lost all green color. See label for rates in conventional soybeans. PHI 7 days conventional, 14 days Roundup Ready soybeans. PHI 25 days for grazing, hay, or fodder (14 days if ≤1 qt) for conventional soybeans. PHI 14 days Roundup Ready soybeans. Maximum use rate 1 qt/A.
GRAMOXONE SL 3.0 ‡	**All soil textures:** 5.4 to 10.7 fl.oz./A			The maximum single application soybean harvest application rate is 10.7 Fl.oz./A. Add 2 pt NIS/100 gal.* Apply 5 GPA by air: 20 GPA by ground. Indeterminate varieties: Apply when at least 65% of seed pods have reached a mature brown color or when seed moisture ≤30%. Determinate varieties: Apply when soybean plants are mature, i.e., beans fully developed, at least 1/2 of leaves have dropped and remainder are turning yellow. PHI 15 days. Do not graze or hay. Use 2 pt/A NIS by air. Also on soybeans grown for research, field trials and seed production under agreement with registrant: PHI 3 days grain; do not graze, forage or hay. DO NOT use or process harvested grain for food or feed from soybeans grown for research, field trials or seed production.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			Add 8.5-17 lb AMS/100 gal or WC+NIS.* May use other glyphosate herbicides: Cornerstone brands, Roundup brands or others at labeled rates. Use 22 fl oz/A for Roundup Ready or Roundup Ready 2 soybeans. PHI 14 days grain, forage, or hay. Conventional soybeans, apply after pods have set and lost all green color. Do not apply more than 3.3 qt/A by ground or 44 fl oz/A by air to soybeans. PHI 7 days. PHI 25 days for grazing, hay, or fodder. If last application is 22 oz or less, grazing PHI is 14 days. Not recommended for soybeans grown for seed.
RT 3	**All soil textures:** Up to 3.3 qt			Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply up to 44 fl oz/A by air. Apply after pods have set and lost all green color. PHI is 7 days for grain, 25 days for grazing or hay. For use in CO,ID,MT,NV,ND,OR,SD,TX,UT,WA,WY. For use in specific counties in KS,MN,NE,NM,OK.
SHARK EW	SEE AIM EC			
SHARPEN	**All soil textures:** 1-2 fl oz			For desiccation only; apply when soybeans have reached physiological maturity. Add 1 gal/100 gal MSO or 0.75 gal/100 gal HSOC-MSO + 8.5-17 lb AMS/100 gal or 1.25-1.5 gal/100 gal.* Physiological maturity up to 3 days before harvest.
STERLING BLUE/ CLARIFIER/CLARITY	**All soil textures:** 8-64 fl oz			Apply to soybeans with mature brown pods and ≥75% leaf drop. PHI 14 days. Do not use for seed unless germination test shows ≥95%.

[1] Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay,sandy clay, clay loam, clay.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

NOTE 1: Rates and timing of application depend on weed species and size. See product label.

NOTE 2: Use Pursuit or Beyond Xtra no more than once per year. In ND and MN north of Hwy. 210, use only 3 fl oz/A 2L (1.08 oz/A 70DG) per A, POST only.

NOTE 4: Use no more than one of these products the same year, or injury to following crops may occur: Classic, FirstRate, Scepter 70 DG, Pursuit or Beyond Xtra.

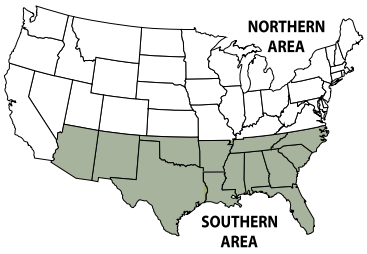
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

NEW HERBICIDES FOR HERBICIDE TOLERANT SOYBEAN TRAITS

	ENLIST ONE	ENLIST DUO
Use Rate	1.5-2 pt/A	3.5-4.75 pt/A
Max Total Use	6 pt/A	14.25 pt/A
Operating Pressure	Follow manufacturer's recommendations	Follow manufacturer's recommendations
Wind Speed *(MPH)*	0-15 [24c AL *(exp. date not given)*: not >10 mph.]	0-15
Rainfast Period *(hours)*	24	24
Allowed Application Timing	No Restrictions	No Restrictions
Buffer Zone *(feet)*	30 - downwind	30-downwind
Application Volume *(minimum)*	10-15 GPA	10-15 GPA
Sprayer Speed *(Maximum)*	Unlisted	Unlisted
Nozzles and Tank-Mixes Approved	Enlisttankmix.com	Enlisttankmix.com

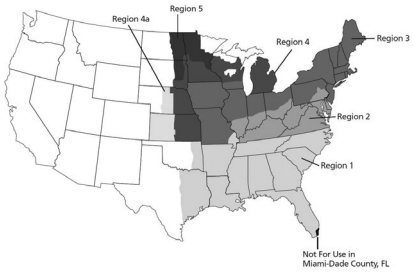
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

COMMAND 3ME
Geographical Areas
For Rates, Weed Control and Crop Rotation



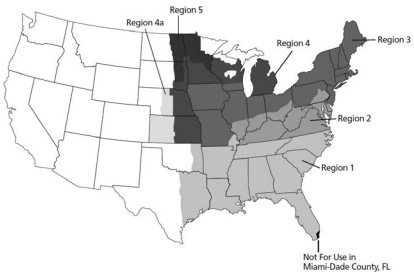
• Southern area includes Missouri bootheel, which incorporates the following counties: Butler, Dunklin, Mississippi, New Madrid, Pemiscot, Scott and Stoddard.

FLEXSTAR/AGENT 1.88/REFLEX
Use Regions

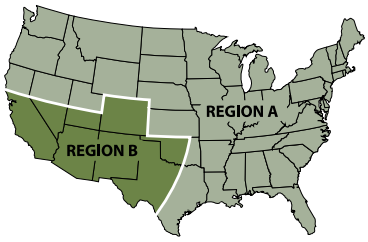


A maximum of 1.5 pints/A of REFLEX (1.6 pt/A FLEXSTAR/AGENT 1.88) may be applied per growing season in Region 1. A maximum of 1.5 pints/A of REFLEX (1.6 pt/A FLEXSTAR/AGENT 1.88) may be applied in alternate years in Region 2. A maximum of 1.25 pints/A of REFLEX (1.3 pt/A FLEXSTAR/AGENT 1.88) may be applied in alternate years in Region 3. A maximum of 1 pint/A REFLEX (1 pt/A FLEXSTAR/AGENT 1.88) may be applied in alternate years in Region 4 and 4a. A maximum of 0.75 pt/A REFLEX (0.75 pt/A Flexstar/AGENT 1.88) may be applied in alternate years in Region 5. Apply only in states or parts of states in Regions 1, 2, 3, 4 or 5. IA and NE east of U.S. 81, MN south of I-94, ND east of 29 and south of 94, SD east of U.S. 81 from Watertown to Madison, all areas south of State Road 34 and U.S. 281 to NE, and WI south of I-94.

FLEXSTAR GT 3.5
Use Regions



FUSILADE DX
Regions



FRAMEWORK 3.3 EC or PROWL H2O
Regional Map for Rate Determination

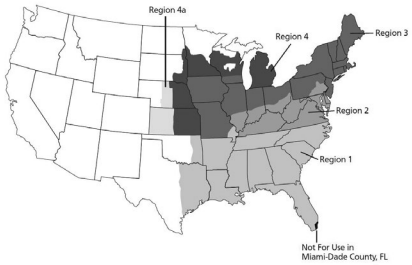


SCEPTER 70 DG
Use Regions Map



Products can be applied only in the states or parts shaded in the map.

PREFIX
Use Regions Map



Maximum use rates: Region 1 – 3 pt/A/yr, Region 2 – 3 pt/A/alternate yr, Region 3 – 2.5 pt/A/alternate yr, Region 4 – 2 pt/A/alternate yr.

LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR SEED IN DAYS	RATE PER ACRE	INSECTS												
			APHID, SOYBEAN	ARMYWORM	BEAN LEAF BEETLE	BLISTER BEETLE	CABBAGE LOOPER	CORN EARWORM/SOYBEAN PODWORM	CUTWORM	GRASSHOPPER	GREEN CLOVERWORM	JAPANESE BEETLE	KUDZU BUG/BEAN PLATASPID	MEXICAN BEAN BEETLE - ADULT	
ADVISE FOUR/ NUPRID 4F MAX	21	1.5 fl oz	●		●							●			
AGRI-MEK SC ‡	28	1.75-3.5 fl oz													
ARCTIC 3.2 EC ‡	60	2-4 fl oz			●		●		●		●	●		●	
		4-8 fl oz		●				●							
ASANA XL ‡	21	2.9-5.8 fl oz									●			●	
		5.8-9.6 fl oz	●	●S	●		●	●	●	●		●			
BAYTHROID XL ‡	21	0.8-1.6 fl oz			●				●		●				
		1.6-2.8 fl oz		●	●	●	●	●				●		●	
		2.0-2.8 fl oz	●							●					
		2.8 fl oz													
BELAY INSECTICIDE	21	3-6 fl oz	●		●	●						●			
BESIEGE ‡	30	5-8 fl oz	●		●		●	●	●		●			●	
		8-10 fl oz		●		●				●		●			
		10 fl oz		●											
BLACKHAWK	28	1.1-1.2 oz		●							●				
		1.7-2.2 fl oz		●				●							
BRACKET 97/ORTHENE 97	14	0.25-0.5 lb								●					
		0.5-1.0 lb													
		0.75-1.0 lb	●	●	●		●				●			●	
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	18	At-plant: 3.4-6.8 fl oz; 0.2-0.39 fl oz/1000' row		●	●				●						
		PPI: 4-5.3 fl oz		●	●				●						
		PRE: 3.4 fl oz		●					●						
		Foliar: 2.8-8.5 fl oz (Capture LFR only)	●	●	●	●	●	●	●	●	●	●	●	●	
		Foliar: 6.8-8.5 fl oz (Capture LFR only)													

See notes and footnotes at end of table

INSECTS *(continued)*													COMMENTS AND RESTRICTIONS
	PLANT BUG	POTATO LEAFHOPPER	SALTMARSH CATERPILLAR	SEED CORN MAGGOT	SOYBEAN LOOPER	SPIDER MITE	STINK BUG	THISTLE CATERPILLAR	THRIPS	VELVETBEAN CATERPILLAR	WEBWORM	WOOLLY BEAR CATERPILLAR	PHI - pre-harvest interval days for grazing or forage, hay and straw
		●											Minimum application interval is 7 days. Maximum 4.5 fl oz/A (0.14 lb a.i./yr). Cover crops for soil building or erosion control may be planted at any time, but do not graze or harvest for food or feed.
						●							1.75-2.5 fl oz/A for moderate infestations, 3.5 fl oz/A for high infestations. Minimum application interval is 7 days. Ground or aerial applicaiton (aerial not in NY). Must be mixed with non-ionic activator type wetting, spreading and/or penetrating spray adjuvant. Do not graze or harvest for forage. Do not feed fodder or silage to meat or dairy animals.
		●	●					●		●		●	Maximum 8 fl oz/A/application. Do not apply >16 fl oz/A/cutting. Retreatment interval is 10 days. Ground, aerial or sprinkler irrigation application. Do not graze or feed forage or hay. Armyworm: Beet armyworm only.
					●						●		
		●	●							●		●	Maximum >0.2 lb a.i./A/season. Do not graze or feed on treated fields. Ground, aerial or sprinkler irrigation application. Aphid: Consider tank mixture under rapid population growth or extremely high populations. Armyworm: Beet armyworm only (suppression). Grasshopper: 3.9-5.8 fl oz/A for first and second instar nymphal stages; 5.8-9.6 fl oz/A for >second instar.
							●						
		●							●				Maximums: 2.8 fl oz/A per 7-day interval; 11.2 fl oz/A per crop season. Ground, aerial or sprinkler irrigation application. PHI 15 days for dry vines (hay) and forage. See label for insect resistance statements.
	●		●				●			●	●	●	
					●								
	●	●					●						Foliar application. Do not apply treatments <7 days apart. Do not apply in fields with neonicotinoid seed treatments within 45 days of planting. Apply at target pest threshold populations. Ground or aerial application. Do not graze or feed forage and hay. Aphid: Apply at ≤250 aphids/plant; above this threshold might require >1 application to achieve control.
		●	●					●	●	●		●	Minimum application interval 5 days. Do not apply >20 fl oz/A or exceed a.i. maximums/A/year on label. Do not exceed 4 applications/A/crop. Do not graze or harvest forage, straw, or hay. Armyworms: 10 fl oz/A for Beet armyworm; 8-10 fl oz/A for all others (use higher rate for large larvae). Thrips: Does not include Western Flower Thrips. Aphid: Lower rates for early-season and/or lighter populations. See label for Beet Armyworm and Soybean Looper resistance management information. Apply in minimum 10 GPA by ground, 2 GPA by air.
	●						●				●		
					●	●S							
					●					●			Use higher rate for heavy infestations. Do not make >2 consecutive applications of Group 5 insecticides. Do not apply >8.3 oz/A/year. Do not graze or feed forage. Armyworm: 1.1-2.2 oz/A for True armyworm; 1.7-2.2 oz/A for Beet, Fall, Yellowstriped.
			●										
									●				Repeat application at 3-day intervals for rates ≤0.52 lb/A, and at 7-day intervals for rates >0.52 lb/A. Use higher rates for severe infestations. Do not apply >1.55 lb/A/crop cycle. Ground or aerial application. Do not graze or feed forage.
		●					●						
										●			
				●									See individual labels for specific target insects and rates. At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed, or broadcast for control of Army cutworm, Cutworm spp., True armyworm, or Armyworm spp. PPI,PRE: Can be tank-mixed with PPI,PRE herbicides; should not be incoporated deeper than 3". Foliar: Do not make applications <30 days apart. Bifenthrin products: Do not apply >0.1 lb a.i./A/season At-plant, or >0.3 lb a.i./A/season including At-plant, PPI, PRE, and Foliar.
				●									
	●	●	●	●	●		●	●	●	●	●	●	
	●					●							

INSECTICIDE	PRE-HARVEST INTERVAL FOR SEED IN DAYS	RATE PER ACRE	INSECTS												
			APHID, SOYBEAN	ARMYWORM	BEAN LEAF BEETLE	BLISTER BEETLE	CABBAGE LOOPER	CORN EARWORM/SOYBEAN PODWORM	CUTWORM	GRASSHOPPER	GREEN CLOVERWORM	JAPANESE BEETLE	KUDZU BUG/BEAN PLATASPID	MEXICAN BEAN BEETLE - ADULT	
CAPTURE 3RIVE 3D ‡	0	3.2-8 fl oz; 0.19-0.46 fl oz/1000' row		●					●						
CORAGEN	1	3.5-7.5 fl oz		●			●	●			●				
		2-5 fl oz								●					
DELTA GOLD ‡	21	1-1.5 fl oz						●	●		●				
		1.5-2.4 fl oz	●	●	●		●			●		●		●	
DENIM ‡	28	6-8 fl oz		●											
		8-12 fl oz		●			●	●			●				
DIMATE 4E	21	1 pt	●		●					●				●	
DIPEL ES	0	1-2 pt					●	●			●				
		2-4 pt		●											
DIMILIN 2L ‡	21	2-4 fl oz									●			●	
		2 fl oz								●					
		4 fl oz		●											
ELEVEST ‡	18	4.8-9.6 fl oz	●		●	●	●	●	●	●	●	●		●	
		5.6-9.6 fl oz		●											
		7.7-9.6 fl oz													
ENDIGO ZCX ‡	30	3.5 fl oz	●				●	●	●		●			●	
		4.0-4.5 fl oz		●	●	●				●		●			
		4.5 fl oz													
ENTRUST SC	28	2.25-3 fl oz		●							●				
		3-4 fl oz		●				●							

See notes and footnotes at end of table

INSECTS *(continued)*													COMMENTS AND RESTRICTIONS
	PLANT BUG	POTATO LEAFHOPPER	SALTMARSH CATERPILLAR	SEED CORN MAGGOT	SOYBEAN LOOPER	SPIDER MITE	STINK BUG	THISTLE CATERPILLAR	THRIPS	VELVETBEAN CATERPILLAR	WEBWORM	WOOLLY BEAR CATERPILLAR	PHI - pre-harvest interval days for grazing or forage, hay and straw
				●									For use in a 3RIVE 3D system only. Must be applied in-furrow with seed. Maximum 0.1 lb a.i./A/season at-plant, 0.2 lb a.i./A/season all application methods.
										●			Do not make >4 applications/A/year. Mininum retreatment interval 3 days. Do not apply >15.4 fl oz/A/year. Apply by ground or sprinkler irrigation. Grasshopper: Foliar applications at established thresholds; see label for important timing and adjuvant recommendations.
		●								●			Do not apply >8.5 fl oz/A/season. Do not graze forage or feed hay.
	●		●		●		●				●	●	
													Target applications to larvae <0.5" in length, except corn earworm at <0.25" larvae. Min. 5 GPA for ground and air applications. Do not apply via irrigation. Min. 7 day application interval. Max 12 fl oz/A/application. Max. 36 fl oz/A/calendar year. Max. 2 sequential applications before switching to different MOA. Beet armyworm: 6-8 fl oz/A; Fall armyworm 8-12 fl oz/A. Do not allow grazing. or harvest forage, straw or hay for feed; see label for details.
			●		●	●S				●			
		●				●							Maximums: 1 pt/A/application, 2 pt/A/yr. Reapplication interval 7 days. Ground or aerial application. PHI 5 days for grazing and feeding.
			●		●					●			Bacillus thuringiensis is a biological insecticide. Reapplication interval usually 3-14 days. Use spreader-sticker or surfactant for hard-to-wet crops. Armyworm and Earworm/Podworm: Control when populations are light and with full coverage sprays; repeat as necessary.
										●			An insect growth regulator: Larvae/nymphs must feed on insecticide and then molt for population control. Caterpillars beetles and worms: Apply when larvae are <0.5"; reapply if damaging numbers reappear; minimum reapplication interval 30 days. Grasshopper: Apply when majority have reached 2nd to 3rd nymphal stage; ineffective on adult grasshopper. Ground or aerial application. Do not make >2 applications/season or > 8 fl oz/A/year.
					●S								
		●	●	●			●	●	●	●		●	Max. 3 applications/A/year. Max. 2 sequential applications before rotating to different MOA. Min. 30-day retreatment interval. See label for timing notes. Grasshopper control improves with addition of MSO at 1% v/v. Coverage is essential for control of mites.
					●						●		
	●					●							
		●	●					●	●	●		●	Apply before pests reach damaging levels. Do not apply >9 fl oz/A/season or exceed lbs. a.i. as indicated on label. Minimum reapplication interval 7 days. Armyworms: Use higher rate for larger larvae. Stink Bug: 4-4.5 fl oz/A Brown Marmorated, Green, Southern Green; 4.5 fl oz/A Brown, Red Banded. Thrips: Does not include Western Flower Thrips. Soybean aphid: Use lower rates for early season applications and/or lighter populations.
	●										●		
						●S	●						
					●					●			Treat when larvae are small, and when counts or crop injury indicate damaging populations. Use higher rate for heavy infestations or when spray coverage is difficult. Do not make >2 consecutive applications of Group 5 insecticides. Minimum application interval 4 days. Do not apply >10 fl oz/A/year (0.186 lb a.i. spinosad) for all application methods, including seed treatements. Do not make >4 applications/year. OMRI Listed. Loopers: Soybean Looper only. Armyworm: 2.25-3 fl oz/A True, 3-4 fl oz/A Beet, Fall, Yellowstriped.
			●										

LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR SEED IN DAYS	RATE PER ACRE	INSECTS												
			APHID, SOYBEAN	ARMYWORM	BEAN LEAF BEETLE	BLISTER BEETLE	CABBAGE LOOPER	CORN EARWORM/SOYBEAN PODWORM	CUTWORM	GRASSHOPPER	GREEN CLOVERWORM	JAPANESE BEETLE	KUDZU BUG/BEAN PLATASPID	MEXICAN BEAN BEETLE - ADULT	
ETHOS ELITE LFR ‡	18	At-plant: 0.2-0.49 fl oz/1000' row		●					●						
		PPI: 4-5.3 fl oz		●					●						
		PRE: 3.4 fl oz		●					●						
ETHOS XB ‡	18	At-plant: 3.4-8.5 fl oz; 0.2-0.49 fl oz/1000' row		●					●						
		PPI: 4-5.3 fl oz		●					●						
		PRE: 3.4 fl oz		●					●						
		Foliar: 2.8-8.5 fl oz	●	●	●	●	●	●	●	●	●	●	●	●	
		Foliar: 6.8-8.5 fl oz													
ETHOS 3D ‡	-	At-plant: 0.21-0.52 fl oz/1000' row		●					●						
FASTAC CS ‡	21	1.3-3.8 fl oz							●						
		2.8-3.8 fl oz	●	●	●	●		●			●	●		●	
		3.2-3.8 fl oz		●			●			●					
GRIZZLY TOO ‡	30	0.96-1.6 fl oz	●		●		●	●	●		●			●	
		1.6-1.92 fl oz		●		●				●		●			
		1.92 fl oz		●S											
HERO ‡	21	At-plant: 4.1-10.3 fl oz		●					●						
		PPI: 4.1-10.3 fl oz		●					●						
		PRE: 4-5.3 fl oz		●					●						
		Foliar: 2.6-6.1 fl oz			●				●	●	●				
		Foliar: 4-10.3 fl oz	●	●		●	●	●				●	●*	●	
		Foliar: 10.3 fl oz													
INTREPID 2F	14	4-8 fl oz		●							●				

See notes and footnotes at end of table

INSECTS *(continued)*													COMMENTS AND RESTRICTIONS
	PLANT BUG	POTATO LEAFHOPPER	SALTMARSH CATERPILLAR	SEED CORN MAGGOT	SOYBEAN LOOPER	SPIDER MITE	STINK BUG	THISTLE CATERPILLAR	THRIPS	VELVETBEAN CATERPILLAR	WEBWORM	WOOLLY BEAR CATERPILLAR	PHI - pre-harvest interval days for grazing or forage, hay and straw
				●									At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed, or broadcast for control of Army cutworm, Cutworm spp., True armyworm, or Armyworm spp. PPI,PRE: Can be tank-mixed with PPI,PRE herbicides; should not be incoporated deeper than 3". Do not apply >0.1 lb/A/season bifenthrin a.i. as at-plant. Do not apply >0.2 lb/A/season bifenthrin a.i. including at-plant, plus foliar applications of other bifenthrin products. Product contains fungicide; see Soy Disease Control and label for diseases suppressed at indicated rates.
				●									
				●									At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed, or broadcast for control of Army cutworm, Cutworm spp., True armyworm, or Armyworm spp. PPI,PRE: Can be tank-mixed with PPI,PRE herbicides; should not be incoporated deeper than 3". Do not apply >0.1 lb/A/season bifenthrin a.i. as at-plant. Do not apply >0.2 lb/A/season bifenthrin a.i. including at-plant, plus foliar applications of other bifenthrin products. Product contains fungicide; see Soy Disease Control and label for diseases suppressed at indicated rates.
				●									
		●	●	●	●		●		●	●	●	●	
	●					●							
				●									For use in a 3RIVE 3D system only. Insecticide and Fungicide. Apply in-furrow with seed. Max. 0.1 lb/A/season of bifenthrin a.i. as an at-plant application. Max. 0.2 lb/A/season bifenthrin a.i. including all application methods.
			●					●					Apply as required by scouting; base timing and frequency on populations reaching economic thresholds. Do not apply >11.4 fl oz/A/season. Ground or aerial application. Minimum application interval 7 days. Armyworm: 2.8-3.8 fl oz/A for True, Southern, Yellowstriped; 3.2-3.8 fl oz/A for Beet, Fall. Loopers, Thrips: See label for resistance management information. Thrips: Aids in control. Do not graze or feed harvested forage, straw or hay.
	●	●		●						●	●	●	
					●		●		●				
		●	●					●	●	●		●	Apply based on scouting, usually at ≥5-day intervals and based on economic thresholds. Ground or aerial application. Do not apply >3.84 fl oz/A/season. Do not graze or feed harvested forage, straw or hay. Aphid: Use lower rate for early season and/or lighter populations. Thrips: Does not include Western Flower Thrips. Armyworm: 1.92 fl oz/A for Beet armyworm; 1.62-1.92 fl oz/A for all others (use higher rate for large larvae). See label for important resistance management information for Beet Armyworm and Sobyean Looper.
	●						●				●		
					●S	●S							
				●									Do not apply >10.3 fl oz/A/application or >41.2 fl oz/A/season. At plant: Apply in-furrow or in a 3-4" T-Band over open furrow for Seed Corn Maggot, or on soil surface in 5-7" band or broadcast for Armyworm spp. (including True Armyworm) and Cutworm; see label for row spacing and fl oz/1000'. PPI, PRE: Foliar by ground or aerial application.Cutworm: Black Cutworm only. Fall Armyworm: Under heavy outbreaks tank mix with another product labeled for this pest.
				●									
								●					
		●	●	●	●		●*			●	●	●	
	●					●			●				
			●		●					●			Apply at first signs of feeding or at thresholds of feeding damage; use higher rate for heavier infestations or when thorough covereage is more difficult. Ground or aerial application. Do not apply >64 fl oz/A/year. Do not make >4 applications/year. 7-day replanting interval. PHI 7 days for harvest of hay and forage.

LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR SEED IN DAYS	RATE PER ACRE	INSECTS												
			APHID, SOYBEAN	ARMYWORM	BEAN LEAF BEETLE	BLISTER BEETLE	CABBAGE LOOPER	CORN EARWORM/SOYBEAN PODWORM	CUTWORM	GRASSHOPPER	GREEN CLOVERWORM	JAPANESE BEETLE	KUDZU BUG/BEAN PLATASPID	MEXICAN BEAN BEETLE - ADULT	
INTREPID EDGE	28	4-6.4 fl oz		●S			●S	●			●S				
LAMBDA-CY AG ‡	30	1.92-3.2 fl oz	●		●		●	●	●		●			●	
		3.2-3.84 fl oz		●		●				●		●			
		3.84 fl oz		●S											
LANNATE LV ‡	14	0.4-1.5 pt						●			●			●	
		0.5-1 pt	●												
		0.75-1.5 pt		●	●										
		1.5 pt													
		1.5-3 pt													
LEVERAGE 360 ‡	21	2.4-2.8 fl oz													
		2.8 fl oz	●	●	●		●	●	●	●	●	●		●	
MUSTANG MAXX ‡	21	1.28-4 fl oz							●						
		2.8-4 fl oz	●	●	●	●		●			●	●		●	
		3.2-4 fl oz		●			●			●					
		4 fl oz											●		
PYGANIC EC 1.4$_{II}$	0	16-64 fl oz	●	●	●	●	●	●		●		●		●	
PYGANIC EC 5.0$_{II}$	0	4.5-15.61 fl oz	●	●	●	●	●	●		●		●		●	
RADIANT SC	28	2-4 fl oz		●			●	●			●				
RENESTRA	21	6.8 fl oz	●	●	●	●	●S	●	●	●	●	●	●	●	

See notes and footnotes at end of table

INSECTS *(continued)*													COMMENTS AND RESTRICTIONS
	PLANT BUG	POTATO LEAFHOPPER	SALTMARSH CATERPILLAR	SEED CORN MAGGOT	SOYBEAN LOOPER	SPIDER MITE	STINK BUG	THISTLE CATERPILLAR	THRIPS	VELVETBEAN CATERPILLAR	WEBWORM	WOOLLY BEAR CATERPILLAR	PHI - pre-harvest interval days for grazing or forage, hay and straw
			●S		●S					●S			Apply at first signs of feeding or at thresholds of feeding damage; use lower rate for light infestations, smaller larvae and/or small plants; use higher rate for heavier infestations, larger larvae and/or larger plants. Ground or aerial application. Do not apply >6.4 fl oz/A/ application, or >25.6 fl oz/A/year. Do not make applications <4 days apart, or make >4 applications/year. Do not make >2 consecutive applications of Group 5 or Group 18 insecticides; see label for additional resistance management information. 7-day replanting interval. PHI 7 days for harvest of hay and forage. Armyworm, Green Cloverworm, Saltmarsh Caterpillar, Loopers: In addition to standard label rates (4-6.4 fl oz/A) to control these pests, see 2ee AL,AK,LA,MS,TN (exp. date not given) 3-4 fl oz/A for late season control.
		●	●					●	●	●		●	Apply based on scouting, usually at ≥5-day intervals and based on economic thresholds. Ground or aerial application. Do not apply >0.48 pt/A/season. Do not graze or feed harvested forage, straw or hay. Aphid: Use lower rate for early season and/or lighter populations. Thrips: Does not include Western Flower Thrips. Armyworms: 1.92 fl oz/A for Beet armyworm; 1.62-1.92 fl oz/A for all others (use higher rate for large larvae). See label for important resistance management information for Beet Armyworm and Sobyean Looper.
	●						●				●		
					●S	●S							
										●			For most pests, apply at 5- to 7-day intervals with direct sprays. Do not apply > 4.5 pt/A/crop, or make >3 applications/crop. Ground or aerial application. PHI 3 days for forage, 12 days for hay. 24c AK (exp. date not given) for Soybean Looper, PHI 10 days for grazing/feeding forage, 12 days for hay.
			●						●				
							●						
					●S								
		●											Minimum application interval 7 days. Maximum 9 fl oz/A/year. See label for a.i. maximums/A/ crop season. Ground, aerial or sprinkler irrigation application. PHI 15 days for forage and hay. Armyworm: 1st and 2nd instar only. Thrips: Foliage feeding thrips only.
	●		●				●		●	●			
			●					●					Scout and apply based on insect population reaching economic thresholds. Ground or aerial application. Use COC to improve deposition and insect control. Do not make applications >7 days apart. Do not apply >24 fl oz/A/season. Armyworm: 2.8-4 fl oz/A for True, Southern, Yellowstriped; 3.2-4 fl oz/A for Beet, Fall. Thrips: See label for resistance management information. Do not graze or feed harvested forage, straw or hay.
	●	●		●						●	●	●	
					●		●		●S				
	●	●	●	●	●	●	●		●		●		OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
	●	●	●	●	●	●	●		●		●		OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
			●		●					●			Treat when scouting or injury indicates presence or development of damaging populations. Ground, aerial or sprinkler irrigation application. Use higher rate for heavy infestations or difficult coverage situations. Do not make >2 consecutive applications of Group 5 insecticides (rotate to another class for at least 1 application). Do not apply >14 fl oz/A/year or make >4 applications/year. Minimum treatment interval 4 days. Armyworm: Controls Armyworm spp. except Yellowstriped.
	●S	●	●	●	●S		●		●S	●	●	●	Max. 13.7 fl oz/A/year. Apply in min. 10 GPA for ground, 2 GPA for air. 7-day min. application interval. Max. 2 consecutive applications before switching MOA. Do not feed or graze hay or forage.

LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR SEED IN DAYS	RATE PER ACRE	INSECTS												
			APHID, SOYBEAN	ARMYWORM	BEAN LEAF BEETLE	BLISTER BEETLE	CABBAGE LOOPER	CORN EARWORM/SOYBEAN PODWORM	CUTWORM	GRASSHOPPER	GREEN CLOVERWORM	JAPANESE BEETLE	KUDZU BUG/BEAN PLATASPID	MEXICAN BEAN BEETLE - ADULT	
RIDGEBACK	18	4.5-13.8 fl oz	●	●	●		●	●	●	●	●	●			
		6.9-13.8 fl oz	●												
		11-13.8 fl oz													
		13.8 fl oz											●		
SEFINA	7	3 fl oz	●												
SIVANTO 200 SL or SIVANTO PRIME	21	7-10.5 fl oz or 7-14 fl oz	●												
STEWARD EC	21	11.5-27.8 fl oz		●			●				●				
		11.5-22.8 fl oz													
		11.5-14 fl oz			●S										
THIMET 20G ‡	–	At plant: 9 oz/1000' row	●											●	
TRANSFORM WG	7	0.75-1 oz	●												
		2-2.25 oz													
TUNDRA EC ‡/BRIGADE 2EC ‡/***BIFEN 2 AG GOLD*** ‡	18	2.1-6.4 fl oz	●	●	●	●	●	●	●	●	●	●	●S	●	
		5.12-6.4 fl oz													
VANTACOR		0.7-1.7 fl oz								●					
		1.2-2.5 fl oz		●			●	●	●		●				
WARRIOR II ‡	30	0.96-1.6 fl oz	●		●		●	●	●		●			●	
		1.6-1.92 fl oz		●		●				●		●			
		1.92 fl oz		●S											
XENTARI	0	0.5-1.5 lb					●				●				
		0.5-2 lb		●				●							

See notes and footnotes at end of table

INSECTS *(continued)*													COMMENTS AND RESTRICTIONS
PLANT BUG	POTATO LEAFHOPPER	SALTMARSH CATERPILLAR	SEED CORN MAGGOT	SOYBEAN LOOPER	SPIDER MITE	STINK BUG	THISTLE CATERPILLAR	THRIPS	VELVETBEAN CATERPILLAR	WEBWORM	WOOLLY BEAR CATERPILLAR	PHI - pre-harvest interval days for grazing or forage, hay and straw
●		●			●	●		●		●		Treat in accordance with local economic thresholds. Use higher rate for heavy pest populations. 30-day min. application interval. Max. 4 applications/year. Max. 2 sequential applications/crop. Max. 2 applications to soybean forage. Max. 41.3 fl oz/A/year. Soybean Aphid: 6.9-13.8 fl oz/A. Plant bug (Lygus spp.): 11.0-13.8 fl oz/A. Brown Marmorated Stink bug: 13.8 fl oz/A.
●					●							
						●						
												Apply at first sign of infestation, according to locally recommended thresholds. Minimum retreatment interval of 7 days. 10 GPA by ground, 2 GPA by air. Do not apply >6 fl oz/A/year. Do not graze or feed hay or forage.
	●											Min. application interval 10 days. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL. Do not apply >28 fl oz/A/year Sivanto 200 SL/Sivanto prime. PHI 7 days for grazing/feeding harvested forage.
				●								Minimum retreatment interval 5 days. Do not make >4 applications/A/crop. Do not apply > 45 fl oz/A/year. Loopers: Use lower rate for low-moderate populations; use 5.6-11.3 fl oz/A for higher populations or with dense crop canopy. Do not graze or feed forage.
									●S			
						●S						
●	●		●		●			●				Early season control. Do not apply >9.8 lb/A. Do not make >1 application/season. Drill granules to side of seed. Do not allow contact with seed. Seed Corn Maggot: As alternative to drilling granules, place granules in 7" band over row directly behind planter shoe and in front of press wheel; ligthly incorporate. Do not feed foliage. Provides suppression of soybean gall midge. Crop injury may occur if used in combination with metribuzin herbicides.
												Treat in accordance with local ETs. Max. 8.5 oz/A/year. Max. 4 applications/crop; max. 2 consecutive applications/crop. 14-day min. application interval. Do not make >2 applications to soybean forage.
						●S						
●	●	●	●	●		●S	●	●	●	●	●	Apply up to 6.4 fl oz/A. Minimum application interval 30 days. Ground, aerial or sprinkler irrigation application. Plant Bug: 2.1-6.4 fl oz/A for Tarnished, 5.2-6.4 fl oz/A for other Lygus spp. Stink Bug: Labeled for "Stink Bug," but note the following: Brigade 2ee all multiple states (exp. date not given) 6.4 fl oz/A for Brown Marmorated Stink Bug. 2ee AL, AK, FL, GA, LA, MS, MO, TN (exp. date not given) Brigade 2EC at 5.12-6.4 fl oz/A for Kudzu Bug. 2ee AL, FL, GA, TN (exp. date not given) Tundra EC at 6.4 fl oz/A for Kudzu Bug.
●				●								
												Do not make >4 applications/year. Minimum application interval 3 days. Do not apply >5.1 fl oz/A/year. Grasshopper: Add MSO; see label for population, timing, life-stage and sequential application information.
							●		●	●	●	
	●	●					●	●	●		●	Apply based on scouting, usually at ≥5-day intervals and based on economic thresholds. Ground or aerial application. Do not apply >3.84 fl oz/A/season. Do not graze or feed harvested forage, straw or hay. Aphid: Use lower rate for early season and/or lighter populations. Thrips: Does not include Western Flower Thrips. Armyworms: 1.92 fl oz/A for Beet armyworm; 1.62-1.92 fl oz/A for all others (use higher rate for large larvae). See label for important resistance management information for Beet Armyworm and Sobyean Looper.
●						●				●		
				●S	●S							
									●			Apply to foliage. Ground, aerial or sprinkler irrigation application. Armyworm, Podworm: Apply full coverage spray at 1st or 2nd instar; repeat as necessary; use highest rate for rapidly increasing populations; for Armyworm populations with 4th and 5th instar present, use in combination with a contact insecticide to enhance control. OMRI Listed.
				●					●			

LABELED INSECTICIDES *continued*

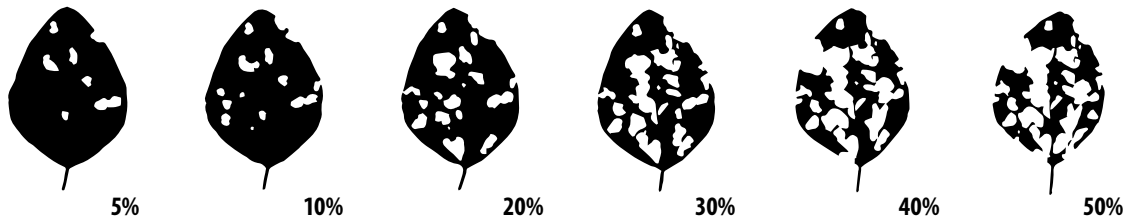
INSECTICIDE	PRE-HARVEST INTERVAL FOR SEED IN DAYS	RATE PER ACRE	INSECTS												
			APHID, SOYBEAN	ARMYWORM	BEAN LEAF BEETLE	BLISTER BEETLE	CABBAGE LOOPER	CORN EARWORM/SOYBEAN PODWORM	CUTWORM	GRASSHOPPER	GREEN CLOVERWORM	JAPANESE BEETLE	KUDZU BUG/BEAN PLATASPID	MEXICAN BEAN BEETLE - ADULT	
XPEDIENT PLUS V ‡	0	At plant: 2.56-5.12 fl oz		●					●						
		PPI: 3-4 fl oz		●					●						
		PRE: 2.56 fl oz		●					●						
ZEAL SC		2-6 fl oz													

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECTS *(continued)*													COMMENTS AND RESTRICTIONS
	PLANT BUG	POTATO LEAFHOPPER	SALTMARSH CATERPILLAR	SEED CORN MAGGOT	SOYBEAN LOOPER	SPIDER MITE	STINK BUG	THISTLE CATERPILLAR	THRIPS	VELVETBEAN CATERPILLAR	WEBWORM	WOOLLY BEAR CATERPILLAR	PHI - pre-harvest interval days for grazing or forage, hay and straw
				●									At plant: Apply as 5-7" band over row, 5-7" T-band over open furrow, or in furrow with seed. Cutworm, Armyworms: Apply as broadcast to soil surface. PPI: Can be tank mixed with PPI herbicides and incorporated at seed planting depth, but <3". PRE: Can be tank mixed with PRE herbicides. Max. 0.1 lb a.i./A/season/at plant, PPI or PRE application.
				●									
						●							Apply before populations have passed established thresholds and early in mite life cycle. Do not apply >0.135 lb a.i./A/year (due to poor control and resistance development). Do not graze or feed forage or hay. Do not apply after R5 stage.

SOYBEAN DEFOLIATION LEVELS

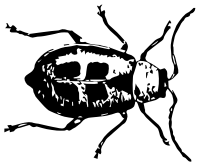




APHID, SOYBEAN: Light green to yellow aphid with black cornicles or "tailpipes" colonize in patches in the field. Leave unspayed strips to promote survival of aphid predators such as lady bird larva. Good coverage is essential. Masterlock can aid canopy penetration. Applications are generally most effective at R1 to R4. ET suggested varies by state and depends if aphid numbers-steady or increasing, honeydew and sooty mold visible, and dry conditions. Common ET is when there are 250+ aphids on 80% of the plants in the R1-R5 stage or, plants show injury symptoms and few natural enemies are present. Additional thresholds:



ARMYWORM: Damage is rarely of consequence until larvae feed on pods. **ET:** fields should be checked from the beginning of bloom for eggs and small worms and treatment made when an average of 30 small worms per 30 feet of row are found, 30% defoliation prebloom or 20% bloom to pod fill.



BEAN LEAF BEETLE: 1/4" long red to light tan beetles with a black border and 4 spots on wing covers - occasionally without spots or dark border and feed on cotyledons, leaves and pods. If beetles are carrying the bean pod mottle virus use a seed treatment with Cruiser or Poncho to reduce early season disease infection. ET levels listed below are based on feeding damage only (not disease infection). Note - These ET levels are based on $5-$6 soybeans. Soybeans are generally tolerant of feeding; however, treatment is warranted when: **ET:** for feeding damage seedling - beetles present, 1 cotyledon destroyed/row ft. or 30-40% defoliation; Post seedling before bloom - beetles present and 50% defoliation; Bloom to maturity - beetles present, 20% defoliation or 5-10% pod feeding. Leaf beetles typically must reach >39/ft of row in soybeans at >V2 stages for economic damage to occur.



BLISTER BEETLE: **ET:** When defoliation reaches 30% before bloom, 20% between bloom and pod fill.



CORN EARWORM (ALSO SOYBEAN PODWORM): **ET:** treat when defoliation reaches 30% prebloom, 20% bloom to pod fill or if >5% of pods are damaged (generally about 1-4 worms/ft of row).



CUTWORM: Scout as plants emerging. **ET:** treat if 20% of plants are cut, stand has gaps of 1 foot or more and cutworms are present.



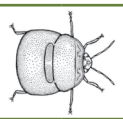
GRASSHOPPER: **ET:** spray field margins when hoppers are small and before they disperse into field, or when defoliation in field reaches 30-40% prebloom, 20% blooming to pod fill or 5-10% pod damage.



GREEN CLOVERWORM (ALSO VELVETBEAN CATERPILLAR): Green worms up to 1 1/4" long with a white stripe down each side. The only caterpillar with 3 pairs of abdominal prolegs. This is the only larva to wiggle violently when touched. **ET:** 5-12 worms/ft of 5-12 > half grown worms/ft of row or > 20% defoliation.



JAPANESE BEETLE (ADULT): The adult is 0.5" in length with metallic green wing covers and has six tufts of white hair on sides of abdomen. Good coverage is essential. Masterlock can aid canopy penetration. **ET:** treat when defoliation exceeds 30% prebloom or 20% during blooming through pod fill stage.



KUDZU BUG: Do not treat until nymphs are observed. **ET:** 1 nymph/sweep or 15 nymphs/15 sweeps in interior of field.

LEAFHOPPER: See Potato Leafhopper.



LOOPER, CABBAGE OR SOYBEAN: Green worms up to 1 1/4" long with a white stripe down each side and two abdominal prolegs. **ET:** soybean looper is often resistant to pyrethroid insecticides and is harder to control than the cabbage looper. Treat when there are no parasitized or diseased larva and defoliation reaches 30% prebloom or 20% from bloom to pod fill (generally about 10-15 small worms/ft of row).



MEXICAN BEAN BEETLE (ADULT): Yellow to coppery-brown beetles 0.25-0.33" in length with 16 small, black spots (8 on each wing cover). There are multiple generations per year depending on location. Adults eat leaf tissue and spiny larva skeletonize leaves. **Early ET:** 0.5 egg mass/yard of row. **ET:** treat when defoliation exceeds 30% prebloom or 20% during blooming through pod fill stage.



NEMATODES: See Soybean Cyst Nematode Section



PLANT BUG: Rarely an economic pest of soybean. **ET:** 1 bug/plant at first flower to green pod stage.



POTATO LEAFHOPPER (ALSO THREE CORNERED ALFALFA HOPPER): Early season protection is provided by Cruiser seed treatment. Avoid planting soybeans adjacent to alfalfa. **ET:** one potato leafhopper/plant at 1st trifoliate or 5 potato leafhoppers/plant at 3rd trifoliate. Three cornered Alfalfa Hopper - **Texas ET:** before bloom, when the infestation has reduced the number of girdled plants to 6 or fewer in row beans and nymphs are present. Pod set to maturity - 3 nymphs/foot or one adult/sweep.

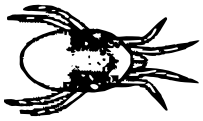


SALTMARSH CATERPILLAR: **ET:** 8 worms/row ft.



SEED CORN MAGGOT: Soybeans planted into tilled sod or alfalfa, manured fields or any soil with high levels of decomposing organic matter are at risk. See seed treatment sections for options. After planting rescue treatments are not organic matter are at risk. See seed treatment sections for options. After planting rescue treatments are not effective.

SOYBEAN CYST NEMATODE (SCN): SCN females are white to yellow, lemon drop-shaped cysts the size of a pin head on soybean roots.
Symptoms: Circular or oval shaped patches of stunted, yellow plants. Leaf symptoms can look similar to potassium deficiency.
Sampling Techniques: For detection, soil sample high-risk areas such as field entries, low spots, areas along fence lines where wind-blown soil accumulates, or where flooding brings in soil from other fields. For estimates of the level of infestation in fields where SCN is known to occur, sample in random pattern similar to taking soil samples for nutrients. Limit number of acres per sample to 10-20 A. Collect 10-20 soil cores/sample. Sample 6-8" deep. Keep samples out of the sun.
Host Crops/Weeds: Crop hosts include corn, sorghum, cotton, peanuts, rice, clovers and field beans. Weed hosts include winter annual weeds such as henbit, deadnettle, mustards and chickweed.
Control: SCN-resistant varieties, crop rotation to non-host crops such as corn, alfalfa or forage grasses, good soil fertility, equipment sanitation. Nematicides are recommended only if cultural practices cannot be utilized. Fall control in no-till is more effective in reducing SCN than spring treatments. Thorough cleaning of machinery tires with hot water or steam can reduce introduction of SCN in to a field. Telone is labeled for nematodes.



SPIDER MITE (TWO-SPOTTED): In most years, mite populations are controlled by a fungal disease, but the disease requires prolonged high humidity and cooler temperatures to be effective. Early infestations can kill soybeans. Later infestations cause premature senescence, shattering and yield reductions of 40 to 50%. Avoid adjacent plantings to alfalfa fields. If conditions are favorable for mite development, treatment is recommended when mites are present and plants have stippling. In making management decisions note that rain alone will not reduce mite populations. Spot or border treatments may be appropriate if infestations are detected very early; however, if mites can be found throughout the field, whole field treatment is recommended. Reinfestations are possible and soybeans should be carefully monitored during outbreak conditions. Apply product in at least 40 GPA by ground or 3-5 by air. **ET:** prepod-20-25% of plants discolored, and mites present; podding-10-15%.



STEM BORER (DECTES): Creamy white, legless larva up to 0.6" in length burrows into leaf petioles and stems in mid to late season. Last stage girdles stem 2-3" above ground resulting in lodging. Adult is an elongated, gray long-horned beetle. Cultural control includes early harvest, burial of stubble >2" deep and control of host weeds such as ragweeds, sunflower and cocklebur. No insecticide labeled for borers as they are difficult to control once inside the stem. Pyrethroids will kill adult beetles.



STINK BUG: Brown stink bug and red banded stink bugs are generally more difficult to control than the green stink bug. **ET:** when adult bugs or large nymphs reach 1/row ft or 9 bugs/25 sweeps. Red-banded - 0.7/row ft or 6 bugs/25 sweeps. Damage appears primarily on pods and beans. Treat when in reproductive stage.



THISTLE CATERPILLAR (PAINTED LADY BUTTERFLY): **ET:** V-3 to V4 stage: 3-4 worms/plant (ESA), 10/row ft of blooming soybeans (ISU), or 4-8/ft of row (NDSU), 25-30% pod defoliation at prebloom stages or 20% defoliation during pod stages.



THRIPS: Treat when serious injury to seedlings and thrips are present

VELVETBEAN CATERPILLAR: See Green Cloverworm.



WEBWORMS: **ET:** Check for the presence of live worms. 10-12% of plants showing heavy webbing on top leaflets, when defoliation reaches 30% prebloom or 20% bloom and pod fill stages.



WOOLLY BEAR CATERPILLAR: **ET:** defoliation of 30% pre bloom and 20% bloom to pod fill; ten woollybears/row ft. at full pod and are found in August and no diseased caterpillars found.

LABELED FUNGICIDES

FUNGICIDE	DISEASES																
	AERIAL LEAF BLIGHT	ALTERNARIA LEAF SPOT	ANTHRACNOSE	ASIAN SOYBEAN RUST (PHAKOPSORA PACHYRHIZI)	BACTERIAL LEAF BLIGHT (PSEUDOMONAS)	BROWN LEAF SPOT (SEPTORIA GLYCINES)	CERCOSPORA LEAF BLIGHT	CERCOSPORA LEAF SPOT	DOWNY MILDEW	FROGEYE LEAF SPOT	PHYTOPHTHORA	POD AND STEM BLIGHT	POWDERY MILDEW	PURPLE SEED STAIN	PYTHIUM	STEM CANKER	WHITE MOLD (SCLEROTINIA STEM ROT)
ADASTRIO/FORCIVO			●			●		●		●			●				●
AFFIANCE	●	●	●	●		●	●			●		●	●	●			●
ALTIPRO		●	●	●		●	●			●		●	●				●
ALTO 100SL	●	●	●	●		●	●	●		●		●					
APROACH	●	●	●	●		●	●	●	●	●		●	●				●
APROACH PRIMA	●	●	●	●		●	●	●	●	●		●	●				
BADGE SC/BADGE X2					●				●				●				
BIO-TAM 2.0											●				●		●
BRAVO ULTREX/BRAVO WEATHER STIK			●	●S		●	●			●		●		●		●	
CHAMPION++					●				●								
COBRA																	●S
CONTANS WG																	●
CUPROFIX ULTRA 40 DISPERSS		●			●	●	●		●	●		●	●				
DELARO 325 SC	●	●	●	●		●	●	●		●		●	●				●S
DELARO COMPLETE	●	●	●	●		●	●			●		●	●				●S
DOMARK 230 ME			●	●		●	●			●			●	●			●
ECHO 720/ECHO 90DF			●	●		●	●			●		●		●		●	
ENDURA	●S	●				●S	●S	●S		●S							●S
ETHOS ELITE LFR ‡											●S				●S		
ETHOS XB ‡											●S		●S		●S		●S
ETHOS 3D ‡											●S				●S		
EVITO 480 SC	●	●	●	●		●	●			●		●					
EVITO T	●	●	●	●		●	●			●		●					
EXCALIA	●			●													
HEADLINE SC	●	●	●	●		●	●			●		●					
KOCIDE 3000				●*	●*				●								
LUCENTO			●	●		●	●			●			●				●
MIRAVIS NEO	●	●	●	●		●	●	●		●		●	●				●
MIRAVIS TOP	●	●	●			●	●	●		●		●	●				●S
OMEGA 500F																	●
ONSET 3.6L				●									●				
PHOENIX																	●
PHOSTROL															●		
PRAIZ			●	●S		●	●			●		●		●		●	
PREVISTO		●			●		●	●	●	●		●	●				
PRIAXOR	●	●	●	●		●	●			●		●					●S
PROLINE 480 SC	●	●	●	●		●	●			●		●	●				●S
PROPULSE				●		●				●			●				●
QUADRIS TOP/QUADRIS TOP SBX	●	●	●	●		●	●	●		●		●	●				
QUILT XCEL/AFRAME PLUS	●	●	●		●	●	●		●		●						
REVYLOK	●	●	●	●		●	●			●		●					●S
RALLY 40WSP				●													
REVYTEK		●	●	●			●			●		●					●S
RIDOMIL GOLD GR/ RIDOMIL GOLD SL											●So				●So		
RUSTEASE	●	●	●	●		●	●	●		●		●					

See notes and endnotes at end of table.

FUNGICIDE	DISEASES																
	AERIAL LEAF BLIGHT	ALTERNARIA LEAF SPOT	ANTHRACNOSE	ASIAN SOYBEAN RUST (PHAKOPSORA PACHYRHIZI)	BACTERIAL LEAF BLIGHT (PSEUDOMONAS)	BROWN LEAF SPOT (SEPTORIA GLYCINES)	CERCOSPORA LEAF BLIGHT	CERCOSPORA LEAF SPOT	DOWNY MILDEW	FROGEYE LEAF SPOT	PHYTOPHTHORA	POD AND STEM BLIGHT	POWDERY MILDEW	PURPLE SEED STAIN	PYTHIUM	STEM CANKER	WHITE MOLD (SCLEROTINIA STEM ROT)
SERENADE ASO				●		●		●				●					●
STRATEGO YLD /***PROTEGAM YLD***	●	●	●	●		●	●			●		●	●				●S*
TETRABAN	●	●	●			●	●	●		●		●					
TILT	●		●	●		●				●							
TOPAZ	●		●			●				●							
TOPGUARD	●S			●		●				●			●	●			●S
TOPGUARD EQ	●	●	●	●		●		●		●		●	●				●S
TOPSIN M WSP/ TOPSIN 4.5FL/ T-METHYL 4.5 F/ T-METHYL 70 WSB	●S		●			●				●		●		●			●
TRIVAPRO	●	●	●	●		●	●	●		●		●	●				
ULTRA FLOURISH											●				●		
UNIFORM															●So		
VELTYMA		●	●	●			●			●		●					●S
VIATUDE	●	●	●	●		●	●			●		●	●	●			●
XYWAY LFR						●				●							
ZORINA		●		●			●			●							●

Many other diseases may be controlled, see label and Fungicide Resistance Management in the Technical Information section.

● - control; ●S - suppression; So - soil applied.

* - 24c, 2ee or Supplemental label; see Comments and Restrictions in Disease Management Guidelines.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

DISEASE MANAGEMENT GUIDELINES

SOYBEAN ASIAN RUST:	Early symptoms begin as small, pin-point sized yellow flecks on the top leaf surface of lower leaves. Lesions become brick-red and develop as pustules on the underside of leaves. Lesions are angular to somewhat circular in shape. **Scouting:** Focus first on early planted soybeans, early maturing varieties, low lying areas and fields with early canopy closure. Development of rust is favored by prolonged leaf wetness (6-12 hours). Optimum temperature for infection is 60-80° F, although infection occurs at lower and higher temperatures. The rust pathogen does not survive on infected residues and is not seedborne. **Fungicide Application:** The period from beginning flowering (R1) through full seed (R6) is most critical for rust management. The earlier in the season that rust is detected, the more likely that multiple sprays 14-20 days apart may be required. Fungicides with only protection activity need to be applied prior to rust infection for best results. If rust infections have already occurred, a curative, systemic product should be applied. However, curative effects of fungicides are limited, particularly in the lower canopy where coverage can be reduced. Fungicides can generally be tank mixed with herbicides or insecticides without compatibility issues. However, ideal timing and coverage for weeds, insects and diseases are often different. Fungicides generally require better leaf coverage than herbicides. Nozzle, pressure and carrier volume selection is critical. Droplet size in the medium range are preferred. Most fungicides provide 21 – 28 days protection. Multiple applications may be required.
SUDDEN DEATH SYNDROME (SDS)	Symptoms may occur from late bloom through pod fill. See soybean disease color plates. **Management:** Plant varieties with known tolerance to SDS and soybean cyst nematode, improve soil drainage, reduce soil compaction, stagger planting dates, delay planting until soils are warm and dry, crop rotation and harvest early. SDS is spread by in soil. Resistant varieties are available.
WHITE MOLD	Use clean seed free of sclerotia, seed treatments and tolerant varieties. Narrow rows and high planting rates favor disease survival. Spores survive in soil for many years thus the value crop of rotation is limited. Spray fungicides when flowers are present on lower half of stem.

DISEASE TREATMENT GUIDELINES

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				SOIL APPLICATION
ADASTRIO/FORCIVO	7-9 fl oz	21	NL	Max. single application 9 fl oz/A. Min. retreatment interval is 14 days. Max. 2 applications/year. Max. 18 fl oz/A/year. Do not feed forage or hay to animals or permit animals to graze.
ALTIPRO	7-13.5 fl oz	21	21	For mangement of Rhizoctonia rots. Apply up to 13.5 fl. oz. per acre (0.775 fl. oz. per 1,000 row feet if on 30-inch row spacing; 0.516 fl. oz. per 1,000 row feet if on a 20-inch row spacing). Direct the spray into the furrow at planting just before the seeds are covered. Apply in 2.5 to 20 gallons of water per acre.
APROACH	6-12 fl oz	14	14	Use 8-12 fl oz/A for white mold. Ground, aerial or sprinkler irrigation application. Do not make >2 sequential applications; see label.
BIO-TAM 2.0	2.5-5 lb	–	–	Can be applied in-furrow (1.5-3 oz/1000 row') and banded (2.5-3 lb). Broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. Chemigation application up to 1 week prior to planting and immediately after planting.
CONTANS WG	1-4 lb	0	NR	Apply prior to planting, at planting or after crop emergence. Incorporate into soil to 2". Make 2 applications, but no more than 8, for maximum efficacy. Ground or sprinkler irrigation application.
ETHOS XB ‡	3.4-8.5 fl oz	–	NL	Suppression only of "Damping Off," seedling blights, and root or crown diseases caused by Pythium, Rhizoctonia, Fusarium, or Phytophtora. See label for specific band, broadcast, PPI, and PRE applied with herbicides. This product is also an insecticide; see Soybean Insects for insects controlled at indicated rates.
ETHOS ELITE LFR ‡	0.2-0.49 fl oz/1000' row	18	NL	At-plant application for suppression of labeled diseases. Max 0.2 lb bifenthrin a.i./A/season including all application methods. This product is also an insecticide; see Soybean Insects for insects controlled at indicated rates.
ETHOS 3D ‡	0.21-0.52 fl oz/1000' row	NL	NL	For use in a 3RIVE 3D system only. Can be mixed with liquid fertilizer. Insecticide and Fungicide. Apply in-furrow with seed. Max. 0.1 lb/A/season bifenthrin a.i. as at-plant application. Max. 0.2 lb/A/season bifenthrin a.i. including all application methods. Suppression of "Damping off," seedling blights, and root or crown diseases caused by Fusarium, Phytophthora, Pythium, Rhizoctonia. This product is also an insecticide; see Soybean Insects for insects controlled at indicated rates.
RIDOMIL GOLD GR	6 oz/1000' row: in-furrow, or 7" band	NR	NR	See label for planting restrictions within 12 months of application. For early to mid-season control 1.5-3 oz/1000' row; for full season control 6 oz/1000' row.
RIDOMIL GOLD SL	0.08-0.28 fl oz/1000' row: in-furrow, or 7" band	NR	NR	See label for planting restrictions within 12 months of application. For early to mid-season control 0.08-0.15 fl oz/1000' row; for full season control 0.28 fl oz/1000' row for SL.
TETRABAN	0.4-0.8 fl oz/1000' row	–	–	Controls Rhizoctonia and Sclerotium diseases. Do not apply >15 fl oz/A. See label for application instructions and in-furrow or banded rates.
UNIFORM	0.34-0.62 fl oz/1000' row	NR	NR	Apply in-furrow in ≥5 GPA or fertilizer. Maximum 1 application.

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
XYWAY LFR ‡	0.44-0.87 fl oz/1000' row	21	12	See label for row spacing. Do not apply in-furrow in direct contact with seed. May apply as foliar for control of late-season infestations and a variety of foliar diseases. Max. 17.3 fl oz/A in a single at-plant application. Max. 1 at-plant application/year.
				FOLIAR
AFFIANCE	10-14 oz	14	NO	Do not apply after R5. Aerial Blight only use 14 fl oz/A.
ALTIPRO	8-11 fl oz	21	21	Apply as a broadcast foliar spray at early flowering or prior to disease development, whichever is earlier. Repeat applications on a 10- to 21-day spray interval if disease monitoring or environmental factors indicate favorable conditions for continued disease development. Use of the higher specified rates and shorter specified spray intervals is advised when disease pressure is severe. Ground: min. 10 gallons/Acre carrier volume. Aerial: Min. application volume of 2 gallons/Acre. DO NOT exceed 4 foliar applications at the maximum application rate (11.0 fl. oz.) and make no more than 2 sequential applications of Altipro or any Group 11 containing fungicide before rotating with a fungicide from a different Group.
ALTO 100SL	4-5.5 fl oz	30	14	Use 2.75-5.5 fl oz for Asian soybean rust. Begin applications prior to disease development. Do not use for forage or hay if >1 application. Ground, aerial or sprinkler irrigation application.
APROACH PRIMA	5-6.8 fl oz	30	14	Do not use soybean for forage or hay if applied more than one application at 6.8 fl oz/A. Apply prior to disease development and continue on 14-28 day interval. Ground, aerial or sprinkler irrigation application.
BADGE SC	0.75-2.5 pt	0	NR	Make first protective spray to 6" plants. Repeat 7-14 days.
BADGE X2	0.75 - 2.5 lb	0	NR	Make first protective spray to 6" plants. Repeat 7-14 days. OMRI Listed.
BRAVO WEATHER STIK or ULTREX or ***PRAIZ***	1-2.25 pt or	42	NO	Rates depend on the number of applications. See label for timing. Ground, aerial or sprinkler irrigation application.
CHAMPION++	0.75-1.5 lb	0	NL	Max. 15.8 lb/A/year. Protective sprays when plants are 6"; repeat at 7- to 14-day intervals. .
COBRA	6-8 fl oz	45 or R6	NO	White mold suppression. Apply at or just before 1st bloom. Add 0.25% v/v NIS/100 gal or 0.5-1 pt COC* or MSO*/A.
CUPROFIX ULTRA 40 DISPERSS	0.75-3 lb	NR	NR	Rate and timing depends on disease. Ground, aerial or sprinkler irrigation application.
DELARO 325 SC	8-11 fl oz	21	NO	Repeat applications on 10-21 day intervals. Do not apply >33 fl oz/A/year, or make >3 applications/year. Apply as a broadcast foliar spray at early flower or prior to disease development. Use the higher rate and shorter spray intervals when disease pressure is severe.
DELARO COMPLETE	8-11 fl oz	21	NO	Repeat applications on 10-21 day intervals. Do not apply >33 fl oz/A/year, or make >3 applications/year. Apply as a broadcast foliar spray at early flower or prior to disease development. Use the higher rate and shorter spray intervals when disease pressure is severe.
DOMARK 230 ME	4-5 fl oz	–	NO	Do not apply after R5.
ECHO 720 or ECHO 90 DF	1-2.5 pt or 0.875-2 lb	42	NO	Rate depends on disease and program. Ground, aerial or sprinkler irrigation application.
ENDURA	3.5-5.5 oz	21	NR	Use 3.5-5.5 oz/A for alternaria leaf spot, 5.5-11 oz/A for white mold suppression and 5.5 oz/A to suppress other labeled diseases. Begin prior to disease development or when conditions are conducive for disease development. Ground, aerial or sprinkler irrigation application.
ETHOS XB ‡	3.4-8.5 fl oz	18	NL	Foliar: Suppression of white mold, gray mold, powdery mildew, rusts. Max 0.2 lb bifenthrin a.i./A/season including all application methods. 30-day min. application interval. This product is also an insecticide; see Soybean Insects for insects controlled at indicated rates.
EVITO 480 SC	2-5.7 fl oz	30	3	Maximum 2 applications no later than R5. PHI 3 days forage harvest. Ground, aerial or sprinkler irrigation application.
EVITO T	4-6 fl oz	30	21	Maximum 2 applications no later than R5. PHI 21 days forage harvest. Ground, aerial or sprinkler irrigation application.
EXCALIA	2 fl oz	R5	NO	Do not apply prior to V3 or after R5. Max. 2 fl oz/A/application. Max. 4 fl oz/A/year. Max. 2 sequential applications. Max. 2 applications/year. 14-day min. retreatment interval.
HEADLINE SC	6-12 fl oz	21	14,21	Apply prior to disease development. PHI 14 days forage, 21 days hay. See "Management of Asian Soybean Rust" on the label. Make first application after first rust infection, preventatively or at blooming start (R1-R3). NIS, HSOC-COC*, HSOC-MSO* or other COC, MSO may be used. Ground, aerial or sprinkler irrigation application.
KOCIDE 3000	0.75-1.5 lb	NR	NR	Make first protective spray to 6" plants. Repeat at 7-14 day intervals.
LUCENTO	3-5.5 fl oz	21	NO	Apply by ground, air or sprinkler irrigation. Max. 2 applications at highest rate (total of 11 fl oz/A/year) or 3 applications at lowest rate (total 9 fl oz/A/year). Max. 11 fl oz/A/year. 14-day min. application interval. Do not make >2 sequential applications before alternating to a fungicide different from FRAC group 7 and 3.

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
MIRAVIS NEO	13.7-20.8 fl oz	14	NO	Max. 42 fl oz/A/year. Max. 2 applications at max. rate/year. 14-day min. application interval. Do not make >2 applications of this or other Group 7, 3, 11 fungicides before rotating to a different MOA. For white mold: apply at R1 to R2, and 14 days later at R3 if needed.
MIRAVIS TOP	9-13.7 fl oz	14	NO	Max. 27.5 fl oz/A/year. Max. 2 applications at max. rate/year. 7-day min. application interval. Do not apply after R6. Do not make >2 applications of this or other Group 3, 7 fungicides before rotating to a different MOA. White mold suppression at 13.7 fl oz/A: Make 1st application at R1-R2; if 2nd application is needed, apply 14 days later at R3.
OMEGA 500F	0.75-1 pt	NR	NO	The first application should be applied at R1 to R2 and, if needed, again at early pod formation (R3) but not after. Ground or aerial application. (except in the State of New York)
ONSET 3.6L	3-4 fl oz	21	NR	Apply as a preventative spray or at first visible symptoms of disease. 10-14 day spray interval if environmental conditions are favorable for continued disease development. Include a surfactant. Ground or aerial application.
PHOENIX	6-12.5 fl oz	45	NO	White mold suppression. Apply at or just before 1st bloom. Add Preference at 0.125-0.5% v/v or other NIS at 0.125% v/v. Ground or aerial application.
PHOSTROL	4-5 pt	0	NR	Cottony leak: Apply by air or ground in min. 10 GPA water. First applications at full bloom and then 10-14 days later.
PRAIZ	SEE BRAVO WEATHER STIK			
PREVISTO	1-2 qt	0	NR	Apply if conditions are favorable for disease development and/or if weather remains cool and wet; see label for specific disease treatments. Do not apply >2 qt/A/application or >62 qt/A/year.
PRIAXOR	4-8 fl oz	21	14, 21	Apply prior to when conditions favor disease development and continue on 7-14 day schedule. Use higher rate and shorter interval under high disease pressure. Maximum 16 fl oz/A/season. Maximum 2 applications before rotating to another mode of action. PHI 14 days for forage and 21 days for hay. Ground or aerial application.
PROLINE 480 SC	2.5-5 fl oz	21	NR	Repeat applications on 10-21 day intervals. Do not apply >12.9 fl oz/A/year, or make >3 applications/year. Apply as a broadcast, preventative foliar spray or at first visible symptoms of the disease. Use the higher rate and shorter spray intervals when disease pressure is severe. 2.5-3 fl oz/A for Asian soybean rust, Frog Eye leaf spot, powdery mildew, and brown spot. 3-5 fl oz/A for all other listed diseases. For white mold, apply at R1 when conditions are favorable for disease development and complete a second application at R3-R4 if conditions persist.
PROPULSE	6-10.2 fl oz	21	NO	Repeat applications on 10-14 day intervals. Do not apply >30.9 fl oz/A/year, or make >2 applications/year. 6-8 fl oz/A for white mold, brown leaf spot, and Phomopsis stem blight. 10.2 fl oz/A for all other listed diseases. Propulse may be applied either by ground, aerial, or chemigation.
PROTEGAM YLD	SEE STRATEGO YLD			
QUADRIS TOP	8-14 fl oz	14	NO	Apply prior to disease onset when conditions are conducive for disease. Continue on 7-10 day schedule. Maximum of 2 sequential applications and 26.5 fl oz/A/year.
QUADRIS TOP SBX	7-7.5 fl oz	14	NO	A COC* or NIS* is recommended. Ground, aerial or sprinkler irrigation application. Do not make >2 sequential applications; see label.
QUILT XCEL/AFRAME PLUS	10.5-21 fl oz	R6	NR	Use 14-21 fl oz/A for rust. Apply at the first sign of disease in the area. For other diseases, use 14-21 fl oz/A at R3, or earlier and again at R5. Use at least 2 GPA to ensure adequate coverage. Ground, aerial or sprinkler irrigation application.
RALLY 40WSP	2.5-5 oz	28	NL	Apply by ground (adequate spray volume) or air (minimum 5 GPA), prior to infection or at first sign of disease. 10- to 14-day retreatement interval. Use higher rate for established disease. Do not make >2 applications or apply >10 oz/A/year.
REVYLOK	4.5-6.5 fl oz	21	21	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. 14-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
REVYTEK	8-15 fl oz	21	14,21	Max. 15 fl oz/A/application. Max. 2 applications/A/year. Max. 30 fl oz/A/year. 14-day min. application interval. PHI 14 days for forage, 21 days for hay.
RUSTEASE	4-6.8 fl oz: rust 5-6.8 fl oz: others	30	14	For rust, repeat at 14-28 days intervals. For other diseases, apply prior to disease development. PHI 14 days grazing. Do not use for hay or forage if >1 application of 6.8 fl oz/A. Ground, aerial or sprinkler irrigation application.
SERENADE ASO	0.5-4 qt	0	NL	*Bacillus subtilis* is a biological fungicide most effectively used in a preventative disease management program. Begin applications when conditions favor disease development. When under severe disease pressure, reduce spray intervals or use in rotation with other registered fungicides.

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
STRATEGO YLD / ***PROTEGAM YLD***	4-4.65 fl oz	21	NO	Repeat applications on 10-21 day intervals. Do not apply >13.95 fl oz/A/year, or make >3 applications/year. Apply as a broadcast foliar spray at early flowering or prior to disease development. Use the higher rate and shorter spray intervals when disease pressure is severe. 2(ee) for white mold suppression in IL, IN, IA, MI, MN, NE, ND, OH, SD, and WI: apply as a broadcast foliar spray at R1 when conditions are favorable for disease development. A sequential application may be made at R3.
TETRABAN	6-15.5 fl oz	14	0	Foliar applications by ground, air or irrigation should begin prior to disease development. See label for soybean rust remarks.
TILT	4-6 fl oz	R6	NO	Use 4-6 fl oz/A for rust. Use 5-6 fl oz/A for aerial web blight. Apply at the first indication of disease. Repeat at 14-21 days. Use 6 fl oz at R3 for other diseases. Ground or aerial application.
TOPAZ	4-6 fl oz	NR	NR	Apply 5-6 fl oz for control of aerial leaf blight at first appearance of disease and repeat 14-21 days later. For other foliar diseases, apply 6 fl oz/A at R3 and repeat 14-21 days later at R5. Maximum 12 fl oz/A/season. Ground or aerial application.
TOPGUARD	7-14 fl oz	21	NO	For Cercospora Leaf Blight, begin applications at R1. For other diseases, begin at first visible flower or when conditions are favorable for disease development, then at 14- 25-day intervals (21- to 35-day intervals for Rust).
TOPGUARD EQ	5-7 fl oz	21	NO	See label for application timing related to specific diseases. Use COC* or NIS* with lower rate is recommended. Do not apply >15.5 fl oz/A/year or >3 applications/year. Only one application at 8 fl oz/A to one field during a single growing season.
TOPSIN M WSB/T-METHYL 70 WSB or TOPSIN 4.5FL/T-METHYL 4.5 F	0.75-1 lb or 15-20 fl oz: white mold 0.5-1 lb or 10-20 fl oz: others	21	NO	Apply from full bloom to 1/8-1/4" pods with a second application 14-21 days later (but not later than 14 days after pods average 1/4" or when beans are formed.) For white mold, make one application at early bloom (R1-R2) followed by a second application 7-14 days later if conditions continue to favor disease development. Ground, aerial or sprinkler irrigation application.
TRIVAPRO	0.5-1 lb or 10-20 fl oz: others	14 or R6	14 or R6	For Soybean rust sprays may need to begin at R1. All other diseases apply at R3 growth stage. An adjuvant may be added. 14 day minimum application interval. Ground, aerial or sprinkler irrigation application. Do not make >2 sequential applications; see label. G/F PHI is for hay or silage.
ULTRA FLOURISH	0.16-0.56 fl oz/1000' row 0.74-2.5 pt	3	NR	Apply in-furrow or as soil spray (broadcast or band). In-furrow: Apply 0.16-0.56 fl oz/1000' row with water or liquid fertilizer at planting (avoid spraying seed directly). Soil spray (broadcast or band): For full season control, 2.5 pt/A in water or liquid fertilizer at planting; for mid-season control, apply 0.74-1.5 pt/A, moving product into seed zone with 0.5-1" sprinkler irrigation; 7" band for banded application; see label for calculations.
VELTYMA	7-10 fl oz	21	14,21	Max. 10 fl oz/A/application. Max. 2 applications/A/year. 14-day min. application interval. PHI 14 days for forage, 21 days for hay.
VIATUDE	10-16 fl oz for White Mold. 8-16 fl oz: others	36	NL	Check the label for labeled states. Apply prior to disease development and continue on 10-14 day interval. Use sufficient spray volume for thorough coverage. For White Mold, begin applications at 20-50% bloom, For White Mold and other labeled diseases begin applications prior to the onset of disease on a 10- to 14-day interval. Use the higher rate and shorter application interval for heavy disease pressure and when conditions are favorable to disease development. Ground, aerial or sprinkler irrigation application. Maximum 16 fl oz per application and 48 fl oz/A/year. Use of surfactants and tank mix partners that solubolize the leaf cuticle increase the potential for crop response. 180 day rotational interval for all no labeled crops. Avoid application of more than two consecutive sprays of the same group per season.
ZORINA	18.5 - 20 fl oz for White Mold. 15 - 20 fl oz: other labeled diseases	21	21	Check the label for labeled states. begin application prior to the onset of disease. Maximum application rate of 20 fl oz/A, and a maximum of 2 applications of 20 fl oz/A/year (40 fl oz/A/year).

PHI – preharvest interval days. G/F – grazing and feeding interval days. NO – do not graze or feed. NR – no restrictions. NL = no information on label. PHI – preharvest interval days. G/F – grazing and feeding interval days. NO – do not graze or feed. NR – no restrictions. NL = no information on label.

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where fungicides require NIS and AMS or a water conditioner.
Also: InterLock + Preference, Masterlock, or PowerLock + Chemsurf/90 or other adjuvants may be recommended to improve deposition and coverage.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

FOLIAR SPRAY EFFICACY[1]

Fungicide	Aerial Web Blight	Brown Spot	Cercospora Leaf Blight[2]	Frogeye Leaf Spot[3]	Phomospsis *(Pod and Stem Blight)*	Soybean Rust	Target Spot	White Mold[4]	
AFFIANCE	U	**VG**	F	F-G	U	U	U	U	
ALTO 100 SL	U	**VG**	F	F	U	**VG**	U	NL	
APROACH	**VG**	P-G	P	P	U	G	U	G[5]	
APROACH PRIMA	**VG**	G	P-G	F-G	U	**VG-E**	F-G	NL	
DELARO 325 SC	**VG**	**VG**	U	G-**VG**	U	U	NL	NL	
DELARO COMPLETE	U	**VG**	U	U	U	U	NL	F	
DOMARK 230 ME	NL	**VG**	P-G	F-G	U	**VG-E**	P	F	
ENDURA	U	**VG**	U	P	NL	NL	U	**VG**	
EVITO	**VG**	P-G	P	P	U	U	U	NL	
EXCALIA	**E**	NL	NL	NL	NL	U	NL	NL	
HEADLINE SC	**VG**	P-G	P	P	U	**VG**	P-F	NL	
LUCENTO	**VG**	**VG**	F-G	G-**VG**	U	**VG-E**	F-G	U	
MIRAVIS TOP	**VG**	**VG**	F-G	**VG**	G	**VG-E**	F-G	U	
OMEGA 500 DF	NL	NL	NL	NL	NL	NL	U	G	
PRIAXOR	**E**	G-**VG**	P-G	P-F	U	**VG-E**	F-G	P	
PROLINE 480 SC	NL	NL	NL	G-**VG**	NL	**VG**	U	F	
PROPULSE	NL	U	NL	U	U	U	NL	G	
QUADRIS TOP	U	G-**VG**	P-G	G-**VG**	F-G	**VG**	P	NL	
QUADRIS TOP SBX	**VG**	G-**VG**	P-G	G-**VG**	F-G	**VG**	F-G	U	
QUILT XCEL/AFRAME PLUS	**E**	G	F	F	U	**VG**	P	NL	
REVYTEK	**VG**	**VG**	F-**VG**	G-**VG**	U	**VG-E**	F-**VG**	P	
STRATEGO YLD/ ***PROTEGAM YLD***	**VG**	G	F	F-G	U	**VG**	P	NL	
TETRABAN/ QUADRIS	**VG**	P-G	P	P	U	G-**VG**	P-F	P	
TOPAZ/TILT	P	G	NL	F	NL	**VG**	U	NL	
TOPGUARD EQ	**VG**	**VG**	U	G-**VG**	U	**E**	P	U	
TOPGUARD	U	**VG**	P-G	G-**VG**	U	**VG-E**	P	F	
TOPSIN M	U	U	F	**VG**	U	G	U	F	
TRIVAPRO	**E**	G-**VG**	P-G	F-G	G	**VG-E**	U	NL	
VIATUDE	**VG**	P-G	P	P	U	**VG**	U	F-G[7]	

Efficacy Ratings: E = Excellent; VG = Very Good; G = Good; F= Fair; P = Poor; U = Unknown efficacy or insufficient data to rank product efficacy; NL = Not Labeled for use against this disease.

[1] Source: Efficacy Ratings From Purdue Extension CPN-1019-W (2023)

[2] Cercospora leaf blight efficacy relies on accurate application timing. Standard R3 application timings may not provide adequate disease control. Fungicide efficacy may improve with earlier or later applications. However, efficacy has been inconsistent with some products. Fungicides with a solo or mixed QoI or MBC mode of action may not be effective in areas where QoI or MBC resistance has been detected in the fungal population that causes Cercospora leaf blight.

[3] In areas where QoI fungicide-resistant isolates of the frogeye leaf spot pathogen are not present, QoI fungicides may be more effective than indicated in this table.

[4] White mold efficacy is based on R1-R2 application timing. Lower efficacy is obtained with R3 or later application timings, or if disease symptoms are already present at the time of application.

[5] Rating is based on two applications of Aproach at 9 fl oz/A at R1 and R3.

[6] Propulse is not labeled for use on soybean in all states as of January 2021.

[7] Rating is based on two applications of Viatude at 16 fl oz/A at R1 and R3.

KEY
E = EXCELLENT
G = GOOD
F = FAIR
P = POOR
N = NONE OR NOT LABELED
L = LABELED
U = UNKNOWN

FUNGICIDE AND/ OR INSECTICIDE	DISEASE									INSECT*								
	Early-Season Septoria Brown Spot	Pod & stem blight *(Phomopsis)*	Phytopthora damping off	Pythium damping off	Rhizoctonia damping off or root rot	Seedling blight	Seed decay or rot	Seed-borne sclerotina *(white mold)*	Sudden Death Syndrome *(Fusarium v.)*	APHID *(early season control)*	Bean leaf beetle	Flea beetle *(early season control)*	Grub	Hessian Fly	Nematodes	Seed corn maggot & beetle	Thrips	Wireworm
COMMERCIAL																		
ALLEGIANCE-FL	N	N	**E**	**E**	P	**G/E**	**E**	N	N	N	N	N	N	N	N	N	N	N
APRONMAXX RFC	N	**G**	**G**	**E**	**G**	**G**	**G**	**E**	N	N	N	N	N	N	N	N	N	N
APRON MAXX RTA	N	**G**	**G**	**E**	**G**	**G**	**G**	**E**	N	N	N	N	N	N	N	N	N	N
APRON MAXX RTA + MOLY	N	**G**	**G**	**E**	**G**	**G**	**G**	**E**	N	N	N	N	N	N	N	N	N	N
APRON XL	N	N	**E**	**E**	N	**G**	**E**	N	N	N	N	N	N	N	N	N	N	N
AVEO	N	N	N	N	N	N	N	N	N	N	N	N	N	N	**G**	N	N	N
AVICTA 500 FS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	**E**	N	N	N
AVICTA COMPLETE BEANS 500	N	**G**	**E**	**E**	**G**	**G**	**G**	**E**	N	**E**	**E**	N	**E**	N	**E**	**E**	**E**	**E**
AVODIGEN	N	N	N	N	L	L	L	N	N	N	N	N	N	N	L	N	N	N
CRUISER 5FS	N	N	N	N	N	N	N	N	N	**E**	**E**	**E**	**E**	**G**	N	**E**	**E**	**E**
CRUISERMAXX	N	**G**	**G**	**E**	**G**	**G**	**G**	**E**	N	**G**	**E**	**E**	N	**E**	N	N	**E**	**E**
CRUISERMAXX VIBRANCE	N	**G**	**E**	**E**	**E**	**G**	**G**	**E**	N	**E**	**E**	N	**E**	N	N	**E**	**E**	**E**
DYNASTY	N	N	N	**G**	**E**	**G**	**G**	N	N	N	N	N	N	N	N	N	N	N
EVERGOL ENERGY SB	N	L	N	**E**	**E**	**E**	**E**	N	N	N	N	N	N	N	N	N	N	N
GAUCHO 600/SENATOR 600 FS	N	N	N	N	N	N	N	N	N	**G**	**E**	**G**	**G**	**E**	N	**G**	**E**	**G**
ILEVO	**G**	N	N	N	N	N	N	N	**G**	N	N	N	N	N	**E**	N	N	N
INTEGO SUITE SOYBEANS	N	**G**	**E**	**E**	**E**	**G**	**G**	N	N	**G**	**E**	**G**	**G**	N	N	**E**	**G**	**E**
MAXIM 4FS	N	**G**	N	N	**G**	**G**	**G**	**E**	N	N	N	N	N	N	N	N	N	N
MAXIM XL	N	F	P	**E**	**G**	**G/E**	**G**	P	N	N	N	N	N	N	N	N	N	N
MERTECT 340-F	P	**E**	N	N	F	N	N	**E**	P	N	N	N	N	N	N	N	N	N
NIPSIT INSIDE	N	N	N	N	N	N	N	N	N	L	L	L	L	N	N	L	L	L
PONCHO VOTIVO	N	N	N	N	N	N	N	N	N	**E**	**E**	**E**	**E**	N	**E**	**E**	**E**	**E**
PONCHO XC	N	N	N	N	N	N	N	N	N	**E**	**E**	**E**	**E**	N	**E**	**E**	**E**	**E**
RANCONA SUMMIT	N	U	U	U	U	U	U	U	N	U	U	U	U	U	U	U	U	U
RESONATE 480 ST	N	N	N	N	N	N	N	N	N	L	N	L	N	N	N	L	N	L
RIZOLEX	N	**G/E**	N	N	**E**	**G/E**	**G**	U	N	N	N	N	N	N	N	N	N	N
SALTRO	**E**	N	N	N	N	N	N	N	**E**	N	N	N	N	N	**E**	N	N	N
TRUNEMCO	N	N	N	N	N	N	N	N	N	N	N	N	N	N	L	N	N	N
VIBRANCE	N	N	N	N	**E**	**E**	N	N	N	N	N	N	N	N	N	N	N	N
WARDEN CX II	N	**G/E**	**E**	**E**	**G/E**	N	N	**G**	N	**E**	**E**	N	**E**	N	N	**E**	**E**	**E**
WARDEN RTA	N	**G/E**	**E**	**E**	**G/E**	**G/E**	**G**	F/**G**	N	N	N	N	N	N	N	N	N	N

* Efficacy ratings are influenced by insect population.
** Soybean cyst only.

SEED TREATMENT PERFORMANCE RATINGS *continued*

KEY
E = EXCELLENT
G = GOOD
F = FAIR
P = POOR
N = NONE OR NOT LABELED
L = LABELED
U = UNKNOWN

FUNGICIDE AND/ OR INSECTICIDE	DISEASE									INSECT*								
	Early-Season Septoria Brown Spot	Pod & stem blight *(Phomopsis)*	Phytopthora damping off	Pythium damping off	Rhizoctonia damping off or root rot	Seedling blight	Seed decay or rot	Seed-borne sclerotina *(white mold)*	Sudden Death Syndrome *(Fusarium v.)*	APHID *(early season control)*	Bean leaf beetle	Flea beetle *(early season control)*	Grub	Hessian Fly	Nematodes	Seed corn maggot & beetle	Thrips	Wireworm
ON-FARM																		
APRONMAXX RFC	N	G	G	E	G	G	G	E	N	N	N	N	N	N	N	N	N	N
APRON MAXX RTA	N	G	G	E	G	G	G	E	N	N	N	N	N	N	N	N	N	N
APRON MAXX RTA + MOLY	N	G	G	E	G	G	G	E	N	N	N	N	N	N	N	N	N	N
APRON XL	N	N	E	E	N	G	E	N	N	N	N	N	N	N	N	N	N	N
CRUISER MAXX	N	G	G	E	G	G	G	E	N	E	E	N	E	N	N	E	E	E
DYNASTY	N	N	N	G	E	G	G	N	N	N	N	N	N	N	N	N	N	N
EQUITY	N	U	U	U	U	U	U	U	N	U	U	U	U	U	U	U	U	U
MAXIM 4FS	N	G	N	N	G	G	G	E	N	N	N	N	N	N	N	N	N	N
MAXIM XL	N	F	P	E	G	G/E	G	P	N	N	N	N	N	N	N	N	N	N
RANCONA SUMMIT	N	U	U	U	U	U	U	U	N	U	U	U	U	U	U	U	U	U
VIBRANCE	N	N	N	N	E	E	N	N	N	N	N	N	N	N	N	N	N	N
WARDEN RTA	N	G/E	E	E	G/E	G/E	G	E	N	N	N	N	N	N	N	N	N	N

* Efficacy ratings are influenced by insect population.
** Soybean cyst only.

PRODUCT[1]	Formulation	Colorant Added	Labeled Intervals (days)		On Farm	Commercial	Use Rates[2]		Seed Load[2]	mg AI/seed[2]			
										Fungicides			
			PHI	Grazing/ Forage			fl oz/cwt	fl oz/ 140,000 seeds	Total Active Ingredients (mg/seed)	Azoxystrobin	Ethaboxam	Fludioxonil	Fluopyram
10% MOLY LIQUID	L	N	NR	NR	x	x	3.5-5	1.63-2.3	0.0409-0.0585				
ALLEGIANCE-FL	L	N	NR	NR		x	0.1-0.375	0.045-0.175	0.0031-0.0115				
APRONMAXX RFC	L	Y	NR	NR	x	x	1.5	0.7	0.009			0.004	
APRON MAXX RTA	L	Y	NR	NR	x	x	5	2.33	0.009			0.004	
APRON MAXX RTA + MOLY	L	Y	NR	NR	x	x	5	2.33	0.009			0.004	
APRON XL	L	N	NR	NR	x	x	0.16-0.64	0.075-0.30	0.0057-0.0227				
ASCEND PRO	L	N	NR	NR	x	x	1.05-4.2	0.49-1.96	0.0006-0.0011				
ASCEND SL	L	N	NR	NR	x	x	1.05-4.2	0.49-1.96	0.0006-0.0011				
ASCEND ST3	L	N	NR	NR	x	x	0.5 - 2.1	0.24 - 0.93	0.0003-0.00055				
ASCEND WSG	D	N	NR	NR	x	x	0.1-0.6 oz	0.046-0.28 oz	0.0006-0.0011				
AVICTA 500 FS	L	N	NR	NR		x	2.1-3.1	0.98-1.45	0.1-0.15				
AVICTA COMPLETE BEANS 500	L	Y	NR	NR		x	6.2	2.89	0.24			0.004	
AVODIGEN	L	N	NR	NR	x	x		0.51 - 0.75					
CRUISER 5FS	L	N	NR	NR		x	1.28	0.6	0.076				
CRUISERMAXX	L	Y	NR	NR	x	x	3	1.38	0.084			0.004	
CRUISERMAXX APX	L	N	NR	NR		x	4.18	1.95	0.0983			0.003932	
CRUISERMAXX VIBRANCE	L	-	NR	NR		x	3.22	1.5	0.095			0.004	
DYNASTY	L	N	NR	NR	x	x	0.153-0.459	0.0714-0.2142	0.0015-0.0045	0.0015-0.0045			
EVERGOL ENERGY SB	L	N	NR	DNU		x	1	0.467	0.017				
FORTENZA	L	N	NR	NR		x	0.8-1.6	0.37-0.747	0.038-0.076				
GAUCHO 600/SENATOR 600 FS	L	N	NR	45		x	1.6-3.2	0.75-1.5	0.0945-0.189				
ILEVO	L	N	NR	DNU		x	1.29-4.22	0.6-1.97	0.076-0.25				0.076-0.25
INTEGO SUITE SOYBEANS	L	Y	NR	DNU		x	3.4	1.573	0.1002		0.0012		
LUMISENA	L	N	NR	NR		x	0.568-1.136	0.265-0.53	0.0112-0.0223				
MAXIM 4FS	L	N	NR	Cereals, Grasses, Nongrasses - 30; Others - NR	x	x	0.08-0.16	0.037-0.0747	0.0038-0.0076			0.0038-0.0076	
MAXIM XL	L	N	NR	30	x	x	0.167-0.334	0.08-0.16	0.0053-0.0107			0.0037-0.0075	
MERTECT 340-F	L	N	NR	Forage of peas - No; Others - NR	x	x	0.08-0.64	0.0373-0.3	0.004-0.031				
NIPSIT INSIDE	L	N	NR	NR		x	1.3	0.6	0.081				
OBVIUS PLUS	L	Y	NR	Cover crop w/o tolerance - No; Others - NR	x	x	1.53	0.714	0.00051				
PONCHO VOTIVO	L	N	NR	DNU		x	2.2	1.04	0.132				
PONCHO XC	L	N	NR	DNU		x	1.86	0.87	0.11				
RANCONA SUMMIT	L	N	NR	NR	x	x	4	1.87	0.01				
RESONATE 480 ST	L	N	NR	45/Soy - NO		x	2.0-4.0	0.93-1.87	0.0945-0.189				
RIZOLEX	L	N	NR	NR	x	x	0.3	0.14	0.015				
SALTRO	FC	N	NR	DNU		x	1.52	0.714	0.075				
VAYANTIS	FC	N	NR	NR		x	0.039-0.195	0.018-0.09	0.0015-0.0075				
VIBRANCE	L	N	NR	NR	x	x	0.075-0.16	0.035-0.0747	0.0038-0.0081				
VIBRANCE TRIO	FC	Y	NR	NR	x	x	1.55	0.72	0.03			0.004	
WARDEN CX II	L	Y	NR	DNU		x	4.2	1.96	0.106			0.004	
WARDEN RTA	L	Y	NR	45	x	x	5	2.33	0.05			0.038	
ZELTERA	L	N	NR	NR	x	x	0.2-1	0.1-0.5	0.008-0.04				

See notes and footnotes at end of table.

PRODUCT[1]	mg AI/seed[2]											
	Fungicides *(continued)*											
	Fluxapyroxad	Inpyrfluxam	Ipconazole	Mefenoxam	Metalaxyl	Oxathiapiprolin	Penflufen	Picarbutrazox	Picoxystrobin	Prothioconazole	Pydiflumetofen	Pyraclostrobin
10% MOLY LIQUID												
ALLEGIANCE-FL					0.0031-0.0115							
APRONMAXX RFC				0.006								
APRON MAXX RTA				0.006								
APRON MAXX RTA + MOLY				0.006								
APRON XL				0.0057-0.0227								
ASCEND PRO												
ASCEND SL												
ASCEND ST3												
ASCEND WSG												
AVICTA 500 FS												
AVICTA COMPLETE BEANS 500				0.011								
AVODIGEN												
CRUISER 5FS												
CRUISERMAXX				0.075								
CRUISERMAXX APX				0.010813				0.003932				
CRUISERMAXX VIBRANCE				0.011								
DYNASTY												
EVERGOL ENERGY SB					0.006		0.004			0.008		
FORTENZA												
GAUCHO 600/SENATOR 600 FS												
ILEVO												
INTEGO SUITE SOYBEANS			0.004		0.003							
LUMISENA						0.0112-0.0223						
MAXIM 4FS												
MAXIM XL				0.0016-0.0032								
MERTECT 340-F												
NIPSIT INSIDE												
OBVIUS PLUS	0.005				0.016							0.004
PONCHO VOTIVO												
PONCHO XC												
RANCONA SUMMIT			0.004		0.006							
RESONATE 480 ST												
RIZOLEX												
SALTRO											0.075	
VAYANTIS								0.0015-0.0075				
VIBRANCE												
VIBRANCE TRIO				0.023								
WARDEN CX II				0.023				0.0015				
WARDEN RTA				0.012								
ZELTERA		0.008-0.04										

See notes and footnotes at end of table.

PRODUCT[1]	mg AI/seed[2]									
	Fungicides *(continued)*					Insecticides				
	Sedaxane	Thiaben-dazole	Thiophan-atemethyl	Tolclofos-methyl	Trifloxy-strobin	Abamectin	Clothianidin	Cyantran-iloprole	Imidacloprid	Thiame-thoxam
10% MOLY LIQUID										
ALLEGIANCE-FL										
APRONMAXX RFC										
APRON MAXX RTA										
APRON MAXX RTA + MOLY										
APRON XL										
ASCEND PRO										
ASCEND SL										
ASCEND ST3										
ASCEND WSG										
AVICTA 500 FS						0.1-0.15				
AVICTA COMPLETE BEANS 500						0.151				0.075
AVODIGEN										
CRUISER 5FS										0.076
CRUISERMAXX										0.006
CRUISERMAXX APX	0.004									0.076
CRUISERMAXX VIBRANCE	0.004									0.076
DYNASTY										
EVERGOL ENERGY SB										
FORTENZA								0.038-0.076		
GAUCHO 600/SENATOR 600 FS									0.0945-0.189	
ILEVO										
INTEGO SUITE SOYBEANS							0.081			
LUMISENA										
MAXIM 4FS										
MAXIM XL										
MERTECT 340-F		0.0039-0.031								
NIPSIT INSIDE							0.081			
OBVIUS PLUS			0.01							
PONCHO VOTIVO							0.1098			
PONCHO XC							0.110			
RANCONA SUMMIT										
RESONATE 480 ST									0.0945-0.189	
RIZOLEX				0.015						
SALTRO										
VAYANTIS										
VIBRANCE	0.0038-0.0081									
VIBRANCE TRIO	0.004									
WARDEN CX II	0.004									0.076
WARDEN RTA										
ZELTERA										

See notes and footnotes at end of table.

PRODUCT[1]	mg AI/seed[2] Plant Growth Regulators		
	Cytokinin	Gibberellic Acid	Indole Butyric Acid
10% MOLY LIQUID			
ALLEGIANCE-FL			
APRONMAXX RFC			
APRON MAXX RTA			
APRON MAXX RTA + MOLY			
APRON XL			
ASCEND PRO	0.0003-0.0006	0.0001-0.0002	0.0001-0.0003
ASCEND SL	0.0003-0.0006	0.0001-0.0002	0.0001-0.0003
ASCEND ST3	0.0000236-0.0001	0.0000212-0.00009	0.00013-0.000545
ASCEND WSG	0.0003-0.0006	0.0001-0.0002	0.0001-0.0003
AVICTA 500 FS			
AVICTA COMPLETE BEANS 500			
AVODIGEN			
CRUISER 5FS			
CRUISERMAXX			
CRUISERMAXX APX			
CRUISERMAXX VIBRANCE			
DYNASTY			
EVERGOL ENERGY SB			
FORTENZA			
GAUCHO 600/SENATOR 600 FS			
ILEVO			
INTEGO SUITE SOYBEANS			
LUMISENA			
MAXIM 4FS			
MAXIM XL			
MERTECT 340-F			
NIPSIT INSIDE			
OBVIUS PLUS			
PONCHO VOTIVO			
PONCHO XC			
RANCONA SUMMIT			
RESONATE 480 ST			
RIZOLEX			
SALTRO			
VAYANTIS			
VIBRANCE			
VIBRANCE TRIO			
WARDEN CX II			
WARDEN RTA			
ZELTERA			

[1] Technical information for seed treatment products containing only biological a.i.s (Avodigen) is provided in the Seed and Grain section.

[2] Based on 3,000 seed/lb

L – liquid; NR – not restricted; DNU – do not use

HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN
NL = NOT LABELED

	CROP TOLERANCE						GRASSES								
	BARLEY	OAT	RYE	WHEAT	DURUM	Site of Action[1]	Barnyardgrass	Cheat	Downy brome	Foxtail, gi,gr	Foxtail, yellow	Jointed goatgrass	Persian Darnel	Ryegrass, Italian (annual)	Wild oat
PREPLANT OR PREEMERGENCE															
AFFINITY BROADSPEC - PP *(thifensulfuron + tribenuron)*	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P
AFFINITY TANKMIX - PP *(thifensulfuron + tribenuron)*	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P
AMBER - PRE *(triasulfuron)*	NL	NL	NL	E	NL	2	P	F	F/G	P	P	P	P	F/G	P
ANTHEM FLEX *(pyroxasulfone + carfentrazone)*	NL	NL	NL	E	NL	15,14	E	F/G	G	E	E	U	U	E	G
BUCKLE - PPI *(trifluralin + triallate)*	E	NL	NL	G	E	3,15	G	P/F	P/F	G	G	P	F	P	G
FACET L *(quinclorac)*	NL	NL	NL	G	G	4	F	P	P	F/G	F	P	U	P	P
FAR-GO - PPI/PRE INC. *(triallate)*	E	NL	NL	G	E	15	P	P	F	P	P	P	P	P	E
FINESSE CEREAL AND FALLOW - PRE *(chlorsulfuron + metsulfuron)*	NL	NL	NL	E	NL	2,2	P	F	F/G	P	P	P	N	G	P
OLYMPUS *(propoxycarbazone)*	NL	NL	NL	G	NL	2	F	E	F/G	P	P	F	N	F	F/G
OUTRIDER - PRE *(sulfosulfuron)*	NL	NL	NL	G	NL	2	P	G	F/G	P	P	P	N	P	P
PRE-PARE *(flucarbazone)*	NL	NL	NL	G/E	NL	2	F	G	F	G	F	P	F	P/F	G
QUELEX *(halauxifen-methyl + florasulam)*	E	NL	NL	E	E	2,4	N	N	N	N	N	N	N	N	N
SHARPEN [burndown]*(saflufenacil)*	E	E	E	E	E	14	N	N	N	N	N	N	N	N	N
TRUST/TREFLAN - PPI *(trifluralin)*	G	NL	NL	G	G	3	G	F	F	E	E	F/G	N	G	F
POSTEMERGENCE															
AFFINITY BROADSPEC *(thifensulfuron + tribenuron)*	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P
AFFINITY TANKMIX *(thifensulfuron + tribenuron)*	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P
AGILITY SG *(thifensulfuron + tribenuron + metsulfuron + dicamba)*	G	NL	NL	G	G	2,2,2,4	P	P	P	P	P	P	P	P	P
AIM EC/SHARK EW *(carfentrazone)*	G	G	NL	G/E	G/E	14	P	P	P	P	P	P	N	P	P
ALLY EXTRA SG + ***2,4-D*** or MCPA *(thifensulfuron + tribenuron + metsulfuron + 2,4-D or MCPA)*	E	NL	NL	E	E	2,2,2,4	P	P	P	P	P	P	N	P	P
ALLY XP/PATRIOT *(metsulfuron)*	E	NL	NL	E	E	2	P	P	P	P	P	P	N	P	P
ALLY XP + ***2,4-D*** or MCPA *(metsulfuron + 2,4-D or MCPA)*	E	NL	NL	E	E	2,4	P	P	P	P	P	P	N	P	P
AMBER *(triasulfuron)*	E	E	NL	E	E	2	P	P	P	P	P	P	N	P	P
AMBER + ***2,4-D*** or MCPA *(triasulfuron + 2,4-D or MCPA)*	E	NL	NL	E	E	2,4	P	P	P	P	P	P	N	P	P
ANTHEM FLEX *(pyroxasulfone + carfentrazone)*	NL	NL	NL	E	E	14,15	P	P	P	P	P	P	P	P	P
AUDIT *(thifensulfuron + tribenuron)*	E	NL	NL	E	E	2,2	N	N	N	N	P	N	P	P	P
AXIAL BOLD *(pinoxaden + fenoxaprop)*	E	NL	NL	E	NL	1,1	E	N	N	G/E	G/E	N	N	N	G/E
AXIAL XL *(pinoxaden)*	E	NL	NL	E	NL	1	G/E	P	P	E	E	U	E	E	E
AXIOM DF *(metribuzin + flufenacet)*	NL	NL	NL	G	NL	5,15	F	P	F	F	F	P	F	G	F
BEYOND XTRA[2] *(imazamox)*	NL	NL	NL	E[2]	NL	2	G	E	G/E	G	F	E	G	G/E	G/E
BISON/MAESTRO ADVANCED/MAESTRO MA *(MCPA ester + bromoxynil)*	E	E	E	E	E	4,6	P	P	P	P	P	P	N	P	P
CARNIVORE/CLEANSWEEP M *(MCPA + fluroxypyr + bromoxynil)*	E	E	NL	E	NL	4,4,6	P	P	P	P	P	P	N	P	P
CURTAIL *(clopyralid + 2,4-D)*	E	NL	NL	E	E	4,4	P	P	P	P	P	P	N	P	P
CURTAIL M *(clopyralid + MCPA)*	E	E	NL	E	E	4,4	P	P	P	P	P	P	N	P	P
DIMETRIC EXT *(metribuzin)*	F	NL	NL	F	NL	5	P/F	G/E	G	P/F	P/F	P	F	F	P
DISCOVER NG *(clodinafop)*	NL	NL	NL	E	E	1	E	U	U	E	G/E	U	G	E	E
EVEREST 3.0 *(flucarbazone)*	NL	NL	NL	E	E	2	G	G/E	G	E	G/E	N	G	G	E
EXPRESS + ***2,4-D*** or MCPA *(tribenuron + 2,4-D or MCPA)*	E	NL	NL	E	E	2,4	P	P	P	P	P	P	N	F	P
FINESSE CEREAL AND FALLOW *(chlorsulfuron + metsulfuron)*	E	NL	NL	E	E	2,2	P	P	P	P	P	P	N	P	P
FINESSE CEREAL AND FALLOW + ***2,4-D*** or MCPA *(chlorsulfuron + metsulfuron + 2,4-D or MCPA)*	E	NL	NL	E	E	2,2,4	P	P	P	P	P	P	N	F	P
GLEAN XP *(chlorsulfuron)*	E	E	NL	E	E	2	P	P	P	P	P	P	N	P	P
GOLDSKY *(florasulam + pyroxsulam + fluroxypyr)*	NL	NL	NL	E	E	2,2,4	G/E	G/E	G	G*	E	P/F	G/E	E	E

See notes and footnotes at end of table.

BROADLEAVES																														
Bindweed, field	Canada thistle	Catchweed bedstraw	Chickweed	Cocklebur	Fiddleneck	Henbit or deadnettle	Horseweed (Marestail)	Knotweed	Kochia	Lambsquarters, common	Mayweed (Dogfennel)	Mustard, blue	Mustard, tansy or Flixweed	Mustard, Treacle/Bushy wallflower	Mustard, tumble	Mustard, wild	Nightshade, black	Pennycress, field	Pepperweed**	Pigweed, redroot	Prickly lettuce	Ragweed, common	Ragweed, giant	Russian thistle	Shepherdspurse	Smartweed, annual	Sowthistle, perennial	Sunflower	Wild buckwheat	Wild garlic***
P	F/G	P	G	G	G	G	F	P/F	E	E	E	E	E	E	G	E	P	E	E	G/E	E	F/G	P	G/E	E	G	F	G/E	G/E	G
P	F	P	G	G	G	G	F	P/F	E	E	E	E	E	E	G	E	P	E	E	G/E	E	F/G	P	G/E	E	G	F	G/E	E	G
P	P	U	U	U	U	G	G	P	G	F	U	E	E	E	E	E	P	E	E	E	G/E	G	G	G	E	G	P	E	G	U
N	N	F	F	P	N	F	F	F	G	G/E	P	F	G	G	G	F	G	E	U	E	F	F	F	G	G	P	G	P	F	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
G	P	U	P	P	U	U	U	U	F	P	U	U	U	P	U	P	G	P	U	P/F	U	F	F	G	U	F	U	P	P	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
P	P	P	G	U	U	E	U	P	G	G	G	E	E	E	E	E	U	E	E	E	G/E	U	U	G	E	G	P	E	G	F
P	P	P	F	P	P	F	P	P	P	P	F	G	G	G	G	G	P	G	P	P	P	P	P	P	F/G	P	P	P	P/F	P
P	P	U	G	P	U	F/G	E	U	P	P	U	U	G	E	E	E	E	U	E	E	P	U	U	U	U	E	G	P	P	P/F
P	P	U	P	P	U	U	U	P	G	F	U	G	G	E	G	G	U	G	U	G	P	P	P	P	P/F	F/G	P	P	F	P/F
F	F	E	E	G	F/G	E	E	G	F	E	F/G	E	E	G/E	E	E	E	E	E	E	F	G/E	G/E	G	G	E	F	F/G	E	P/F
U	G	U	U	G	U	F	E	U	E	E	U	U	U	U	U	E	E	E	U	E	E	E	E	E	E	E	U	G	G	U
P	P	P	U	P	U	P	P	F/G	F	F	U	P	P	P	P	P	P	P	P	F	P	P	P	F	P	P	P	P	F	P
P	P/F	P	G	G	G	G	F	P/F	E	E	E	E	E	E	G	E	P/F	E	E	G/E	E	F/G	P	G/E	E	G	F	G/E	E	G
P	G	P	G	G	G	G	F	P/F	E	E	E	E	E	E	G	E	F	E	E	G/E	E	E	P	G/E	E	G	F	G/E	E	G/E
P/F	G	F	G	E	G	G/E	F	G	E	E	G/E	E	G	E	E	E	E	E	E	E	E	E	G/E	E	E	E	F	E	G	G/E
P	P	E	P	P	U	F	F	F	G	G/E	P	P/F	G	G	F	P/F	G	E	U	E	F	F	F	F/G	F	P	F	P	F	P
P/F	G	P	G	G	F	G	G	F	G	E	F	E	E	E	E	E	F	E	E	E	E	E	E	E	E	G	F	E	G	G/E
P	F	P	G	U	U	G	G	P	G	G	U	G/E	G	E	G	G	G	G	G	E	G/E	U	U	G	G	F/G	F	G/E	G	F
P/F	G	P	G	G	F	G	G	F	G	E	G	E	E	E	E	E	F	E	E	E	E	E	E	E	E	F	F	G	G	F
P	P	P	U	G	U	G	G	P	G	F/G	U	E	E	E	E	E	U	E	G	E	E	E	G	G	E	F	P	E	G	P
P/F	F	U	G	G	F	G	G	P/F	G	G/E	E	E	E	G/E	E	E	F	E	E	E	E	E	E	E	E	F	F	E	G	F
P	P	E	P	P	U	F/G	F/G	F	F	G	N	P	P	P	P	P	G/E	N	N	E	U	F/G	N	N	F	P	N	U	F	N
P	G	P	F	G	G	G	F	E	P	E	E	E	E	E	E	E	P	E	E	E	E	F/G	P	G/E	E	G	F	G/E	E	G
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
P	N	P	F	P	F	F	U	U	F	F	P	G	G	G	G	G	P	G	U	F	P	U	U	P	G	U	U	U	P	N
P	F	F	G	G	F	G	G	P	G	G	P	G	E	E	E	E	E	E	U	E	P	F	F	G	E	G	F	G	F	P
P	P/F	F	P	E	E	E	E	E	G/E	E	G	F/G	G	G/E	E	E	E	E	F/G	G	G	E	G/E	G/E	E	E	F	E	E	P
P	P/F	G/E	G	G/E	E	G	G/E	G/E	G/E	E	F/G	F/G	G	E	E	E	E	E	F/G	G	G	E	G/E	G/E	E	E	P/F	E	E	P
F	E	P	F	E	F	F	G	F	F/G	E	E	E	E	E	E	E	F	E	E	G	E	E	E	G	E	G	G	E	G	U
P	E	P	F	E	F	F	G	F	F	E	E	G	F	E	G	E	F	E	E	G	E	E	E	F	E	F	G	E	G	U
P	F	P	E	F	E	G/E	F/G	U	F/G	G/E	F	F/G	G	G	G	G/E	P	G	G	E	G	F	F	F	E	F/G	P	F	G	P
P	P	P	P	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
P	P	P	P	P	U	P	P	G	P	N	P	G	G	G	G	E	P	E	G	E	P	P	P	P	E	E	P	P	F	P
P/F	G	P	G	G	F	F	G	F	G/E	E	F	G/E	G	G	G	E	F/G	E	U	G	E	E	U	E	E	F	G	G	F	P/F
P	F	P	G	U	U	E	G	P	G	E	G	E	E	E	E	E	E	E	G	E	G/E	G	U	E	E	F/G	P	E	G	P/F
P/F	G	P	G	G	F	E	G	F	G/E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	E	E	F
P	F	P	U	U	U	G/E	F/G	P	F/G	F	G	E	F	E	E	E	U	E	G	E	G	G	U	G	E	F/G	F	F/G	F/G	P
F	P/F	E	E	F/G	E	F/G	U	G/E	E	G/E	G/E	E	E	G/E	E	E	G	E	E	E	G	F/G	F/G	G/E	E	G	P/F	E	E	U

SMALL GRAIN WEEDS

KEY
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G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR(<65%)
N = NONE
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NL = NOT LABELED

	CROP TOLERANCE						GRASSES								
	BARLEY	OAT	RYE	WHEAT	DURUM	Site of Action[1]	Barnyardgrass	Cheat	Downy brome	Foxtail, gi,gr	Foxtail, yellow	Jointed goatgrass	Persian Darnel	Ryegrass, Italian (annual)	Wild oat
POSTEMERGENCE *(continued)*															
HARMONY EXTRA SG *(thifensulfuron + tribenuron)*	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P
HARMONY EXTRA SG + ***2,4-D*** or MCPA *(thifensulfuron + tribenuron + 2,4-D* or *MCPA)*	E	E	NL	E	E	2,2,4	P	P	P	P	P	P	N	P	P
HUSKIE *(bromoxynil + pyrasulfotole)*	E	NL	NL	E	E	6,27	N	N	N	N	N	N	N	N	N
HUSKIE COMPLETE ‡ *(thiencarbazone + bromoxynil + pyrasulfotole)*	NL	NL	NL	E	E	2,6,27	G/E	F/G	F	G/E	G/E	N	F	N	G/E
HUSKIE FX *(bromoxynil + pyrasulfotole + fluroxypyr)*	E	NL	NL	E	E	6,27,4	N	N	N	N	N	N	N	N	N
MAESTRO 2EC *(bromoxymil)*	E	E	E	E	E	6	P	P	P	P	P	P	N	P	P
MCPA AMINE/RHOMENE MCPA *(MCP amine)*	E	E	E	E	E	4	P	P	P	P	P	P	N	P	P
MCP ESTER *(MCP ester)*	G/E	G/E	E	E	E	4	P	P	P	P	P	P	N	P	P
OLYMPUS *(propoxycarbazone)*	NL	NL	NL	E	NL	2	F*	E	F/G	P	P	P/F	N	P/F	F/G
OPENSKY *(pyroxsulam + fluroxypyr)*	NL	NL	NL	E	E	2,4	G/E	G/E	G	G[5]	E	P/F	G/E	E	E
ORION *(florasulam + MCPA)*	G/E	G/E	E	E	E	2,4	U	U	U	U	U	U	U	U	U
OSPREY *(mesosulfuron)*	NL	NL	NL	G/E	NL	2	P	F	F	G	P/F	F/G*	G	G/E	G/E
OSPREY XTRA *(mesosulfuron + thiencarbazone)*	NL	NL	NL	G	NL	2	F	F	F/G	G	P/F	F/G	G	G/E	E
OUTRIDER *(sulfosulfuron)*	NL	NL	NL	G	NL	2	P	G/E	F/G	P	P	P	N	P/F	G/E
PEAK *(prosulfuron)*	E	E	E	E	E	2	P	P	P	P	P	P	N	P	P
PEAK + ***2,4-D*** or MCPA *(prosulfuron + 2,4-D* or *MCPA)*	E	E	E	E	E	2.4	P	P	P	P	P	P	N	P	P
PERFECTMATCH *(clopyralid + fluroxypyr + pyroxsulam)*	NL	NL	NL	E	E	2,4,4	G/E	E	G	F/G	E	P/F	G/E	E	E
PIXXARO EC *(fluroxypyr + halauxifen-methyl)*	E	NL	NL	E	E	4,4	N	N	N	N	N	N	N	N	N
POWERFLEX HL/TEAMMATE *(pyroxsulam)*	NL	NL	NL	E	E	2	G/E	E	G	F/G	E	P/F	G/E	E	E
QUELEX *(halauxifen-methyl + florasulam)*	E	NL	NL	E	E	2,4	N	N	N	N	N	N	N	N	N
RAVE *(triasulfuron + dicamba)*	F	NL	NL	G	G	2,4	P	P	P	P	P	P	N	P	P
RIMFIRE MAX *(propoxycarbazone + mesosulfuron)*	NL	NL	NL	E	E	2,2	F/G	G/E	F	F	P	P	G	P	E
SADDLE-UP/SPITFIRE *(dicamba + 2,4-D)*	F	F/G	NL	G	G	4,4	P	P	P	P	P	P	N	P	P
STARANE FLEX *(fluroxypyr + florasulam)*	E	E	E	E	E	2,4	P	P	P	P	P	P	P	P	P
STARANE ULTRA/STAREDOWN *(fluroxypyr)*	E	E	E	E	E	4	P	P	P	P	P	P	N	P	P
STARANE NXT + MCPA *(fluroxypyr + MCPA + bromoxynil)*	E	E	NL	E	E	4,4,6	P	P	P	P	P	P	P	P	P
STERLING BLUE/***CLARIFIER***/CLARITY/***DICAMBA MAX 4*** *(dicamba)*	F	F/G	NL	G	G	4	P	P	P	P	P	P	N	P	P
STERLING BLUE/***CLARIFIER***/CLARITY/***DICAMBA MAX 4*** + ***2,4-D*** or MCPA *(dicamba + 2,4-D* or *MCPA)*	F	F/G	NL	G	G	4,4	P	P	P	P	P	P	N	P	P
STINGER/STINGER HL *(clopyralid)*	G	E	NL	E	E	4	P	P	P	P	P	P	N	P	P
SUPREMACY *(thifensulfuron + tribenuron + fluroxypyr)*	E	E	NL	E	E	2,2,4	N	N	N	N	P	N	P	P	P
TACOMA 1EC *(fenoxaprop)*	E	NL	NL	E	E	1	E	N	N	E	GE	P	N	P	E
TARZEC *(pyroxsulam + halauxifen-methyl)*	NL	NL	NL	E[3]	NL	2,4	E	E	F	F	G	U	F	G	E
TOLVERA	E	NL	NL	E	E	6,27	G	P	P	G/E	E	U	P	P	P
VARRO *(thiencarbazone)*	NL	NL	NL	E	E	2	G/E	G	F	G/E	G/E	N	F/G	N	E
VIDA *(pyraflufen)*	G	G	NL	G/E	G/E	14	P	P	P	P	P	P	N	P	P
WELD *(MCPE + fluroxypyr + clopyralid)*	E	E	NL	E	E	4,4,4	P	P	P	P	P	P	N	P	P
WIDEARMATCH *(fluroxypyr + halauxifen-methyl + clopyralid)*	E	NL	NL	E	E	4,4,4	P	P	P	P	P	P	P	P	P
WIDEMATCH + MCPA *(clopyralid + fluroxypyr + MCPA)*	E	E	NL	E	E	4,4,4	P	P	P	P	P	P	N	P	P
WOLVERINE ADVANCED *(fenoxaprop + bromoxynil + pyrasulfotole)*	E	NL	NL	E	E	1,6,27	E	N	N	E	G/E	P	N	P	E

See notes and footnotes at end of table.

	BROADLEAVES																														
	Bindweed, field	Canada thistle	Catchweed bedstraw	Chickweed	Cocklebur	Fiddleneck	Henbit or deadnettle	Horseweed (Marestail)	Knotweed	Kochia	Lambsquarters, common	Mayweed (Dogfennel)	Mustard, blue	Mustard, tansy or Flixweed	Mustard, Treacle/Bushy wallflower	Mustard, tumble	Mustard, wild	Nightshade, black	Pennycress, field	Pepperweed**	Pigweed, redroot	Prickly lettuce	Ragweed, common	Ragweed, giant	Russian thistle	Shepherdspurse	Smartweed, annual	Sowthistle, perennial	Sunflower	Wild buckwheat	Wild garlic***
	P	F/G	F	G	G	G	G	F	P/F	E	E	E	G/E	G/E	E	G/E	E	F/G	G/E	E	G/E	G	G	P	G/E	E	G	F	G/E	G/E	G
	P	G	P	G	G	G	G	G	F	E	E	E	E	E	E	G	E	F/G	E	E	E	E	E	G	G/E	E	G	F/G	E	G/E	G/E
	P	F	G/E	G	E	G	E	E	F	E	E	F/G	E	E	E	E	E	E	E	F/G	E	G	E	E	E	E	E	G	E	G/E	P
	P	F	G/E	G	E	G	E	E	F	E	E	F/G	E	E	E	E	E	E	E	F/G	E	G	E	E	E	E	E	G	E	G/E	P
	P	F	G/E	G	E	E	E	E	E	E	E	F/G	E	E	E	E	E	E	E	F/G	G	E	E	E	E	E	E	G	E	E	P
	P	P	F	P	E	G	F	F	E	G	G/E	G	F/G	G	G/E	E	G/E	E	E	F/G	F/G	F/G	E	F	G	E	E	F	E	G/E	P
	P/F	F	P	F	G	F	P/F	F/G	P	F	E	P	P	G/E	G/E	G	E	F	G/E	G	F	G	G/E	G/E	F	G/E	P	F	F/G	P	P/F
	P/F	F	P	F	G	F	P/F	F/G	P	F	E	P	F	E	E	G	E	F	E	G	F	G/E	G/E	G/E	F	E	P	F	F/G	P	P/F
	P	P	P	F*	P	P	F*	P	P	P	P	F	E*	E	E	E	E	P	E	P	P/F	P	P	P	P	E	P	P	P	P/F	P
	F	E	E	G	E	F/G	F/G	G/E	E	G/E	G/E	E	E	G/E	E	E	G	E	E	E	G	F/G	F/G	G/E	E	E	G	P-F	E	U	U
	P	P/F	E	E	G	F	P/F	G	G	P/F	E	U	E	E	E	E	E	F	E	U	F	G/E	E	G/E	F	E	G/E	F	G	G	U
	P	P	P	F/G	P	P	F	P	P	P	P	P	P	G/E	U	E	E	P	E	P	F	P	P	P	P	E	P	P	P	P	P
	P	P	F	F/G	P	P	F/G	P	P	P	P	P	P	G/E	U	E	E	P	E	P	F	P	P	P	P	E	P	P	P	P	P
	P	P	F/G	G	U	F	F	F	P	P/F	P/F	G	P	E	E	E	E	U	E	U	P	G	U	U	P/F	G/E	P	P	F	P	F
	P	F	P	G	G	U	P/F	F	P/F	F	F	U	G/E	E	E	U	E	P	E	E	G	G	G/E	F	F	E	F	P	F	G	G/E
	F	F	P	G	G/E	E	P/F	G	F	G	E	P	E	E	E	E	E	F	E	E	E	E	E	G	G	E	F	F	E	G	E
	F/G	E	E	E	E	G	F/G	E	G	E	G	G	G	E	G/E	E	E	E	E	E	E	E	E	E	G	G	G	E	E	E	P/F
	F	F	E	G	E	P	E	E	F	E	E	F	F	F	N	F	E	F	G	U	E	G/E	E	G/E	F	F	F	P	G	G	G
	P	P	E	E	N	E	G	P/F	P/F	P/F	G/E	G/E	E	E	G/E	E	E	E	E	E	E	F	F	F	G	G	F	P	G	F	P/F
	F	F	E	E	G	F/G	E	E	G	F	E	F/G	E	E	G/E	E	E	E	E	E	E	F	G/E	G/E	G	G	E	F	F/G	E	P/F
	F/G	F/G	G	G	E	F	G	G	F	E	E	E	G/E	E	N	E	E	G/E	E	G	E	E	E	E	E	E	E	G	E	E	F
	P	P	P	P	P	P	F	P	P	P	P	F	E	E	N	E	E	P	F/G	P	F	P	P	P	P	F/G	P	P	P	P	P
	G	G	G	G	E	P	G	G/E	G	E	E	P	F/G	E	N	E	E	G	E	E	E	G	E	E	E	G/E	E	G	E	E	P/F
	F	P/F	E	G/E	E	U	P/F	F	G	E	P	G	E	E	N	E	F/G	P	E	U	F/G	E	E	F/G	P	G	P	F	E	F	U
	F	P	E	G	G	U	P/F	G	F	E	P	F	F	F	N	F	F	F	G	U	P	G	E	G	F	F	F	P	G	F/G	P
	P	P/F	F	F	E	E	E	E	E	E	E	G	F/G	G	N	E	E	E	E	F/G	F	G	E	G/E	G	E	E	F	E	E	U
	F/G	G	G	G	E	P	G	G	F	E	E	P	F	F	N	F	F	G	G	F	E	F/G	E	E	G/E	G	E	G	E	E	P
	G	G	G	G	E	P	G	G/E	G	E	E	P	F/G	E	N	E	E	G	E	E	E	G	E	E	E	G/E	E	G	E	E	P/F
	P	E	G	P	E	P	P	G	F	P	P	E	P	P	N	P	P	F	P	P	P	E	G/E	G	P	P	F	F	G/E	F/G	P
	G	G	E	G	G	G	G	F/G	E	E	E	E	E	E	N	G	E	F	E	E	E	E	E	G	G/E	E	G	F	G/E	E	G
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	F	F	E	G	U	G	E	E	U	F	G	U	E	E	U	E	E	U	E	E	F	F	U	U	G	E	E	F	F	F	P
	P	F	E	G	U	U	F	F	U	E	E	F	U	G	U	G	E	U	E	U	E	F	E	G	G/E	E	U	F	E	G	U
	N	P	F/G	F/G	P	U	U	P	P	N	F	U	F/G	F/G	F/G	F/G	G	U	G	F	G	U	U	U	P/F	G	F	N	F	F	U
	P	P	E	P	P	U	F	F	F	G	G/E	P	PF	G	G	F	P/F	G	E	U	E	F	F	F	F/G	F	P	F	P	F	P
	F/G	E	G	F/G	E	U	F	E	F	E	E	E	F/G	F/G	N	E	E	G	E	E	F/G	E	E	E	F	E	F/G	F/G	E	E	U
	G	E	E	G	G	U	E	E	U	E	E	U	F	F	U	U	F	U	F	F	G	E	E	U	F	F	G	E	E	E	P
	F/G	E	G	F/G	E	U	F	E	F	E	E	E	F/G	G	N	E	E	G	E	E	F/G	E	E	E	F	E	F/G	F/G	E	E	U
	P	F	G/E	G/E	E	G	E	E	F	E	E	G	E	F	N	E	E	E	E	F/G	E	G	E	E	E	E	F/G	G	E	E	U

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POSTEMERGENCE *(continued)*															
ZIDUA SC *(pyroxasulfone)*	NL	NL	NL	**E**	NL	5	F/**G***	F/**G***	F*	F*	F*	U	U	**E**	F*
2,4-D AMINE 4 *(2,4-D amine)*	**E**	**G**	**E**	**E**	**E**	4	P	P	P	P	P	P	N	P	P
2,4-D LV4; LV6 *(2,4-D ester)*	**E**	F	**G**	**G**	**G**	4	P	P	P	P	P	P	N	P	P

[1] Site of Action described in Technical Information section.
[2] Clearfield wheat only.
[3] Winter wheat only.
* Efficacy may vary depending on weed species, product rate, or fall/spring
** Veiny pepperweed is tolerant to sulfonylurea herbicides such as Ally XP, Ally Extra SG, Amber, Finesse Cereal and Fallow, Glean XP etc.
*** Control ratings are for aerial bulblets, control of underground bulbs is difficult. Wild onion is generally more difficult to control.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																														
Bindweed, field	Canada thistle	Catchweed bedstraw	Chickweed	Cocklebur	Fiddleneck	Henbit or deadnettle	Horseweed (Marestail)	Knotweed	Kochia	Lambsquarters, common	Mayweed (Dogfennel)	Mustard, blue	Mustard, tansy or Flixweed	Mustard, Treacle/Bushy wallflower	Mustard, tumble	Mustard, wild	Nightshade, black	Pennycress, field	Pepperweed**	Pigweed, redroot	Prickly lettuce	Ragweed, common	Ragweed, giant	Russian thistle	Shepherdspurse	Smartweed, annual	Sowthistle, perennial	Sunflower	Wild buckwheat	Wild garlic***
N	N	F	F*	U	N	F/**G***	F/**G***	N	F/**G***	F/**G***	N	N	N	N	N	F/**G***	N	N	N	**E***	U	F/**G***	N	N	F*	N	N	U	F*	N
F	F/**G**	P	F	**E**	F	P	F/**G**	P/F	F	**E**	P	F	**G/E**	N	**E**	**E**	F	**E**	**E**	**G**	**E**	**G/E**	**G/E**	**G**	**E**	F	F	**E**	P	P/F
F/**G**	F/**G**	P	F	**E**	F	P/F	**G**	F	F/**G**	**E**	P	**G**	**E**	N	**E**	**E**	F	**E**	**E**	**G/E**	**E**	**G/E**	**G/E**	**G/E**	**E**	F	F	**E**	P	F

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

HERBICIDE ADJUVANT RECOMMENDATIONS

HERBICIDE	SPRAY ADJUVANTS[1]						
	NIS		HSOC-MSO[2]		HSOC-COC[3]		OTHER[4]
AFFINITY BROADSPEC[6]	1-2 qt/100 gal						
AFFINITY TANKMIX[6]	1-2 qt/100 gal		[L]		[L]	+	2-4 qt/A UAN or 2-4 lb/A AMS
AGILITY SG[6]	1-4 pt/100 gal	or	0.5-1 gal/100 gal	or	0.5-1 gal/100 gal [fallow]	+	2-4 qt/A UAN or 2-4 lb/A AMS
AIM EC/SHARK EW	1 qt/100 gal					+	2-4 gal/100 gal 28%N or 2-4 lb/A AMS
+ ***STERLING BLUE*/*CLARIFIER***/ CLARITY/***DICAMBA MAX 4***	1 qt/100 gal					or	2.5 gal/100 gal WC+NIS
ALLY XP/PATRIOT (spring wheat and spring or winter barley)[6]	1-2 pt/100 gal		[L]		[L]	+	2-4 qt/A UAN or 2-4 lb/A AMS
ALLY XP/PATRIOT (winter wheat)[6]	0.5-4 pt/100 gal		[L]		[L]	+	2-4 qt/A UAN or 2-4 lb/A AMS
+ ***2,4-D*** or MCPA (0.5 pt or less)[5,6]	1-2 pt/100 gal						
+ ***2,4-D*** or MCPA (over 0.75 pt)	No						
ALLY EXTRA SG[6]	0.5-4 pt/100 gal		[L]		[L]	+	2-4 qt/A UAN or 2-4 lb/A AMS
AMBER[6]	1-2 qt/100 gal						
+ ***2,4-D*** or MCPA[5]	1 qt/100 gal						
ANTHEM FLEX[8]	1 qt/100 gal	or	0.5-1 pt/A	or	0.5-1 pt/A	+	1-2 qt/A UAN or AMS at specified rates
AUDIT 1:1	0.5-4 pt/100 gal	or	0.5-1 gal/100 gal	or	0.5-1 gal/100 gal	+	2-4 qt/A UAN or 2-4 lb/A AMS
AUDIT 4:1	2-4 pt/100 gal	or	0.5-1 gal/100 gal	or	0.5-1 gal/100 gal	+	2-4 qt/A UAN or 2-4 lb/A AMS
AUDIT 75WDG[6]	1-2 qt/100 gal	or	0.5-1 gal/100 gal	or	0.5-1 gal/100 gal	+	2-4 qt/A UAN or 2-4 lb/A AMS
BEYOND XTRA[7]	1 qt/100 gal	+	0.5 gal/100 gal			+	2.5 gal/100 gal 28%N or 12-15 lb/A AMS
CALLISTO/***INCINERATE***[5]	1 qt/100 gal			or	0.5 gal/100 gal	+	2.5 gal UAN or 8.5 lb AMS/100 gal
DISCOVER NG			1 pt/100 gal				
ELEVORE			2-4 pt/100 gal	or	2-4 pts/100 gal		
ET HERBICIDE	2 qt/100 gal						
EVEREST 3.0	1-2 qt/100 gal	or	1-2 qt/100 gal			+	1-2 qt/A UAN or 1-2 lb/A AMS
EXPRESS	0.5-4 pt/100 gal	or	[L] (0.5-1 gal/100 gal)	or	[L] (0.5-1 gal/100 gal)	+	2-4 qt/A UAN or 2-4 lb/A AMS
+ ***2,4-D*** or MCPA (1/8 lb a.i. or less)[6]	1-2 pt/100 gal						
+ ***2,4-D*** or MCPA (1/4-3/8 lb a.i.)[5]	1 pt/100 gal						
FACET L			0.75-1 pt/A	or	1 pt/A	+	2.5 AMS or 0.5-1 gal UAN/A
FINESSE CEREAL AND FALLOW[6]	0.5-2 qt/100 gal						
+ ***2,4-D*** or MCPA (1/4-1/2 lb a.i.)[5,6]	0.5-1 qt/100 gal						
FIRSTSHOT	1-2 qt/100 gal	or	0.5-1 gal/100 gal	or	0.5-1 gal/100 gal	+	2-4 qt/A UAN or 2-4 lb/A AMS
GLEAN XP	1-2 qt/100 gal						
GOLDSKY	1-2 qt/100 gal					+	1.5 lb/A AMS
GR2	1-2 qt/100 gal			or	[L] (1-1.25 gal/100 gal)	+	With NIS only: 1-2 qt/A UAN or 1.5-3 lb/A AMS
GRAMOXONE SL 3.0 ‡	2 pt/100 gal [when applying by air]	or	0.5 gal/100 gal	or	0.5 gal/100 gal		
HARMONY EXTRA SG[6,7]	1-2 qt/100 gal	or	[L](0.5-1 gal/100 gal)	or	[L] (0.5-1 gal/100 gal)	+	2-4 qt/A UAN or 2-4 lb/A AMS
+ ***2,4-D*** or MCPA (1/4-3/8 lb a.i.)[5]	1-2 pt/100 gal						
+ ***2,4-D*** or MCPA (≥ 3/8 lb a.i.)	No						
HUSKIE/HUSKIE FX[7]	1-2 qt/100 gal					+	1-2 qt/A UAN or 0.5-1 lb/A AMS
OLYMPUS[6]	1-2 qt/100 gal						
OPENSKY	1-2 qt/100 gal					+	1-2 qt/A UAN/A or 1.5-3 lb/A
OSPREY[6]	2 qt/100 gal	or	0.75 pt/A			+	1-2 qt/A UAN/A or 1.5-3 lb/A AMS
OSPREY XTRA[6]	2 qt/100 gal					+	1-2 qt/A UAN/A or 1.5-3 lb/A AMS
OUTRIDER[6]	2 qt/100 gal						
PEAK[6]	1-2 qt/100 gal	or	0.5-2 pt/A	or	0.5-2 pt/A	+	2-4 qt/A UAN or 2 lb/A AMS
PERFECTMATCH	1-2 qt/100 gal					+	1-2 qt/A UAN or 1.5-3 lb/A AMS
POWERFLEX HL[5,6]	1-2 qt/100 gal			or	[L] (0.5-0.625 gal/100 gal)	+	1-2 qt/A UAN or 1.5-3 lb/A AMS
PRE-PARE[6]	1 qt/100 gal					+	0.75-0.5/A AMS
QUELEX	1.6 -4 pt/100 gal	or	2-4 pt/100 gal	or	2-4 pts/100 gal		
RAVE[6]	1-2 pt/100 gal						
RIMFIRE MAX	2 qt/100 gal	or	1.3-1.5 pt/A			+	w/ NIS: 1-2 qt/A UAN or 1.5-3 lb/A AMS
RT 3							8.5-17 lb AMS/100 gal

See notes at end of table

HERBICIDE	SPRAY ADJUVANTS[1]						
	NIS		HSOC-MSO[2]		HSOC-COC[3]		OTHER[4]
RUGGED	1 qt/100 gal			or	1 pt/A		
SADDLE-UP	1-2 qt/100 gal					+	1 qt/A UAN
SHARPEN			0.75pt/A			+	8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal
SPITFIRE	2-4 pt/100 gal			or	0.5 qt/A	+/or	1 qt/A 28% N
STERLING BLUE*/*CLARIFIER/CLARITY/ ***DICAMBA MAX 4*** (When mixed with SU herbicides such as Ally XP, Amber, Express, Finesse Cereal and Fallow, Glean XP, Harmony Extra, Patriot)	1-2 pt/100 gal			or	1-2 qt/A	or	2.5 lb/A of AMS or 2-4 qt/A 28% UAN
SUPREMACY	1 qt/100 gal	or	0.75 pt/A			+	1.5 lb AMS or 0.5-1 gal WC+NIS/100 gal
TALINOR	[L] (1 qt/100 gal)			or	0.5 gal/100 gal	+	2.75-3.6 fl oz/A spray additive CoAct+ based on Talinor application rate
TARGA	1 qt/100 gal	or	1 gal/100 gal	or	1 gal/100 gal	+	2-4 qt/A UAN or 2-4 lb/A AMS
TARZEC	1-2 qt/100 gal	or	0.5-1 qt/100 gal	or	0.05-0.75 gal/100 gal	+	1-2 qt/A UAN or 1.5-3 lb/A AMS
TEAMMATE[5,6]	1-2 qt/100 gal			or	[L] (0.5-0.625 gal/100 gal)	+	1-2 qt/A UAN or 1.5-3 lb/A AMS
TOLVERA 1			2-4 qt/100 gal	or	2-4 qt/100 gal		
VALOR EZ/PANTHER SC			1 qt/A			+	2-2.5 lb/A AMS or 1-2 qt/A UAN
VIDA	1 qt/100 gal					+	2-4 gal/100 gal 28% N or 2-4 lb/A AMS

Always refer to product label for specific information.

[1] When rate ranges are given for adjuvants, higher rates are recommended under dry/arid conditions. See specific label for details. See label when using a liquid N carrier.

[2] Use a quality HSOC-MSO like Optify HSMSO or HSOC-MSO. HSOC-MSOs are generally used at half the labeled MSO rates.

[3] Use a quality HSOC-COC like Optify HSCOC or Superb HC. HSOC-COCs are generally used at half the labeled MSO rates.

[4] Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner

[5] Do not use adjuvant with a liquid nitrogen fertilizer carrier; for Callisto/ Incinerate - do not use POST.

[6] NIS may be needed if fertilizer and water are carriers; see label for NIS and liquid fertilizer rates.

[7] Burndown only.

[8] Use NIS only if crop has emerged.

[L] - labeled, but may not be the best choice because of crop tolerance or weed control issues; consult product representatives or product label.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions; Zadoks range shown in parentheses (X-Y) if labeled.	GPA[3]		Rainfast (hrs)	Intervals (Days)[1]		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
AFFINITY TANKMIX/ BROADSPEC	PP POST	W,S,D,B,O,T	Apply before crop emerges. Apply after crop is 2-leaf but before flag leaf is visible. PHI 30 days for hay.	10	2-5	 3-4	7,30	7	45
AGILITY SG	POST	W,S,D,B,T	Fall W,B,T - 2-leaf to before jointing. Spring W,T - 2-leaf to before exceeds 6-leaf. Spring B - 2-leaf to before exceeds 4-leaf. PHI 30 days for hay.	3-50	1-10	6	7,30	7	45
AIM EC/SHARK EW	PP POST PH	W,S,D,B,O,R,T	Before planting to emerged weeds. Up to jointing, except winter wheat. Winter wheat up to boot stage. Harvest Aid up to 7 days before harvest.	10	3		7	NR	 7
ALLY XP/PATRIOT	POST PH	W,S,D,B,T W,S,B	(Zadoks 1.2-4.0) 2 leaf - but before boot. For D: after tillering but before boot. After crop has reached hard dough stage but before boot once per use season. Applications to durum and wampum should include 2,4-D.	5-20	1-5	4	NR	NR	10
ALLY EXTRA SG	POST	W,S,D,B,T	(Zadoks 1.2-3.3) 2 leaf - but before flag leaf is visible (wheat, barley). After tillering to before boot (durum). PHI 30 days for hay.	5-20	1-5	6	7,30	7	45
AMBER	PP PRE POST	W,S W,S W,S,B,D	May PPI shallow. Before crop emergence. (0-40) emergence - but before boot stage of wheat. 2-leaf - but before boot stage of barley.	3-20	2-5	4	NR NR (hay 30 d)	NR NR (hay 30 d)	NR
ANTHEM FLEX	PRE POST FALL	W,S	Do not apply to durum wheat or PPI in wheat. Do not apply PP or PRE to broadcast seeded wheat. Apply Anthem Flex when 80% of the wheat has germinated and has at least 0.5 inch shoot. POST: Can be applied up to the 4th tiller in wheat. See label for local use directions	10	3	1	7	7	7
AUDIT 1:1	PP POST PH	W,D,B	Prior to or shortly after planting (prior to emergence). After crop is in 2 lf stage but before flag leaf is visible. Apply to crop stubble after harvest to emerged weeds.	5-20	2-5	 RE	NO	NO	45
AUDIT 4:1	PP POST PH	W,D,B,T	Prior to or shortly after planting (prior to emergence). After crop is in 2 lf stage but before flag leaf is visible. Apply to crop stubble after harvest to emerged weeds.	5-20	2-5	 RE	NO	NO	45
AUDIT 75WDG	PP POST	W,S,D,B,T	Burndown before crop emerges. After 2-leaf stage but before flag leaf is visible.	5-10	3-5	 RE	NO	NO	45
AXIAL BOLD	POST	W,S,B	Wheat: From emergence to pre-boot. Barley: From emergence to prior to jointing.	5-10	5	0.5	NO	NO	70
AXIAL STAR	POST	W,S,B	Apply from 2-leaf to pre-boot. PHI 60 days for straw.	8	5	1	30,60	30	60
AXIAL XL	POST	W,S,B	Apply to crops from 2-leaf stage to pre-boot. Apply to actively growing weeds. PHI 60 days for straw.	5-10	5	0.5	30,60	30	60
AXIOM DF	POST	W,T	Apply from spike to 3-leaf wheat, and prior to 1-leaf weeds.	5	NL	30		30	NR
BEYOND XTRA	POST	W,S	Apply from 3rd leaf to prior to winter wheat joint stage or 4 leaf to prior to jointing in spring wheat. Clearfield wheat only.	10	5	1	0	0	0
BISON/MAESTRO ADVANCED/ MAESTRO MA	POST	W,S,D,B,O,R	(Zadoks 1.3-4.0) 3 leaf up to boot stage.	10-20	5	1	45	45	NR
BUCKLE	PP	W,D,B	PPI no deeper than 3-4".		NL		NO	NO	NR
BRASH/ WEEDMASTER/ WEEDMASTER XHL	PP POST PH	W,S,D,B,O W,S,D W,S,D	Apply before planting. Barley and Oat as pasture or hay, for Brash or WeedMaster, delay planting 10 days/pt./A.; for WeedMaster XHL, delay planting 7 days per 1/2 pt./A. Winter wheat after tillering prior to jointing. Spring wheat after tillering prior to 6 leaf. When in hard dough stage, green color gone from nodes.	5-40	3-10	 4 	Delay M	Delay M	NR 7
CALLISTO/ ***INCINERATE***	PRE POST	O	Prior to oat and weed emergence. To emerged weeds <5" up to 50 day PHI.	10-80	NL	 1	30	30	50
CARNIVORE/ CLEANSWEEP M	POST	W,S,D,B,O	From 2 leaf up to and including flag leaf emergence. PHI 40 days straw, 14 days hay.	8-20	3	1	45	45	40
CLARIFIER/CLARITY			SEE STERLING BLUE						
CLEANSWEEP D	POST	W,S,D,B,O,T	From fully tillered stage but before jointing stage.	8	3	1	45	45	40

See notes at end of table.

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions; Zadoks range shown in parentheses (X-Y) if labeled.	GPA[3]		Rainfast (hrs)	Intervals (Days)[1]		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
CLEANSWEEP M			SEE CARNIVORE						
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP PRE PH	W,S,D,B,O,R,T W,S,D,B,O,R,T W	Apply prior to planting to emerged weeds. Apply prior to crop emergence to emerged weeds. Pre-harvest wheat only, 30% or less moisture content.	3-40	3-15	RE	56	56	56 7
CREDIT XTREME			SEE ROUNDUP						
CURTAIL/CURTAIL M	POST	W,S,D,B,O	(Zadoks 1.4-3.1) 4-leaf up to jointing for Curtail. Curtail M labeled on oat. (Zadoks 1.3-3.1) 3-leaf up to jointing for Curtail M.	10	2	6	–*	–*	14*
DICAMBA MAX 4			SEE STERLING BLUE						
DIMETRIC EXT	POST	W,B	2 leaf to prior to jointing for winter wheat and barley.	10-40	2-10	7	–	14	21
DISCOVER NG	POST	W,S,D	(Zadoks 1.2-3.0) 2 leaf to pre-boot. Do not apply to winter wheat in fall.	5	3	0.5	30	30	60
DISTINCT	PP	W,S	Apply ≥ 30 days before planting. 1" rain or irrigation is required.	3		4	NR	NR	NR
ELEVORE	PP PH	W,S,D,B,T W,S,B	Apply >14 days before planting for annual broadleaf weed control. Do not apply PH to O,T. Do not apply PH in CA.	8	5	NL	NL	NL	NL
ET HERBICIDE	POST	W,S	Emergence to appearance of flag leaf. PHI 21 days for hay.	10	5	1	NR,21	7	60
EVEREST 3.0	POST	W,D	From 1 lf to 60 days before harvest. Fall or spring application for winter wheat.	5-10	3-5	1	30	30	60
EXPRESS	PP PRE POST	W,S,D,B,O,T	Burndown. (Zadoks 1.2-3.2) 2 leaf - but before flag leaf is visible. PHI 30 days for hay.	5-20	2-5	 3+	7,30	7	45
FACET L	PP	W,S	Apply prior to wheat planting. Not labeled POST in-crop. Plant wheat at least 1-inch deep. Aerial application certain states only.	5-40	5	6	NL	NL	NL
FAR-GO	PP	W,S,D,B,T	PPI no deeper than 3-4". Post-plant incorporated - stay above seed.	10	NL		NO	NO	NR
FINESSE CEREAL and FALLOW	PP PRE POST	W,S W,S W,S,D,B,T	Do not apply to durum or Wampum varieties. Before crop emergence. 1-leaf to before boot stage wheat and barley. After 2-3 leaf but before flag leaf visible in triticale.	3	1-5	 6	NR	NR	NR
FIRSTSHOT	PP	W,S,D,B,T	Apply prior to planting.	5	5		NO	NO	NR
GLEAN XP	PRE POST	W,O W,S,D,B,O,T	Winter wheat and winter oat in certain states. (Zadoks 1.2-4.0) 2 leaf - but before boot stage.	3-20	1-5	 4	NR	NR	45
GOLDSKY	POST	W,S,D,T	Apply to actively growing weeds from 3 leaf to joint stage (Zadoks 3.1) of crop.	10	5	4	28	7	60
GR2	POST	W,S,D,T	Apply from 3-leaf to jointing (Zadoks 3.1) to main flush of actively growing weeds according to weed heights on label.	10	5	4	28	7	60
GRAMOXONE SL 3.0 ‡	PP PRE	W,S,D,B W,S,D,B	Before planting to emerged weeds. Before crop emergence to emerged weeds.	5	5	0.5	NR	NR	NR
HARMONY EXTRA SG	PP POST	W,S,D,B,O,T	Prior to planting or shortly after, but prior to crop emergence. PHI 30 days for hay. (Zadoks 1.2-3.3) 2 leaf - but before flag leaf is visible (Spring oats 3-leaf to prior to jointing.)	5-20	2-5	 4	7,30	7	45
HI-DEP	POST PH	W,S,B,O,D,R W,S,B,O,D,R	After grain begins tillering and before boot stage. After the dough stage of grain.	1-10	0.5	4	14	14	NR
HUSKIE/HUSKIE FX	POST	W,S,D,B,T	Apply from 1-leaf (Huskie)/2-leaf (Huskie FX) up to flag leaf.	10	5	1	25	25	60
HUSKIE COMPLETE ‡	POST	W,S,D	Apply from 1-leaf stage up to: PHI 60 days in MN, MT, ND and SD; 70 days in other states.	10	5	1	25	25	60,70
INCINERATE			SEE CALLISTO						
KARMEX DF/DIREX	POST	W,O,B	Fall. 3-6 weeks after planting. Spring as soon as wheat growth starts. Oats PNW only. Winter barley in western OR and WA. ASAP after planting and before barley emergence.		5-10		NR	NR	NR
KOCHIAVORE	POST	W,B	Apply from 4-leaf (Zadoks 1.4) to emergence of flag leaf (Zadoks 3.7). Do not use with atrazine, crop oils or other adjuvants (e.g., NIS).	8	3	1	45	45	40
MAESTRO ADVANCED/ MAESTRO MA			SEE BISON						

See notes at end of table.

SMALL GRAIN WEEDS

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions; Zadoks range shown in parentheses (X-Y) if labeled.	GPA[3]		Rainfast (hrs)	Intervals (Days)[1]		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
MAESTRO 2EC	POST	W,S,D,B,O,R,T	(Zadoks 1.0-4.0) emergence to boot stage.	10-20	5	1	45	45	NR
MCPA AMINE/ RHOMENE MCPA	POST	W,S,D,B,O,R	(Zadoks 1.3-4.0) 3-5 leaf up to early boot stage. Do not spray in boot to dough. Rainfast: 1 hr ester, 4 hr amine.	10	2	1-4	7	7	NR
OLYMPUS	PP	W,S	FALL before planting.						
	PRE	W,S	FALL after planting winter wheat. SPRING after planting spring wheat.						
	POST	W,S,D,T	Apply from emergence (2-leaf wheat) to before jointing stage.	5-10	5	4	NR	NR	71
OPENSKY	POST	W,S,D,T	From 3-leaf up to and including flag leaf emergence (Zadoks 3.7). PHI 14 days for hay.	10	5	4	28	7	60
ORION	POST	W,S,D,B,O,R,T	Apply to emerged weeds from 3-leaf up to joint stage (Zadoks 3.1) of crop. May apply later, not after boot stage, if risk of crop injury is acceptable.	8	3	4	NR	7	60
OSPREY	POST	W,T	Apply to fall-sown or winter wheat from emergence to jointing stage; 2 nodes in ID, OR, WA, and 2 tiller in CA. PHI 30 days forage, 60 days hay or straw. 2ee in ID, OR, WA or MT (exp. dates not given) for various tank mixes to control emerged annual grasses and/or broadleaf weeds.	10-15	5	4	30,60	NR	60
OSPREY XTRA	POST	W,T	Apply to fall-sown or winter wheat from emergence to jointing stage; 2 nodes in ID, OR, WA, and 2 tiller in CA. PHI 30 days forage, 60 days hay or straw. 2ee in ID, OR, WA (exp. dates not given) for various tank mixes to control emerged annual grasses and/or broadleaf weeds.	10-15	5	4	30,60	NR	60
OUTRIDER	PRE	W	For winter wheat only. Before crop emergence.	5-20	5-15		NR	0,30	55
	POST	W,S	Winter Wheat: KS, OK, TX-After 2-leaf to before jointing. Other States: After emergence to before jointing. Spring Wheat: After emergence to before jointing. PHI 0 days for for grazing, 30 days for hay.			4			
PALISADE EC	POST	W,S,D,B,O,R,T	Apply from Feekes 4-7 and before Feekes 8A. PHI forage/grazing NR when grown for cereals; when grown for seed, do not feed or graze 49 days after last application.	10	2		see comment	see comment	45
PALISADE MAXX	POST	W,S,D,B,O,R,T	Apply from Feekes 4-7 and before Feekes 8A. PHI forage/grazing NR when grown for cereals; when grown for seed, do not feed or graze 49 days after last application.	10	2		see comment	see comment	45
PANTHER SC			SEE VALOR SX						
PATRIOT			SEE ALLY XP						
PEAK	POST	W,S,B,O,D,R,T	(Zadoks 1.3-3.2) 3 leaf stage of crop to before the second node is detectable in stem elongation. PHI 30 days for grazing, 40 days for silage.	20	2	4	30	30,40	60
PERFECTMATCH	POST	W,S,D,T	Apply from 3-leaf to jointing (Zadoks 3.1) to main flush of actively growing weeds according to weed heights on label.	10	5	4	28	7	60
PIXXARO EC	POST	W,S,D,T,B	Apply to actively growthing weeds from 2 leaf to flag leaf emergence (Zadoks 3.7).	8	5	1	21	7	60
POWERFLEX HL	POST	W,T	Apply to actively growing weeds from 3 leaf to joint stage (Zadoks 3.1) of crop.	10	5	4	28	7	60
PRE-PARE	PP	W,S	Burndown	5-10	3	1	NR	NR	60
	PRE								
PROWL H2O	POST	W,S,T	Apply from 1st leaf until before flag leaf is visible/emerged. PHI 28 days for hay.	10	5		11,28	see comment	60
QUELEX	PP	W,S,D,B,T	Summer, Fall or Spring PrePlant	8	5	4	21	7	60
	POST	W,S,D,B,T	2 lf to flag leaf emergence; Zadoks 1.2-3.9						
RAVE	POST	W,S,D,B	Winter wheat or barley: After emergence up to jointing. Spring wheat: After emergence up to 6-leaf. Spring barley: After emergence up to 4-leaf.	5-20	2-10	4	0	7-hay	37
REZUVANT	POST	W,S,B	Early POST to actively growing weeds from 2-leaf stage to flag leaf (Zadoks 3.9).	8	5	1	60	30	60
RHOMENE MCPA			SEE MCPA AMINE						
RHOMENE	POST	W,S,B,O,R,T	Apply after 4 leaf but not forming joints. Do not spray in boot to dough stage.	10	2	4	7	7	NR
RIMFIRE MAX	POST	W,S,D	Emergence (one fully expanded leaf) up to flag leaf emergence.	10-15	5	4	30	NR	71

See notes at end of table.

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions; Zadoks range shown in parentheses (X-Y) if labeled.	GPA[3]		Rainfast (hrs)	Intervals (Days)[1]		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	PP	W,S,D,B,O,R,T	Apply prior to planting to emerged weeds.	3-40	3-15	S	56	56	56
	PRE	W,S,D,B,O,R,T	Apply prior to crop emergence to emerged weeds.						
	PH	W,S,D,B	Pre-harvest (wheat and feed barley only). Apply after hard dough stage and 30% moisture or less.	10-20	3-10	S	7	7	7
RT 3	PP	W,S,D,B,O,R,T	Apply before planting.	3-4	3-15	S	NR	NR	14
	PRE	W,S,D,B,O,R,T	Apply before crop emergence.						
	PH	W,S,D,B	For wheat and feed barley after hard dough stage, 30% (wheat) or 20% (barley) or less moisture content.	10-20	3-10		7	7	14
RUGGED	POST	W,S,D,B,O,R	Full tiller but before boot stage (Zadoks 2.5-4.0).	5	2	6	NR	NR	14
	PH		Grain in hard dough stage.						
SADDLE-UP/ SPITFIRE	POST	W,S	After tillering and before 6 lf (spring-seeded) or prior to jointing (fall-seeded). For early developing varieties apply prior to jointing. Fall-seeded specific use program only: For perennial weed suppression, after wheat tillering through first frost but before killing freeze.	5-40	3-10	4	Delay M	Delay M	14
	PH		Grain in hard dough stage and green color gone from nodes (joints) of stem.						
SHARPEN	PP	W,S,D,B,O,R,T	Apply as a burndown before planting or PPI.	5	3	1	30	30	NR
	PRE		Before crop emergence.						
	PH	W,S,D,B,T	Harvest Aid/Desiccation. Apply after hard dough stage and <30% moisture.	10	5	1	NR	NR	3
SHREDDER E-99			SEE 2,4-D						
SPITFIRE			SEE SADDLE-UP						
STARANE FLEX	POST	W,S,D,B,O,R,T	Apply from 3-leaf crop to flag leaf emergence (39).	8	3	4	NR	7	60
STARANE ULTRA/ STAREDOWN	POST	W,S,D,B,O,T	(Zadoks 1.2-3.9) 2 leaf to flag leaf emergence.	8	3	1	7	7	40
STARANE NXT	POST	W,S,D,B,O,T	Apply from 3 leaf to flag leaf emergence.	8	3	1	45	45	45
STERLING BLUE/ ***CLARIFIER***/ CLARITY/***DICAMBA MAX 4***	PP	W,S,D,B,O	≤ 24 oz/A Sterling Blue/Clarifier/Clarity: delay planting 15 days/8 oz (east of Miss. river) and 22 days/8 oz (west of Miss. river). Dicamba Max 4: delay planting 20 days/pt (east) and 45 days/pt (west). PHI grain 7 days for lactating animals, 0 days for non-lactating animals.	3-50	1-10		37	7,0	NR
	POST	W,S,D,B,O,T	W prior to jointing; S before 6 leaf; Fall barley prior to jointing; Spring barley through 4-leaf; Fall oat prior to jointing; Spring oat through 5-leaf.			4			
STINGER/STINGER HL	POST	W,S,D,B,O	3 leaf up to early boot.	10	NL	6	–*	–*	NR
SUPREMACY	POST	W,S,D,B,O,T	Apply after 2-leaf but before flag leaf is visible. Oats - apply from 2-leaf to prior to jointing.	8	3, 5	2	NO	NO	45
TACOMA 1EC	POST	W,S,D,B	(Zadoks 1.1-3.0) wheat, apply from emergence to PHI; barley emergence to 5-leaf stage (prior to jointing); recommended prior to 5th leaf emergence. PHI grain 60 days in ND,SD,MN, 70 days in other labeled states.	5-20	5	1	NR	NR	60,70
TALINOR	POST	W,S,D,B	2 lf to pre-boot stage. Do not apply to crops stressed by frost, severe weather. PHI 30 days for forage, 60 days for straw.	10	5	1	30,60	30	60
TARGA	PP	W,B	Prior to crop emergence, before annual/perennial grass weeds begin to tiller. Applications within 7 days of planting may result in crop injury.	10	3	1	-	-	-
TARZEC	POST	W,T	Winter wheat and Triticale: Apply to main flush of actively growing weeds according to weed stage growth indicated on label (generally 2-leaf to 2-tiller for grass weeds; >2" tall or diameter for broadleaf weeds).	8	5	4	28	7	60
TEAMMATE	POST	W,T	Apply to actively growing weeds from 3 leaf to joint stage (Zadoks 3.1) of crop.	10	5	4	28	7	60
TOLVERA	POST	W,B,D	Apply to actively growing weeds from 1 leaf to jointing, crop stage (Zadoks 31). Applications on winter wheat may be made in fall or spring.	10	5	NL	50	21	50
TREFLAN			SEE TRUST						

See notes at end of table.

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions; Zadoks range shown in parentheses (X-Y) if labeled.	GPA[3]		Rainfast (hrs)	Intervals (Days)[1]		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
TRUST/TREFLAN TR-10/TREFLAN HFP	PP	W,S,D,B	Spring: PPI 1-1.5". Fall: apply September 1 to freeze-up. Incorporate 1-1.5" within 24 hrs. Do not allow contact with seed.	5-40	5-10		NR	NR	NR
VALOR SX/VALOR EZ/ PANTHER SC	PP	S,B	FALL in barley, spring wheat, SPRING in spring wheat.	15		1	NL	–**	10
	HA	W, S	Hard dough stage and grain has <30% moisture.	10	5	1	NL	–**	10
VARRO	POST	W, S, D	Do not apply after joint stage of growth in wheat and durum.	10	5	1	30	7	60,70
VIDA	PP	W,B,O,R,T	B,O,R: Do not apply within 24 hours of planting.	10	5	1	21	21	60
	POST	W,T	Emergence to appearance of flag leaf.						
VIOS FX	POST	W,S	Applications from 2 leaf to jointing.	10	5	1	7	7	60, 70
WEEDAR 64	POST	W,S,D,B,O,R	After crop is fully tillered, but before boot stage, not forming joints.	10-15	3-10	-	see label	see label	14
WEEDAR XHL	POST	W,S,B,O,R,T	After crop is fully tillered, but before boot stage, not forming joints.	10-15	3-10	-	see label	see label	14
WEEDMASTER/ WEEDMASTER XHL			SEE BRASH						
WEEDONE 638	POST	W,B	After crop is fully tillered, but before boot stage, not forming joints.	10-15	3-10	-	see label	see label	14
WELD	POST	W,S,D,B,O	From 3-leaf up to and including flag leaf emergence (Zadoks 3.9). PHI 14 days for hay.	8	3	6	7,14	7	40
WIDEARMATCH	POST	W,D,B,T	Early POST to actively growing weeds, preferrably to dry weed foliage.	8	5	1	NO	7	60
WIDEMATCH	POST	W,S,D,B,O	Apply from 3 leaf up to flag leaf emergence.	10	3	6	7	7	40
WOLVERINE ADVANCED	POST	W,S,D,B	From emergence to 60 days PHI in MN, MT, ND, SD; up to 70 days PHI elsewhere. Up to 5-leaf stage barley.	10-20	5	1	25	25	see comment
ZIDUA SC	PP PRE POST	W	May apply sequentially relative to wheat growth stage. PP: No more than 14 days before planting; soil disturbance after application may result in crop injury. PRE and Delayed PRE: After planting up to spiking. Early POST: Spiking to 4th-tiller.	5	3	-	7	7	NR
2,4-D AMINE 4; LV4; LV6, SHREDDER E-99	POST	W,S,D,B,O,R	(Zadoks 2.5-4.0) full tiller - but before boot stage (prior to jointing preferred); not forming joints for Shredder E-99.	see labels	see labels	1-4	14	14	14
	PH		When grain is in dough stage or later. Rainfast: 1 hr ester, 4 hr amine. DE-99 for animals going to slaughter.						

[1] Application Timing and Interval. Consult current labels for verification and specific tillage equipment since depth settings vary from desired depth of incorporation. Incorporation is not required for many of these herbicides.

[2] W - winter wheat, S - spring wheat, D - durum wheat, B - barley, O - oat, R - rye, T - triticale

[3] Includes labeled minimum or range.

PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
POST - Postemergence
PGR - Plant growth regulator
PH - Preharvest
Delay M - delay until crop maturity

NL - No related information on label.
NR - No restrictions
NO - Not permitted
RE - Heavy rainfall soon after application may require retreatment.
Y - Permitted

* 7-lactating dairy or animals being finished for slaughter. Do not harvest hay. For Curtail M only intervals are: 7 days Feeding Forage; 45 days Grazing Animals; 72 days Grain Harvest. 3 60 in ND, SD, MN. 70 in other states. Spring barley 57. 6 PHI for hay.

** Do not graze until wheat is at least 5" tall.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BURNDOWN/PREPLANT OR PREEMERGENCE		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures**	**Comments/Restrictions**
AFFINITY BROADSPEC	W,S,D,B,O,T	0.4-1 oz	Add 1-2 qt NIS/100 gal.* PP or PRE shortly after planting to emerged weeds. Burndown of emerged weeds <4" tall or across. Note 1.
AFFINITY TANKMIX	W,S,D,B,O,T	0.6-1 oz	Add 1-2 qt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/A AMS.* PP or PRE: Apply through planting for burndown of emerged weeds but prior to crop emergence. Note 1.
AIM EC/SHARK EW	W,S,D,B,O,R,T	Up to 2 fl oz	Add 1 qt NIS/100 gal.* PP: Apply to emerged weeds before planting and no later than 1 day after planting. Tank mix with other labeled herbicides for broader spectrum control. Burndown only, no residual. Add to tank before other herbicides. Rate depends on target weeds; see label. Max. 2.0 fl oz/A/season including all application timings/methods. Do not apply when conditions favor drift or wind is >10 mph.
AMBER	W,S	0.28-0.47 oz: standard rate 0.56 oz: enhanced rate (each water-soluble packet = 1.4 oz)	Add 1-2 qt NIS/100 gal.* PP,PPI or PRE: Use Amber in these states only: CO, ID, KS, MN, MT, NE, NM, NV, ND, OK, OR, SD, TX, UT, WA, WY. On durum, use Amber POST only. Apply before weed emergence. Use enhanced rate for control of annual ryegrass, suppression of annual brome species and Canada thistle. Rain required for activation. Split application of 0.28 oz PRE and 0.28 oz POST permitted on winter wheat (soils < pH 7.5 only). Notes 2,3.
ANTHEM FLEX	W,S	1.27-4.55 fl oz/A: see label for soil texture/timing table	Add 1 qt NIS or 1 pt HSOC-MSO/100 gal + 1-2 qt/A UAN or AMS.* Rates dependent on soil texture. PP,PRE use in WA,OR,ID,MT only. All other states "delayed pre" application (80% of wheat seed germinated with ½" radical), or spring early post for control of emerged small broadleaf weeds and subsequent residual control of grasses and other weeds in preemerge control list. See label for specific directions.
AUDIT 1:1	W,D,B	0.4-1 oz	PP burndown: Do not apply >1 oz/A/crop season.
AUDIT 4:1	W,D,B,T	0.6-1 oz	Do not apply >1.8 oz/A/preplant season.
AUDIT 75WDG	W,S,D,B,T	0.4-0.66 oz	Add 1-2 qt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/A AMS.* POST harvest or PP burndown of emerged broadleaves up through planting but before crop emergence. May use COC or MSO.*
BRASH/WEEDMASTER or WEEDMASTER XHL	W,S,D,B,O	1-2 pt or .4-1.6 pt	PP. Apply prior to planting. Labeled for barley and oat when grown for pasture or hay, for Brash or WeedMaster, delay planting 10 days per pint at ≤6 pt/A.; for Weedmaster XHL, delay planting 7 days per 1/2pt/A. at < 4.8pt/A.
BUCKLE	W,D,B	10-12.5 lb	PPI. Fall application for barley, durum, and winter wheat and in spring for barley. Apply within 3 weeks of freeze-up. Incorporate no deeper than 3-4" within 24 hours. Perform a shallow tillage in spring before planting. For CO, ID, KS, MN, MT, NE, NV, ND, OR, SD, UT, WA, and WY only.
CALLISTO/***INCINERATE***	O	6 fl oz	PRE prior to crop or weed emergence. If weeds are emerged, include 1% v/v COC or 0.25% v/v NIS plus 2.5% v/v UAN or 8.5 lb AMS/100 gal.* Better crop safety PRE than POST. Use 3 fl oz/A on emerged weeds.
CLARIFIER/CLARITY	SEE STERLING BLUE		
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	W,S,D,B,O,R,T	Up to 48 fl oz or Up to 36 fl oz	Add 8.5-17 lb AMS/100 gal; include NIS or WC+NIS as needed.* PP or PRE: For control of actively growing volunteer grains and such weeds as downy brome and mustards up to 6" tall. See label for perennial rates.
CREDIT XTREME	SEE ROUNDUP		
DICAMBA MAX 4	SEE STERLING BLUE		
DIMETRIC CHARGED	SEE FALLOW SECTION		
DISTINCT	W,S	2-4 oz	Add 1 qt NIS + 5 lb AMS/100 gal.* Apply ≥ 30 days before planting. 1" rain or irrigation is required. Apply to 2-4 leaf weeds or rosettes <2".
ELEVORE	W,S,D,B,T	1 fl oz	PP burndown in spring, summer or fall when majority of weeds have emerged and are actively growing. Do not apply >2 fl oz/A/season or >2 PP applications/year. Use with MSO.*
EXPRESS	W,S,D,B,O	0.25-0.5 oz	Add 1-2 qt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/A AMS.* PP, PRE, or POST harvest. Apply to emerged broadleaves through planting but prior to crop emergence.
FACET L	W,S	22 oz	PP: Apply prior to planting wheat for control of annual grasses and broadleaf weeds. May be tank mixed with Roundup (glyphosate formulations) or Sterling Blue/Clarifier/Clarity/ Dicamba Max 4 for burndown. Wheat may be planted 6 months after application in ID,MT,NV,OR,UT,WA,and WY; see label.

See notes at end of table.

BURNDOWN/ PREPLANT OR PRE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures**	**Comments/Restrictions**
FAR-GO	W,S,D,B,T		All crops/timing for use only in: CO,ID,KS,MN,MT,NE,NV,ND,OR,SD,UT,WA,WY.
		1 qt: spring, durum wheat 1.25 qt: spring barley, triticale	PPI SPRING. Apply just before or immediately after seeding and incorporate immediately with spike or spring-tooth harrow. Plant 2-3" deep. PPI FALL. Apply within 3 weeks of freeze-up, and incorporate immediately with spike or spring-tooth harrow. Plant 2-3" deep.
		1.25 qt: winter wheat 1.25 qt: winter barley	PPI FALL. Apply within 3 weeks of freeze-up, before seeding and incorporate at once. In preparation for seeding in spring, do not till soil deeper than 3-4".
		1.5 qt: winter wheat, barley	PPI FALL in CO,KS,NE,MT,OK,TX only. Apply just before seeding and incorporate at once. For suppression of cheat,downy brome.
FAR-GO + ***TRUST***	S,D,B	1 qt + 1 pt	All crops/timing for use only in: CO, ID, KS, MN, MT, NE, NV, ND, OR, SD, UT, WA,WY. PPI SPRING. For control of wild oats and foxtails in durum and spring wheat and barley. Apply immediately after seeding 2-3" deep and incorporate 1-1.5" deep at once.
FINESSE CEREAL and FALLOW	W,S	0.2-0.5 oz	PP winter wheat. May incorporate 1" in TX,OK,KS,NE and SD. Note 1.
		0.2-0.5 oz	PRE winter wheat. Do not exceed 0.3 oz/A in WY,MT,ND and MN.
		0.2-0.4 oz	PP or PRE spring wheat. Do not exceed 0.3 oz/A in WY,MT,ND,SD and MN. Do not use on durum or Wampum varieties. Include 0.5-2 qt NIS/100 gal for emerged weeds. Seed wheat ≥1" deep. See label for specific weed rates, pH, rainfall and other restrictions.
	W,S,D,B,T	0.5-0.8 oz	Apply before planting for burndown of emerged broadleaves. In light soils, delay planting by 7 days. In soils with pH >7.9, extend 7 additional days. May use 0.5-0.6 oz/A in tank mixes. Do not exceed 1 oz/A total if sequential application. Include MSO, COC, NIS plus UAN or AMS.*
GLEAN XP	W,O	0.33-0.5 oz	PRE for winter wheat in parts of TX and OK and winter oat in TX and parts of OR and WA. For suppression of annual ryegrass. Apply after planting but before wheat emergence. Rainfall required for activation. Notes 1,2,3.
GRAMOXONE SL 3.0 ‡	W,S,D,B	1.7-2.7 pt	Add 2 pt NIS/100 gal.* PP or PRE: Apply in clean water or nitrogen solution to annual weeds 1-6" tall.
HARMONY EXTRA SG	W,S,D,B,O,T	0.45-0.9 oz	Add 1-2 qt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/A AMS.* PP or PRE. Apply emerged broadleaves through planting but before crop emerges. Note 1.
HONCHO K6	SEE ROUNDUP		
INCINERATE	SEE CALLISTO		
OLYMPUS	W,S	0.6 oz: winter wheat 0.2 oz: spring wheat	PP or PRE FALL burndown, with glyphosate. For winter wheat and fall planted triticale, apply with glyphosate in the fall. For enhanced control, follow by Olympus, Osprey, Huskie Complete, Varro, Wolverine Advanced or Rimfire Max in the spring. For spring wheat, apply with glyphosate in the fall or spring. Do not apply Olympus PP or PRE to durum wheat. 2ee various states (exp. date not given) for tank mixes to control or suppress various weeds in wheat or winter wheat. Supplemental label (exp. date not given) for PP, PRE burndown with glyphosate. Note 1.
OUTRIDER	W	0.67 oz	PRE: Apply for control of brome species and certain annual broadleaves. Do not apply if dry soil conditions will cause delayed weed emergence. POST treatments are more effective than PRE under dry soil conditions. Rainfall improves herbicide uptake and control.
PANTHER SC	SEE VALOR SX		
PRE-PARE	W,S,T	0.3 oz	PP or PRE. For broad spectrum contact and residual activity on weeds. When making the PP or PRE application, glyphosate may be tank mixed. Do not apply to gravelly soils or to coarse-texture soils with low O.M. (<2%) or high pH (>7.8). Do not apply PP or PRE to durum wheat. Do not apply PP or PRE if in-furrow applications of organophosphate insecticides have been made. May use as a follow-up POST product in the SPRING.
QUELEX	W,S,D,B,T	0.55 to 0.75 oz	Add NIS. Apply as a preplant burndown treatment to control emerged weeds prior to, or shortly after planting (prior to emergence). If applied after seeding, do not apply if soil has begun cracking over the drill row due to emerging crop seedlings. Make applications when majority of weeds have emerged and are actively growing. Do not apply >0.75 oz/A/ growing season. 2ee all states except TX (exp. date not given) for tank mix with 0.45 oz/A Harmony Extra SG for control of wild garlic in winter wheat.

See notes at end of table.

BURNDOWN/ PREPLANT OR PRE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures**	**Comments/Restrictions**
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	W,S,D,B,O,R	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or WC+NIS. PP or PRE: For control of actively growing volunteer grains and such weeds as downy brome and mustards up to 6" tall. Up to 3.3 qt/A for perennial weeds. May use other glyphosate products at greater or lesser volumes; see individual labels.
RT 3	W,S,D,B,O,R,T	11-32 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS. PP, PRE or at planting. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY; for use in KS, MN, NE, NM, OK see county restrictions on label.
SHARPEN	W,S,D,B,O,R,T	1-2 fl oz	Add 0.75 pt HSOC-MSO + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal.* Apply as a PP burndown, PPI, or PRE before crop emergence to actively growing emerged winter annual broadleaf weeds. Provides a low level of residual control of broadleaf weeds, especially at 2 oz/A rate.
STERLING BLUE*/*CLARIFIER/ CLARITY/***DICAMBA MAX 4***	W,S,D,B,O	8-16 fl oz	PP. Sterling Blue/Clarifier/Clarity (≤24 oz/A): delay planting 15 days for every 8 oz/A (east of Miss. River) and 22 days for every 8 oz/A (west of Miss. River). Dicamba Max 4 (≤24 oz/A) delay planting 20 days for every 1 pt/A (east of Miss. River) and 45 days for every 1 pt/A (west of Miss. River).
TARGA	W,B	2.5-5 fl oz	PP Burndown. Rate depends on height of grass weeds. Maximum 10 fl oz/A/season. Early PP burndown must include petroleum-based COC. Mix with glyphosate for broadleaf control.
TREFLAN TR-10	W,S,D,B	3.5-10 lb	Varies by crop, soil type, application method, timing and geography - see label.
TRUST/TREFLAN HFP	B	1.0-2.0 pt	Varies by crop, soil type, application method, timing and geography - see label.
VALOR SX or VALOR EZ/ PANTHER SC	S,B	FALL: 3 oz or 3 fl oz SPRING: 2 oz or 2 fl oz	FALL burndown for barley and spring wheat. May be tank mixed with glyphosate and/ or 2,4-D for enhanced burndown. PP only in DE,KY,MD,NC,NJ,SC,PA,TN,VA in no-till or minimum till >7 days before planting or in ID,MN,MT,ND,OR,SD,WA,WI in no-till or minimum till >14 days before planting. Plant at least 1" deep. Do not irrigate between emergence and spike. Do not graze until wheat >5" tall. Do not apply more than 2 oz/A during a single application or growing season. Do not use on Durum.
VIDA	W,T	0.5 – 2 fl oz	Apply to emerged weeds before planting up to flag leaf appearance. Tank mix with other labeled herbicides for broader spectrum. Temporary leaf burn possible.
WEEDMASTER/ WEEDMASTER XHL	SEE BRASH		
ZIDUA SC	W	1-3.25 fl oz based on soil texture	Do not apply >4 fl oz/A (0.130 lb a.i./A)/year. Do not irrigate PRE or Delayed PRE until wheat spiking. Do not apply to broadcast-seeded wheat. ID,MT,OR,WA: 1.75-3.25 fl oz/A based on soil texture; do not apply on spring wheat or to coarse soils.

[1] W – winter wheat, S – spring wheat, D – durum wheat, B – barley, O – oat, R – rye, T – triticale.

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

NOTE 1: When liquid nitrogen is the carrier, use of surfactant can increase risk of crop injury with many sulfonylurea herbicides. Surfactant may be advisable for winter application on dormant weeds and small grain, especially under marginal control conditions or if liquid fertilizer is diluted >50% with water. Consult product registrants. Never add surfactant if tank mixed with phenoxy herbicides in liquid fertilizer carrier.

NOTE 2: See restrictions chart for rotational and/or soil pH restrictions.

NOTE 3: If resistant weed biotypes such as kochia, wild oat, and Russian thistle are suspected, use in tank mixtures (or apply in sequence) an appropriately registered herbicide having a different mode of action. Do not allow weed escapes to flower.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

CONDENSED SUMMARY OF THE ZADOKS TWO-DIGIT CODE SYSTEM FOR GROWTH STAGING IN WHEAT WITH CORRESPONDING FEEKES SCALE

Zadoks Code			
Principal Stage	Secondary Stage	Description	Corresponding Feekes Code
0		**Germination**	
	0	Dry Kernel	
	1	Start of imbibition (water absorption)	
	5	Radicle emerged	
	7	Coleoptile	
	9	Leaf just at coleoptile tip	
1		**Seedling Development**	1
	0	First leaf through coleptile	
	1	First leaf at least 50% emerged	
	2	Second leaf at least 50% emerged	
	3	Third leaf at least 50% emerged	
	4	Fourth leaf at least 50% emerged	
2		**Tillering**	2
	0	Main shoot only	
	1	Main shoot plus 1 tiller visible	
	2	Main shoot plus 2 tillers	
	3	Main shoot plus 3 tillers	
	4	Main shoot plus 4 tillers	
	5	Main shoot plus 5 tillers	3
3		**Stem Elongation**	
	1	First node detectable	6
	2	Second node detectable	7
	3	Third node detectable	
	7	Flag leaf visible	8
	9	Flag leaf collar just visible	9
4		**Boot**	
	1	Flag leaf sheath extending	
	3	Boot just beginning to swell	
	5	Boot swollen	10
	7	Flag leaf sheath opening	
	9	First awns visible	

Zadoks Code			
Principal Stage	Secondary Stage	Description	Corresponding Feekes Code
5		**Head Emergence**	
	1	First spikelet of head just visible	10.1
	3	One-fourth of head just visible	10.2
	5	One-half of head just visible	10.4
	7	Three-fourths of head just visible	10.4
	9	Head emergence complete	10.5
6		**Flowering *(not readily visible in barley)***	
	1	Beginning of flowering	10.5.1
	5	Half of florets have flowered	10.5.2
	9	Flowering complete	
7		**Milk development in kernel**	
	1	Kernel watery ripe	10.5.4
	3	Early milk	
	5	Medium milk	11.1
	7	Late milk	
8		**Dough development in kernel**	
	3	Early dough	
	5	Soft dough	11.2
	7	Hard dough, head losing green color	
	9	Approximate physiological maturity	
9		**Ripening**	
	1	Kernel hard (difficult to divide with thumbnail)	11.3
	2	Kernel cannot be dented by thumbnail - harvest ripe	11.4

FEEKES GROWTH STAGES

1 One shoot (number of leaves can be added as 1.2).
2 Beginning of tillering. Collar visible on lower leaves.
3 Tillers formed, leaves often twisted spirally. In some varieties of winter wheats, plants may be 'creeping' or prostrate.
4 Beginning of the erection of the pseudo-stem, leaf-sheaths beginning to lengthen. Full tillered.
5 Pseudo-stem (formed by sheaths of leaves) strongly erected. Head initiated.
6 First node of stem visible at base of shoot. Beginning jointing.
7 Second node of stem formed, next-to-last leaf just visible.
8 Last leaf visible, but still rolled up; head beginning to swell.
9 Ligule of last leaf just visible.
10 Sheath of last leaf completely grown out. Head swollen but not yet visible. Boot stage.
10.1 First heads just visible (awns just showing in barley, head escaping through split of sheath in wheat or oats).
10.2 Quarter of heading process completed.
10.3 Half of heading process completed.
10.4 Three-quarters of heading process completed.
10.5 All heads out of sheath.
10.5.1 Beginning of flowering (wheat).
10.5.2 Flowering complete to top of head.
10.5.3 Flowering over at base of head.
10.5.4 Flowering over, kernel watery-ripe. Lower leaves and culm lose color.
11.1 Milky-ripe, kernel near full length.
11.2 Mealy-ripe, contents of kernel soft but dry. Flag leaf lost color. Early to soft dough-deformed by fingers, but no milk extrudes
11.3 Kernel hard (difficult to divide by thumbnail). Will not crack; can divide by thumbnail. Head losing color, upper node green. Physiologically mature (25-35% moisture). Hard dough..
11.4 Ripe for cutting. Straw dead. Grain ready to crack, not dented by thumbnail lost green color.

Preemergence surface | Preplant surface | Preplant incorporated and preplant surface | PPI only

Herbicide	Labeled Crops*	Fall**	***	45	30	21	14	7	0	PRE	Comments
AFFINITY BROADSPEC	W,S,D,B,O,T										NOTE 1
AFFINITY TANKMIX	W,S,D,B,O,T										NOTE 1
AIM EC/SHARK EW	W,S,D,B,O,R,T										NOTE 6
AMBER	W,S										NOTE 1
ANTHEM FLEX	W,S										NOTE 13
AUDIT 1:1	W,D,B										NOTE 1
AUDIT 4:1	W,D,B,T										NOTE 1
AUDIT 75 WDG	W,S,D,B,T										NOTE 1
BRASH/WEEDMASTER / WEEDMASTER XHL	W,S,D,B,O										NOTE 11
BUCKLE	W,D,B										NOTES 2,11
CALLISTO/***INCINERATE***	O										NOTE 3
CORNERSTONE PLUS, ***CORNERSTONE 5 PLUS***	W,S,D,B,O,R,T										NOTE 1
DIMETRIC CHARGED	W										NOTES 11,12
DISTINCT	W,S										NOTES 8,12
ELEVORE	W,S,D,B,T										
EXPRESS	W,S,D,B,O,T										NOTE 1
FACET L	W,S										NOTE 11
FAR-GO	W,S,D,B,T										NOTES 2,4,10
FINESSE CEREAL and FALLOW	W,S										NOTE 3
GLEAN XP	W, O										NOTES 3,7,11
GRAMOXONE SL 3.0 ‡	W,S,D,B										NOTE 1
HARMONY EXTRA SG	W,S,D,B,O,T										NOTE 1
OUTRIDER	W										NOTE 1
PRE-PARE	W,S										NOTE 1
QUELEX	W,S,D,B,T										NOTE 1
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6/RT 3	W,S,D,B,O,R,T										NOTES 1,11
SHARPEN	W,S,D,B,O										NOTE 1
STERLING BLUE/***CLARIFIER***/ CLARITY/***DICAMBA MAX 4***	W,S,D,B,O										NOTES 6,9,11
TARGA	W,B										NOTE 1
TREFLAN TR-10	W,S,D,B										NOTE 11
TRUST/TREFLAN HFP	W,S,D,B										NOTES 10,11
VALOR SX/VALOR EZ/PANTHER SC	S,B										NOTE 11
VIDA	W,T										NOTE 1
ZIDUA SC	W										NOTES 11,12

* W - winter wheat, S - spring wheat, D - durum wheat, B - barley, O - oat, R - rye, T - triticale

** Fall applications may be restricted by temperature, soil characteristics, location, state, and date. See the label for detailed instructions.

*** Days before planting not restricted or specified.

NOTE 1: To emerged weeds, prior to crop emergence.

NOTE 2: Fall, before ground is frozen. Apply within three weeks of freeze up.

NOTE 3: Apply prior to crop emergence.

NOTE 4: Maximum days PPI not defined. PPI spring before or immediately after seeding. Triticale only in spring.

NOTE 6: Apply to emerged weeds.

NOTE 7: Winter oat only.

NOTE 8: Delay planting 30 days.

NOTE 9: Delay planting 15-66 days depending on rate and area (up to 24 oz/A Sterling Blue/Clarifier/ Clarity) or 20-45 days/pt for Dicamba Max 4.

NOTE 10: Post-plant incorporated winter wheat and before emergence.

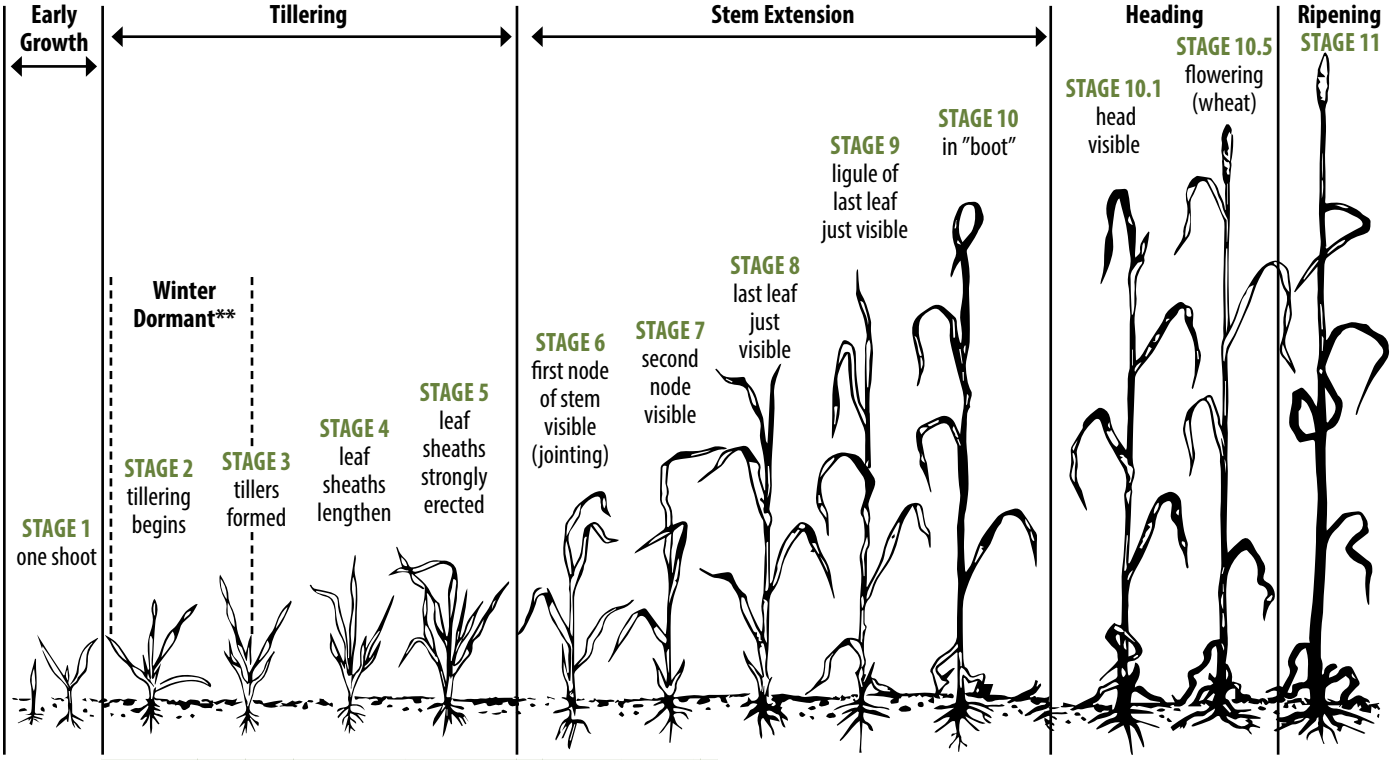
NOTE 11: See the label for applicable crops, state or use area restrictions.

NOTE 12: See label for other restrictions and comments on adverse crop response potential.

NOTE 13: Apply Anthem Flex when 80% of the wheat has germinated and has at least 0.5 inch shoot delayed PRE use or FALL application.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

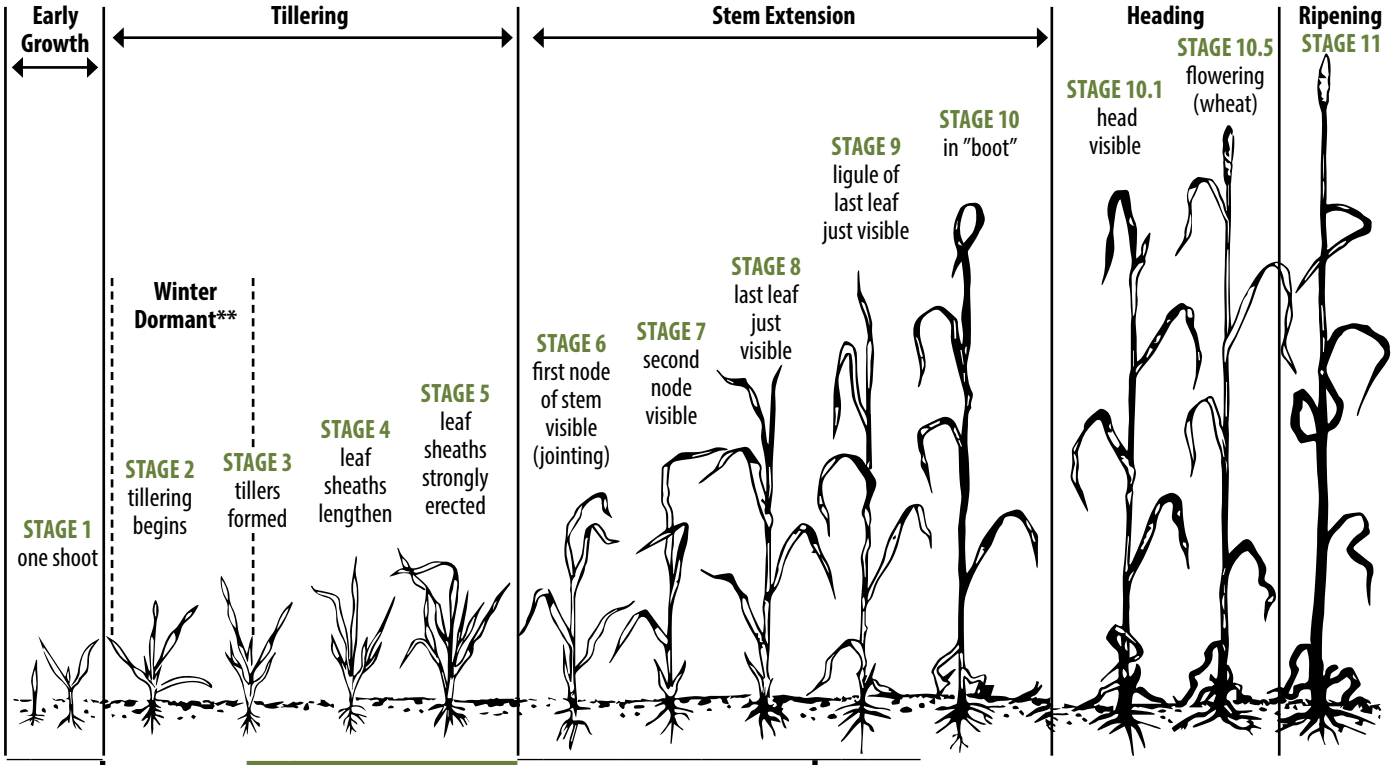
FEEKES GROWTH STAGES AND POST HERBICIDE APPLICATION



	AFFINITY TANKMIX/BROADSPEC
Fall W, B, T: >2-lf to before jointing; Spring W, T: > 2-lf to before 6-lf; Spring B - before 4-lf	AGILITY
winter wheat to boot stage	AIM EC/SHARK EW
	ALLY XP/PATRIOT
	ALLY EXTRA SG
W - any stage; B - in 2-lf	AMBER
	ANTHEM FLEX
	AUDIT
	AUDIT 1:1 or AUDIT 4:1
W: From emergence to preboot (Feekes Stage 9); B: From emergence to prior to jointing (Feekes Stage 6)	AXIAL BOLD
	AXIAL STAR
	AXIAL XL
Between spiking and 2-lf, except OR,WA,ID - germination through 2-lf; see label	AXIOM DF
	BEYOND XTRA
	BISON/MAESTRO ADVANCED/MAESTRO MA
	CARNIVORE/CLEANSWEEP M
(fall- and spring-seeded wheat)	***CLARIFIER***/CLARITY/***STERLING BLUE***/RAVE/***DICAMBA MAX 4***
	CURTAIL/CLEANSWEEP D
	DIMETRIC EXT
	DISCOVER NG
	ET HERBICIDE
	EVEREST 3.0 - WHEAT (up tp 60 days PHI)
	FINESSE CEREAL and FALLOW - WHEAT, BARLEY
	FINESSE CEREAL and FALLOW - TRITICALE
	GLEAN XP - WHEAT, BARLEY, OAT
	GLEAN XP - TRITICALE
	GOLDSKY/GR2
	EXTRA SG or ALLY EXTRA SG/EXPRESS
60 days pre-PHI; see label	HUSKIE/HUSKIE FX
up to 60-70 days pre-PHI; see label	HUSKIE COMPLETE ‡
	MAESTRO 2EC

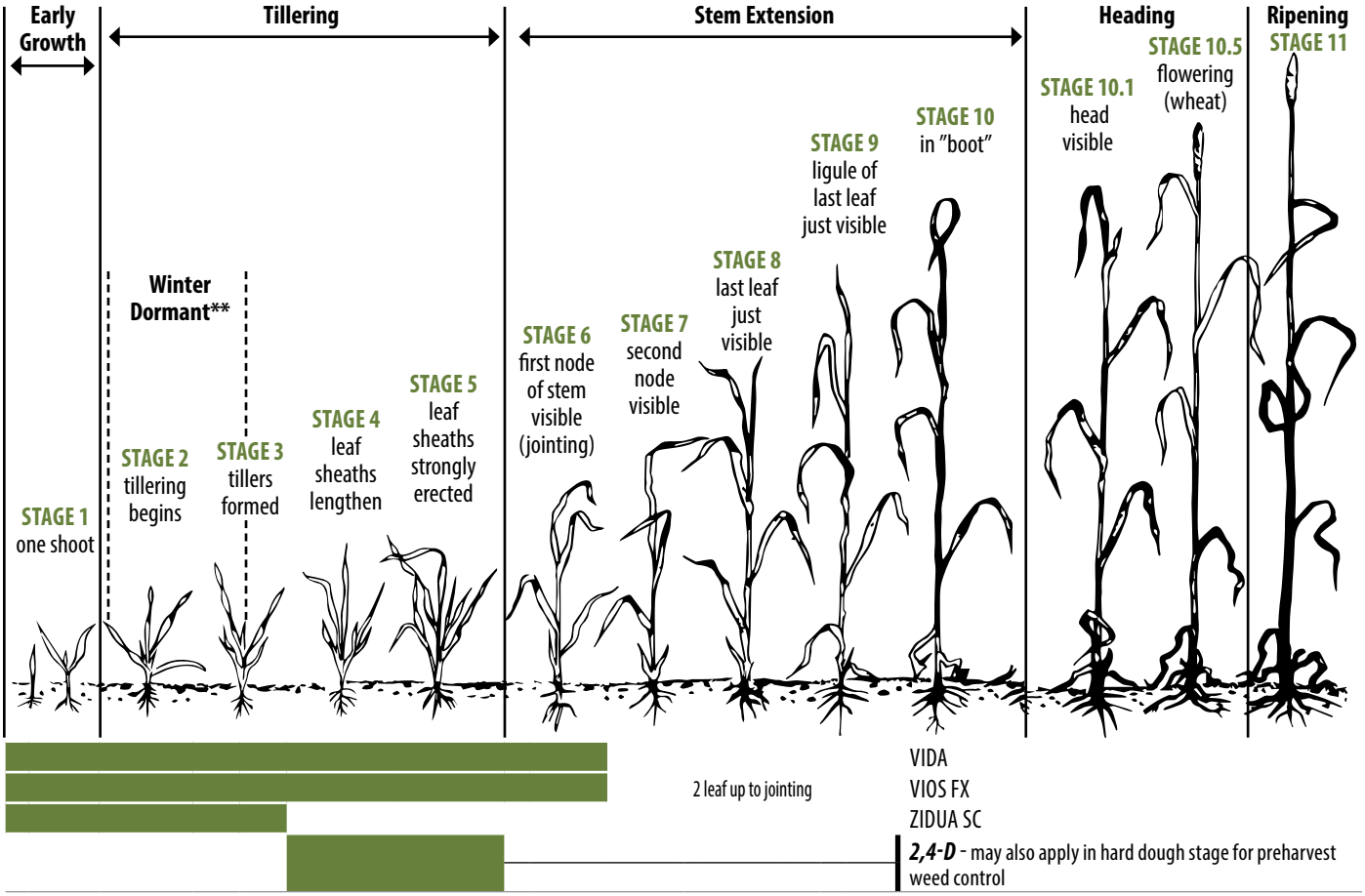
See notes at end of table

FEEKES GROWTH STAGES AND POST HERBICIDE APPLICATION *continued*



	MCPA AMINE/RHOMENE MCPA
	OLYMPUS
	OPENSKY
	ORION
	OSPREY/OSPREY XTRA
see label; [winter W split application from 2 weeks after first up to boot]	OUTRIDER
	PEAK
	PERFECTMATCH
	PIXXARO EC
	POWERFLEX HL/TEAMMATE
	PROWL H2O
	QUELEX/REZUVANT
	RIMFIRE MAX
	RUGBED
Fall W before jointing; Spring W before 6-lf	***SADDLE-UP***/SPITFIRE
	SCORCH
	STARANE FLEX/STARANE ULTRA/STAREDOWN/ WIDEMATCH
	SUPREMACY
	TACOMA 1EC - BARLEY
up to 60-70 days pre-PHI; see label	***TACOMA 1EC*** - WHEAT
	TALINOR
to Zadoks 31	TARZEC
to Zadoks 31	TOLVERA
	VARRO
to Zadoks 39	WIDEARMATCH
up to 60-70 days pre-PHI; see label	WOLVERINE ADVANCED - WHEAT
	WOLVERINE ADVANCED - BARLEY
	WEEDAR 64/WEEDONE 638/WEEDAR XHL - may also apply in hard dough stage for preharvest weed control
	WELD

See notes at end of table



Source: Adapted from Correlation of Five Wheat Growth Stage Scales in the Great Plains; Bauer, Armmond et al.

** Usual dormancy within this range, depending on weather.

⟷ = labeled

▬ = preferred or recommended application period

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POSTEMERGENCE		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
AFFINITY BROADSPEC	W,S,D,B,O,T	0.4-1 oz	Add 1-2 qt NIS/100 gal.* Apply after the crop is 2-leaf but before flag leaf is visible for wheat, barley, triticale and winter oat. Apply to spring oat after 3-leaf but before jointing. Do not use on Ogle, Porter or Premiere oats. Notes 1,5.
AFFINITY TANKMIX	W,S,D,B,O,T	0.6-1 oz	Add 1-2 qt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/A AMS.* Apply after the crop is 2-leaf but before flag leaf is visible for wheat, barley, triticale and winter oat. Apply to spring oat after 3-leaf but before jointing. Do not use on Ogle, Porter or Premiere oats. Notes 1,2,5.
AGILITY SG	W,S,D,B,T	1.6-3.2 oz	Add 1-4 pt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/S AMS. Can use NIS, COC or MSO with UAN/AMS.* Apply from 2-leaf to before jointing in fall-seeded wheat, barley, and triticale; 2-leaf to before crop exceeds 6-leaf in spring wheat and triticale; 2-leaf to before crop exceeds 4-leaf in spring-seeded barley. Small grain varieties vary in tolerance to Agility. Do not apply with malathion or Lorsban. Agility contains dicamba. Do not apply near sensitive crops if temperature is >85°F. Notes 1,5.
AIM EC/SHARK EW	W,S,D,B,O,R,T	Up to 0.5-1.0 fl oz	Add 1 qt NIS/100 gal.* Apply from emergence up to jointing (to boot stage for winter wheat) and weeds up to 4" high or rosettes <3". See label for rates on specific weeds. Tank mix with other labeled herbicides for broader spectrum control.
ALLY EXTRA SG + ***2,4-D LV4*** or ***2,4-D LV6/ SHREDDER E-99*** or MCP 3-WAY WITH ABOVE and ***STERLING BLUE/ CLARIFIER/*** CLARITY/ ***DICAMBA MAX 4***	W,S,D,B,T	0.3 - 0.5 oz + 0.5-1 pt 4# amine/ester or 0.33-0.67 pt or 0.5-1 pt 4# amine/ester 4-8 fl oz	Add 1-2 pt NIS/100 gal.* Apply to wheat and barley after 2-leaf stage but before flag leaf is visible. Apply to durum and Wampum spring wheat after tillering but before boot stage. Apply to actively growing weeds <4" tall or wide (see label for exceptions). Apply to wheat or barley from tillering (2,4-D) or 3-5 leaf stage (MCPA) to before boot stage (timing varies with weed size, crop stage, crop variety and tank mix, see label). Use Ally Extra SG + 2,4-D + Sterling Blue or Dicamba Max 4 for wide spectrum weed control including ALS resistant kochia and Russian thistle. Extended recrop interval if soil pH >7.9. Use only 1-2 pt surfactant/100 gal with Sterling Blue/Banvel/Dicamba Max 4. On winter wheat, use 1 pt surfactant/100 gal with high rate of 2,4-D or MCPA; 2 pt/100 gal with low rate. On spring wheat and barley use 0.5-1 qt surfactactant/100 gal. Do not use surfactant with liquid fertilizer carrier. UAN or AMS may be added to Ally Extra. Notes 1,2,3,5.
ALLY XP/PATRIOT	W,S,D,B,T	0.1 oz	Add 1-2 pt NIS/100 gal. Apply from 2-leaf but before boot stage; 2-3 leaf to before flag leaf is visible for triticale. Use 0.5-4 pt NIS for winter wheat. UAN or AMS may be added. Do not apply during boot and early heading. Notes 1,2,5.
ANTHEM FLEX	W,S	2-4.55 fl oz: see label for soil texture/timing table	Add 1 qt NIS or 1 pt HSOC-MSO/100 gal + 1-2 qt/A UAN or AMS.* Rates dependent on soil texture. "Delayed pre" application (80% of wheat seed germinated with ½" radical), or spring early post for control of emerged small broadleaf weeds and subsequent residual control of grasses and other weeds in preemerge control list. See label for specific directions.
AMBER	W,S,D,B	0.28-0.47 oz: standard rate, or 0.56 oz: enhanced rate	Add 1-2 qt NIS/100 gal.* For POST and residual control of broadleaf weeds. Apply between emergence (wheat) or 2-leaf stage (barley) and pre-boot; weed at stages shown on Amber label. Use 0.35-0.47 oz. rate for wild buckwheat. Use Amber in these states only: CO, ID, KS, MN, MT, NE, NM, NV, ND, OK, OR, SD, TX, UT, WA, WY. On durum, use Amber Post only. Add surfactant first if using a liquid fertilizer carrier. Notes 1,4,5.
AMBER or PEAK + ***2,4-D LV4*** or ***2,4-D LV6/SHREDDER E-99*** or MCPA or MCPE or ***STERLING BLUE/ CLARIFIER/*** CLARITY/***DICAMBA MAX 4*** or ***DIMETRIC EXT***	W,S,D,B	0.28-0.47 oz or 0.25-0.5 oz + 0.5-0.75 pt amine/ester or 0.33-0.67 pt or 0.5-1 pt or 0.33-0.67 pt or 2-4 fl oz or 1.3-5.3 oz	Add 1 qt NIS/100 gal.* Use tank mixtures for ALS resistant weeds, and to control broadleaves not on Amber or Peak label. See labeled states in Amber. Notes 3,5. Apply from tillering to jointing (fall seedings); prior to 5-leaf stage (spring wheat); DO NOT USE on spring barley. Note 2. As for 2,4-D, except may use on spring barley before it exceeds 4-leaf stage. Apply to fall-seeded wheat and barley prior to jointing; spring wheat before exceeding 5 leaves; spring barley through 4-leaf stage. For suppression of downy brome and cheat in wheat, apply early postemergence. Use with Amber only. Note 2.
AUDIT 1:1	W,D,B	0.4- 1 oz	Do not apply >1 oz/A/crop season.
AUDIT 4:1	W,D,B,T	0.6-1 oz	Do not apply <0.6 oz/A/application or >1.8 oz/A total to crop.
AUDIT 75WDG	W,S,D,B,T	0.4-0.66 oz	Add 1-2 qt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/A AMS.* Apply to emerged broadleaves from after 2-leaf crop to before the flag leaf is visible. May tank mix with many other herbicides. May use COC or MSO.* Do not apply within 60 days on an in-furrow OP insecticide. Notes 1,5.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
AXIAL BOLD	W,S,B	15 fl oz	Apply to actively growing weeds; optimum control obtained if application is delayed until any growth stress conditions have ended and weeds are actively growing again. Minimum 5-10 GPA by ground, 5 GPA by air. May be applied with liquid fertilizer, though certain conditions may cause crop burn. Do not make >1 application/year PHI straw/grain 60 days in MN, MT, ND, SD; 70 days all other states, B
AXIAL STAR	W,S,B	16.4 fl oz	Apply from 2-leaf to pre-boot to actively growing weeds. May be tank mixed with many broadleaf herbicides. Apply to grass with 1-5 leaves and <3 tillers.
AXIAL XL	W,S,B	16.4 fl oz	Apply to winter wheat, spring wheat (excluding durum) and barley from 2-leaf stage to pre-boot (60 day PHI). Apply to annual grass weeds from 1 to 5 or 6 true-leaf stage (see label for weed staging). Use ≥5 GPA by ground; ≥10 GPA if droughty or dense weeds. Use ≥5 GPA by air. Axial XL contains an adjuvant. Maximum 16.4 fl oz/A/season. Do not compost any plant material from treated area. MN, MT, ND, SD, WY (exp. date not given) for tank mix with Witness (see labels for rates) for weed control in W, B
AXIOM DF	W,T	**Coarse soil:** 4-6 oz **Medium/fine soil:** 6-10 oz	Apply to winter wheat from germination up to 2-leaf stage but premergence to grassy weeds. Minimum crop planting depth of 1.5" to ensure crop safety. Heavy rainfall soon after application may cause crop thinning and/or stunting. For control/suppression of Italian ryegrass, rattail fescue, annual bluegrass, windgrass, and annual bromes. Use 6-8 oz/A for for lighter soils and and 8-10 oz/A for heavier soil types. In OR,ID,WA: at-spiking to 2-lf wheat. Use 4-6 oz/A on coarse, 6-8 oz/A medium and 8-10 oz/A for fine soils.
BEYOND XTRA	W,S	4-6 fl oz: winter wheat 4-5 fl oz: spring wheat	Add 1 qt NIS/100 gal + 2.5 gal 28%N or 2-15 lb AMS/100 gal (or WC+NIS).* Apply in fall or spring only to CLEARFIELD (imidazolinone tolerant) winter wheat varieties. Apply from 3rd leaf up to just prior to wheat jointing stage when grass weeds are 1-5 leaf and before broadleaf weeds exceed 3" in height. Apply to Clearfield spring wheat from 4 leaf to just prior to jointing. May be tank mixed with broadleaf herbicides for control of ALS resistant weeds such as kochia. Do not tank mix with sulfonylurea herbicides. Apply in fall for best results on emerged feral rye, jointed goatgrass, downy brome and cheatgrasses. If applied with liquid fertilizer carrier, fertilizer should not exceed 50:50 concentration with water. Do not use if the daytime high temperature is expected to be < 40 °F within a week of application.
BISON/MAESTRO MA	W,S,D,B,O,R	1-1.5 pt 2 pt: chemigation only	Apply to wheat, barley, oats, rye after 3-leaf stage up to boot stage. Apply to the most susceptible broadleaf weeds up to 8 leaf or 4" and susceptible broadleaves up to 4 leaf or 2". Refer to label for rates in PNW. Do not apply when crops are stressed.
BRASH/WEEDMASTER or WEEDMASTER XHL	W,S,D,B,O	0.5-1 pt or 0.4-0.8 pt.	May use up to 1.33 pt/A or 1.1 pt/A (for Weedmaster XHL) in fall seeded wheat. Apply in spring after tillering and before 6-leaf. Apply in fall after tillering and prior to jointing. Barley and oat labeled for pasture and hay use.
CALLISTO/***INCINERATE***	O	3 fl oz	Add 1 qt NIS/100 gal.* Apply up to 5" broadleaf weeds and up to 50-day PHI. COC improves control, as does UAN or AMS but may increase crop injury.* Avoid mixing with EC formulations. May be used POST directed. Do not use POST if used PRE.
CARNIVORE/ CLEANSWEEP M	W,S,D,B,O	1-1.5 pt	Apply from 2 leaf up to and including flag leaf emergence (Zadoks 3.9). Use 1 pt/A for broadleaf weeds <4" and 1.5 pt for 4 - 8" broadleaf weeds.
CLARIFIER/CLARITY	SEE STERLING BLUE		
CLEANSWEEP D	W,S,D,B,O	1-1.5 pt	Apply from fully tillered stage but before jointing.
CREDIT XTREME	SEE ROUNDUP		
CURTAIL	W,S,D,B	2-2.67 pt	Apply after 4 leaves unfolded on main stem but before jointing of wheat and barley to broadleaf weeds 3" tall or less. Treat Canada thistle before it buds. Notes 3,6.
CURTAIL M	W,S,D,B,O	1.75-2.33 pt	Apply after 3 leaves unfolded on main stem but before jointing of wheat, barley or oats to broadleaf weeds 3" tall or less. Notes 3,6.
DICAMBA MAX 4	SEE STERLING BLUE		
DIMETRIC EXT	W,B	*2-leaf to 2 tiller* **Coarse, medium soil:** 1-3 oz **Fine soil:** 2-4 oz *3 tiller-4 tiller (before jointing)* **Coarse soil:** 3-5 oz **Medium soil:** 4-6 oz **Fine soil:** 5-6 oz	For control/suppression of certain grasses and broadleaf weeds in winter wheat and spring and winter barley (see label for tolerant and resistant varieties). For dryland winter wheat, use highest recommended rate for maximum weed suppression/control. Wheat should have secondary root formation prior to application. Do not apply to frozen soil or within 2 weeks after grazing or breaking winter dormancy. Do not apply before 75 days after planting at 3-4 tiller rate. Recommended in AR,GA,ID,IL,IN,KS,KY,LA,MO,MS,MT,NV,OH,OK,OR,TN,TX,UT,WA. Not labeled in SD.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
DISCOVER NG	W,S,D	12.8 oz: most weeds 16 oz: giant foxtail, persian darnel, annual ryegrass	Apply to all types of winter and spring wheat including Durum grown in MT,MN,ND and SD. Apply from the 2-leaf stage to pre-boot stage. Apply to wild oats - 1-6 lf and prior to 4 tillers; foxtails - 1-5 lf with optimum prior to 3rd tiller emergence; Persian darnel, barnyard grass, and annual rye - 1-5 lf and optimum before tillering. Use a minimum of 5 GPA water for ground applications,use a minimum of 3 GPA water for aerial applications. Discover NG contains an adjuvant. MSO* at 1 qt/100 gal may be added for low moisture or high temperature stress conditions or with > 10 GPA. Liquid nitrogen may be used up to 50% of the carrier volume.
ET HERBICIDE	W,S	0.4-0.75 fl oz: spring 0.5-1 fl oz: winter	Apply up to the appearance of the flag leaf. Mixes with bromoxynil may cause significant crop injury.
EVEREST 3.0	W,D	2 fl oz	Do not apply >2 fl oz/A (0.027 lb a.i./A)/year. See label for use rates if Pre-Pare has been applied PP or PRE. See label for application restrictions for counties in ID, MN, MT, OR, WA, WY to protect endangered species. 2ee ID, MN, MT, ND, SD, OR, WA (exp. date not given) for tank mix with Talinor for control of grass and broadleaf weeds in spring wheat, winter wheat and durum.
EXPRESS	W,S,D,B,O,T	0.25-0.5 oz	Add 1-2 qt NIS/100 gal + 2-4 qt UAN/A or 2-4 lb AMS/A. Apply to wheat or barley from 2-leaf stage to before flag leaf is visible. If used with 2,4-D LV, do not apply before small grain is tillered. Apply to actively growing weeds from cotyledon to 4" tall or wide (see label for exceptions). Tank mixes with 2,4-D, MCPA amine/Rhomene MCPA, Maestro 2EC, Bison recommended. Preslurry in water if using a liquid fertilizer carrier. Use 2 qt NIS/100 gal + 2 qt UAN/A when applied with water. Use NIS at 0.5-2 pt/100 gal with up to 50% liquid N carrier. Do not add NIS if >50% liquid N carrier. COC, MSO and AMS may be used.* Notes 1,5.
EXPRESS + ***2,4-D AMINE 4***/ ***SHREDDER E-99*** or ***2,4-D LV4*** or ***2,4-D LV6*** or MCPA AMINE/ESTER	W,S,D,B,O,T	0.25-0.5 oz + 0.25-0.75 pt or 0.25-0.75 pt or 0.17-0.5 pt or 0.25-0.75 pt	Apply from full tillering but before flag leaf is visible. NIS at 2 pt/100 gal may be added at lower rate of 2,4-D or MCPA. 1-2 pt NIS may be added at 1/8 lb a.i. of 2,4-D or MCPA and 1 pt NIS for 1/4-3/8 lb a.i. Surfactant use may increase crop injury. Spray within 24 hr of mixing. Use ester forms if liquid fertilizer carrier used. Notes 1,2.
FINESSE CEREAL and FALLOW	W,S,D,B,T	0.2-0.4 oz	Apply to wheat or barley after 1-leaf but before boot. Apply to triticale after 2-3 leaf but before flag leaf is visible. See label for additional tank mix and timing options for specific crops, and for OP insecticide, cold weather, specific weed rates, and rotational restrictions. Include 0.5-2 qt NIS/100 gal.
GLEAN XP + ***2,4-D LV4*** or MCPA or ***STERLING BLUE***/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	W,S,D,B,O	0.167-0.33 oz + 0.5-1 pt or 0.5-1 pt or 2-4 fl oz	Add 1-2 qt NIS/100 gal. Use only in AR, CA, CO, DE, GA, ID, IL, KS, MD, MN, MO, NC, ND, NE, NM, OK, OR, PA, SC, SD, TX, UT, VA, WA, WI and WY. Winter oat only in TX and western WA and OR. See label. Provides postemergent and residual control of broadleaf weeds. Apply to wheat, oats or barley after crop is in 2-leaf stage but before boot to control weeds less than 2" tall or across. Apply from 2-leaf to second joint in PNW to spring cereals. See label for Vic variety. Notes 1,2,3,5. Apply after tillering but prior to boot stage. Do not use 2,4-D in fall. Apply from 3-5 leaf stage but prior to boot. Dicamba must be applied to winter wheat or oats prior to jointing; spring wheat or oats before exceeding 5-leaf. Use 1-2 pt NIS/100 gal 2,4-D or MCPA mixes.
GOLDSKY	W,S,D,T	1 pt	Add 1-2 qt NIS/100 gal + 1.5 lb/A AMS (or use WC+NIS).* Apply to wheat from 3-leaf to joint stage (Zadoks 3.1). Apply to annual grass from 2-leaf to 2 tillers and broadleaf weeds up to 2" in height or diameter. Controls wild oats and yellow foxtail and suppresses green foxtail. Controls kochia, w. buckwheat, w. mustard, pigweed, lambsquarters, R. thistle, c. bedstraw, and fiddleneck. 1.5 lb AMS/A may be added in moisture stress or low RH conditions.
GR2	W,S,D,T	1 oz	Add 1-2 qt NIS/100 gal.* Apply from 3-leaf to jointing (Zadoks 3.1). Do not apply >1 oz/A/year. Do not use on ALS-sensitive varieties. Only apply liquid ammonium nitrogen fertilizer 7 days before or after application of GR2 if risk of transient leaf burn or stunting is acceptable.
HARMONY EXTRA SG	W,S,D,B,O,T	0.45-0.9 oz: wheat, barley 0.45-0.6 oz: oats	Add 1-2 qt NIS/100 gal + 2-4 qt/A UAN or 2-4 lb/A AMS. Apply to wheat, barley, triticale or winter oat in the 2-leaf stage but before flag leaf is visible. Apply to spring oat after it is in the 3-leaf stage but before jointing. Apply to weeds from cotyledon to 4" tall or wide and wild garlic less than 12" tall with 4" new growth. Tank mix with 2,4-D or MCPA ester for most uses. Ogle, Porter and Premier oat varieties should not be treated. Check with seed supplier before applying to oats. In 2,4-D or MCPA tank mixes (1/4-3/8 lb a.i./A) use 1-2 pt NIS/100 gal. Notes 1,5.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
HARMONY EXTRA SG + ***2,4-D AMINE 4*** or ***2,4-D LV4*** or ***2,4-D LV6*** or MCPA AMINE/ESTER	W,S,D,B,O	0.45-0.9 oz (0.45-0.6: oats) + 0.5-0.75 pt or 0.5-0.75 pt or 0.25-0.75 pt or 0.25-0.75 pt	Apply to wheat, barley or winter oat in the 2-leaf stage but before flag leaf is visible. Apply to spring oat after it is in the 3 leaf stage but before jointing. Do not use on Ogle, Porter, or Premier varieties. Apply to broadleaf weeds past the cotyledon stage but before 2" or 3" for most weeds (<12" for wild garlic) with 4" new growth. Check with seed supplier before applying to oats. May apply sequentially (except for oat), but do not exceed 1.5 oz. 2 pt NIS/100 gal may be added at lower rate of 2,4-D or MCPA. 1 pt NIS/100 gal may be added at 0.5 pt/A rate 2,4-D or MCPA. Surfactant use may increase crop injury. Notes 1,2,4.
HI-DEP	W,S,D,B,O,R	0.25-1.5 pt (0.5-1 pt: oat)	Apply after grain begins tillering and before boot stage.
HONCHO K6	SEE ROUNDUP		
HUSKIE or HUSKIE FX	W,S,D,B,T	11-15 fl oz or 13.5-18 fl oz	Add 0.5-1 lb/A AMS. Apply from crop emergence (1-leaf for Huskie; 2-leaf for Huskie FX) to flag leaf emergence. Broadleaf weeds should be 4" tall or less. Has limited soil activity. Add adjuvants under challenging conditions in spring wheat and only when the tank mix partner requires and adjuvant. In winter wheat, NIS at 1-2 qt/100 gal may be used with UAN at 1-2 qt/A or AMS at 0.5-1 lb/A. See label for more information and rotational restrictions to lentils. Can be used with a liquid N carrier in winter wheat only. 2ee for tank mixes with Starane Flex, Osprey and Starane Flex, and Osprey and Orion in ID, OR, WA (exp. date not given), and 2ee Huskie ID, OR, WA (exp.date not given) to control grasses and/or broadleaf weeds in winter wheat; CO, ID (exp. date not given) chemigation directions for tank mixes in wheat or barley.
HUSKIE COMPLETE ‡	W,S,D	13.7 fl oz	Apply from 1-leaf stage to 60 days prior to harvest in ND, SD, MN, MT and 70 days in other states. Broad spectrum control of grasses and broadleaf weeds. Apply to weeds 4" wide or with 4-6 leaves depending on weed. Maximum one application/season. Do not tank mix with tebuconazole containing products.
INCINERATE	SEE CALLISTO		
KARMEX DF	W,B,O	0.5-2 lb	Rate dependent on geographic area and average annual rainfall; see label. Do not use on coarse textured soils with <1% OM. May apply in spring or fall depending on crop.
MAESTRO 2EC	W,S,D,B,O,R,T	1.5-2 pt: fall seeded 1-1.5 pt: spring seeded 2 pt: chemigation only	Apply to small grain from emergence to boot stage. Spring-seeded wheat, barley, oats: Apply to weeds to 4-leaf or 2" tall or on rosettes to 1" in diameter. Kochia can be controlled to 2". Use 1.5-2 pt/A rate in ID,OR,WA,CO,WY,MN. Fall-seeded wheat, barley, rye, triticale: Apply to weeds up to 8-leaf or 2" tall or 2" diameter rosette. Can be used on grain underseeded with alfalfa that has 4 or more trifoliates.
MAESTRO ADVANCED	W,S,D,B,O,R,T	9.6-25.6 fl oz	See label for rate or rate range specific to U.S. fall seeded and ID, OR, WA, CO, WY, MT spring seeded crops, and specific to certain weeds. Chemigation: 25.6 fl oz/A. Post-harvest: 9.6-25.6 fl oz/A
MAESTRO MA	SEE BISON		
MCPA AMINE/ RHOMENE MCPA or ESTER (PHENOXY)	W,S,D,B,O,R	0.5-1.5 pt	Rates above 1.5 pt/A labeled for perennial weeds. MCPA: apply to 3-5 leaf spring grain up to early boot (Zadoks 1.3-4.0); fall grain - fully tillered grain but before boot. MCPE Phenoxy: apply to 3-5 leaf spring grain up to early boot (Zadoks 1.3-4.0). Spray when broadleaves are small. Do not use from boot to dough (Zadoks 4.0-8.0). Safer on oats than 2,4-D (use 0.5-1 pt/A). In grains underseeded with seedling clover (except Dutch and sweet), apply 0.5 pt/A after clover has 2 or more trifoliates. Amine only in PNW. PHI 7 days. Note 7.
METRICLUDE EXT	SEE DIMETRIC EXT		
OLYMPUS	W,S,D,T	0.6-0.9 oz: winter wheat, triticale 0.2 oz: spring wheat	Add 1-2 qt NIS/100 gal.* Apply in fall or spring to actively growing weeds. In winter wheat, use 0.9 oz/A for downy brome in spring or fall or for wild oat in spring. Best control on 2 lf-2 tiller grass and <2" diameter broadleaves. Apply to 2-leaf wheat up to before the jointing stage. N fertilizer should not exceed 50% of carrier (30 pounds of actual N/A) for fall applications and may result in slight stunting, leaf burn and discoloration. Applications including more than 50% N carrier may result in excessive leaf burn from the fertilizer. Fall POST application to small actively growing weeds is generally more effective than spring application, particularly on downy brome. 2ee MN,MT,ND,SD (exp. date not given) for tank mix to control certain emerged annual grasses and broadleaf weeds; ID, OR, WA (exp. date not given) for tank mix to control grass and broadleaf weeds in winter wheat; CO, ID, KS, MT, NE, OK, OR, SD, WA, WY (exp. date not given) to control certain emerged annual grasses and broadleaf weeds in winter wheat from emergence to jointing. Notes 1,5.
OPENSKY	W,S,D,T	1-1.25 pt	S,D use 1 pt/A to actively growing weeds; W,T use 1-1.25 pt/A to actively growing weeds, using higher rate for difficult to control weeds. W,T applications may include up to 50% liquid N fertilizer up to 30 lb/A N. Do not use if crop is underseeded with a legume. Add 1-2 qt NIS/100 gal + 1.5 lb/A AMS.* Do not apply in solutions containing UAN at rates >2 qt/A or AMS at >3 lb/A.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
ORION	W,S,D,B,O,R,T	17 fl oz	Apply to emerged broadleaf weeds from 3-leaf up to joint stage of crop. Application may be made from jointing to boot stage, but crop injury is possible.
OSPREY	W	3.2-4.75 oz	Add 0.75 pt HSOC-MSO.* Use 3.2 oz/A for wild oat, windgrass, canarygrass and Persian darnel. Use 4.75 oz/A for Italian ryegrass, downy brome, jointed goatgrass, and other grasses. Best control on 1-lf to 2 tiller grass and 1-2" broadleaves. NIS + UAN/AMS* should be used instead of MSO in WA, OR, ID. See label for tank mixes, adjuvants, and fertilizer recommendations. 2ee ID, OR, WA (exp. dates not given) for various tank mixes to control emerged annual grasses and/or broadleaf weeds in winter wheat. Notes 1,5.
OSPREY XTRA	W	3.2-4.75 oz	Add 0.75 pt HSOC-MSO.* Use 3.2 oz/A for wild oat, windgrass, canarygrass and Persian darnel. Use 4.75 oz/A for Italian ryegrass, downy brome, jointed goatgrass, and other grasses. The addition of thiencarbazone-methyl in Osprey Xtra enhances rattail fescue efficacy. Best control on 1-lf to 2 tiller grass and 1-2" broadleaves. NIS + UAN/AMS* should be used instead of MSO in WA, OR, ID. See label for tank mixes, adjuvants, and fertilizer recommendations. 2ee ID, OR, WA (exp. dates not given) for various tank mixes to control emerged annual grasses and/or broadleaf weeds in winter wheat. 2ee ID, OR, WA (exp. date not given) for tank mix with Curtail M or MCPA Amine/Ester. Notes 1,5.
OUTRIDER	W,S	0.67 oz	Add 2 qt NIS/100 gal.* Apply to winter or spring wheat early post. Apply from emergence to prior to jointing (in KS,OK,TX from 2-leaf to jointing). For control of mustards and 2-3 leaf annual bromegrasses - better control of cheat than downy or Japanese brome. Fall POST applications to small, actively growing weeds are generally more effective than spring applications, particularly on cheatgrass. Outrider will suppress other winter annual grasses (<50%) when applied to small, actively growing ryegrass, rescuegrass, and wild oats. See label for crop rotation restrictions. Do not mix with malathion. See label on restrictions on use of fertilizer carriers. Notes 3,5.
PALISADE EC	W,D,B,O,R,T	10.5-14.4 fl oz	Plant growth regulator for yield protection and lodging prevention. Apply from (Feekes 4) to (Feekes 7). Apply before (Feekes 8). See label for split applications and rates for grasses grown for seed.
PALISADE MAXX	W,D,B,O,R,T	10.5-14.5 fl oz	Plant growth regulator for yield protection and lodging prevention. Apply from (Feekes 4) to (Feekes 7). Apply before (Feekes 8). See label for split applications and rates for grasses grown for seed.
PATRIOT	SEE ALLY XP		
PEAK	W,S,D,B,O,R,T	0.38-0.5 oz	Add 1-2 qt NIS/100 gal. Apply over-the-top to actively growing small grains from 3-leaf stage to before 2nd node is detectable. Within this window, time applications to optimum weed heights (see label). Can tank mix 0.25 oz with other broadleaf herbicides. See label for restrictions on use with organophosphate insecticides or liquid fertilizer carriers. UAN or AMS may be added. Notes 4,5.
PERFECTMATCH	W,S,D,T	1 pt	Add 1-2 qt NIS/100 gal + 1.5 lb/A AMS (or use WC+NIS).* Apply to wheat from 3-leaf to joint stage (Zadoks 3.1). Apply to annual grass from 2-leaf to 2 tillers and broadleaf weeds up to 2" in height or diameter. Controls wild oats and yellow foxtail and suppresses green foxtail. Controls Canada thistle kochia, w. buckwheat, w. mustard, mayweed chamomile, sunflowers, narrowleaf hawksbeard, c. bedstraw, and fiddleneck. 1.5 lb/A AMS may be added in moisture stress or low RH conditions.
PIXXARO EC	W,S,D,T,B	6 fl oz	Apply to labeled crops at 2 leaf growth stage to emergence of flag leaf and actively gowing weeds. No need to add spray adjuvent, acceptable to add adjuvant if required by tank mix partners.
POWERFLEX HL	W,T	2 oz	Add 1-2 qt NIS/100 gal + 1.5-3 lb/A AMS (or use WC+NIS).* Apply in fall or spring to winter wheat or triticale from 3-lf to joint stage (Zadoks 3.1). Apply to annual grass from 2-lf to 2 tillers and broadleaf weeds up to 2" in height or diameter. Suppression only of downy brome with spring application. True cheat and Japanese brome are more susceptible. Also controls weeds in mustard family, pigweed, c. bedstraw, and fiddleneck. Mixing with dicamba or amine formulations of 2,4-D or MCPA can reduce grass control. COC at 1-1.25 gal/100 gal may be used instead of NIS.* May be applied with top-dress nitrogen solutions but ≤50% of total solution and not to exceed 30 lb N/A. Rotate to common rotation crops 10 months following application.
PROWL H2O	W,S,T	1.5-3 pt	Apply from the 1st leaf until before flag leaf is visible/emerged. Plant wheat at least 0.5-1" deep to avoid crop injury. Use rates depend on region and soil texture.
QUELEX	W,S,D,B,T	0.55-0.75 oz	Add 1.6-4 pt NIS/100 gal. Apply from 2-leaf to flag leaf emergence (Zadoks 1.2 to 3.9). Do not apply >0.75 oz/A/growing season. 2ee all states except TX (exp. date not given) tank mix with 0.45 oz/A Harmony Extra SG for control of wild garlic in winter wheat.
RAVE	W,S,D,B	2-4 oz (2 oz on spring barley)	Add 1-2 pt NIS/100 gal. Apply from emergence up to jointing stage of wheat or barley but early tiller stage preferred. For post and residual broadleaf control. 5 oz/A rate for certain weeds. For use in ID,KS,MN,MT,ND,NE,NM,NV,OR,OK,SD,TX,UT,WA,WY,CO (except San Luis Valley). Not registered in IA,IL,IN,MO,WI and certain other states.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
REZUVANT	W,S,B	16.4 oz	Apply from 2-leaf to flag leaf emergence (Zadoks 1.2 to 3.9). Max. 1 application/12 consecutive months. Max. 16.4 fl oz/A/12 consecutive months. See label straw feeding restrictions, management of animals foraged on treated fields, and manure management from grazing animals.
RHOMENE MCPA	SEE MCPA AMINE		
RIMFIRE MAX	W,S,D	3 oz	Add 0.75 pt HSOC-MSO* or 2 qt NIS/100 gal and 1-2 qt/A UAN or 1.5-3 lb/A AMS. Apply from crop emergence (one fully expanded leaf) up to flag leaf emergence. Grasses should be 1-leaf to 2-tiller stage and broadleaves less than 2" in diameter. See label for restrictions on insecticide tank mixes. Add UAN or AMS only with NIS.* Note 5.
RUGGED	W,S,D,B,O,R	0.67-2.5 pt	Apply when grain is in full tiller but before boot stage (Zadoks 2.5-4.0). Use 0.67-1.33 pt/A for annual/biennial weeds and 2-2.5 pt/A for perennial broadleaf weeds in spring wheat, barley and rye; 1-1.33 pt/A for winter wheat and rye; 0.5-1 pt/A for spring oats; 1-1.25 pt/A for fall oats (Southern); and 2.5 pt/A for emergency control of perennial broadleaf weeds in wheat. Use 2-2.5 pt/A for perennial broadleaf weeds in spring wheat, barley and rye only in spring when fully tillered, before boot (Zadoks 4.0). See label for possible crop injury or damage.
SADDLE-UP or SPITFIRE	W,S	**Early season fall- or spring-seeded:** 0.5-1 pt or 0.5-1 pt **Fall seeded wheat specific use program:** Up to 1.33 pt or up to 1.4 pt	Do not use crop oil concentrate for grain crops. If grown for pasture or hay only, refer to Pastures section of label.
SCORCH	W,B,O,R,T	**Early season:** 0.5-1 pt **Fall seeded wheat:** Up to 1.33 pt	Early season applications to well-tillered (Feekes 3) through mid-jointing (Feekes 7.0). Do not apply if flag leaf is visible in the whorl. Min. 10-day/pt/A interval between planting and application PHI 40 days. Max. 1 POST application/crop cycle. Max. 1 pt/A/application. Fall-seeded wheat: Apply after wheat begins to tiller. May apply in fall before killing freeze and assess potential for crop injury. Do not use crop oil concentrate for grain crops. Max. 1.3 pt/A/application. Do not use if cereal crop is underseeded with legumes. If grown for pasture or hay only, refer to Pastures section of label.
SHREDDER E-99	SEE 2,4-D		
STARANE FLEX	W,S,D,B,O,R,T	13.5 fl oz	Apply from 3-leaf crop up to flag leaf emergence (39). Apply to broadleaf weeds <4". Controls hemp dogbane.
STARANE ULTRA/ STAREDOWN (alone or) + ***2,4-D LV4*** or MCPA	W,S,D,B,O,T	14-27.4 fl oz + 0.5-1 pt 0.5-1 pt	Apply to small actively growing broadleaf weeds and crop from 2 leaf to before boot stage (labeled through flag leaf). Starane + Salvo (2,4-D ester) is not labeled for oat. Generally apply Starane Ultra in tank mix with other broadleaf herbicides. Apply Starane Ultra/StareDown + MCPA (MCPA, Sword) at 1.25-1.5 pt/A from 3 leaf up to and including flag leaf emergence. Controls hemp dogbane. Note 2.
STERLING BLUE/ CLARIFIER/CLARITY or ***DICAMBA MAX 4*** + ***2,4-D LV4*** or MCPA	W,S,D,B,O,T	2-4 fl oz (rates in fl oz/A) + 8-12 or 8-12 8-12 or 8-12 8 or 8-12 No or 8-12 No or 8-12 No or 8-12 No or No	Apply when broadleaf weeds are in 2-3 leaf stage and rosettes are less than 2" across. Do not apply 2,4-D before crop is well tillered; MCPA before 3-4 leaf stage. Barley and oat have lower crop tolerance. Do not apply when SMALL GRAIN are stressed. Dicamba is not labeled for 2,4-D or MCPA tank mixes in triticale. Bromoxynil is labeled. Note 2. FALL-SEEDED WHEAT: prior to jointing. SPRING-SEEDED WHEAT: before exceeding 5 leaves. FALL-SEEDED BARLEY: prior to jointing. SPRING-SEEDED BARLEY: before exceeding 4 leaves. FALL-SEEDED OATS: prior to jointing. SPRING-SEEDED OATS: before exceeding 5 leaves. FALL or SPRING-SEEDED TRITICALE: prior to jointing.
STINGER	W,S,D,B,O	0.25-0.33 pt	Apply to small broadleaf weeds when wheat, barley, oats are between 3-leaf stage up to early boot. For Canada thistle use 0.2 pt/A before bud stage. Do not permit lactating dairy animals or meat animals being finished for slaughter to forage or graze treated grain fields within 1 week after treatment. Do not harvest hay from treated grain fields.
STINGER HL	W,S,D,B,O	0.15-.02 pt	Apply to small broadleaf weeds when wheat, barley, oats are between 3-leaf stage up to early boot. For Canada thistle use 0.2 pt/A before bud stage. Do not permit lactating dairy animals or meat animals being finished for slaughter to forage or graze treated grain fields within 1 week after treatment. Do not harvest hay from treated grain fields.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
SUPREMACY	W,S,D,B,O,T	4 or 5 oz	Add 1 qt NIS/100 gal.* Apply to wheat, barley and triticale after 2 leaf but before flag leaf is visible. For oats, apply after 2 leaf, but prior to jointing. Use 5 oz for ≤4" broadleaf weeds, including ALS resistant kochia, catchweed bedstraw and wild buckwheat. Use 4 oz/A for ≤2" weeds. Maximum for oats is 5 oz/A. Use 6 oz/A for 4" weeds in ID,WA,OR. Do not use NIS when tankmixing with an EC herbicide at ≥8 fl oz. Tank mix with MCPA ester or 2,4-D ester or bromoxynil for additional broadleaf control. May use MSO or NIS + AMS, or WC+NIS* brands.
TACOMA 1EC	W,S,D,B	0.33 pt: green foxtail 0.4 pt: yellow foxtail 0.66 pt: wild oat, barnyardgrass	Apply to wheat from emergence to 60 days before harvest in MN, MT, ND and SD and up to 70 days before harvest in other states. Apply to barley from emergence up to 5 leaf. Recommended application is before 5th leaf has emerged. Do not apply after jointing begins. For control of 1-leaf to 2-tiller stage annual grasses. Do not mix with 2,4-D ester. Do not use with bromoxynil or Bison on 2-row barley.
TACOMA 1EC + CURTAIL M or HARMONY EXTRA + STARANE ULTRA/ STAREDOWN or HUSKIE or STARANE ULTRA/ STAREDOWN + MCPA ESTER or CURTAIL M + STARANE ULTRA/ STAREDOWN or ***DICAMBA MAX 4*** + MCPA ESTER	W,S,D,B	0.66 pt: wild oat + 1.75 pt or 0.3 oz + up to 0.36 pt or 11 oz or up to 0.36 pt + 0.5-0.75 pt or 0.95 pt + 0.36 pt or 2 oz + 0.5-0.75 pt	May also be tank mixed with bromoxynil + Starane Ultra.
TALINOR	W,S,D,B	13.7-18.2 fl oz	No more than 1 application/crop year. Do not exceed 18.2 fl oz/A/year.
TARZEC	W,T	1 oz	Winter wheat and Triticale: Apply from 3-leaf through jointing to small, actively growing weeds. Tank mix for POST application to broaden weed spectrum. Apply with NIS at 0.25 to 0.5% v/v (UAN or AMS may be added to NIS), COC at 1.0 to 1.25% v/v, or MSO at 1.0% v/v.* May be applied in liquid fertilizer.
TEAMMATE	W,S,D,T	1 oz + 1-2 qt NIS/100 gal	Add 1.5 lb/A AMS (or use WC+NIS).* Apply from 3-leaf to jointing (Zadoks 1.3 to 3.1). Do not apply >1 oz/A/year.
TOLVERA	W,S,D,B	11 or 14 fl oz	Apply when susceptible broadleaf weed seedlings are emerged, actively growing and less than 4 inches tall. Use the 14.7 fl oz/A for heavy weed pressure, weed staging is more advanced, or on environmentally stressed weeds. Consider tank mixing labeled product(s) to increase spectrum of control. Do not apply more than 14.7 fl oz/A/year. Refer to the label for additional restriction and details on application with liquid fertilizer. Not for use in California.
VARRO	W,S,D	6.85 fl oz	Apply to durum, spring and winter wheat from the 1 leaf stage (fully expanded first true leaf) but prior to jointing (presence of first node). 60 days PHI in MN, MT, ND, and SD; 70 days PHI in all other states. Do not apply after joint stage of growth in wheat and durum. Apply to grass between the 1-leaf to 2-tiller stage of growth. Do not apply to crops undersown with grass or legume species. Do not apply more than 6.85 fl oz/A/year or make more than 1 application/year. Do not mix with tebuconazole-containing products. Use nozzles and pressures for medium size droplets. 60 days PHI in MN, MT, ND, and SD; 70 days PHI in all other states except MT. Do not apply after joint stage of growth in wheat and durum. Note 5.
VIDA	W,T	0.5-1 fl oz	Emergence to flag leaf; do not apply to flag leaf foliage. Minimum of 30 days between applications. Not >2 POST applications or >1 fl oz/A POST. Not >3 fl oz /A/year for all after planting before crop emergence and POST uses. Use with bromoxynil-containing products may cause crop injury.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
VIOS FX	W, S	13.7 fl oz	Apply to spring and winter wheat from the 2-leaf stage of growth up to jointing. Do Not Apply once the wheat has started to joint. Do not apply to crops under sown with grass or legume species. Do not apply more than 13.7 fl oz/A or make more than 1 application/year. Do not mix with any tebuconazole containing products. Use nozzles and pressure to deliver medium sized droplets. Vios FX is formulated as an EC for easy handling, mixing, and tank cleanout. NO additional adjuvants required. Refer to the label for specific tank mix recommendations.
WEEDAR 64	W,S,D,B,O,R,T	0.25-2.0 pt; 2.6 pt	Max. 3.6 pt/A/crop cycle, incl. PH applications. W,S,D,B,T,R not underseeded w/ legumes: 0.5-2.0 pt/A for annual & biennial broadleaf weeds; 1.0-2.0 pt/A perennial broadleaf weeds. O not underseeded w/ legumes: 0.5 pt/A spring seeded; 0.75-1.5 pt/A fall seeded southern. W,S,D,B,O,R,T underseeded w/ legumes: 0.25-0.5 pt/A. Emergency control in W,T: 2.6 pt/A.
WEEDAR XHL	W,S,B,O,R,T	4.3 - 21 fl oz	The higher rates in the rate range increase the risk of grain injury and should be used only where the weed control problem justifies the grain damage risk. Limit to 37 fl oz (1.75 lb 2,4-D ae) per acre per year incl. pre harvest applications. Refer to the product label for post emerge application rates to specific cereal grains underseed with Legumes.
WEEDMASTER/ WEEDMASTER XHL	SEE BRASH		
WEEDONE 638	W,B	0.67-1.33 pt	Use only when cereal grain is not underseeded w/ legumes. Max. 5.0 pt/A/crop cycle, incl. PH applications. 1.0 pt/A for annual & biennial broadleaf weeds; 2.0 pt/A perennial broadleaf weeds. Emergency control in W: 3.0 pt/A.
WELD	W,S,D,B,O	1-1.5 pt	Apply from 3-leaf through flag leaf emergence (Zadoks 3.9) to broadleaf weeds <4" tall. Use 1.5-2 pt for dicamba-resistant kochia or volunteer potato. PHI 14 days for hay, 40 days grain or straw, and 7 days forage or grazing. May be used with liquid fertilizer, up to 50% by volume of fertilizer.
WIDEARMATCH	W, S, D, B, T	14 fl oz	Apply from 3-leaf through flag leaf emergence to broadleaf weeds <4" and not vining. Tank mix with other herbicides registered for POST application to broaden weed spectrum. No adjuvants required. May be applied in liquid fertilzer.
WIDEMATCH (alone or) + MCPA or ***2,4-D LV4***	W,S,D,B,O	1-1.33 pt + 0.5-1 pt or 0.5-1 pt	Apply from 3 leaf through flag leaf emergence to broadleaf weeds less than 4" or not vining. Tank mix with MCPA or 2,4-D to improve control of mustards, pigweed, lambsquarters, and Russian thistle. NIS is not required for tank mixes with sulfonylureas. For best results, liquid fertilizer should not make up > 50% of carrier volume. Add water first. 2ee (exp. date not given) for Harmony SG tank mix to improve weed control in wheat, durum, barley. Note 2.
WOLVERINE ADVANCED	W,S,D,B	1.7 pt	Apply to wheat from emergence to 60 days before harvest in MN, MT, ND, and SD and up to 70 days before harvest in other states. Recommended application for barley is before the 5th leaf has emerged. For control of 1-leaf to 2-tiller annual grasses and 1-4" tall broadleaf weeds. See label for rotational restriction to lentils.
ZIDUA SC	W	Refer to the label for specific application timing, and soil type rates.	Do not apply >4 fl oz/A (0.130 lb a.i./A)/year. To avoid crop injury, apply only to a uniform seedbed that is firm and free of clods, cracks, excess trash (previous crop residue), and weed growth. The seedbed must be prepared to ensure good seed row closure and soil coverage of the seed. Open furrows or poor furrow closure can result in crop injury. Use high quality seed. Plant seed at between 3/4-inch to 1 1/2 inches deep to avoid crop injury.
2,4-D AMINE 4 or ***2,4-D LV4*** or ***2,4-D LV6*** or ***SHREDDER E-99***	W,S,D,B,O,R	0.67-2.5 pt or 0.5-1.33 pt or 0.33-1.33 pt or 0.33-1.33 pt	Apply after crop is well tillered and prior to jointing. Application at or after jointing increases the chance of crop injury. Do not use Amine if mixing with liquid fertilizer unless compatibility has been tested. High rates of 4# amine may cause crop injury. Use higher rates for perennial weeds if increased chance of crop injury is acceptable. Winter wheat and rye and oat require lower rates. Oat tolerance is marginal, use Amine 4 at 0.5-1 pt/A, LV4 at 0.5-0.67 pt/A, LV6 at 0.33-0.5 pt/A, and Shredder E-99 at 0.33 pt/A. For fall seeded southern oat, use Amine 4 at 1-1.25 pt/A, LV4 at 0.67-1.5 pt/A, LV6 at 0.5-1 pt/A, or E-99 at 0.5-0.75 pt/A. Use 1-1.33 pt/A Amine 4, 0.5-1 pt/A LV4, 0.33-0.67 pt/A LV6 for winter wheat and rye. PHI 14 days. Note 2.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
		PREHARVEST	
AIM EC/SHARK EW	W,S,D,B,O,R,T	Up to 2 fl oz	Add 1 qt NIS/100 gal.* Harvest aid up to 7 days of harvest.
ALLY XP/PATRIOT + ***2,4-D LV4***	W,S,D,B	0.1 oz + 0.5-1 pt	PREHARVEST. Add 1-2 qt NIS/100 gal. Apply to wheat or barley when crop is at or past the hard dough stage but no later than 10 days prior to harvest. Can use up to 2 pt/A 4# 2,4-D for larger weeds. In areas where 2,4-D is restricted, use only Ally XP + surfactant. Notes 2,3.
BRASH/WEEDMASTER or WEEDMASTER XHL	W,S,D	Up to 1.4 pt or 1.1 pt.	PREHARVEST. Apply to wheat in hard dough stage when all green color is gone from nodes. Do not use wheat for seed unless germination is tested. PHI 7 days for Brash and WeedMaster, 14 days for WeedMaster XHL. Do not use preharvest-treated wheat for seed unless a germination test is performed on the seed with an acceptable result of 95% germination or greater.
CLARIFIER/CLARITY	SEE STERLING BLUE		
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	W	Up to 32 fl oz or Up to 24 fl oz	PREHARVEST. Add 8.5-17 lb AMS/100 gal. Wheat and feed barley only. Apply after hard dough stage (≤30% moisture for wheat and ≤20% for barley) at least 7 days prior to harvest. Include NIS or WC+NIS as needed.*
HI-DEP	W,S,D,B,O,R	1-2 pt	PREHARVEST. Apply to wheat, barley, oat or rye after the dough stage of grain.
PANTHER SC	SEE VALOR SX		
PATRIOT	SEE ALLY XP		
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	W,S,D,B	See label for precise rates associated with weed species and annual per acre maximums.	PREHARVEST. Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply to feed barley and wheat only at least 7 days prior to harvest. Apply after hard dough stage and ≤ 30% moisture (wheat) or ≤ 20% moisture (barley). Do not apply to wheat or barley grown for seed. Will provide suppression or control of certain perennial weeds. Add 2,4-D for suppression of field bindweed. Apply in 10-20 GPA water ground or 3-10 GPA aerial. May use other glyphosate products at greater or lesser volumes; see individual labels.
RT3	W,S,D,B	Up to 22 fl oz	PREHARVEST. Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply to wheat or feed barley after hard dough stage. Allow 7 days before grazing or forage or straw harvest. PHI 7 days. It is not recommended to apply preharvest to wheat and barley grown for seed. For use in CO,ID,MT,NV,ND,OR,SD,TX,UT,WA,WY and specific counties KS,MN,NE,NM,OK; see label.
RUGGED	W,S,D,B,O,R	1 pt	PREHARVEST. Apply to cereal grains in hard dough stage. PHI 14 days.
SADDLE-UP or SPITFIRE	W,S	Up to 1.33 pt or Up to 1.3 pt	Apply as broadcast or spot treatment when wheat is in hard dough stage and green color is gone from nodes (joints) of stem. Do not use PH-treated wheat for seed unless germination test of seed is ≥95%. Do not use crop oil concentrate for grain crops. If grown for pasture or hay only, refer to Pastures section of label.
SHARPEN	W,S,D,B,T	1-2 fl oz	Spray over top by ground or air. Allow up to 10 days for optimum desiccation effect. Max. 2 fl oz/A for desiccation uses, which do not count toward annual per acre maximums for other uses. Do not use on barley grown for malting purposes.
SHREDDER E-99	SEE 2,4-D		
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** (alone or) + ***2,4-D LV4***	W,S,B	0.5 pt + 1-2 pt	PREHARVEST. Apply to winter or spring wheat in hard dough stage (green color is gone from stem nodes). Do not harvest for at least 7 days. Do not save treated barley for seed unless a germination test is performed. Note 2.

See notes at end of table.

POSTEMERGENCE *(continued)*		Rate/Acre	
Herbicide	**Labeled Crops[1]**	**All Soil Textures (except as noted)**	**Comments/Restrictions**
		PREHARVEST *(continued)*	
VALOR SX or VALOR EZ/ PANTHER SC	W,S	1.5-2 oz or 1.5-2 fl oz	PREHARVEST. Add 1 qt HSOC-MSO/A + 2-2.5 lb/A AMS or 1-2 qt/A UAN.* Apply after wheat reaches hard dough stage and grain has less than 30% moisture. PHI 10 days. May be tank mixed with glyphosate.
WEEDAR 64	W,S,D,B,O,R,T	1.0 pt	Max. 3.6 pt/A/crop cycle, incl. POST and emergency applications.
WEEDAR XHL	W,S,B,O,R,T	10.6 fl oz	Apply when grain is in dough stage. Do not apply from early boot through the milk stage of growth. Max. 37 fl oz/A/Year. Limit to one preharvest application per year.
WEEDONE 638	W,B	1.0-1.33 pt	Max. 5.0 pt/A/crop cycle, incl. POST and emergency applications.
2,4-D AMINE 4 or ***2,4-D LV4*** or ***2,4-D LV6*** or ***SHREDDER E-99***	W,S,D,B,O,R	1 pt or 1 pt or 0.67-1.33 pt or 0.67 pt	PREHARVEST. Apply to wheat, barley, oat or rye at or past the hard dough stage. LV may provide more effective control than amine but is more subject to vapor drift. Note 2.

[1] W – winter wheat, S – spring wheat, D – durum wheat, B – barley, O – oat, R – rye, T – triticale.

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner

NOTE 1: When liquid nitrogen is the carrier, use of surfactant can increase risk of crop injury with many sulfonylurea herbicides such as Affinity, Agility, Ally XP, Ally Extra SG, Finesse Cereal and Fallow, Harmony, Glean XP, Olympus, Osprey or Patriot. Surfactant may be advisable for winter application on dormant weeds and small grain, especially under marginal control conditions or if liquid fertilizer is diluted >50% with water. Consult label, registrant or distributor. Never add surfactant if tank mixed with phenoxy herbicides in liquid fertilizer carrier.

NOTE 2: Do not feed 2,4-D treated straw to livestock. Do not let dairy animals or animals for slaughter forage or graze treated fields within 2 weeks of treatment.

NOTE 3: See restrictions chart for rotational and/or soil pH restrictions.

NOTE 4: Do not make a foliar or soil application of any organophosphate insecticide within 15 days before or 10 days after an application of Peak.

NOTE 5: If resistant weed biotypes such as kochia, wild oat, and Russian thistle are suspected, use in tank mixtures (or apply in sequence) an appropriately registered herbicide having a different mode of action. Do not allow weed escapes to flower.

NOTE 6: Apply only once per 12-month period. Do not harvest hay from treated fields.

NOTE 7: Do not use if vetch or sweet clover are underseeded. Use low pressure and <6 GPA water. SMALL GRAIN or weeds must provide a protective umbrella over the legume seeding.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECTICIDE	LABELED CROPS: W - WHEAT	B - BARLEY	O - OAT	R - RYE	T - TRITICALE	PRE-HARVEST INTERVAL FOR GRAIN IN DAYS	RATE PER ACRE	INSECTS: APHID	ARMYWORM	BROWN WHEAT MITE	CEREAL LEAF BEETLE	CHINCH BUG	CUTWORM, ARMY or PALE WESTERN	FALL ARMYWORM	GRASSHOPPER	GREENBUG	HESSIAN FLY	ORANGE W.B. MIDGE	RUSSIAN WHEAT APHID	WINTER GRAIN MITE
ACTARA		B				21	4 oz	●											●	
BAYTHROID XL ‡	W	B	O	R	T	30	1-1.8 fl oz				●		●							
							1.8-2.4 fl oz	●	●					●	●		●*		●	
							2.4 fl oz					●								
BESIEGE ‡	W	B	O	R	T	30	5-8 fl oz						●							
							6-10 fl oz	●	●		●			●	●		●	●	●	
							10 fl oz	●S		●S		●				●S			●S	●S
BLACKHAWK	W	B	O	R	T	21	1.1-3.3 oz		●		●									
							1.7-3.3 oz							●	●S					
DIMATE 4E	W					35	0.5-0.75 pt	●								●			●	
							0.33-0.5 pt			●										
							0.75 pt								●					
DIPEL ES	W	B	O			0	2-4 pt		●					●						
							1-2 pt						●							
ENDIGO ZCX ‡		B					3.5-4 fl oz	●	●		●		●	●	●		●	●	●	
							4.5 fl oz			●S		●				●				●S
ENTRUST SC	W	B	O	R	T	21	2-6 fl oz		●		●			●	●S					
							3-6 fl oz		●					●	●S					
GRIZZLY TOO ‡/WARRIOR II ‡	W	B	O	R	T	30	0.96-1.6 fl oz						●							
							1.28-1.92 fl oz	●	●		●			●	●		●	●	●	
							1.92 fl oz	●S		●S		●				●				●S
LAMBDA-CY AG ‡	W	B	O	R	T	30	1.92-3.2 fl oz						●							
							2.56-3.84 fl oz	●	●		●			●	●		●	●	●	
							3.84 fl oz	●		●		●				●				●
LANNATE LV ‡ or LANNATE SP ‡	W						0.75-1.5 pt or 0.25-0.5 lb	●	●		●			●					●	
MALATHION 5	W	B	O	R		7	1-1.5pt				●									
	W	B	O	R			1.5 pt	●								●				
	W		O	R			1.6 pt	●	●	●				●	●				●	●
		B					2 pt		●					●						
		B					1.5-2 pt	●		●					●					●

See notes at end of table.

COMMENTS AND RESTRICTIONS
Maximum 8 oz (0.125 lb a.i.)/A/season. Minimum application interval is 7 days. Ground or aerial application.
Maximums: 2.4 fl oz/A per 3-day interval; 4.8 fl oz/A per crop season. Aphid: For best control apply prior to insect damage to plants; use higher rate range and increased water volume after plant damage has taken place or following booting (after which control may be limited to suppression). Ground, aerial or sprinkler irrigation application. Armyworms: 1st and 2nd instar. PHI 3 days for grazing and feeding. 2ee NC,VA (exp. date not given) for Hessian Fly when adults emerge. 2ee MN, MT, ND, SD (exp. date not given) for control of adult wheat stem maggot.
Maximum: 18 fl oz/A/year. Minimum application interval is 7 days. Do not make >4 applications/A/crop. Ground or aerial application. Aphids and Greenbug: Best control before insects begin to roll leaves; may only provide suppression once crop starts to boot;10 fl oz/A is for Corn Leaf Aphid, suppression only. Chinch Bug: 7-day application interval if needed; may only suppress heavy infestations and/or migrations. Greenbug: May provide suppression only; consider second application with alternative chemistry; see label for important resistance management information. Hessian Fly: Apply when adults emrege. PHI 7 days for grazing livestock or harvesting forage for meat or dairy animals. PHI 30 days for feeding treated straw to meat or dairy animals. Apply in minimum 10 GPA by ground, 2 GPA by air.
Do not make >2 consecutive applications of Group 5 insecticides; if additional treatments are required, rotate to another class for at least one application. Do not apply >12.4 oz (0.28 lb a.i.)/A/year. Minimum application interval is 4 days. Ground or aerial application. Armyworms: Apply to coincide with peak egg hatch and/or small larval growth stage of each generation. PHI 3 days for harvest of forage, fodder or hay. Do not allow cattle to graze until spray has dried.
Maximums: 0.75 pt (3/8 lb a.i.)/A/application; 1 pt (0.5 lb a.i.)/A/year. Ground, aerial or sprinkler irrigation application. PHI for grazing immature plant is 14 days.
Ground or aerial application. Armyworm: Controls 1st and 2nd instar with full coverage sprays when populations are light; repeat as necessary; enhance control of mature or heavy populations with a contact insecticide.
Do not apply >9 fl oz/A/season. Minimum application interval is 7 days. Ground, aerial or sprinkler irrigation application. Aphids: Best control before insects begin to roll leaves; once wheat boots, may provide suppression only; 4.5 fl oz/A is rate to control Corn Leaf Aphid only. Chinch Bug: Repeat applications as necessary; may only suppress heavy infestations and/or migrations. Greenbug: May provide suppression only; a second application using alternative chemistry may be necessary. See label for resistance information. Hessian Fly: Apply when adults emerge. PHI for meat or dairy animals to graze or feed on treated forage is 7 days, and for feeding treated straw to meat or dairy animals is 30 days.
Ground, aerial or sprinkler irrigation application. Armyworms and Grasshopper: Scout to monitor egg laying a hatch; treat when tresholds are reaches.; time applications to coincide with peak egg hatch and/or small alrvale growth stafe of each generation. Do not make >2 consecutive applications of Group 5 insecticides; rotate to another class for at least one application. Do not make applications <4 days apart. Do not apply >19 fl oz (0.28 lb a.i.)/A/year for all application methods. Do not make >3 applications per calendar year. Do not graze treated area until spray has dried. PHI for forage, fodder or hay harvest is 7 days, and for straw is 21 days. OMRI Listed.
Do not apply >3.84 fl oz (0.06 lb a.i.)/A/season. Minimum application interval is 7 days. Ground, aerial or sprinkler irrigation application. Aphids: Best control before insects begin to roll leaves; once wheat boots, may provide suppression only; 1.92 fl oz/A is rate for Corn Leaf Aphid, suppression only. Chinch Bug: Repeat applications at 3- to 5-day intervals; may only suppress heavy infestations and/or migrations. Greenbug: May provide suppression only; a second application using alterntive chemistry may be necessary. See label for resistance information. Hessian Fly: Apply when adults emerge. PHI for meat or dairy animals to graze or feed on treated forage is 7 days, and for feeding treated straw to meat or dairy animals is 30 days.
Apply as required by scouting, usually at intervals ≥5 days. Do not apply >7.68 fl oz (0.06 lb a.i.)/A/season. Ground or aerial or sprinkler irrigation application. Aphids: Best control before insects begin to roll leaves; once wheat boots, may provide suppression only; 3.84 fl oz/A is rate for Corn Leaf Aphid, suppression only. Chinch Bug: Repeat applications at 3- to 5-day intervals; may only suppress heavy infestations and/or migrations. Greenbug: May provide suppression only; a second application using alterntive chemistry may be necessary. See label for resistance information. Hessian Fly: Apply when adults emerge. PHI for meat or dairy animals to graze or feed on treated forage is 7 days, and for feeding treated straw to meat or dairy animals is 30 days.
Apply in ID,OR,WA only (by ground, aerial or sprinkler irrigation). Apply Lannate LV by Supplemental label (exp. date not given) in CO, KS, NE, NM, WY only (by sprinkler irrigation). Do not apply >6 pt Lannate LV/A/crop or >2 lb Lannate SP/A/crop. Do not make >4 applications Lannate LV or Lannate SP/crop. Aphids: Crop must be actively growing and not under stress from environmental conditions; Russian wheat aphid populations need to begin when there are <10 adults/stem. Cereal leaf beetle: Can provide contact ovicidal effect when applications are timed to coincide with appearance of newly laid eggs or in anticipation of egg hatch.
Rates are for non-ULV applications (see label for ULV application rates). Aphid: 1.5 pt/A rate is for English Grain aphid in W, B, O, R; 1.6 pt/A is for other aphids in W, O, R and 1.5-2 pt/A is for other aphids in B. Maximum 2 applications per year. Minimum retreatment interval is 7 days.

INSECTICIDE	LABELED CROPS: W - WHEAT	B - BARLEY	O - OAT	R - RYE	T - TRITICALE	PRE-HARVEST INTERVAL FOR GRAIN IN DAYS	RATE PER ACRE	INSECTS: APHID	ARMYWORM	BROWN WHEAT MITE	CEREAL LEAF BEETLE	CHINCH BUG	CUTWORM, ARMY or PALE WESTERN	FALL ARMYWORM	GRASSHOPPER	GREENBUG	HESSIAN FLY	ORANGE W.B. MIDGE	RUSSIAN WHEAT APHID	WINTER GRAIN MITE
MALATHION 5EC	W			R		7	1-1.5 pt	●											●	
	W			R			1.5 pt				●				●	●				●
			O				1.5 pt	●			●				●	●			●	●
		B					1-2 pt	●			●				●	●			●	●
MALATHION 8 FLOWABLE		B				7	1 pt	●	●					●	●	●			●	
	W		O	R			1-1.25 pt	●	●					●	●	●			●	
MUSTANG MAXX ‡	W	B	O	R	T	14	1.28-4 fl oz						●							
							1.76-4 fl oz		●		●		●							
							3.2-4 fl oz	●S	●			●		●	●	●S			●S	
PYGANIC EC 1.4$_{II}$	W	B	O	R	T	0	16-64 fl oz	●	●	●				●	●			●	●	●
PYGANIC EC 5.0$_{II}$	W	B	O	R	T	0	4.5-15.61 fl oz	●	●	●				●	●			●	●	●
RADIANT SC	W	B	O	R	T	21	2-6 fl oz				●									
							3-6 fl oz		●					●	●S					
SIVANTO 200 SL or SIVANTO PRIME	W	B	O	R	T	21	7-10 fl oz or 7-14 fl oz	●											●	
TRANSFORM WG	W	B	O	R	T	14	0.75-1.5 oz	●								●			●	
VANTACOR	W	B	O	R	T	1	1.2-2.5 fl oz		●					●						
							0.7-1.7 fl oz								●					
XENTARI	W	B	O	R			0.5-2 lb		●					●						

Products may control/suppress many other insects; see label

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

COMMENTS AND RESTRICTIONS
Maximum 2 applications per year. Minimum retreatment interval is 7 days.
Maximum 2 applications per year. Minimum retreatment interval is 7 days.
Apply based on scouting and thresholds. Ground, aerial or sprinkler irrigation application. Do not apply >20 fl oz/A/season. Do not make applications <14 days apart. Armyworm: 1.76-4 fl oz/A for Southern, True and Yellow-Striped; 3.2-4 fl oz/A for Beet (suppression only; see label for resistance management information) and Fall. Aphid/Greenbug: See label for resistance management information. Cutworm: 1.28-4 fl oz/A for Cutworm spp., including Army; 1.76-4 floz/A for Pale Western.
OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
Use higher rate in range for heavy infestations, advanced growth stages, or difficult spray coverage situations. Do not make >2 consecutive applications of Group 5 insecticides; rotate to another class for at least one application. Do not apply >18 fl oz/A/year. Do not make >3 applications/calendar year. Minimum treatment interval is 4 days. Ground, aerial or sprinkler irrigation application. Armyworms: Excludes yellowstriped and western yellowstriped. PHI for straw harvest is 21 days, and for forage, fodder or hay harvest is 3 days.
Do not apply >28 fl oz/A/calendar year Sivanto 200 SL, Sivanto prime. Minimum treatment interval is 7 days. 10 GPA by ground, 2 GPA by air Sivanto 200 SL or 3 GPA by air Sivanto prime, or sprinkler irrigation application. PHI for stover or straw is 21 days, and for hay or forage is 7 days.
Apply in accordance with local economic thresholds. Use higher rate in range for heavy populations. Minimum treatment interval is 14 days. Do make >2 applications/crop. Do not apply >2.8 oz/A/year. Ground, aerial or sprinkler irrigation application. PHI for grain or straw is 14 days. For grazing, forage, fodder, or hay the PHI is 7 days.
Maximum 4 applications/A/year. Minimum application interval is 7 days. Do not apply >60 fl oz (0.2 lb a.i.)/A/year. Ground, aerial or sprinkler irrigation application. Grasshopper: Best foliar spray results with MSO; see label for additional information; do not make >2 sequential applications before rotating to another insecticide with a different mode-of-action.
Ground application only. For best results, full coverage sprays when 1st or 2nd instar larvae are present; repeat treatment as necessary. Use highest rate for rapidly increasing populations, or tank mix with a contact insecticide.



APHID: Aphids have different impacts on small grains and different growth stages of the plant react differently. Bird cherry-oat aphids are a primary vector for barley yellow dwarf virus. English grain aphids are often found clustered in heads. The following thresholds are adapted from Colorado State University for winter wheat. Spring wheat may be more sensitive and have lower ETs. SEE GREENBUG AND RUSSIAN WHEAT APHID SECTION FOLLOWING FOR DETAILED THRESHOLD.

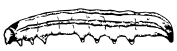


Type of aphid (Adapted from Colorado State University)

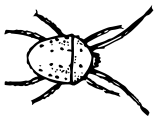


Aphids/stem which justify chemical control in winter wheat

	Seedling	Boot to Heading	Flowering Ripe	Milky Dough	Milk to Medium
Corn Leaf Aphid	20	30	>25	>25	>25
Bird Cherry-oat Aphid	20	30	5	10	>10
English Grain Aphid	30	50	5	10	>10



ARMYWORM: Infestations usually begin in Texas and Oklahoma and progress northward. May be found in fields from April through small grain headings. Outbreaks are favored by cool damp weather. Feed on vegetation and usually at night. Look for signs of leaf feeding and for worms in debris around base of plants. Barley is readily attacked along with lush stands of wheat. **ET:** treat if there are 3 or more worms per row foot. Head clipping is serious in barley and winter wheat. Watch fields late in season, where worms are present, to protect flag leaves and heads. Treat before extensive head clipping occurs. Spray in morning or evening for best results.



BROWN WHEAT MITE: In dry years, mite populations build up rapidly during March and early April. Up close, the plants show signs of a fine mottling in areas where mites are feeding and fields may take on a bronze appearance. Beating rains generally eliminate the problem. Yield increases from insecticide treatments tend to be more favorable at high populations above 200 or more per foot of planted row, assuming average tillering and growth. In dryland fields moisture is usually the limiting factor and wheat may not respond to a mite spray treatment till additional moisture is received.



CEREAL LEAF BEETLE: Adults and larvae eat long narrow strips of tissue between veins. Occurs from April to maturity. **ET:** when there is total of 3 or more larva and eggs per stem. For larger plants, treat when > 1 larva per flag leaf.



CHINCH BUG: Rarely a problem in small grains, but if damage is occurring, aerially apply at least 15 days before harvest. Spray applications are rarely successful.



CUTWORM, ARMY AND PALE WESTERN CUTWORM: Army cutworms are mottled brown, up to 1.25" long, and feed on spring growth. Some fields never green up because of feeding. Frequent inspection of fields during warm periods in Feb, March and early April is encouraged especially when the previous fall was dry. Worms may be active at temperatures as low as 40˚F. **ET:** in late planted or thin stands, 1 to 2 worms/sq ft justify treatment. Usually treatment will not be necessary until populations average 4 to 5 worms/sq ft in winter and early spring. The pale western cutworm is shiny, gray to cream and begins feeding about 2-3 weeks later than the army cutworm. These insects feed primarily below the soil surface. Scratch the soil to a depth of 2 to 4 inches in search of larvae. Two or more worms/sq foot justify treatment.





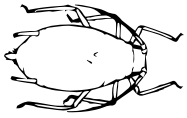
FALL ARMYWORM: Early planted fields usually experience a higher risk of infestation. The first killing frost generally stops further activity. A two-day old worm will consume 0.0465 in2 of leaf surface; 0.9982 in2 leaf surface when 5 to 7 days old; and about 16.52 in2 during days 10 to14 as it nears the end of its larval development. Inspect early planted fields frequently during the first couple of weeks after emergence. Beginning injury consists of tiny "window-pane" like chewing. The larvae, at this stage, hide in or around the base of the seedling. **ET:** finding an average of 25-30 percent of the plants with window-pane chewing is cause for concern and should be scouted daily. Within a few days, the larvae, if they survive, will be large enough to destroy entire leaves. Control should be initiated if this begins to occur at a level which will threaten the stand. Later, where abundant, the larvae will destroy the entire stand.



FALSE WIREWORM : These yellowish-brown hardshelled larvae live in the soil and attack the seed before germination. To detect problems before planting, sample the soil by sifting one foot square samples to a depth of about 4" through a piece of hardware screen. Repeat in 5 to 10 places in the field. There is no established **ET:** however, an average density of 1 worm per 3 sq ft would probably justify treatments.



GRASSHOPPER: Check wasteland margins (field borders) 10 days before planting, **ET:** 7-12 hoppers per sq yd justify treatment of wasteland margins. 3 or more hoppers in seedling wheat can destroy stands. Spray while hoppers are in field borders. Later in season **ET:** 20 hoppers per square yd in field borders; 8 or more/sq. yd. in planted field justify treatment.



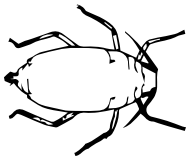
GREENBUG: GREENBUG RESISTANCE occurs in both greenbug biotypes E and I. Thus far, control failures have been mostly limited to greenbugs attacking sorghum. Every attempt should be made to limit spraying until ETs have been exceeded. There are no proven non-chemical methods of prevention and control of greenbugs on small grains. The risk of encountering damaging infestations is often reduced by avoiding either unusually early or late dates of planting. Some research suggests that the risk of greenbug infestations can be reduced by increasing the amount of crop residues on the soil surface during the period of emergence and stand establishment. Utilize natural populations of beneficial insects wherever possible. **ET:** spray seedlings with less than 3 tillers if there are 50 or more bugs per row foot; 3-6" wheat (3 or more tillers) if 100-300 bugs/row foot; 6-10" wheat if 300-500 bugs/row foot. Where there are 1 to 2 lady beetles per foot of row or 15 to 20% of the greenbugs have been parasitized, control measures should be delayed until it can be determined if the greenbug population is continuing to increase.



HESSIAN FLY: Rescue treatments have been found to be ineffective. Preventive control utilizes resistant varieties, seeding after fly-free date and destroying volunteer wheat. Cruiser or Gaucho seed treatments provide early season control.



ORANGE WHEAT BLOSSOM MIDGE: Examine wheat fields at dusk. Treat in late pm or early evening for best control. The orange colored midge can be seen laying eggs on the wheat heads. Plants are susceptible as the head emerges from the boot. Detecting adult midge – Sticky traps may be used to capture adult midges active in wheat fields. A simple trap design would be a cardboard milk carton, painted white, attached to the top of a wooden stake. The trapping surface can be coated with tangle foot or vegetable oil. The trap can alert an individual to the presence of midge but does not provide information on the need to treat. **ET:** if more than 1, midge is observed for every 4-5 heads treatment is warranted. Treatments after early flowering are not recommended for the protection of a parasitic wasp that attacks the midge larvae.



RUSSIAN WHEAT APHID: The Russian Wheat Aphid (RWA) injects a potent toxin into the plants, causing the leaves to roll and turn purple with yellow or white lengthwise stripes. Its "double-tailed appearance" and reduced cornicles "tailpipes" help to distinguish it from other aphids. Heavily infested plants appear flattened, with young tillers lying parallel to the ground. RWA is difficult to control due to its habit of feeding in rolled-up leaves of new growth and because beneficial insects do not significantly reduce RWA numbers. Feeding by RWA on flag leaves can cause premature death and distorted white heads. Damage often appears in circular, purple or reddish-brown areas in a field. RWA cause more damage on stressed plants than those plants which are healthy. If one tiller shows damage, then the plant should be considered damaged. Aphids may be very hard to find during cold weather, so base treatment decisions on damage alone under such conditions. Resistant varieties are available. Scout fields by walking across fields and randomly select 100 tillers. Examine each tiller for damage and for infestation. Use the following **ET** for management decisions. **Texas ET:** for every one percent of the tillers infested there is 0.5% yield loss.

COLORADO STATE UNIVERSITY ETS:

Crop Stage	Level at which aphids should be treated
Fall (any stage)	10-20% damaged plants or 10 aphids/foot of row
Spring	
Regrowth to early boot	5-10% damaged and infested plants
Early boot to flowering	10-20% damaged and infested plants
After flowering	More than 20% damaged and infested tillers



WHEAT CURL MITE: Mite carries and spreads the virus that causes wheat streak mosaic. It feeds on the upper surface of leaves, and is often found in the vicinity of the leaf axils. High numbers of this insect will prevent leaves from unrolling normally. Later heads may become trapped if population remains high. Destroy volunteer wheat and follow the fly-free date as a planting guide. Chemical control has not proven effective.

WHEATHEAD ARMYWORM: Damage occurs in May through June. Body tapers toward the rear. Destroys green heads.



WHEAT STEM MAGGOT: Damage may occur in May through June. Damage causes white heads. Chemical control generally not effective. Delay planting after fly-free date. Rotation to non-susceptible crops will reduce numbers. Baythroid XL 2ee MN, MT, ND, SD (exp. date not given) for adult in spring wheat.



WHEAT STEM SAWFLY: Damage occurs May through June by insects tunneling in stem reducing yields, stems lodging and lowering protein content. Sawfly damage is most prevalent in fields continuously cropped to hard red spring wheat and where stubble is left undisturbed. Management options include resistant varieties, rotation to non-susceptible crops, delayed planting of varieties and shallow fall tillage. Chemical control has not been consistent and is not a viable option.



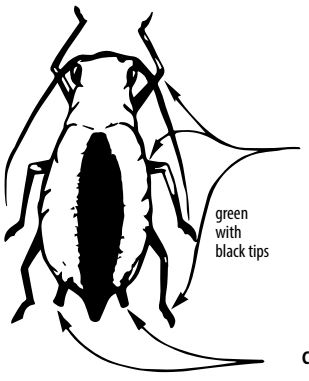
WHITE GRUB: A population of 4-5/square foot can cause economic damage. See seed treatment section. No rescue insecticide is labeled.



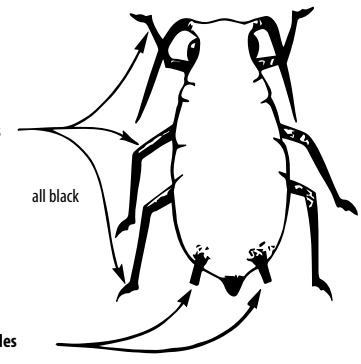
WINTER GRAIN MITE: Fall or spring injury appears as off-color, silver-gray appearance of leaf tissue. Feeding occurs mostly at night, remain around the base of the plant during the day. Greatest damage occurs during winter and early spring. Hot, dry weather slows mite injury. Injury symptoms and presence of mites indicate the need for control. Several products have state 2(ee) labels.

GREENBUG

Body Color:
Bright green with dark green stripe down center of back. Usually found on the underside of leaves



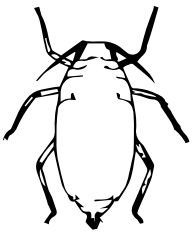
CORN LEAF APHID



Body Color:
Bluish-green a(lacks green stripe down the back).

Usually found in whorls and on top of newly emerged leaves.

RUSSIAN WHEAT APHID



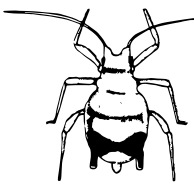
Body Color and Shape:
Body light green and spindle-shaped; all of legs dark tan.
Antennae:
Very short and dark at tips.
Tip of Abdomen:
Double tail.



Side View

Cornicles:
Reduced in size, almost nonexistent.

BIRD CHERRY-OAT APHID



Body Color:
Olive-green with red-orange patch surrounding the base of each cornicle.

LABELED FUNGICIDES

FUNGICIDE	DISEASES											
	BARLEY SCALD	BARLEY STRIPE	BLACK POINT	EYE SPOT	FOOT ROT	GLUME BLOTCH	HELMINTHOSPORIUM LEAF SPOT	HELMINTHOSPORIUM BLOTCH	HELMINTHOSPORIUM LEAF BLIGHT	KERNEL BLIGHT	NET BLOTCH	
ABSOLUTE MAXX	B					WB					B	
ADASTRIO/FORCIVO						WBT					WBT	
ALTIPRO												
ALTO 100SL					WT	WT			WT			
APROACH			WBORT			WBORT					WBORT	
APROACH PRIMA			WT			WT						
BADGE SC/BADGE X2							WBOR	WBOR	WBOR			
BIO-TAM 2.0					WBORT							
CHAMP DRY PRILL							WBO					
CHAMP FORMULA 2 FLOWABLE							WBO					
CHAMP WG							WBO					
CHAMPION++							WBO					
CUPROFIX ULTRA 40 DISPERSS							WBO	WBO				
DELARO 325 SC	B					B					B	
DELARO COMPLETE						W						
DITHANE F-45 RAINSHIELD							WBORT					
EVERLON/PRIAXOR			WBRT	WT			O			B	BR	
EVITO 480 SC												
EVITO T												
HEADLINE SC			WBT				O					
KOCIDE 3000								WBO			B	
LUCENTO						WT						
MANZATE PRO-STICK							WBORT					
MIRAVIS ACE	WBORT		WBORT			WBORT	WBORT					
NEXICOR	B	B				WBOT	O	O		BWT	BR	
ONSET 3.6L											BOR	
PENNCOZEB 75DF							WBORT					
PREVISTO							WOB	WOB				
PROLINE 480 SC	B					W					B	
PROSARO 421 SC	B					W					B	
PROSARO PRO 400 SC	B					W					B	
QUILT XCEL/AFRAME PLUS	BORT	BORT		W	WOR	WBORT			WBORT	WBORT	BORT	
RUSTEASE						WT			WT			
SERENADE ASO												
SPHAEREX												
STRATEGO YLD/***PROTEGAM YLD***[3]						B					B	
TETRABAN		BOR								BOR	BOR	
TOPAZ/TILT	BORT	BORT			WBORT	WBORT			WBORT		WBORT	
TOPGUARD												
TOPGUARD EQ												

See notes at end of table.

	DISEASES *(continued)*														
	POWDERY MILDEW	RUST	RUST, LEAF	RUST, STEM	RUST, STRIPE	SCAB (FUSARIUM HEAD BLIGHT)[2]	SCALD	SEPTORIA GLUME BLOTCH	SEPTORIA LEAF BLIGHT	SEPTORIA LEAF BLOTCH	SEPTORIA LEAF SPOT	SPOT BLOTCH	STAGONOSPORA BLOTCH	STRAWBREAKER	TAN SPOT
	WB	WB	WB	WB	WB				W			B			W
	WBT		WBT	WBT	WBT					WBT			WBT		WBT
	W	W	W	W	W					W			W		W
	WT	WT						WT	WT			WT			WT
	WBORT	WBORT	WBORT	WBORT	WBORT		WBORT	WBORT		WBORT		WBORT			WBORT
	WT	WT	WT	WT	WT	WT-S						WT			WT
	WBOR			WBOR		WBOR				WBOR		WBOR	WBOR		
						WBORT									
										WBO					
										WBO					
	WBO-S			WBO									WBO		
	WBO			WBO		WBO							WBO		
										WBO					
	WB	WB	WB	WB	WB			W		W		B	WB		W
	W	W	W	W	W			W		W			W		W
		WBT	OR					WRT		BO	WBORT				WBORT
	WBRT		WBORT	WBORT	WBORT		BR	WBRT		WBORT		WBORT			WBRT
	W		W	W	W			W		W					W
			W	W	W			W		W					W
	WBRT	BO	WBORT	WBORT	WBORT		B	WBORT		WBORT		WBOT			WBT
										WBO					
	WT	WT	WT	WT	WT			WT	WT	WT			WT		WT
			WBORT					WBORT			WBORT				WBORT
	WBORT	WBORT-*	WBORT-*	WBORT-*	WBORT-*	WBORT	WBORT	WBORT				WBORT	WBORT		WBORT
	WBRT	BO		WBORT	WBRT		BR	BR		WBORT		WBRT			WBRT
		WB				WB-S									
		WB	ORT			WBOT		WBORT			WBORT				WBORT
										WOB					
	WB	WBORT	WBORT	WBORT	WBORT	WBT-S	B			WT		B			WT
	WB	WB	WB	WB	WB	WB	B	W		W		B	WB		W
	WB	WB	WB	WB	WB		B	W		W		B	WB		W
	BORT	WBORT	WBT	W					WBORT			WBORT			WBORT
	WT	WT	WT	WT	WT				WT			WT			WT
	WBORT	WBORT													
	W	W				W				W		W	W		W
	WB	WB	WB	WB	WB		B			W		B	WB		W
	WBORT		WBORT	WT	WT			WT		WT					WT
	WBORT	WBORT				WBORT-S			WBORT			WBORT			WBORT
	WT	WT				WT-S		WT		WT					
	WT		WT					WT		WT					WT

FUNGICIDE	DISEASES											
	BARLEY SCALD	BARLEY STRIPE	BLACK POINT	EYE SPOT	FOOT ROT	GLUME BLOTCH	HELIMINTHOSPORIUM LEAF SPOT	HELMINTHOSPORIUM BLOTCH	HELMINTHOSPORIUM LEAF BLIGHT	KERNEL BLIGHT	NET BLOTCH	
TOPSIN 4.5FL/TOPSIN M WSB/T-METHYL 4.5 F/T-METHYL 70 WSB[1]				WT	WT							
TRIVAPRO						WBORT			WBORT			

Products may control/suppress many other diseases; see label and Fungicide Resistance Management in the Technical Information section
* - 24c, 2ee or Supplemental label; see Comments and Restrictions in Disease Treatment Guidelines
* Many other diseases may be controlled, see label.
W – wheat, B – barley, O – oat, R – rye, T – triticale
S – suppression
[1] For Eye Spot, Foot Rot and Strawbreaker, triticale and fall seeded wheat in WA, ID, and OR only.
[2] Use tolerant varieties for scab. Some seed treatments have activity on scab organisms that attack seedlings, but provide no control of head infections.

	DISEASES *(continued)*														
	POWDERY MILDEW	RUST	RUST, LEAF	RUST, STEM	RUST, STRIPE	SCAB (FUSARIUM HEAD BLIGHT)[2]	SCALD	SEPTORIA GLUME BLOTCH	SEPTORIA LEAF BLIGHT	SEPTORIA LEAF BLOTCH	SEPTORIA LEAF SPOT	SPOT BLOTCH	STAGONOSPORA BLOTCH	STRAWBREAKER	TAN SPOT
														WT	
	WBORT		WBORT	WBORT	WBORT				WBORT			WBORT			WBORT

DISEASE MANAGEMENT

Volunteer wheat and grassy weeds are hosts for many diseases and insect vectors. Wheat streak mosaic, High Plains mosaic and other virus diseases are spread by wheat curl mite and other mites. Barley yellow dwarf is spread from volunteer wheat by insect vectors such as greenbugs and aphids. Control volunteer wheat within 1/2 mile at least 2 weeks before planting. Early season suppression of aphids with seed treatments containing imidcloprid. Moderate control of BYD with tolerant varieties.	
BARLEY SCALD	Attacks barley only. Destroy barley residue. Use seed treatment and resistant varieties.
GLUME BLOTCH	Enhaced by high precipitation, heavy canopies. Use resistant varieties. Apply fungicides to exposed heads. Seed treatments control seed-borne disease.
POWDERY MILDEW	Especially severe on tender, rank wheat under heavy nitrogen and cool, humid and cloudy weather. Scout for presence of small, white pustules on lower leaves and leaf sheaths. Treat if pustules occur on flag leaf or 1 -2 leaves below between stage 8 and 10.
RUSTS	Stem rust, stripe rust, leaf rust. Use resistant varieties. Some previously resistant varieties to stripe rust have lost resistance. Most durum varieties are resistant to rusts. Favored by temperatures of 59-72° F.
SCAB	Enhanced following corn, wheat or barley and with reduced tillage. Use tolerant varieties. Also, some seed treatments have activity on scab organisms that attack seedlings, but have no control of head infections. Rotate to crops other than wheat, corn or sorghum. Incorporate crop residue. Favored by temperatures of 70-85° F.
SEPTORIA LEAF BLOTCH	Enhanced following wheat and reduced tillage. Heavy N use. Use tolerant varieties. Treat if 1-2 lesions on leaf below flag leaf on susceptible variety between growth stages 8 and 10.5.
TAN SPOT	Symptoms begin in late March in KS on lower leaves and move up the plant. Wheat after wheat and reduced tillage increase severity.

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops	Rate/Acre	PHI	G/F	Comments/Restrictions
The flag leaf provides up to 65% of the carbohydrate that goes into the grain. The leaf below (penultimate leaf) provides 20-25% of the carbohydrates. Loss of the top two leaves can reduce yield up to 25-30% or more. The purpose of fungicide application is to keep the top two leaves and head healthy between Feekes growth stages 8 and 10.5.4.					
ABSOLUTE MAXX	W,B	3.3-5 fl oz	35,40	30,30	Apply Absolute Maxx preventatively for best results. Tank mixing with grass or broadleaf herbicides in wheat and barley is not recommended as crop injury may occur. Do not apply more than 3.3 fl oz/A of Absolute Maxx per season in barley and more than 5.0 fl oz/A in wheat. PHI 35 days wheat, 40 days barley. Do not harvest for hay or straw within 45 days after application. Registered for use in CO, KS, NE, OK, SD, TX only.
ADASTRIO/FORCIVO	W,B,T	5-9 fl oz	15,30	7	Max. 9 fl oz/A/application. Max 2 applications/year. Apply by ground, air or chemigation. Apply lower rates early in season. Application of high rate at flag leaf ligule emergence protects upper foliage during grain fill period.
ALTIPRO	W	8 fl oz 5.7 fl oz	30	-	Mimimum retreatment interval: 14 days. Make applications only from tiller stage to flag leaf stage. Maximum of two applications per season. Make applications only from tiller stage to flag leaf stage. A second application (minimum interval of 14 days) may be made if needed. Make applications only from tiller stage to flag leaf stage. For control of early season powdery mildew, Septoria, Stagonospora, tan spot, and suppression of rusts: Apply 4.0 - 6.0 fl. oz./acre of Altipro. Ground: minimum application volume of 10 gallons/Acre. Aerial: minimum application volume of 2 GPA.
ALTO 100SL	W,T	1.5-5.5 fl oz	30	21	Apply from Feekes 5 to 10.5.1. Do not apply more than 5.5 fl oz/A/season or more than 0.036 lb ai/A/year cyproconozole containing products. Also may be used in early season suppression of certain diseases. See label for rates and footnote information. May be applied by air or chemigation.
APROACH	W,B,O,R,T	2-12 fl oz	Feekes 10.5	14,7	Apply 2-4 fl oz/A between tillering through jointing for early season control/suppression, with 6-12 fl/A application ≥7 days later depending on disease pressure. Or use 6-12 fl oz/A prior to disease development followed by second application at 7- to 14-day interval depending on targeted disease. Max. 36 fl oz/A/year. Max. 4 applications/year. Apply no later than the beginning of flowering (Feekes 10.5). May be applied by air or chemigation.
APROACH PRIMA	W,T	3.4-6.8 fl oz	45	45,21	Apply early season for preventative control/suppression. Begin applications prior to disease development. To optimize yields protect the flag leaf from foliar diseases. Do not exceed 6.8 fl oz/A/crop.
BADGE SC	W,B,O,R	0.5-1.8 pt foliar; 2-3 fl oz/cwt seed dressing for W,B only	0	NR	Foliar: Use higher rate when conditions favor disease development; minimum retreatment 2-3 fl oz/cwt seed dressing for W,B only diseases and common bunt - see label): Dilute with equal amount of water and maintain agitation for ease of handling and when using a seed treating machine.
BADGE X2	W,B,O,R	0.5-1.8 lb	0	NR	Foliar: Use higher rate when conditions favor disease development; minimum retreatment interval is 10 days; do not apply >3.8 lb/A/year.

See notes at end of table.

Fungicide	Labeled Crops	Rate/Acre	PHI	G/F	Comments/Restrictions
BIO-TAM 2.0	W,B,O,R,T	2.5-5 lb	–	–	Apply preventatively at least 2 times for best results. Do not apply by aircraft. Do not mix or apply within 3 days of imazalil, dichloran, mancozeb, propiconazole, tebuconazole, thiram, and triflumizole. May be applied by chemigation.
CHAMP DRY PRILL or CHAMP WG	W,B,O	1.0-1.33 lb or 1.0 lb	–	–	First application by early heading; second application if needed. Min. 10-day retreatment interval. Max. 1.33 lb or 1.0 lb/A/application. Max. 2.83 lb or 2.12 lb/A/year. Champ WG not registered for stem rust in CA.
CHAMP FORMULA 2 FLOWABLE		1.0-1.33 pt: broadcast 2 fl oz/cwt: seed dressing for W,B only			Broadcast: First application by early heading; second application if needed. Min. 10-day retreatment interval. Max. 1.33 pt/A/application. Max. 2.9 pt/A/year. Seed dressing: Dilute with equal parts water before applying. Controls bacterial leaf blight, bacterial leaf streak and common bunt; see label for disease information and handling of treated seed.
CHAMPION++	W,B,O	0.5-0.75 lb	0	NL	Apply for early disease control through heading and repeat as necessary. Min. 10-day retreatment interval. Max. 3.5 lb/A/year. Use of an adjuvant is recommended.
CUPROFIX ULTRA 40 DISPERSS	W,B,O	1-1.25 lb	26	NO	Apply at early heading and a second application 10 days later. Use the higher rates when conditions favor disease development. May be applied by air or chemigation.
DELARO 325 SC	W B	8 fl oz 5.7 fl oz	35 40	see comments	Max. 16 fl oz/A/year for W, 11.4 fl oz/A/year for B. Max. 2 applications/year. Do not make >2 sequential applications of this or other Group 11 fungicide before rotating to a different Group. Do not apply after Feekes 10.5 for W, Feekes 8 for B. Grazing: If a total of 8 fl oz/A/year are applied to W or 5.7 fl oz/A year are applied to B, do not graze in treated area or harvest treated crop for forage within 30 days of application, or harvest for hay within 45 days of application. If >8 fl oz/A/year are applied to W or >11.4 fl oz/A/year are applied to B, do not graze, forage or hay. Apply by ground, air or irrigation.
DELARO COMPLETE	W	8 fl oz	35	30-45	Begin applications preventively when conditions are favorable for disease; min. 14-day application interval. Apply 4-6 fl oz/A for early season control. Min. 10 GPA by ground, 2 GPA by air. Max. 16 fl oz/A/year. Max. 2 applications/year. Do not apply after Feekes 10.5. If up to 8 fl oz/A/year applied, do not graze within 30 days, do not harvest for forage within 30 days or for hay within 45 days. If >8 fl oz/A/year applied, do not allow livestock access to treated area and do not harvest for forage or hay.
DITHANE F-45 RAINSHIELD	W,B,O,R,T	1.6 qt	26	NO	Start application at onset of disease or when plants are in tillering to jointing stage. Application frequency: 7-10 days, 3 times maximum. Do not apply after Feekes stage 10.5. Contact action – good spray coverage important. Residual: approximately 7 days. Subject to wash off by rain. A surfactant improves control. May be applied by air or chemigation.
EVERLON/PRIAXOR	W,B,O,R,T	4-8 fl oz	See label	7, 14	Apply prior to disease development. For maximum results, apply immediately after flag leaf emergence. Maximum 16 fl oz/A/season. Maximum 2 applications before rotating to another mode of action. For early season disease control when conditions favor disease development, apply 2-4 fl oz/A for labeled diseases. Do not feed or harvest hay for 7 days after last application in rye; 14 days for barley, oats, wheat, triticale. For suppression of eyespot in wheat and triticale, apply 6-8 fl oz/A.
EVITO 480 SC	W	2-4 fl oz	40	7	Use 2.5-4 fl oz for powdery mildew and 2-4 fl oz for other diseases. Begin applications preventatively and continue on a 14-21 day and schedule. Apply from Feekes 5 up to late head emergence Feekes 10.5 Maximum of 2 sequential applications before rotating MOA. 2ee for most states (exp. date not given) for 1-2 fl oz for early season tan spot, septoria leaf and glume blotch, and rust (leaf, stripe, stem). 2ee labels for most states (exp. dates not given) for aerial application. May be applied by air or chemigation.
EVITO T	W	4-6 fl oz	40	7	Apply no later than Feekes 10.5. For optimum results, apply at Feekes 5 (Zadoks 3.1) and again at Feekes 10.5 (Zadoks 5.4). Maximum of 2 applications. PHI 40 days on grain or straw, 7 days on forage, hay or grazing. May be applied by air.
HEADLINE SC	W,B,O,R,T	6-9 fl oz	see comments	0, 14	Begin applications prior to disease development. Apply no later than the beginning of flowering (Feekes 10.5). In barley and rye, apply no later 50% head emergence or Feekes 10.3. See label for western production area allowing barley to be harvested 14 days after last application. PHI 0 days for rye, 14 days for barley in specific areas, and 14 days for others. May be applied by air or chemigation.
KOCIDE 3000	W,B,O	0.5-0.75 lb	–	–	Apply at early heading and a second application 10 days later. Use the higher rates when conditions favor disease development. May be applied by air.

See notes at end of table.

Fungicide	Labeled Crops	Rate/Acre	PHI	G/F	Comments/Restrictions
LUCENTO	W,T	3-5.5 fl oz	30	30	Apply by ground, air or irrigation prior to disease development. Apply lower rates in early season. Application at high rate at flag leaf ligule emergence protects upper foliage during grain fill. Tank mix with surfactant for optimum control. Max. 2 appplications/year. Max. 11 fl oz/A/year. Do not make >2 sequential applications/ year before alternating to another fungicide from FRAC group other than 7 and 3.
MANZATE PRO-STICK	W,B,O,R,T	2 lb	26	NO	Start application at onset of disease or at tillering to jointing stage. Application frequency: 7-10 days, 3 times maximum. Do not apply > 6 lb/(4.5 lb a.i.)/A/crop. May be applied by air or chemigation.
MINUET	W,B,O,R,T	6-12 fl oz	0	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS ACE	W,B,O,R,T	13.7 fl oz	Feekes 10.5.4	7	Apply between Feekes 10.3 (Zadoks 5.5) and Feekes 10.5.2 (Zadoks 6.5); protect flag leaf. Max. 13.7 fl oz/A forage hay; 27.4 fl oz/A grain. Do not make >2 applications of this or other Group 7 & 3 fungicides before alternation to a fungicide from other groups. Do not make >1 application/year for forage/hay. 14-day min. application interval. Apply by ground, air or sprinkler irrigation. Adjuvant may be added.
NEXICOR	W,B,O,R,T	7-13 fl oz	Feekes 10.3-10.5, Zadoks 5.5-5.9	7	Begin applications prior to disease development and protect the flag leaf. Apply immediately after flag leaf emergence, no later than 50% head emergence (Feekes 10.3, Zadoks 5.5 for barley, oats; Feekes 10.5, Zadoks 5.9 for rye, wheat, triticale). Minimum retreatment interval of 14 days.
ONSET 3.6L	W,B	4 fl oz	30	6	Apply at earliest sign of rust pustules. For blight suppression, Feekes 10.5 on 50% of plants. For suppression of head scab apply to wheat at Feekes 10.51 (25-50% of heads on main head stem are flowering) and barley at Feekes 10.5 (100% of heads on main stem have emerged). Include NIS for optimum control. May be applied by air.
PENNCOZEB 75DF	W,B,O,R,T	1-2 lb	26	NO	Start application at onset of disease or when plants are in tillering to jointing stage. Frequency: 7-10 days, 3 times maximum. Do not apply after Feekes stage 10.5. May be applied by air or chemigation.
PREVISTO	W,O,B	0.75-2 qt	0	NR	Make first applications at early heading with second application 10 days later. Minimum retreatment interval of 10 days. Use higher rates when conditions favor disease development. Do not apply >2 qt/A/application or >14 qt/A/year.
PROLINE 480 SC	W,B,O,R,T	2.8-5.7 fl oz: barley 4.3-5.7 fl oz: wheat, triticale 5-5.7 fl oz: rye, oats	30 32,30 30,30	–	Apply to wheat at Feekes 10.51 (25-50% of heads on main head stem are flowering) and barley at Feekes 10.5 (100% of heads on main stem have emerged). NIS at 0.25% v/v may improve performance. Maximum of 2 applications per season, applied at 14 day intervals. PHI 32 days for barley. On wheat, barley, and triticale use 5-5.7 fl oz/A for Fusarium control, do not exceed 9.37 fl oz/A/season. On oat and rye do not exceed 5.7 fl oz/A/season. May be applied by air.
PROSARO 421 SC	W,B	6.5-8.2 fl oz	30,32	6	Apply to wheat at Feekes 10.51 (25-50% of heads on main head stem are flowering) and barley at Feekes 10.5 (100% of heads on main stem have emerged). NIS at 0.25% v/v may improve performance. Do not exceed 8.2 fl oz/A/season. 2ee labels CO, KS, MT, ND (west of Missouri Rvr), NE, OK, SD, WY (exp. dates not given) for control of rusts at 5 fl oz/A. May be applied by air or chemigation. PHI 30 days for wheat; 32 days for barley.
PROSARO PRO 400 SC	W,B	10.3-13.6 fl oz	30,32	14	Apply to wheat at Feekes 10.51 (25-50% of heads on main head stem are flowering) and barley at Feekes 10.5 (100% of heads on main stem have emerged). Max. 13.6 fl oz/A in min. 10 GPA by ground, or in min. 2 GPA by air prior to Feekes 10.51 or 5 GPA by air at early flower stage or later. Add NIS at 0.25% v/v for improved performance. Max. 2 sequential applications for Group 7 products before rotating to different MOA. Minimum 14-day application interval. See label for max. lbs a.i./A/year regardless of formulation. Do not allow livestock to graze or feed green forage to livestock prior to 14 days after treatment.
QUILT XCEL/AFRAME PLUS	W,B,O,R,T	7-14 fl oz	Feekes 10.54	7	When applied with herbicides and fertilizers, flecking and/or burning in wheat may occur. Rates of 7-14 fl oz/A may be used to suppress certain early season diseases. Use 14 fl oz/A for foot rot/eye spot. May be applied by air or chemigation.
RUSTEASE	W,T	3.5-6.8 fl oz	30	21	Early season suppression, later season control (Feekes 8 to 10.5.1): See label for specific diseases/rates. Minimum treatement interval 14 days. May be applied by air or chemigation.

See notes at end of table.

Fungicide	Labeled Crops	Rate/Acre	PHI	G/F	Comments/Restrictions
SPHAEREX	W	4-7.3 fl oz	30	NR	Rate depends on disease and/or crop stage; see label. Min. 14-day application interval. Min. 5 GPA by ground, 2 GPA by air. Do not apply if final spray solution contains fertilizer at concentration >20% v/v. Max. 7.3 fl oz/A/application. Max 2 applications/year (including other Group 3 fungicides). Max. 14.6 fl oz/A/year.
STRATEGO YLD/ ***PROTEGAM YLD***	W,B	4 fl oz: wheat 2.3 fl oz: barley	35,40	30, 45	Leaf disease control in winter wheat only. Tank mixing with broadleaf herbicides is not recommended as crop injury may occur, especially in spring wheat and barley. Do not apply after Feekes growth stage 10.5 (full head emergence) for wheat; or Feeks 8 (the ligule of the flag leaf emerges) for barley. Maximum 2 applications. PHI 30 days grazing or forage and 45 days for hay for up to 4 fl oz/A (total) in wheat or 2.3 fl oz/A (total) in barley. Do not graze, forage, or hay if > 4 fl oz/A in wheat or >4.6 fl oz/A in barley. May be applied by air or chemigation.
TETRABAN	W,B,O,R,T	4-12 fl oz: wheat,triticale 6-12 fl oz: barley,oats, rye	–	14, 7, NR	Apply by ground, air or irrigation prior to disease development. Do not apply after Feekes 10.54. No more than 2 applications/season. PHI 14 days for grazing wheat and triticale, 7 days for forage and hay (all small grains), NR for grazing B,O,R.
TOPAZ/TILT	W,B,O,R,T	2-4 fl oz	see comments	see comments	Use 2-4 fl oz/A in spring followed by 2-4 fl oz/A through Feekes 10.5 for early season suppression of powdery mildew, leaf blight, glume blotch, and tan spot. Use 2 fl oz at 50% emergence of flag leaf for disease control. Use 4 fl oz/A at 50% flowering for fusarium head blight suppression and control of leaf diseases. Topaz PHI Feekes 10.5 for W grain, 45 days for B,O,R,T grain; 30 days for forage/hay; 45 days for straw. Tilt PHI Feekes 10.5.4 for W,B,O,R,T grain; 7 days for forage/hay.
TOPGUARD	W,T	10-14 fl oz	30	15	Application interval of 7 days. No single application may exceed 14 fl oz/A. No more than 2 applications/year or more than 28 fl oz/year. For aerial application use minimum 2 gallons/A spray solution. For fusarium head blight suppression apply at Feekes Growth Stage 10.51. PHI 30 days for grain, 15 days for hay.
TOPGUARD EQ	W,T	4-7 fl oz	30	7, 15	Apply preventatively or when conditions are favorable for disease developments. Do not apply past Feekes 10.54. May use adjuvant. No single application >7 fl oz/A; no more than 2 applications/year. PHI 15 for hay.
TOPSIN 4.5FL/T-METHYL 4.5 F or TOPSIN M WSB/T-METHYL 70 WSB	W,T	20 fl oz or 1 lb	–	NO, 90	Fall seeded wheat or triticale in OR,WA,ID. Apply in a single application by air or ground. Max. 1 application/season. PHI 90 days for hay.
TRIVAPRO	W,B,O,R,T	9.4-13.7 fl oz	Feekes 10.5.4 (see comments)	7	Apply prior to disease development and no closer than 14 days apart. Apply in spring for early disease control, or from Feekes 8 through 10.5.4 for disease control on flag leaf. See label for adjuvant recommendations.

*W – wheat, B – barley, O – oat, R – rye, T – triticale.
PHI – preharvest interval days. NO – not permitted.
G/F – grazing and feeding interval days.

FOLIAR SPRAY EFFICACY [1,2]

Disease	ACTION[4]	Powdery Mildew	Glume Blotch	Septoria Leaf Blotch	Tan Spot	Rust, - Stripe	Rust, - Leaf	Rust, - Stem	Scab (Fusarium Head Blight)[5]
HOST PLANT - WHEAT[3]		++	++	++	++	++	++	++	++
HOST PLANT - BARLEY[3]		++	+	++	+	++	++	++	++
ABSOLUTE MAXX	PC	G	**VG**	**VG**	**VG**	**VG**	**E**	**VG**	NL
APROACH	P	G	**VG**	**VG**[6]	**VG**	**E**[7]	**VG**	**VG**	NL
APROACH PRIMA	PC	**VG**	**VG**	**VG**	**VG**	**E**	**VG**	U	NR
DELARO 325 SC	PC	G	**VG**	**VG**	**VG**	**VG**	**VG**	**VG**	NL
EVERLON/PRIAXOR	PC	G	**VG**	**VG**	**E**	**VG**	**VG**	G	NL
HEADLINE SC	PC*	G	**VG**	**VG**[6]	**E**	**E**[7]	**E**	G	NL
LUCENTO	PC	**E**	G/**E**	G/**E**	G/**E**	**E**	G/**E**	G/**E**	NR
MIRAVIS ACE	PC	**VG**	**VG**	**VG**	**VG**	**VG**	**VG**	**VG**	G
NEXICOR	PC	**VG**	**VG**	**E**	**E**	**E**	**E**	**VG**	NL
PROLINE 480 SC	PC	U	**VG**	**VG**	**VG**	**VG**	**VG**	**VG**	G
PROSARO 421 SC	PC	G	**VG**	**VG**	**VG**	**E**	**E**	**E**	G
PROSARO PRO 400 SC	PC	G	**VG**	**VG**	**VG**	**E**	**E**	**E**	G
QUILT XCEL/AFRAME PLUS	PC	**VG**	**VG**	**VG**	**VG**	**E**	**E**	**VG**	NL
STRATEGO YLD/ ***PROTEGAM YLD***	PC	G	**VG**	**VG**	**VG**	**VG**	**VG**	**VG**	NL
TOPAZ/TILT	PC	**VG**	**VG**	**VG**	**VG**	**VG**	**VG**	**VG**	P
TOPGUARD EQ/ADASTRIO	PC	**VG**	NL	**VG**	**VG**	**E**	**E**	**VG**	NL
TRIVAPRO	PC	**VG**	**VG**	**VG**	**VG**	**E**	**E**	**VG**	NL

Efficacy Ratings: E = Excellent; VG = Very Good; G = Good; F= Fair; P = Poor; U = Unknown efficacy or insufficient data to rank product efficacy; NL = Not Labeled for use against this disease.

[1] Source: Efficacy Ratings From Purdue Extension CPN-3002-W (2023)

[2] Most fungicides provide 21 days of protection against fungal diseases (>21 days of residual against rust diseases).

[3] ++ = Frequent, economically important. + = Rare, economically unimportant.

[4] P = Protectant or preventative. C = Curative or systemic. * = Partially systemic.

[5] Application of products containing strobilurin fungicides may result in elevated levels of the mycotoxin Deoxynivalenol (DON) in grain damaged by head scab.

[6] Product efficacy may be reduced in areas with fungal populations that are resistant to strobilurin fungicides.

[7] Efficacy may be significantly reduced if solo strobilurin products are applied after stripe rust infection has occurred.

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FUNGICIDE AND/OR INSECTICIDE	DISEASE									INSECT*								
	Bunt, common or Stinking smut	Common root rot	Pythium damping off	Rhizoctonia damping off or root rot	Seedling blight	Seed decay or rot	Seed-borne scab	Smut, covered	Smut, loose	Aphid (ear?ly season control)	Bean leaf beetle	Flea beetle (early season control)	Grub	Hessian Fly	Nematodes	Seed corn maggot & beetle	Thrips	Wireworm
COMMERCIAL																		
ALLEGIANCE-FL	P	P	**E**	P	**G/E**	**E**	P	P	P	N	N	N	N	N	N	N	N	N
APRON XL	P	P	**E**	P	**G**	**E**	P	P	P	N	N	N	N	N	N	N	N	N
AVODIGEN	N	N	N	L	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CRUISER 5FS	N	N	N	N	N	N	N	N	N	**E**	**E**	**E**	**E**	**G**	N	**E**	**E**	**E**
CRUISERMAXX CEREALS	U	U	L	U	L	L	U	L	L	L	U	U	U	L	N	U	U	L
CRUISERMAXX VIBRANCE CEREALS	**E**	**G**	**E**	**E**	**E**	**E**	F	**E**	**E**	**E**	N	N	N	**G**	N	N	N	**G**
DIVIDEND EXTREME	**E**	**G**	**E**	**E**	**G/E**	**G**	**G**	**G**	**G**	N	N	N	N	N	N	N	N	N
DYNASTY	**G**	N	F	**G**	F	F	N	N	N	N	N	N	N	N	N	N	N	N
EVERGOL ENERGY	**E**	**E**	**E**	**E**	**E**	**E**	N	**E**	**E**	N	N	N	N	N	N	N	N	N
GAUCHO 600/SENATOR 600 FS	N	N	N	N	N	N	N	N	N	**G**	**E**	**G**	**G**	**E**	N	**G**	**E**	**G**
MAXIM 4FS	P	P	N	**G**	**G**	**G**	**G**	P	P	N	N	N	N	N	N	N	N	N
MAXIM XL	P	P	**E**	**G**	**G/E**	**G**	P	P	P	N	N	N	N	N	N	N	N	N
MERTECT 340-F	L	N	N	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NIPSIT INSIDE	N	N	N	N	N	N	N	N	N	L	N	L	L	N	N	L	N	L
NIPSIT SUITE CEREALS OF	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	N	N	N	N	N	N	N	N	**G**
RANCONA CREST	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
RANCONA PINNACLE	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
RANCONA SUMMIT	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
RAXIL PRO MD	**E**	**G**	**E**	**E**	N	L	**G**	**G/E**	**E**	N	N	N	N	N	N	N	N	N
RAXIL PRO SHIELD	**E**	**G**	**E**	**E**	N	L	**G**	**G/E**	**E**	**E**	N	N	N	**E**	N	N	N	**E**
RIZOLEX	N	U	N	**E**	**G/E**	**G**	**G**	N	N	N	N	N	N	N	N	N	N	N
STAMINA	**G**	**G**	F	**G**	**G**	**G**	**G**	**G**	P	N	N	N	N	N	N	N	N	N
STAMINA F4 CEREALS	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	N	N	N	N	N	N	N	N	N
TERAXXA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	L
TERAXXA F4	L	L	L	L	L	N	N	L	L	N	N	N	N	N	N	N	N	L
VIBRANCE	N	N	N	**E**	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VIBRANCE EXTREME	**E**	**G**	**E**	**E**	**E**	**E**	F	**E**	**E**	N	N	N	N	N	N	N	N	N
WARDEN CEREALS II	N	**G**	**E**	**E**	**G**	**G**	**G**	L	L	N	N	N	N	N	N	N	N	N
WARDEN CEREALS HR	**G**	F	**E**	**E**	**G**	**G**	N	N	**G**	**E**	N	N	**E**	**E**	N	N	N	**G**
WARDEN CEREALS WRII	**G**	**G**	**E**	**E**	**G**	**G**	**G**	**G**	**G**	**E**	**E**	N	**E**	N	N	N	**E**	**E**

* Efficacy ratings are influenced by insect population.

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FUNGICIDE AND/OR INSECTICIDE	DISEASE									INSECT*								
	Bunt, common or Stinking smut	Common root rot	Pythium damping off	Rhizoctonia damping off or root rot	Seedling blight	Seed decay or rot	Seed-borne scab	Smut, covered	Smut, loose	Aphid (early season control)	Bean leaf beetle	Flea beetle (early season control)	Grub	Hessian Fly	Nematodes	Seed corn maggot & beetle	Thrips	Wireworm
ON-FARM																		
APRON XL	P	P	**E**	N	**G**	**E**	P	P	P	N	N	N	N	N	N	N	N	N
CRUISER MAXX CEREALS	U	U	L	U	L	L	U	L	L	L	U	U	U	L	N	U	U	L
CRUISER MAXX VIBRANCE CEREALS	**E**	**G**	**E**	**E**	**E**	**E**	F	**E**	**E**	**E**	N	N	N	**G**	N	N	N	**G**
DIVIDEND EXTREME	**E**	**G**	**E**	**E**	**G/E**	**G**	**G**	**G**	**G**	N	N	N	N	N	N	N	N	N
DYNASTY	**G**	N	F	**G**	F	F	N	N	N	N	N	N	N	N	N	N	N	N
MAXIM 4FS	P	P	N	**G**	**G**	**G**	**G**	P	P	N	N	N	N	N	N	N	N	N
MAXIM XL	P	P	**E**	**G**	**G/E**	**G**	P	P	P	N	N	N	N	N	N	N	N	N
MERTECT 340-F	L	N	N	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NIPSIT SUITE CEREALS OF	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	N	N	N	N	N	N	N	N	**G**
RANCONA CREST	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
RANCONA PINNACLE	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
RAXIL PRO MD	**E**	**G**	**E**	**E**	N	L	**G**	**G/E**	**E**	N	N	N	N	N	N	N	N	N
RAXIL PRO SHIELD	**E**	**G**	**E**	**E**	N	L	**G**	**G/E**	**E**	**E**	N	N	N	**E**	N	N	N	**E**
STAMINA	**G**	**G**	F	**G**	**G**	**G**	**G**	**G**	P	N	N	N	N	N	N	N	N	N
STAMINA F^3 CEREALS	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	N	N	N	N	N	N	N	N	N
TERAXXA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	L
TERAXXA F4	L	L	L	L	L	N	N	L	L	N	N	N	N	N	N	N	N	L
VIBRANCE	N	N	N	**E**	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VIBRANCE EXTREME	**E**	**G**	**E**	**E**	**E**	**E**	F	**E**	**E**	N	N	N	N	N	N	N	N	N
WARDEN CEREALS II	N	**G**	**E**	**E**	**G**	**G**	**G**	L	L	N	N	N	N	N	N	N	N	N
WARDEN CEREALS HR	**G**	F	**E**	**E**	**G**	**G**	N	N	**G**	**E**	N	N	**E**	**E**	N	N	N	**G**
WARDEN CEREALS WRII	**G**	**G**	**E**	**E**	**G**	**G**	**G**	**G**	**G**	**E**	**E**	N	**E**	N	N	N	**E**	**E**

* Efficacy ratings are influenced by insect population.

SEED TREATMENT PRODUCT[1]	Formulation	Colorant Added	Labeled Intervals (days)		On Farm	Commercial	Use Rates[2]		Seed Load[2]	mg AI/seed[2] Fungicides	
			PHI	Grazing/ Forage			fl oz/cwt	fl oz/ 140,000 seeds	Total Active Ingredients (mg/seed)	Azoxystrobin	Difenoconazole
ALLEGIANCE-FL	L	N	NR	NR		x	0.1-0.375	0.01-0.04	0.0007-0.0027		
APRON XL	L	N	NR	NR	x	x	0.04-0.085	0.004-0.009	0.0003-0.0007		
ASCEND PRO	L	N	NR	NR	x	x	1.05-4.2	0.49-1.96	0.0006-0.0011		
ASCEND SL	L	N	NR	NR	x	x	1.05-4.2	0.49-1.96	0.0006-0.0011		
ASCEND ST3	L	N	NR	NR	x	x	0.5 - 2.1	0.24 - 0.93	0.0003-0.00055		
ASCEND WSG	D	N	NR	NR	x	x	0.1-0.6 oz	0.046-0.28	0.0006-0.0011		
AVODIGEN	L	N	NR	NR	x	x		0.51 - 0.75			
CRUISER 5FS	L	N	NR	NR		x	0.025-1.33	0.0027-0.1432	0.00034-0.01811		
CRUISERMAXX CEREALS	L	Y	NR	45	x	x	5	0.54	0.008		0.004
CRUISERMAXX VIBRANCE CEREALS	L	Y	NR	45	x	x	5.0-10.0	0.54-1.08	0.01-0.02		0.0042-0.0084
DIVIDEND EXTREME	L	Y	NR	NR	x	x	2.0-4.0	0.22-0.44	0.005-0.01		0.0042-0.0084
DYNASTY	L	N	NR	NR	x	x	0.153-0.459	0.0714-0.2142	0.0015-0.0045	0.0015-0.0045	
EVERGOL ENERGY	L	N	NR	NR		x	1	0.11	0.004		
GAUCHO 600/SENATOR 600 FS	L	N	NR	45		x	0.13-2.4	0.014-0.2585	0.0177-0.03265		
MAXIM 4FS	L	N	NR	Cereals, Grasses, Nongrasses - 30; Others - NR	x	x	0.08-0.16	0.0086-0.0172	0.00087-0.00174		
MAXIM XL	L	N	NR	30	x	x	0.167-0.334	0.018-0.036	0.00123-0.00245		
MERTECT 340-F	L	N	NR	Forage of peas - No; Others - NR	x	x	0.17-3.9	0.0183-0.42	0.0019-0.04348		
NIPSIT INSIDE	L	N	NR	NR		x	0.25-1.79	0.0269-0.1928	0.0034-0.02433		
NIPSIT SUITE CEREALS OF	L	Y	NR	NR	x		5.0-7.5	0.5385-0.8078	0.005-0.00756		
PONCHO XC	L	N	NR	NR	x	x	0.25-1.79	0.027-0.19277	0.00324-0.02318		
RANCONA CREST	L	Y	NR	NR	x	x	5.0-8.33	0.54-0.9	0.019-0.031		
RANCONA PINNACLE	L	Y	NR	NR	x	x	5.0-8.33	0.54-0.9	0.0012-0.002		
RANCONA SUMMIT	L	Y	NR	DNU		x	4	1.867	0.010		
RAXIL PRO MD	L	Y	NR	31	x	x	5.0-7.5	0.5385-0.8078	0.00278-0.00418		
RAXIL PRO SHIELD	L	Y	NR	45	x	x	5	0.539	0.013		
RESONATE 480 ST	L	N	NR	45	x	x	0.16-3	0.017-0.3231	0.0017-0.0327		
RIZOLEX	L	N	NR	NR	x	x	0.3	0.14	0.015		
STAMINA	L	N	NR	NR	x	x	0.4-0.8	0.0431-0.0862	0.00181-0.00363		
STAMINA F4 CEREALS	L	Y	NR	NR	x	x	4.6	0.5	0.00539		
SYSTIVA XS	L	N	NR	NR		x	0.24-2.36	0.0258-0.2542	0.00177-0.01742		
TERAXXA	L	N	NR	NR	x	x	0.26	0.028	0.00174		
TERAXXA F4	L	Y	NR	NO	x	x	4.6	0.4025	0.007327		
TREBUSET	L	N	NR	NR		x	0.31	0.0265-0.0347	0.00277-0.00363		
VIBRANCE	L	N	NR	NR	x	x	0.08-0.16	0.0086-0.0172	0.00093-0.00187		
VIBRANCE EXTREME	L	Y	NR	NR	x	x	2.8-5.6	0.3016-0.6031	0.00611-0.01223		0.00419-0.00838
WARDEN CEREALS II	L	Y	NR	NR	x	x	2.8-5.6	0.3-0.6	0.006-0.012		0.0042-0.0084
WARDEN CEREALS HR	L	Y	NR	45	x	x	5.0-8.33	0.54-0.9	0.019-0.031		
WARDEN CEREALS WRII	L	Y	NR	45	x	x	5	0.54	0.015		0.004
ZELTERA	L	N	NR	NR	x	x	0.04-0.08	0.004-0.008	0.00035-0.0007		

See notes and footnotes at end of table.

SEED TREATMENT PRODUCT[1]	mg AI/seed[2]								
	Fungicides								
	Fludioxonil	Fluxapyroxad	Inpyrfluxam	Ipconazole	Mefenoxam	Metalaxyl	Metconazole	Penflufen	Prothioconazole
ALLEGIANCE-FL						0.0007-0.0027			
APRON XL					0.0003-0.0007				
ASCEND PRO									
ASCEND SL									
ASCEND ST3									
ASCEND WSG									
AVODIGEN									
CRUISER 5FS									
CRUISERMAXX CEREALS					0.001				
CRUISERMAXX VIBRANCE CEREALS					0.0011-0.0022				
DIVIDEND EXTREME					0.001-0.002				
DYNASTY									
EVERGOL ENERGY						0.001		0.001	0.002
GAUCHO 600/SENATOR 600 FS									
MAXIM 4FS	0.00087-0.00174								
MAXIM XL	0.00086-0.00173				0.00036-0.00073				
MERTECT 340-F									
NIPSIT INSIDE									
NIPSIT SUITE CEREALS OF						0.00105-0.00157	0.00052-0.00077		
PONCHO XC									
RANCONA CREST				0.0005-0.0009		0.0007-0.0012			
RANCONA PINNACLE				0.0005-0.0009		0.0007-0.0012			
RANCONA SUMMIT				0.004		0.006			
RAXIL PRO MD						0.00071-0.00106			0.00174-0.00261
RAXIL PRO SHIELD						0.001			0.002
RESONATE 480 ST									
RIZOLEX									
STAMINA									
STAMINA F4 CEREALS		0.000897				0.001015			
SYSTIVA XS		0.00177-0.01742							
TERAXXA									
TERAXXA F4		0.000899				0.00107			
TREBUSET									
VIBRANCE									
VIBRANCE EXTREME					0.00105-0.0021				
WARDEN CEREALS II					0.0011-0.0021				
WARDEN CEREALS HR				0.0005-0.0009		0.0007-0.0012			
WARDEN CEREALS WRII	0.001				0.001				
ZELTERA			0.00035-0.0007						

See notes and footnotes at end of table.

SEED TREATMENT PRODUCT[1]	mg AI/seed[2]							
	Fungicides							
	Pydiflumetofen	Pyraclostrobin	Sedaxane	Tebuconazole	Thiabendazole	Thiophanate-methyl	Tolclofos-methyl	Triticonazole
ALLEGIANCE-FL								
APRON XL								
ASCEND PRO								
ASCEND SL								
ASCEND ST3								
ASCEND WSG								
AVODIGEN								
CRUISER 5FS								
CRUISERMAXX CEREALS								
CRUISERMAXX VIBRANCE CEREALS			0.0009-0.0018					
DIVIDEND EXTREME								
DYNASTY								
EVERGOL ENERGY								
GAUCHO 600/SENATOR 600 FS								
MAXIM 4FS								
MAXIM XL								
MERTECT 340-F					0.0019-0.04348			
NIPSIT INSIDE								
NIPSIT SUITE CEREALS OF								
PONCHO XC								
RANCONA CREST								
RANCONA PINNACLE								
RANCONA SUMMIT								
RAXIL PRO MD				0.00034-0.00051				
RAXIL PRO SHIELD				0.000				
RESONATE 480 ST								
RIZOLEX							0.015	
STAMINA		0.00181-0.00363						
STAMINA F4 CEREALS		0.001744						0.001744
SYSTIVA XS								
TERAXXA								
TERAXXA F4		0.001786						0.001786
TREBUSET	0.00277-0.00363							
VIBRANCE			0.00093-0.00187					
VIBRANCE EXTREME			0.00087-0.00175					
WARDEN CEREALS II			0.0009-0.0018					
WARDEN CEREALS HR								
WARDEN CEREALS WRII			0.002					
ZELTERA								

See notes and footnotes at end of table.

SEED TREATMENT PRODUCT[1]	mg AI/seed[2]						
	Insecticides				Plant Growth Regulators		
	Broflanilide	Clothianidin	Imidacloprid	Thiamethoxam	Cytokinin	Indole-Butyric Gibberellic Acid	Acid
ALLEGIANCE-FL							
APRON XL							
ASCEND PRO					0.0003-0.0006	0.0001-0.0002	0.0001-0.0003
ASCEND SL					0.0003-0.0006	0.0001-0.0002	0.0001-0.0003
ASCEND ST3					0.00015 - 0.0003	0.00005-0.0001	0.00005-0.00015
ASCEND WSG					0.0003-0.0006	0.0001-0.0002	0.0001-0.0003
AVODIGEN							
CRUISER 5FS				0.00034-0.01811			
CRUISERMAXX CEREALS				0.004			
CRUISERMAXX VIBRANCE CEREALS				0.0035-0.007			
DIVIDEND EXTREME							
DYNASTY							
EVERGOL ENERGY							
GAUCHO 600/SENATOR 600 FS			0.0177-0.03265				
MAXIM 4FS							
MAXIM XL							
MERTECT 340-F							
NIPSIT INSIDE		0.0034-0.02433					
NIPSIT SUITE CEREALS OF		0.00348-0.00522					
PONCHO XC		0.00324-0.02318					
RANCONA CREST			0.0175-0.0292				
RANCONA PINNACLE							
RANCONA SUMMIT							
RAXIL PRO MD							
RAXIL PRO SHIELD			0.010				
RESONATE 480 ST			0.0017-0.0327				
RIZOLEX							
STAMINA							
STAMINA F4 CEREALS							
SYSTIVA XS							
TERAXXA	0.00174						
TERAXXA F4	0.001786						
TREBUSET							
VIBRANCE							
VIBRANCE EXTREME							
WARDEN CEREALS II							
WARDEN CEREALS HR			0.0175-0.0292				
WARDEN CEREALS WRII				0.007			
ZELTERA							

[1] Technical information for seed treatment products containing only biological a.i.s (Avodigen) is provided in the Seed and Grain section.
[2] Based on 13,000 wheat or barley seeds/pound

CROPS II

- Alfalfa and Other Legumes 232
- Bean, Field and Other Pulse Crops 250
- Canola, Crambe, Mustard, and Rape Seed 282
- Cotton 290
- Fallow 332
- Flax 339
- Grasses Grown for Seed 342
- Millet (Proso and Pearl) 349
- Mint 352
- Pasture 360
- Pea 376
- Peanut 393
- Potato 413
- Rice 445
- Sorghum 461
- Sugar Cane 480
- Sugarbeet 486
- Sunflower/Safflower 504

CROPS II



GET FUNGICIDES WHERE THEY NEED TO GO WITH MASTERLOCK® ADJUVANT.

BUILT FOR IT.

MasterLock adjuvant gets more fungicide deeper into the canopy so you can stay ahead of disease and late-season stress. Formulated without nonylphenol ethoxylates (NPE) so it won't contribute to arrested ear development, MasterLock adjuvant makes the last opportunities in-season to impact performance count, delivering a 5.7 bushel per acre average yield increase in corn1 and 3.7 bushels per acre in wheat as compared to using a fungicide alone.[2] Whether applied by ground or by air, MasterLock adjuvant helps reduce fungicide evaporation and drift. Plus, proprietary InterLock® adjuvant technology helps more droplets reach the intended target instead of drifting away, so you can feel confident in accurate delivery. With all this behind it, MasterLock adjuvant is built for enhancing crop potential. Help unlock the full potential of every field with products that are built for it. Scan the QR code to learn more.

WINFIELD® UNITED MasterLock® WINFIELDUNITED.COM

[1]WinField United. 14 studies, eight states, all fungicides. 2012–2017.
[2]WinField United. 12 trials, five locations across the U.S. and Canada. 2019-2021. © 2024 WinField United. Important: Before use always read and follow label directions. Crop performance is dependent on several factors, many of which are beyond the control of WinField United. Including without limitation: soil type, pest pressure, agronomic practices and weather conditions. Growers are encouraged to consider data from multiple locations, over multiple years and to be mindful of how such agronomic conditions could impact results. InterLock, MasterLock and WinField are registered trademarks of WinField United.

ALFALFA HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES													
			Barnyardgrass	Bluegrass, annual	Bluegrass, perennial	Bromes, annual*	Crabgrass	Downy brome	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Foxtail barley	Quackgrass	Sandbur field	Wild oat	Yellow nutsedge
DIRECT SEEDING - PREPLANT INCORPORATED																
EPTAM *(EPTC)*	G	15	**E**	F	N	**E**	**E**	**E**	**E**	**E**	**E**	P	F	**G/E**	**G**	**G**
TRUST/TREFLAN HFP/TREFLAN TR-10 *(trifluralin)*	F/G	3	**E**	**G**	N	**E**	**E**	**E**	**E**	**E**	**E**	P	P	**G**	F	P
SEEDING OR ESTABLISHED - POSTEMERGENCE																
BEYOND XTRA *(imazamox)*	G	2	**G**	P	N	**E**	F/**G**	**G**	**G**	**G/E**	**G**	**G**	F	F	**E**	F
BUTYRAC 200/***2,4-DB 200/2,4-DB 175*** *(2,4-DB)*	G	4	N	P	N	N	N	N	N	N	N	N	N	P	N	N
FRAMEWORK 3.3 EC/PROWL H2O *(pendimethalin)*	E	3	**E**	F	N	P	**E**	P/F	**E**	**E**	**E**	P	P	**G/E**	F	P
KERB SC[1] *(pronamide)*	G	15	**G**	U	**G**	**G**	**G**	**G**	F	F	P	**E**	**G**	F	**G**	P
MAESTRO 2EC*** *(bromoxynil)*	F	6	P	P	N	P	P	P	P	P	P	P	P	P	P	P
POAST *(sethoxydim)*	E	1	**E**	P	P	F/**G**	**E**	F/**G**	**E**	**E**	**E**	P	F	**E**	**G/E**	P
PURSUIT *(imazethapyr)*	E	2	F	P	N	P	F	P	F	F/**G**	F/**G**	U	P	P	P	P
ROUNDUP BRANDS; ***CORNERSTONE*** BRANDS; GLYPHOSATE[B] *(glyphosate)*	E	9	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	F
SECTION THREE/CLEANSE/SELECT MAX *(clethodim)*	E	1	**E**	**G**	F	**G**	**E**	**G**	**E**	**E**	**E**	**G**	**G**	**E**	**E**	P
WARRANT *(acetochlor)*	G/E	15	**E**	U	N	N	F	N	F	**G/E**	**G**	N	N	F	P	F
DORMANT OR BETWEEN CUTTINGS																
AIM *(Carfentrazone-ethyl)*	P	14	P	P	P	P	P	P	P	P	P	P	P	P	P	P
DIMETRIC EXT/DIMETRIC LIQUID *(metribuzin)*	G	5	F	P	P/F	**G**	F	**G**	F	P/F	P/F	**G**	P	P	P	P
GRAMOXONE SL 3.0 ‡ *(paraquat)*	F	22	F/**G**	P	N	**G**	P/F	**G**	**G**	**G**	F/**G**	**G**	P/F	F	**G**	P
KARMEX *(diuron)*	G	5	**E**	F	P	P/F	**E**	F	F	**G**	F/**G**	P	P	F	F	P
KERB SC *(pronamide)*	G	3	**G**	U	U	**G**	**G**	**G**	F	F	P	**E**	F	F	**G**	P
SHARPEN *(saflufenacil)*	E	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SINBAR WDG *(terbacil)*	G	5	F	F	P	**G/E**	**G**	**G/E**	**G**	F/**G**	F/**G**	**E**	F	F	F	P
TRUST/TREFLAN HFP/TREFLAN TR-10 *(trifluralin)*	G	3	**E**	F	P	**E**	**E**	**E**	**E**	**E**	**E**	P	P	**G**	F	P
VELPAR L, L CU OR DF CU *(hexazinone)*	F	5	F	F	N	**G/E**	F	**G/E**	F	F/**G**	F	**G**	F	F	**G**	P
VELPAR ALFAMAX/VELPAR ALFAMAX GOLD *(hexazinone + diuron)*	G/E	5,5	**G**	F	N	**G**	**G**	**G/E**	**G**	**G**	**G**	**G**	F	F	**G**	P
PREHARVEST, STAND RENOVATION, SPOT OR DORMANT																
GLYPHOSATE** *(glyphosate)*	N	9	**E**	P	**G/E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	F

* Includes downy brome, Japanese brome and cheatgrass. Control of winter annual bromes in spring is difficult.
** May use glyphosate products at labeled rates.
*** Maestro 2EC is labeled for seedling alfalfa only.
[A] Site of Action described in Technical Information section.
[B] Check individual product labels for reference to Roundup Ready alfalfa.
[1] Similar ratings for PRE application.
[2] See label of pigweed species controlled.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

ALFALFA HERBICIDE PERFORMANCE RATINGS *continued*

BROADLEAVES																												
Bindwwed, field	Canada Thistle	Chickweed	Cocklebur	Dandelion - seeding	Dandelion - established	Dock, curly	Dodder	Henbit	Hoary alyssum	Kochia	Lambsquarters, common	Mustard, tansy	Mustard, wild	Nightshade, black	Pennycress, field	Pigweed2	Plantain, broadleaf	Prickly lettuce	Purslane	Radish, wild	Ragweed, common	Russian thistle	Shepherdspurse	Smartweed, annual	Sunflower	Velvetleaf	White cockle	Yellow rocket
P/F	P	F	P	P	P	P	P	**G**	F/**G**	F	F	P	P	F	P	F/**G**	U	U	P	P	F	P	P	P	P	F	P	P
P	P	P	P	P	P	P	**G**	**G**	P	**G**	**G**	P	P	P	P	**G**	P	P	**G**	P	P	P	P	P	P	P	P	P
P	F	**G**	**E**	**G**	F	F	F	P/F	F	**G**	**G**	**G**	**E**	**E**	**G**	**E**	F	U	**E**	**G**	F	F	**G**	**E**	**E**	**E**	P	F/**G**
P	P/F	F	F	**G**	P/F	F	P	P/F	F	F	**G**	F	F/**G**	F	**G**	F/**G**	F/**G**	F	**G**	F	**G**	P/F	F/**G**	F	F	F	P	F
P	N	**G**	P	P	P	P	**G**	**G**	P	**G**	**G**	P	P	P	P	**G**	P	P	**E**	P	P	F	**G**	P	P	P	P	P
P	P	**G**	P	P	P	P	**G**	**G**	P	P	F	P	P	F	P	P	U	U	**G**	P	P	**G**	P	P	U	P	P	P
F	P	P/F	**E**	F	P	P	P	F/**G**	F	**G**	**G**/**E**	F	F/**G**	**G**	**G**	F/**G**	P	U	P/F	F/**G**	**E**	**G**/**E**	**E**	**E**	**E**	**G**	F	F
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N
P	P	**G**	**E**	F	P	P/F	P	F	F	**G**	F	**G**	**E**	**E**	**G**	**E**	F	U	**E**	**G**	F	F	**G**	**G**/**E**	**G**	**G**	P	F/**G**
G	**G**	**E**	**E**	**G**	F/**G**	F	F	**G**	**G**	**E**	**G**	**E**	**E**	**G**	**E**	**E**	**G**/**E**	**G**	**G**	**E**	**E**	**E**	**E**	**G**/**E**	**E**	**E**	F	F/**G**
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
N	N	N	N	N	N	N	N	F	N	F	**G**/**E**	P	P	**G**	U	**G**	**G**	N	**G**	N	N	F	N	P	N	N	N	N
F	P	F	P/**G**	P/F	P	F	N	F/**G**	N	**G**	**G**/**E**	F/**G**	F/**G**	**G**	**G**/**E**	**G**/**E**	F	F/**E**	N	**G**	F/**G**	N	F/**E**	**E**	N	**E**	P/F	N
P	P	**E**	F/**G**	**G**/**E**	F/**G**	F	P	**G**	F/**G**	**G**/**E**	**E**	**E**	**E**	P	**E**	**E**	F	F	U	**E**	**E**	**G**	**E**	**G**	**G**	**G**	F/**G**	**E**
P	P	**G**/**E**	F	**G**	P/F	P	U	**G**	P/F	F	**G**	P	**G**	F	F	F/**G**	P	**G**	**E**	**G**	**G**	F	**G**	**G**	F	**G**	U	F
P	P	F	F	P	P	P	P/F	P	U	**E**	**G**	**E**	**E**	F/**G**	**G**	**G**	P	**G**	**E**	**E**	F/**G**	F	**E**	F	**G**	F	U	F
P	P	**G**	P	P	P	P	**G**	**G**	P	F	F	P	P	F	P	P	F/**G**	U	**G**	P	**G**	**G**	P	P	U	P	P	P
U	**G**	F	**G**	F	F	U	U	F	U	**E**	**E**	**G**	**G**	**E**	**E**	**E**	U	**E**	**G**	U	**E**	**E**	**E**	**E**	**G**	**G**	U	U
P	P	**E**	**G**	**G**	F	P/F	F	**G**/**E**	**G**	**G**	**G**	**E**	**G**/**E**	**G**/**E**	**E**	**G**	F	**E**	U	**G**	**G**	**G**	**E**	**G**	**G**	**G**	P	**G**
P	P	P	P	P	P	P	**G**	**G**	P	**G**	**G**	P	P	P	P	**G**	P	P	**G**	P	P	P	P	P	P	P	P	P
P/F	P	**G**/**E**	**G**	**G**/**E**	**G**	F	P	**G**	**G**	**G**/**E**	**G**	**E**	**G**/**E**	P/F	**E**	**G**	F/**G**	F	U	F	**G**	**G**	**E**	**G**	F	**G**	F	**E**
P	P	**G**/**E**	**G**	**G**	**G**	F	P	**G**	**G**	F/**G**	**G**/**E**	**E**	**G**/**E**	F/**G**	**E**	**G**/**E**	F/**G**	**E**	**G**	**G**/**E**	**G**/**E**	**G**	**E**	**G**	**G**	**G**	F	**E**
G	**G**	**E**	**E**	F/**G**	P/F	P	U	F	U	**G**	**G**/**E**	**E**	**E**	F	**E**	**E**	**G**/**E**	**G**	**G**	**E**	**E**	F/**G**	**E**	**G**/**E**	**E**	**G**	F/**G**	**G**

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

ALFALFA HERBICIDE APPL. TIMING AND RESTRICTIONS

Herbicide	Labeled Crops[1]	Application Timing[2]	Comments/Restrictions	Rainfast (hrs)	Intervals** (Days)	
					Forage	Grazing
AIM EC/SHARK EW	A,B,AC,LC,RC,CV,S,L	POST	Established stands only. Dormant season, in-crop and stubble. From hay removal through 6" of growth.		21	21
		PH	Apply when crop is mature or according to local Extension Service guidelines. PHI 3 days for stands grown for seed.			
BASAGRAN 5L	A	POST	Seed production only. Seedling alfalfa must have 2 trifoliate leaves.	4	NO	NO
BEYOND XTRA	A	POST	New seedings - 2nd trifoliate or larger. Established stands - fall or spring dormant, between cuttings <3" growth.	1	0	0
CHATEAU EZ	A,AC,LC,RC	POST	Established A and AC,LC,RC with ≤6". AC,LC,RC in ID, OR, WA only.	1	25	25
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	A,B,AC,LC,RC,CV,S,L	PP,PRE	Before crop emerges.	RE	M	M
DIMETRIC EXT/DIMETRIC LIQUID	A,AG,S	POST	Established stands - dormant, spring or fall.	6-8	28	28
DUAL MAGNUM	A	–	See 24c indemnified labels for select state(s).			
EPTAM 20G	A,B,AC,LC,RC,L	PPI	New seeding.	–	NR	NR
		PRE	Established stand-CA, AZ (alfalfa only). Inc. with irrigation.		14	NR
EPTAM 7E	A,B,AC,LC,RC,L	PPI	North Region incorporate immediately 2-3".	–	NR	NR
		PPI	PNW. Incorporate immediately 2-3".		A-14, LC-45	A-14, LC-45
		PRE	Established-North region, CA, NV, AZ and PNW. Apply in irrigation.		14	14
FRAMEWORK 3.3 EC	A	DEPOST	Dormant or early POST to ≤10" alfalfa after first cutting or with drop nozzles >10" or ≥ 2 cuttings. Seed production only. PHI 90 days for seed.		50	NO
FUSILADE DX	A,AC,LC,RC	POST	24c in alfalfa grown for seed: WY (exp. not given).	1	NO	NO
GRAMOXONE SL 3.0 ‡	A,B,CV,AC,	PP/PRE	New seedings. Apply before crop emergence to emerged weeds.	0.5	NR	NR
		POST	Dormant. Alfalfa grazing forage interval - 42-60 days.		42-Region A	42-Region A
			Other legumes - 60 days.		60-Region B	60-Region B
		POST	Between cuttings.	–	30	30
		PH	24c: SL 3.0 as harvest aid in alfalfa grown for seed in CO (exp. 12/2026), WY (exp. 12/2026).		NO	NO
HERBIVORE	A	POST	Reduce crop injury: apply as soon as possible after removal of hay from field or prior to irrigation.	4	14	14
KARMEX	A	POST	Dormant established stands, fall or winter.	–	NR	NR
KERB SC	A,B,CV,AC,LC,RC,S	PRE/POST	Fall post or dormant, winter. POST after trifoliate leaf stage.	–		
			East of MI River (Alfalfa) and other legumes, entire U.S.		120	120
			West of MI River - <3 lb a.i. (Alfalfa).		25	25
			West of MI River 3 - 4 lb a.i. (Alfalfa).		45	45
MAESTRO 2EC	A	POST	Fall or spring seedling-alfalfa with a minimum of 4 trifoliate leaves.	1	30-Spring	30-Spring
		POST	Fall or spring seedling-alfalfa with a minimum of 2 trifoliate leaves. Western states only.		60-Fall	60-Fall
POAST	A,B,S	POST	New or established stands. Poast only may be applied to all clovers.	1	14 (hay) 7 (haylage)	7
PROWL H2O	Forage Legumes	see comment	Not labeled PPI or PRE except for CRP or set-aside. See label.	–	NO	NO
	A	POST	Established stands in fall, spring, or dormant.		NO	NO
			New - once alfalfa has reached 2nd trifoliate and before 6". PHI 28 days ≤ 2.1 qt, 50 for >2.1 qt, 90 for seed production.		28, 50	28, 50
PURSUIT	A	POST	New seedings - 2nd trifoliate or larger.	1	30	30
			Est. stands - fall or spring dormant, between cuttings <3" growth.			

See notes and footnotes at end of table

ALFALFA HERBICIDE APPL. TIMING AND RESTRICTIONS *continued*

Herbicide	Labeled Crops[1]	Application Timing[2]	Comments/Restrictions	Rainfast (hrs)	Intervals** (Days)	
					Forage	Grazing
REGLONE/DIQUAT 2L	A	PH	Seed production only. PH desiccation broadcast.	0.5	NO	NO
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	A	POST	Roundup Ready alfalfa in new and established stands.	RE	5	5
ROUNDUP POWERMAX 3; WEATHERMAX;/CREDIT XTREME/HONCHO K6	A,B,CV,AC,LC,RC,L,S	PP,PRE,AP PH	Apply before planting or crop emergence to emerged weeds. Prior to the last harvest of the stand.	RE	0**, 56 36 hr*	0**, 56 36 hr*
SECTION THREE/CLEANSE	A,B,S	POST	New or established stands.	1	15	15
SELECT MAX	A,B,S	POST	New or established stands.	1	15	15
SINBAR WDG	A	PRE	Dormant - established stands in spring or fall. Seedling alfalfa in OR and WA only in late winter or early spring.	–	NR	NR
SHARPEN	A	DOR	Apply when alfalfa is not actively growing in the fall or during the winter dormancy period.	1	28	28
TRUST/TREFLAN HFP or TREFLAN TR-10	A	PRE PPI	Established stands - dormant or after cutting. Incorporated by rain or irrigation. Treflan TR-10 and Treflan HFP: Direct seeded alfalfa. Use of Trust (EPA Reg. #1281-146) PPI in direct seeded alfalfa in all states requires Supplemental label (exp. date not given).	–	21	21
VARISTO	C	POST	For clover grown for seed production in OR and WA only. Apply before clover bloom when clover has a minimum of 2 trifoliate leaves and most weeds are 1″-3″ tall.	4	36	36
VELPAR L, L CU or DF CU	A	PRE	Established stands - dormant or <2″ growth between cuttings or in spring.	–	30	30
VELPAR ALFAMAX/VELPAR ALFAMAX GOLD	A	PRE	Dormant established stands.	–	30	30
WARRANT	A	POST	Up to or at the 4th trifoliate stage following emergence of the new stand or following green up or regrowth the following spring.	–	20	20
2, 4-DB 200/BUTYRAC 200	A, B	POST	Crop should be healthy and actively growing.	6	60-seedling 30-estab.	60-seedling 30-estab.

[1] A - alfalfa, B - birdsfoot trefoil, AC - alsike clover, AG - alfalfa grass mixtures, LC - ladino clover, RC - red clover, CV - crown vetch, S - sainfoin, L - lespideza.
[2] Application Timing and Interval.
AP - At planting
PPI - Preplant incorporated
PP - Preplant surface, unless otherwise specified
PRE - Preemergence
DOR - Dormant
DEPOST - Dormant early postemergence
M - Maturity
POST - Postemergence
PH - Preharvest

NR - Not restricted
NO - Not permitted
RE - Heavy rainfall soon after application may require retreatment.
* - 36 hours for alfalfa and 3 days for other legumes at labeled pre-harvest rates.
** For Cornerstone Plus or Cornerstone 5 Plus, crop may be grazed or fed as soon as it reaches sufficient maturity.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

ALFALFA NEW SEEDING HERBICIDES *(also see New or Established Stand Herbicides on the next page)*

Herbicide	Labeled Crops[1]	Rate/Acre			Comments/Restrictions
		Coarse[2]	Medium	Fine	
2,4-DB 200/BUTYRAC 200 or ***2,4-DB 175***	A,B or A	**All soil textures:** 1-3 qt or 4.3-6.5 pt			POST. Rates depend on weed size – see label. Treat in late fall or spring when both broadleaf weeds (less than 3" tall) and seedling crop have emerged. Treat established crop in late fall for best results. Do not apply if temperatures exceed 90 °F or fall below 40 °F in the next 2-3 days. Do not graze established alfalfa, nor feed straw or hay until 30 days after application. Do not graze or feed seedling alfalfa within 60 days after application.
BASAGRAN 5L	A	**All soil textures:** 0.8-1.6 pt			POST to seedling alfalfa grown for seed. Apply to seedlings with at least 2 trifoliate leaves.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	A, Forage Legumes	**All soil textures:** Up to 48 fl oz or Up to 36 fl oz			Add 8.5-17 lb AMS/100 gal or WC+NIS as needed.* Apply PP, PRE or at planting before crop emergence. See label for perennial rates.
EPTAM 7E or EPTAM 20-G	A,B,AC,LC,RC,L	3.5-4.5 pt or 15 lb	3.5-4.5 pt or 15 lb	3.5-4.5 pt or 15 lb	PPI. Apply to dry soil just before seeding and incorporate immediately. Low rate for grasses only; higher rate for grasses and broadleaves. Eptam 7E may be applied through sprinkler irrigation. Temporary crop stunting and sealing of first leaves will occur if growing conditions are not optimum. Do not use if atrazine was used previous year.
FRAMEWORK 3.3 EC	Forage Legumes	1.2-1.8 pt	1.8-2.4 pt	2.4-3 pt	PPI or PRE. SET-ASIDE or CRP planted to legume cover crops only. Do not feed or graze treated foliage. Some stand reduction may occur. See label. Use on alfalfa grown for seed production only.
MAESTRO 2EC	A,A/Grass cover crop	**All soil textures:** 1-1.5 pt 2 pt: chemigation			POST. Apply to seedling alfalfa when most plants have at least 4 trifoliate leaves (2 leaves if chemigating). In WA, OR, ID, MT, WY, CO, UT, NV, AZ, NM and western ND, SD, NE, KS: apply in fall or spring to minimum 2 trifoliate alfalfa. Weeds should not exceed 4-leaf stage or 2" high. Best control of winter annual broadleaves in fall. May mix with 2,4-DB 200/Butyrac 200. Do not apply when temperatures are likely to exceed 70° F (80° F in some Western States – see label) at application or for 3 days following.
POAST	A	**All soil textures:** 1 pt			POST. Add 1 pt/A HSOC-COC.* For controlling grasses and oat seeded with alfalfa as a cover crop. Apply to 3-6" oats.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	A,CV,LC,RC,L, others	**All soil textures:** 11-32 fl oz			Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply PP, PRE or at planting before crop emergence. See label for perennial rates. May use other glyphosate herbicides-Roundup brands, Cornerstone or others at labeled rates.
TRUST/TREFLAN HFP or TREFLAN TR-10	A	1 pt or 5 lb	1-1.5 pt or 5-7.5 lb	1.5 pt or 7.5 lb	Some crop stand reduction and stunting may occur; however reduced weed competition will allow establishment of quality stand. Use lower rate on medium textured soils in areas receiving <20" rainfall or irrigation. Treflan TR-10 and Treflan HFP: Direct seeded alfalfa. Use of Trust (EPA Reg. #1281-146) PPI in direct seeded alfalfa in all states requires Supplemental label (exp. date not given).

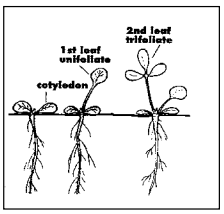
[1] A – alfalfa, B – birdsfoot trefoil, AC – alsike clover, AG – alfalfa grass mixtures, LC – ladino clover, RC – red clover, CV – crown vetch, S – sainfoin, L – lespideza.

[2] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.

O.M. – Soils with low organic matter - use lower rate, with high organic matter – use higher rate within the range.

****For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.



ALFALFA NEW OR ESTABLISHED STAND HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre			Comments/Restrictions
		Coarse[2]	Medium	Fine	
2,4-DB 200/BUTYRAC 200 or ***2,4-DB 175***	A,B or A	**All soil textures:** 1-3 qt or 4.3-6.5 pt			POST. Rates depend on weed size – see label. Treat in late fall or spring when both broadleaf weeds (less than 3" tall) and seedling crop have emerged. Treat established crop in late fall for best results. Do not apply if temperatures exceed 90 °F or fall below 40 °F in the next 2-3 days. Do not graze established alfalfa, nor feed straw or hay until 30 days after application. Do not graze or feed seedling alfalfa within 60 days after application.
BEYOND XTRA	A	All soil textures: 4-6 fl oz			POST: Add 1 qt NIS or 0.5 gal HSOC-MSO/100 gallons + 12-15 lb AMS or 2.5% UAN.* Apply to seedling alfalfa in 2nd trifoliate or larger stage. Apply to ESTABLISHED stands in fall, winter or spring to dormant, semi-dormant alfalfa or between cuttings before new growth reaches 3" to achieve good coverage. Apply before bud stage to alfalfa grown for seed. Apply to 1-3" weeds. For best alfalfa tolerance, use NIS on new seedling applications. Tank mixes include Maestro 2EC (seedling), 2,4-DB, Poast or Section Three/Cleanse. Labeled at 5 fl oz/A for red, white and crimson clover grown for seed in WA and OR only. See label.
CHATEAU EZ	A,AC,LC,RC	**All soil textures:** up to 4 fl oz			Apply to established A and to AC,LC,RC with ≤6" growth. AC,LC,RC in ID, OR, WA only. Max. 4 fl oz/A/application. Max. 8 fl oz/A/year. Max. 4 applications/year. Do not make sequential application within 60 days of first application. See label for use adjuvant and possible injury when targeting emerged weeds. 24c ID (exp. 12/2026), OR, MT (exp. (12/2027) for use in established alfalfa grown for seed only (see 24c label for details).
CLEANSE	A,B,S	**All soil textures:** *New seedings* 6-8 fl oz *Established stands* 8-16 fl oz			POST. May add 1 pt HSOC-COC + 2.5 lb AMS.* Apply to annual grasses to 8" (downy brome to 6", giant foxtail to 12"). Apply 8-16 oz/A for perennial grasses in established alfalfa. Can tank mix with Pursuit, Beyond Xtra, 2,4-DB or many insecticides. Best control of grass before mowing. If grass has been mowed, use the higher rate and allow time for active regrowth.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	A	**All soil textures:** Up to 2 qt or Up to 1.5 qt			POST. Add 8.5-17 lb AMS/100 gal, or WC+NIS.* Roundup Ready alfalfa only in new and established stands. Apply to alfalfa seedlings up to 4th trifoliate. Apply to annual weeds before 6" for most effective control. Can apply up to 2 qt or 1.5 qt from 5 trifoliate up to 5 days before cutting in new stands and up to 5 days before harvest in established stands. Late fall application to actively growing perennials such as dandelion and Canada thistle can be effective. Maximum 6 qt or 144 fl oz/A total for in-crop applications.
CREDIT XTREME	SEE ROUNDUP				
FUSILADE DX	A,all clovers	**All soil textures:** 8-12 fl oz			Rate dependent on weed height and timing of application; see label. 24c labels for quackgrass in alfalfa grown for seed: WY (exp. date not given).
GRAMOXONE SL 3.0 ‡	A,clovers,B,S,L	**All soil textures:** *Before seeding–PP or PRE before crops emerge* 1.3-2.7 pt *New fall seedings <1 year old* 0.7-1.3 pt: North 0.5-0.8 pt: South *Established stands* 1.3-2.0 pt: North 0.7-1.3 pt: South 0.7 pt: Between cuttings (East of Rockies)			Add 2 pt NIS/100 gal.* Rates shown are for alfalfa. North and South Regions divide at the southern borders of CO, KS, MO, KY. For control of winter and summer annuals and suppression of perennial weeds. DORMANT SEASON: Apply late fall after last cutting through spring before growth is 2" tall. Green foliage will be burned. Can tank mix with Dimetric EXT or Velpar L, L CU or DF CU on stands over 1 year old in Northern area. BETWEEN CUTTINGS: Treat stands established at least 1 year within 5 days after cutting before alfalfa regrowth is 2" tall.
KERB SC	A,B,CV,	**All soil textures:** 1.25-5 pt			PRE and/or POST. To crop in fall seedings, apply after legumes have reached trifoliate stage. In spring seedlings, apply the next fall prior to freeze-up. Best activity in cool weather (<55-60 °F). 2ee ID, NV, OR, UT, WA (exp. date not given) for 0.625-1.25 pt/A for grass weed suppression.
PANTHER SC		SEE VALOR EZ			
POAST	A,B,S,all clovers	**All soil textures:** 0.5-2 pt (1-2.5 pt West, High Plains)			POST. Add 1 pt HSOC-COC.* Apply to grasses at heights stated on label. Good coverage essential. Best control of volunteer grains and winter annual grasses achieved in fall and prior to mowing. Best control of grass before mowing. If grass has been mowed, use the higher application rate and allow time for active regrowth.

See notes and footnotes at end of table

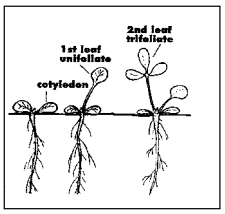
ALFALFA NEW OR ESTABLISHED STAND HERBICIDES *continued*

Herbicide	Labeled Crops[1]	Rate/Acre			Comments/Restrictions
		Coarse[2]	Medium	Fine	
PROWL H2O	A	**All soil textures:** 1.1-2.1 pt: new seeding **All soil textures:** 1-4 qt: established			Apply to new seedings that have not been cut. Established stands are those that have been cut. Apply before weeds emerge and when alfalfa is <6" tall. PHI 50 days. Apply to new stands after second trifoliate but before 6" in growth. Apply to established alfalfa before 6" growth. PHI 28 days ≤ 2.1 qt/A, and 50 days for >2.1 qt/A.
PURSUIT	A,AC,AG,LC,RC	**All soil textures:** 3-6 fl oz			POST. Add 0.5 gal HSOC-MSO or 1 qt NIS/100 gal + 1-2 qt 28% UAN or 12-15 lb AMS/100 gal.* Apply to SEEDLING alfalfa in 2nd trifoliate stage or larger and to weeds 1-3" in height or diameter. Apply to ESTABLISHED alfalfa in fall or spring to dormant, or semi-dormant (<3" growth) stage or between cuttings. Apply before bud stage to alfalfa grown for seed. Can tank mix with Maestro 2EC, 2, 4-DB, Poast or Section Three/Cleanse. Use crop oil if weeds are under moisture or temperature stress. Stunting can occur if temperature is <40 °F. Maximum of 4 oz/A in ND or MN north of HWY 210.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	A	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			POST. Add 8.5-17 lb AMS/100 gal, or WC+NIS.* Roundup Ready alfalfa only in new and established stands. Apply to alfalfa seedlings up to 4th trifoliate to eliminate gaps created by alfalfa plants that do not contain the Roundup Ready gene. Apply to annual weeds before 6" for most effective control. Can apply up to 44 fl oz/A from 5 trifoliate up to 5 days before first cutting in new stands and up to 44 fl oz/A up to 5 days before cutting in established stands. Late fall application to actively growing perennials such as dandelion and Canada thistle can be effective. May tank mix with Assure II, Poast, Pursuit, or Select Max in actively growing alfalfa or Kerb SC, Lexone, Pursuit, Beyond Xtra and Dimetric EXT in dormant stands. May use other glyphosate herbicides if labeled for alfalfa or Roundup Ready alfalfa.
SECTION THREE	A,B,S	**All soil textures:** *4-10.67 fl oz*			PHI 15 days before grazing, feeding or harvesting. Use 1pt/A of HSOC-MSO or HSOC-COC, WC+NIS or 8.5-17 lb/100 gal of AMS.* See label for tank-mixes.
SELECT MAX	A,B,S	**All soil textures:** 12-32 fl oz			POST. Add 1 qt NIS/100 gal.* Minimum 20 fl oz in established stands. 1-2 qt UAN or 2.5-4 lb AMS may be added. May be mixed with 4-6 fl oz Beyond Xtra. See label for rates and weeds.
SINBAR WDG	A	**All soil textures:** 0.25-0.3 lb: Sandy soils in WA,OR and all soils in PA,VA 0.5 lb: Loam, silt clay soils			POST. In PA,OR,WA,VA only. In OR and WA apply to seedling alfalfa in late winter or early spring before alfalfa has more than 2" of new growth. On sandy soils with 0.5- 0.9% OM only apply when tap root is >6" and all other OM content and soil types only apply when tap root is >4". In PA,VA apply in fall or early spring before weeds >2". Do not apply to spring seeded alfalfa until established for 6 months.
SOLICAM DF	A	**All soil textures:** 1.25-2.5 lb			For use in AL,AR,AZ,CA,FL,GA,ID,LA,MS,NC,NM,NV,OK,OR,SC,TN,TX,WA and south of I-70 in portions of CO,KS,MO.
TUSCANY SC		SEE VALOR EZ			
VARISTO	C	**All soil textures:** 21-27 fl oz			For clover grown for seed production in OR and WA only. Apply before clover bloom when clover has a minimum of 2 trifoliate leaves and most weeds are 1"-3" tall. Adjuvant and fertilizer must be used. Do not make >1 application or apply 27 fl oz/A/season.
WARRANT	A	<1.5% OM 1.25-1.6 qt ≥1.5% OM 1.25-1.7 qt	<1.5% OM 1.25-1.7 qt ≥1.5% OM 1.25-1.9 qt	<1.5% OM 1.25-1.9 qt ≥1.5% OM 1.25-2 qt	POST in alfalfa and GT alfalfa at 4th trifoliate stage following emergence of the new stand or following green up or regrowth the following spring; at either the first or second cutting in the seeding year, but no later than 7 days after the cutting, a sequential application can be made at 1.25-2 qt/A; 20-day min. between application and subsequent cutting for forage or hay or before open grazing by livestock.

[1] A – alfalfa, B – birdsfoot trefoil, AC – alsike clover, AG – alfalfa grass mixtures, LC – ladino clover, RC – red clover, CV – crown vetch, S – sainfoin, L – lespideza.

[2] Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.
O.M. – Soils with low organic matter - use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.



ALFALFA ESTABLISHED STAND HERBICIDES (1+ YEAR)

Herbicide	Labeled Crops[1]	Rate/Acre			Comments/Restrictions
		Coarse[2]	Medium	Fine	
2,4-DB 200/BUTYRAC 200 or ***2,4-DB 175***	A,B or A	**All soil textures:** 1-3 qt or 4.3-6.5 pt			POST. Rates depend on weed size – see label. Treat in late fall or spring when both broadleaf weeds (less than 3" tall) and seedling crop have emerged. Treat established crop in late fall for best results. Do not apply if temperatures exceed 90 °F or fall below 40 °F in the next 2-3 days. Do not graze established alfalfa, nor feed straw or hay until 30 days after application. Do not graze or feed seedling alfalfa within 60 days after application.
AIM EC/SHARK EW	A,B,AC,LC,RC,CV,S,L	**All soil textures:** 0.5-2.5 fl oz			Established stands only. Dormant season or between cuttings, alone or in combination with other registered products. From hay removal through 6" of growth. See label for application timing relative to crop growth state, and for adjuvant and fertilizer recommendations.
CHATEAU EZ	A,AC,LC,RC	**All soil textures:** up to 4 fl oz			Apply to established A and to AC,LC,RC with ≤6" growth. AC, LC, RC in ID, OR, WA only. Max. 4 fl oz/A/application. Max. 8 fl oz/A/year. Max. 4 applications/year. Do not make sequential application within 60 days of first application. See label for use adjuvant and possible injury when targeting emerged weeds.
DIMETRIC EXT or ***DIMETRIC LIQUID***	A,AG,S; alone or with grasses	**All soil textures:** 0. 33-1.33 lb or 0.66-2.66 pt			Apply in fall after dormancy, or in spring before new growth starts and before weeds are 2" tall. Do not use on sand or soils with <0.55% O.M. Use less than 1 lb/A on mixed grass stands. Lower rates for downy brome, grasses, common chickweed; higher for dandelion and quackgrass. Do not use on alfalfa grown for seed. Dimetric EXT at 1-1.33 lb/A may be applied impregnated on dry fertilizer in CT,IL,IN,IA,KS,KY,MN,NE,NM,NY,OH,OK,PA,SD,TN,TX,WI only; apply after dormancy has broken but prior to 3" of new shoot growth.
FRAMEWORK 3.3EC	A	**All soil textures:** 1.2-4.8 qt			DORMANT or EPOST. Apply to dormant alfalfa or after first cutting to < 10" alfalfa. Use drop nozzles ≥ 10" or if mowed two or more times. Seed production only. May be used with irrigation.
KARMEX DF	A	**All soil textures:** Tansy mustard: 1 lb applied just after emergence Other annuals: 1.5-3 lb in early spring			Dormant. Control may be reduced on fine-textured soils. Apply to dormant alfalfa. Apply before new spring growth starts. May replant to any crop 1 year after application of < 2 lb. Do not use on coarse soils or soils with less than 1% organic matter. See state restrictions.
KERB SC	A	**All soil textures:** Dodder control 3.5-5 pt/A: furrow irrigation 3.5 pt/A: flood or overhead sprinkler irrigation Cheatgrass control 2-2.5 pt/A: spring broadcast			Only in CA, CO, ID, NV, OR, UT, WA. Irrigate within 1-3 days after application or within 2 weeks if precedes dodder germination. See label.
MCPA AMINE/ RHOMENE MCPA	A,RC	**All soil textures:** 1 pt			DORMANT. Apply in late fall. Temperatures should be above 40º F. Check label for specific uses.
PROWL H2O	A	**All soil textures:** 1.2-4.8 qt			PRE DORMANT. For alfalfa for hay or forage, or grown for seed production. Apply to alfalfa forage or hay in fall after the last cutting, during winter dormancy in spring, or between cuttings. Apply prior to 6" regrowth. For seed production, apply to dormant stand or before 10" height after first cutting. Use drop nozzles for ≥ 10" or 2 or more cuttings. PHI 90 days for seed, 28 days forage/hay at ≤ 2.1 qt, and 50 days for > 2.1 qt.
SHARPEN	A	**All soil textures:** 1-2 fl oz			Apply to emerged broadleaves only in dormant stands of alfalfa that have gone through first cutting; for use on stands that are only used for forage or hay production; do not apply to alfalfa grown for seed production; before application, verify varietal dormancy rating of alfalfa; timing of cutting after application varies by region, refer to label; see label for adjuvants.
SINBAR WDG	A	**All soil textures:** 0.5-1.5 lb			Dormant. Apply in fall after alfalfa becomes dormant, or in spring before new growth starts. Do not rotate to other crops for 2 years. Do not use on coarse soils or soils with less than 1% organic matter. See label for reduced rates in certain states.
SONALAN HFP	A,LC,RC	**All soil textures:** 3-4 pt POST			24C, ID (exp. 12/2029), MT, NV, OR (exp. 12/2027), for nightshade and dodder control: in alfalfa grown for seed. 24c OR, WY (exp. 12/2027), for nightshade and dodder control in clover grown for seed.
TRUST/TREFLAN HFP	A	**All soil textures:** 4 pt			PRE. Apply through sprinkler irrigation system only. Apply during, dormancy, semi- dormancy or during growing season immediately after a cutting. Apply in 0.5-1" water prior to weed germination.

See notes and footnotes at end of table

ALFALFA ESTABLISHED STAND HERBICIDES (1+ YEAR) *continued*

Herbicide	Labeled Crops[1]	Rate/Acre			Comments/Restrictions
		Coarse[2]	Medium	Fine	
TREFLAN TR-10	A	**All soil textures:** 20 lb			PRE. Apply uniformly prior to weed emergence during dormancy or after a cutting. Rainfall or overhead irrigation of 0.5" or more is needed within 3 days; or incorporate with small disk, or spring tooth. Apply in late summer for control of winter annual bromes; in spring for control of summer grasses. Apply in fall after a cutting from Aug. 1 to Oct. 1. 24c OR (exp. 12/2026) for dodder control in established alfalfa grown for seed. 2ee CA, ID, OR, WA (exp. date not given) for dodder control.
VELPAR ALFAMAX	A	1.5-2 lb	2-4.3 lb	2-4.3 lb	DORMANT. Rates are for 1-5% O.M. Use 3-4.3 lb for > 5% O.M. Apply to dormant alfalfa not grown for seed; except in CA, ID, MT, NV, OR, UT, or WA. PHI 30 days. Apply to weeds <3". Premix: 1lb product = 7.5 oz Velpar DF CU + 8.5 oz Karmex 80 DF.
VELPAR ALFAMAX GOLD	A	2.2-3.2 lb	3.2-4.3 lb	3.2-4.3 lb	DORMANT. Rates are for 1-5% O.M. Use 4.3 lb for > 5% O.M. Apply to dormant alfalfa not grown for seed; except in CA. PHI 30 days. Premix: 1lb product = 4.9 oz Velpar DF CU + 11.1 oz Karmex 80DF.
VELPAR L	A	2-6 pt	2-6 pt	3-6 pt	See label for state grown for dormant, semi-dormant, or non-dormant alfalfa. Soil and foliar activity. Apply in winter or spring to dormant alfalfa to weeds <2". For tansy mustard may use with 1-2 pt/A or 0.33-0.67 lb/A. Do not apply to frozen ground. Stubble application labeled in some states. Do not use on alfalfa grown for seed. PHI 30 days.
WARRANT	A	*<1.5% OM* 1.25-1.6 qt *≥1.5% OM* 1.25-1.7 qt	*<1.5% OM* 1.25-1.7 qt ≥1.5% OM 1.25-1.9 qt	*<1.5% OM* 1.25-1.9 qt *≥1.5% OM* 1.25-2 qt	POST in alfalfa and GT alfalfa after spring green-up in established stands; can be applied between cuttings, and no later than 7 days after a cutting; 20-day min. between application and subsequent cutting for forage or hay or before open grazing by livestock.
Preharvest					
AIM EC/SHARK EW	A,B,AC,LC,RC,CV, S,L	**All soil textures:** 2.0-3.8 fl oz			Established stands only. Apply when crop is mature or according to local Extension Service guidelines. Max. 3.8 fl oz/A, including all POST application volumes and use rates. See label for adjuvant and fertilizer recommendations.
GRAMOXONE SL 3.0 ‡	A	**All soil textures:** 1.7-4 pt			Add 1 pt NIS/100 gal.* 24c Gramoxone SL 3.0 for PREHARVEST of alfalfa grown for seed only: CO (exp. 12/2026), WY (exp. 12/2026). Do not graze or use treated alfalfa for feed. Do not harvest until at least 4 days after application.
REGLONE/DIQUAT 2L	A	**All soil textures:** 1.5-2 pt			PREHARVEST desiccation broadcast. Seed production only. Minimum total spray volume 15 GPA by ground, 5 GPA by air. On thin stands use 1 pt/A. Do not graze or forage. Do not use seed for food, feed, or oil. Dessication complete in 3-10 days.
ROUNDUP POWERMAX; POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6/ ***CORNERSTONE PLUS/ CORNERSTONE 5 PLUS***	A see comments for B,AC,LC,RC,CV,S,L	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			PREHARVEST. For the last cutting of a stand. Alfalfa will be killed or severely injured. For control of quackgrass and other hard-to-control weeds. Apply a minimum of 36 hours before harvest. The treated crop and weeds can be harvested and fed to livestock after 36 hours. Do not use on alfalfa grown for seed. See individual labels for adjuvant or surfactant recommendations.*

[1] A – alfalfa, B – birdsfoot trefoil, AC – alsike clover, AG – alfalfa grass mixtures, LC – ladino clover, RC – red clover, CV – crown vetch, S – sainfoin, L – lespideza.

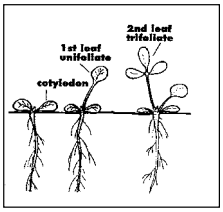
[2] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.

O.M. – Soils with low organic matter - use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.



ALFALFA LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR CUT	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT														
				ALFALFA LEAFBLOTCH MINER	ALFALFA WEEVIL (ADULT)	ALFALFA WEEVIL (LARVAE)	APHID	ARMYWORM	ARMY CUTWORM	BLISTER BEETLE	CATERPILLAR (ALFALFA)	CLOVER ROOT CURCULIO (ADULT)	CLOVER WEEVIL	CUTWORM	GRASSHOPPER	LEAFHOPPER SPP.	PLANT BUG
ARCTIC 3.2 EC ‡	0,14	14	2-8 fl oz				●	●	●		●			●				
			4-8 fl oz			●										●	●	
BAYTHROID XL ‡	7	7	0.8-1.6 fl oz											●		●		
			1.6-2.8 fl oz			●		●	●		●						●	
			2-2.8 fl oz	●											●			
			2.8 fl oz				●S											
BESIEGE ‡	7	1	5-8 fl oz								●			●		●		
			6-9 fl oz		●	●	●	●	●	●			●		●		●	
			9 fl oz	●														
CORAGEN	0	–	3.5-7.5 fl oz					●			●							
			2-5 fl oz												●			
DIMATE 4E/DIMETHOATE 4EC	10	10	0.5-1 pt			●S	●				●					●	●	
DIPEL ES	0	0	1-2 pt								●							
			2-4 pt					●										
ENTRUST SC	3	0,3	2-4 fl oz			●S		●										
FASTAC CS ‡	7	3	2.2-3.8 fl oz		●	●S	●		●		●			●		●		
			2.8-3.8 fl oz					●							●		●	
GRIZZLY TOO ‡	7	1	0.96-1.6 fl oz								●			●		●		
			1.28-1.92 fl oz			●	●	●	●	●			●		●		●	
			1.92 fl oz	●														
IMIDAN 70W	7,14	7,14	1-1.33 lb		●	●	●								●		●	
INTREPID 2F	7,3	0	4-10 fl oz					●			●							
LAMBDA-CY AG ‡	7	1	1.92-3.20 fl oz								●			●		●		
			2.56-3.84 fl oz			●	●	●	●	●			●		●		●	
			3.84 fl oz	●														
LANNATE LV ‡ or LANNATE SP ‡	7	7	0.75-3 pt or 0.25-1 lb											●				
			1.5-3 pt or 0.5-1 lb	●			●	●			●						●	
			3 pt or 1 lb			●												
MALATHION 5/MALATHION 5EC	0	0	1.5-2 pt			●	●						●		●	●		
			2-2.25 pt					●										
MALATHION 8 FLOWABLE	0	NL	1-1.25 pt			●	●	●					●		●	●	●	
MUSTANG MAXX ‡	3,7	3	2.24-4 fl oz			●	●		●		●			●		●		
			2.8-4 fl oz					●							●		●	
PYGANIC EC 1.4$_{II}$	0	0	16-64 fl oz		●	●	●	●		●	●		●		●	●	●	
PYGANIC EC 5.0$_{II}$	0	0	4.5-15.61 fl oz		●	●	●	●		●	●		●		●	●	●	

See notes and footnotes at end of table.

SPITTLE BUG	WEBWORM	COMMENTS AND RESTRICTIONS
	●	PHI 0 days at 4 oz/A. (PHI 0 days at ≤ 0.1 lb a.i./A; 14 days at >0.1 lb a.i./A.) Use higher recommended dosage for high pest pressure or for increased residual pest control. May be applied by sprinkler irrigation; see label. Alfalfa weevil: Controls larvae.
●		Labeled for use on mixed alfalfa stands. Max. 12.8 fl oz/A/season. May be applied by sprinkler irrigation; see label. Do not use on alfalfa grown for seed. Apply a min. 2 GPA by air or 10 GPA by ground. Alfalfa weevil: Controls larvae.
	●	
	●	PHI 1 day forage.
		Armyworm: Beet and western yellow striped. Max. 4 applications/A/year. One application/cutting.
		Only one application per cutting. Alfalfa weevil: Suppresses larvae.
		Biological control. Armyworm: Apply to 1-2 instar armyworms.
	●	
		PHI 3 days hay or fodder, 0 days for forage, until spray has dried for grazing. Alfalfa weevil: Suppresses larvae. Armyworm: Includes beet, fall, southern, and true armyworm.
●	●	May be applied by sprinkler irrigation; see label. Apply min. 2 GPA by air or 10 GPA by ground. When pest populations are high or foliage is dense, use min. 5 GPA by air. Do not make applications <7 days apart. Alfalfa caterpillar: Apply as insects appear. Use higher rate for increased pest pressure or greater residual.
	●	PHI 1 day forage. May be applied by sprinkler irrigation; see label. Apply only to fields planted to pure stands of alfalfa. Do not exceed 1.92 fl oz/cutting or 7.68 fl oz/A/season. Alfalfa weevil: Controls larvae. Armyworm: 1.92 fl oz/A for beet armyworm; use higher rates for larger larvae.
●		
●		Do not apply if the crop or weeds are in bloom. PHI 14 days in CA, AZ, NV; 7 days elsewhere. Alfalfa weevil: Controls adults and larvae. Aphid, Grasshopper, Plant (Lygus) Bug: Controls adults and larvae.
	●	Apply when first signs of feeding appear or at threshold levels. Use higher rate for heavier infestations or under difficult coverage conditions. Max. 1 application per cutting. Max. 32 fl oz/A/year. PHI 7 days for 4-10 fl oz/A. Reduced PHI 3 of days for 4-8 fl oz/A and ≤8 fl oz/application.
	●	PHI 1 day forage. May be applied by sprinkler irrigation; see label. Max. 0.96 pt/A/season. Apply only to fields planted to pure stands of alfalfa. Armyworm: 3.84 fl oz for beet armyworm.
●		
		May be applied by sprinkler irrigation; see label. Do not apply to dormant or semidormant alfalfa if ≤50 °F. Max. 12 pt/A/crop or 4 lb/A/crop. Alfalfa weevil: Controls larvae; use 1.5-3 pt/A for Egyptian larvae. Aphid: Pea aphid. Armyworm: Labeled for True, Fall, Yellowstriped and Beet armyworm. Cutworm: Variegated cutworm.
●		Do not apply if the crop or weeds are in bloom. Maximum of 2 applications/cutting with 14-day retreatment interval. Note 9. Alfalfa weevil: Controls larvae. Armyworm: Use higher rate for control.
●		Do not apply if the crop or weeds are in bloom. Maximum of 2 applications/cutting with 14-day retreatment interval. Note 9. Alfalfa weevil: Controls larvae. Armyworm: Use higher rate for control.
●	●	PHI 7 days for harvesting seed. May be applied by sprinkler irrigation; see label. Max. 0.05 lbs a.i. (8oz) per cutting or 0.15 lb a.i. (24 oz) per season of zeta-cypermethrin. Alfalfa weevil: Controls larvae. Aphid: Variable control of some species.
	●	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
	●	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.

ALFALFA LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR CUT	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT														
				ALFALFA LEAFBLOTCH MINER	ALFALFA WEEVIL (ADULT)	ALFALFA WEEVIL (LARVAE)	APHID	ARMYWORM	ARMY CUTWORM	BLISTER BEETLE	CATERPILLAR (ALFALFA)	CLOVER ROOT CURCULIO (ADULT)	CLOVER WEEVIL	CUTWORM	GRASSHOPPER	LEAFHOPPER SPP.	PLANT BUG	
SEFINA	0	0	3-6 fl oz				●									●		
			5-6 fl oz				●											
			6-10 fl oz													●		
SIVANTO 200 SL or SIVANTO PRIME	7,14	7,14	7-10.5 fl oz or 7-14 fl oz				●									●	●S	
STEWARD EC	7	–	4.6-11.3 fl oz												●			
			6.7-11.3 fl oz			●		●			●			●				
			9.2-11.3 fl oz					●								●S		
TRANSFORM WG	24	7	0.75 to 1.0 oz			●												
			1.5-2.75 oz														●	
VANTACOR	0	–	1.2-2.5 fl oz					●			●							
			0.7-1.7 fl oz												●			
WARRIOR II ‡	7	1	0.96-1.6 fl oz								●			●		●		
			1.28-1.92 fl oz		●	●	●	●	●	●			●		●		●	
			1.92 fl oz	●														
XENTARI	0	0	0.5-1.5 lb								●							
			0.5-2 lb					●										

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

	SPITTLE BUG	WEBWORM	COMMENTS AND RESTRICTIONS
			Adjuvant may improve performance. Min. 10 GPA by ground, 3 GPA by air. 7-day min. application interval. Max. 2 sequential applications before using insecticide with differing MOA. Max. 16 fl oz/A/season. Max. 1 crop season/year.
			Min. application interval 10 days. For use on clover only in ID, OR, WA. Max. 28 fl oz/A/year Sivanto 200 SL/Sivanto prime. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL. PHI 7 days alfalfa, 14 days clover. Tarnished Plant Bug suppressed in alfalfa only.
			Do not apply >45 oz/A/season or >11.3 fl oz/A/cutting. May be applied by sprinkler irrigation; see label. Alfalfa weevil: Controls larvae. Armyworm: For beet (6.7-11.3 fl oz/A) and western yellowstriped armyworm (9.2-11.3 fl oz/A). Cutworm: Granular cutworm.
			Use a higher rate for heavy pest populations. Min. 7-day application interval. Max 2 applications/cutting. Max. 8.5 oz/acre/year.
			Armyworm: Beet and western yellow striped. Max. 4 applications/A/year. One application/cutting.
		●	PHI 1 day forage. May be applied by sprinkler irrigation; see label. Do not exceed 1.92 fl oz/cutting or 7.68 fl oz/A/season. Alfalfa weevil: Controls larvae. Armyworm: Use 1.92 fl oz/A for beet armyworm. Spittle bug: Meadow spittlebug.
	●		
			Contains Bt. Armyworm: Apply to 1-2 instar armyworms. May be applied by sprinkler irrigation; see label.

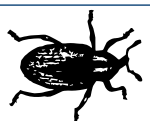
BEE ALERT

APPLY INSECTICIDES TO ALFALFA IN LATE EVENING WHEN BEES HAVE RETURNED TO HIVES. IF INSECTICIDES MUST BE APPLIED DURING ALFALFA BLOOMING PERIOD, NOTIFY BEEKEEPERS AT LEAST 48 HOURS IN ADVANCE OF TREATMENT, AND CHOOSE THE LEAST TOXIC INSECTICIDE POSSIBLE.

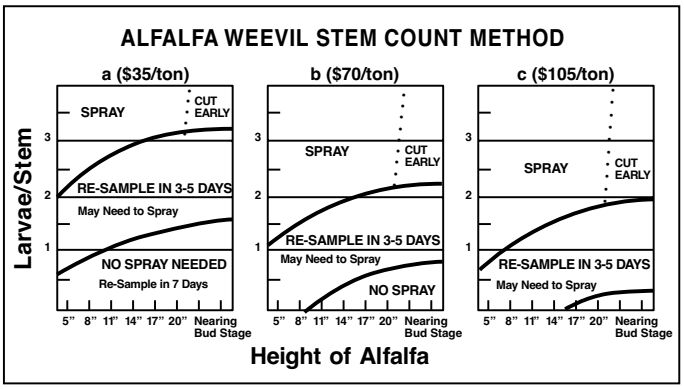
See Insecticide Resistance Management in the Technical Information section.

ALFALFA INSECT MANAGEMENT GUIDELINES

ALFALFA LEAFBLOTCH MINER: ET: not well established. Treatment is rarely warranted unless damage is severe (>30-40% of leaflets with pinhole feeding). Cutting alfalfa kills larvae.



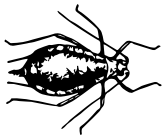
ALFALFA WEEVIL: ET: when 25-40% of tips are being skeletonized and if there are 3 or more larvae per stem, treat immediately. Do not apply sprays during bloom. Instead, cut and remove the hay. Two treatments may be necessary on the first cutting. Stubble Treatment: Control may also be warranted after a cutting when larvae and adults are feeding on more than 50% of the crowns and regrowth is prevented for 3 to 6 days. See Decision-Making Guide following for more specific thresholds. With high weevil levels of 3 or more per stem, permethrin does not provide sufficient control or residual activity. With lower infestations or for stubble spray, performance is adequate. Spray gallonage is important. Alfalfa under 7" use 10-12 GPA; 8-15" 15-20 GPA.



Management of Alfalfa Weevil

The Stem-Count Decision Method – Carefully break off 30 to 50 stems, selected at random from across the field, and shake them individually into a deep-sided bucket. Remember to take stems from each of several different areas of the field to ensure that a representative sample is obtained. Count the stems and determine the average stem height. Count the larvae, and determine the average number of larvae per stem. By plotting the average stem height versus the average number of larvae on the charts to the right, the appropriate course of action is suggested. After bud stage, it is probably more profitable to harvest the alfalfa than to treat with an insecticide.

(Adapted from Univ. of Nebr.)



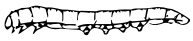
APHID: Small, whitish, yellow, greenish sucking insects. Early symptoms are yellowish spots on leaves. **Pea or cowpea aphid ET:** when there are 50 aphids/ stem on 10" alfalfa or up to 100/stem on 20" alfalfa. **Spotted alfalfa aphid ET:** control when they reach 50/stem on 10-inch tall alfalfa, except on seedlings, where 2-3 aphids/plant can be economical. Resistant varieties are available for the pea aphid and the spotted alfalfa aphid. **Blue alfalfa aphid ET:** control at approximately 50 aphids/stem, except regrowth when 20/stem can cause economic damage. If the crop is to be cut in less than one week, immediate cutting is recommended over an insecticide treatment.



ARMYWORM: ET: Control may be warranted when larvae reduce the stand of a new seeding, when there are 2 or more larvae per sweep, or when there are 1 to 2 half-grown larvae per sq ft. Spray if 5/ft2 are feeding on regrowth after first cutting.



BLISTER BEETLE: Adults feed on flowers and foliage. Blister beetles are highly toxic (produce cantharidin) to horses and poultry and are occasionally trapped or crushed by the crimper and thus retained in the hay. The old harvest method of cutting the hay and allowing it to dry before raking and bailing allows beetles to escape. Early cutting avoids most problems as the beetles are attracted to flowers and don't build up in the alfalfa till bloom. No economic level has been established for blister beetles, but if beetle swarms are noted in the field and the crop is destined for horses, an insecticide treatment may be justified.



CATERPILLAR, ALFALFA: Velvety (short hairs), green larva with a white stripe on each side. Established Plant: 10 worms per sweep and cutting will not occur for a few days on new seedings established plant = one larva/2 plants.



CUTWORM: Cutworms may seriously damage alfalfa by feeding on new growth. Variegated cutworms feed in spring. Army cutworms feed from fall through early spring. ET: spray when there are the following populations per sq ft: Army cutworms; 2 (seedlings). 3-4 (established); Variegated cutworms: 2, if hay has been cut and if most are not expected to pupate in 3-4 days. Windrows must be baled and bales removed before treating. Birds feeding in field are a good indication of cutworms.



GRASSHOPPER: ET: control hoppers when small and confined to a small area. 21-40 hoppers yd2. in field margins, and 8-14 in fields justify treatment. Use sufficient gallonage of spray to completely cover all vegetation.



LEAFHOPPER: 2nd and 3rd cuttings may be damaged by small, 1/8" wedge-shaped, light-green leafhoppers. Mowing removes eggs and encourages adults to leave field. New seedings are most susceptible. Scout for leafhoppers or symptoms. Spray before severe hopper burn and alfalfa stunting occurs. Cutting may be required for new growth. ET: treatment thresholds range from 0.2 leafhoppers/sweep on 3" alfalfa to 2.0 hoppers on >12" alfalfa. For potato leafhopper resistant varieties the ET thresholds are higher ranging 0.6/ sweep on 3" alfalfa to 6.0/sweep on 12" plants. Resistant Varieties: Alfalfa varieties, such as Trail Blazer XHH/RR Vamoose that contain high resistance to potato leaf hopper, should be the basis of an integrated pest management program in areas where potato leafhoppers cause frequent damage. For more information, contact your CROPLAN Seed Representative, read the CROPLAN Seed Guide, or view their website at: http://www.croplan.com

Alfalfa Height (inches)	ET Leafhoppers/ sweep
0-3	0.2
3-6	0.5
6-12	1.0
12 or taller	2.0



PLANT OR LYGUS BUG: Plant bugs or Lygus bugs are green or brown, about 3/16" long and half as wide. They feed on alfalfa buds. Harvesting removes eggs and kills most flightless nymphs. ET: when tip damage is obvious and nymphs and adults average 3/sweep on alfalfa less than 3 inches tall, or 5/sweep on alfalfa taller than 3 inches.



SPITTLEBUG: Nymphs of this small, leafhopper-like insect can cause economic damage to the first cutting. ET: Treatment is warranted when spittle masses average 1 or more per stem.



WEBWORM: Greenish caterpillars up to 3/4"with 3 dark spots on the sides of each abdominal segment destroy foliage inside web. If hay is within 2 weeks of cutting, mow instead of trying to kill worms. When spraying use sufficient volume to penetrate the webbing. ET: treat if webbing and defoliation are abundant.

FUNGICIDE	DISEASE*							
	ALTERNARIA LEAF SPOT	CERCOSPORA LEAF SPOT	DOWNY MILDEW	LEPTOSPHAERULINA LEAF SPOT	POWDERY MILDEW	RUST	SPRING BLACK STEM	WHITE MOLD
APROACH				●				
BADGE SC/BADGE X2		●		●				
CONTANS WG								●
CHAMP DRY PRILL/ CHAMP FORMULA 2 FLOWABLE/CHAMP WG		●		●				
CHAMPION++		●		●				
CUPROFIX ULTRA 40 DISPERSS		●		●				
ENDURA				●	●S		●	●
EVERLON/PRIAXOR			●	●	●	●	●	
FONTELIS					●			●
HEADLINE SC				●	●	●	●	
KOCIDE 3000		●	●	●			●	
PREVISTO		●		●				
REVYLOK				●	●		●	
SERENADE ASO								●
TETRABAN	●	●	●		●	●		●S
ZORINA				●	●		●	●S

* Many other diseases may be controlled, see label.
● - control; ●S - suppression; ●So - soil application
See Fungicide Resistance Management in the Technical Information section.

ALFALFA DISEASE TREATMENT GUIDELINES

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
APROACH	6-12 fl oz	14	14	Begin applications at green-up and once 1-3 new leaves have grown after each cutting. Max 1 application/cutting. Max. 36 fl oz/A/year. Max 3 applications/year.
BADGE SC or BADGE X2	0.75-1.5 pt or 0.75-1.5 lb	0	NR	Apply 10-14 days before each harvest or earlier if disease threatens. Badge X2 is OMRI listed.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG	1.33 lb or 1.33 pt or 1.0 lb	–	–	Apply 10-14 days before each harvest or earlier if disease threatens. Repeat at 30-intervals if needed. Max. 1.33 lb or 1.33 pt or 1.0 lb/A/application. Max. 3 lb or 3.0 pt or 2.24 lb/A/year.
CHAMPION++	0.75 lb	0	NR	Apply 10-14 days before each harvest or earlier if disease threatens. Max. 3.7 lb/A/year. Min. 30-day retreatment interval.
CONTANS WG	1-4 lb	0	NR	Apply prior to planting, at planting, or after crop emergence. Incorporate into soil to 2". Make 2 applications, but no more than 8, for maximum efficacy. Note 2.
CUPROFIX ULTRA 40 DISPERSS	1.25 lb	–	–	Apply 10-14 days before each harvest or earlier if disease threatens. Notes 1, 2.
ENDURA	6-11 oz	14	NR	Use 6-11 oz/A for seed alfalfa (white mold control at 8-11 oz/A) and 6.5 oz/A for alfalfa for hay or forage (white mold suppression at 6.5 oz/A). Begin prior to disease onset when conditions are favorable for disease. Alfalfa hay or forage may be grazed. Notes 1, 2.
EVERLON/PRIAXOR	4-6.9 fl oz	14	14	Apply at onset of disease and continue on 14- to 21-day interval. Do not use on rangeland. Max. 20.7 fl oz/A/year. Max. 2 applications/cutting or 3 applications/year.
FONTELIS	14-24 fl oz	28	–	Apply prior to disease development, continue on 7-14 day interval. 16-24 fl oz/A for white mold; begin application at 20-50% bloom prior to disease development. Notes 1, 2.
HEADLINE SC	6-9 fl oz	14	NL	Max. 2 applications per cutting or max. 3 applications/year. 14- to 21-day application interval. Max. 27 fl oz/A/year.
KOCIDE 3000	0.75 lb	–	–	Max. 3.7 lb/A/season. Apply 10 to 14 days before each harvest or earlier if disease threatens. Repeat every 30 days if needed.
PREVISTO	0.75-2 qt	–	–	Max. 2 qt/A/application. Max. 62 qt/A/year. 7-day min. retreatment interval.
REVYLOK	4.5-6.5 fl oz	14	14	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. 14-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
SERENADE ASO	1 - 4 qts	0	0	For improved performance under moderate to severe disease pressure, use the stated higher rates and reduced spray intervals. Make foliar applications when environmental conditions are conducive to disease development and repeat as needed. May be applied as a soil surface drench, shanked-in, side-dress, injected and in-furrow at any time. Refer to the label for diseases controlled in a soil application. Not for use in California.
TETRABAN	6-15.5 fl oz	14	14	Begin applications prior to disease development and continue following resistance management guidelines. Max. 15.5 fl oz/cutting. Max. 46 fl oz/A/year. Max. 2 applications/year when applying at 15.5 fl oz/A or 7 applications/year when applying at 6 fl oz/A. Not for use in rangeland.
ZORINA	10 - 20 fl oz	14	–	Begin foliar applications prior to disease development and continue following resistance management guidelines. Maximum of 2 applications per cutting, 20 fl ozs/A/application and 3 applications at 20 fl ozs per acre per year. Notes 1 & 2.

PHI – preharvest interval days. G/F – grazing and feeding interval days. NR - no restrictions.
NOTE 1: May be applied by air.
NOTE 2: May be applied by chemigation.

BEAN HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROPS LABELED*							GRASSES												
	Dry/Field Beans	Snap Beans	Garbanzo/Chickpea	Lentil	Lupine	CROP TOLERANCE	SITE OF ACTION[A]	Barnyardgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Quackgrass	Sandbur	Shattercane/Sorghum	Volunteer barley	Volunteer wheat	Wild oat	Wild proso millet	Yellow nutsedge
PREPLANT																				
AIM EC/SHARK EW [burndown ratings] *(carfentrazone)*	L	NL	L	L	NL	E	14	N	N	N	N	N	N	N	N	N	N	N	N	N
CHARGER MAX/DUAL II MAGNUM/EVERPREX *(s-metolachlor)* or OUTLOOK *(dimethenamid-p)*	L	L[1]	L	L[1]	L[1]	G	15	**E**	**E**	**E**	**E**	**E**	P	P/F	P	P	P	P	F	**G**
CHARGER MAX/DUAL II MAGNUM/EVERPREX *(s-metolachlor)* or OUTLOOK *(dimethenamid-p)* + SONALAN *(ethalfluralin)*	L	L[1]	L	L[1]	L[1]	G/E	15,3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	F	F	F	F	F
CHARGER MAX/DUAL II MAGNUM/EVERPREX *(s-metolachlor)* or OUTLOOK *(dimethenamid-p)* + ***TRUST*** *(trifluralin)*	L	L[1]	L	L[1]	L[1]	G	15,3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	P/F	P/F	F	F	**G**
EPTAM 7E/EPTAM 20-G *(EPTC)*	L	L	NL	NL	NL	E	15	**E**	**E**	**E**	**E**	**E**	F	**G**	F	**G**	**G**	**G**	F	**G**
EPTAM 7E *(EPTC)* + ***TRUST*** *(trifluralin)* or SONALAN *(ethalfluralin)*	L	NL	NL	NL	NL	E	15,15	**E**	**E**	**E**	**E**	**E**	F	**G/E**	**G**	**G**	**G**	**G**	F	**G**
FRAMEWORK 3.3 EC/PROWL H20 *(pendimethalin)*	L	L	L	L	L	E	3	**E**	**E**	**E**	**E**	**E**	P	**G**	**G**	P/F	P/F	F	F	P
FRAMEWORK 3.3 EC/PROWL H20 *(pendimethalin)* + EPTAM 7E *(EPTC)*	L	L	NL	NL	NL	E	3,15	**E**	**E**	**E**	**E**	**E**	F	**E**	**G**	**G**	**G**	**G**	F	**G**
PURSUIT *(imazethapyr)*	L	L	L	L	L	G	2	P/F	P	P	F	F	P	P	**E**	P	P	P	P	P
REFLEX/***AGENT 1.88*** [PP surface/PRE] *(fomesafen)*	L	L	NL	NL	NL	F/G	14	N	N	N	N	N	N	N	N	N	N	N	N	N
SHARPEN [burndown ratings] *(saflufenacil)*	NL	NL	L	NL	NL	E	14	N	N	N	N	N	N	N	N	N	N	N	N	P
SONALAN *(ethalfluralin)*	L	NL	L	L[5]	NL	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	F	F	F	F	P
SPARTAN CHARGE *(carfentrazone + sulfentrazone)*	L[5]	NL	L	NL	NL	E	14,14	P	N	N	P/F	P/F	N	N	N	P	P	P	P	**G**
TRUST/TREFLAN HFP *(trifluralin)*	L	L	NL	L	NL	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	P/F	P/F	F	F	P
VIDA [burndown ratings] *(pyraflufen)*	L	NL	L	L	NL	E	14	N	N	N	N	N	N	N	N	N	N	N	N	N
PREEMERGENCE																				
CHARGER MAX/DUAL II MAGNUM/EVERPREX *(s-metolachlor)*	L	L	L	L[1]	L	G	15	**E**	**E**	**E**	**E**	**E**	P	P/F	P	P	P	P	F	F
HERBIVORE/PERMIT *(halosulfuron)*	L	NL	NL	NL	NL	F	2	N	N	N	N	N	N	N	N	N	N	N	N	F
OUTLOOK *(dimethenamid-p)*	L	NL	L	L	NL	G	15	**E**	**E**	**E**	**E**	**E**	P	P/F	P	P	P	P	F	F
SPARTAN CHARGE *(carfentrazone + sulfentrazone)*	L[5]	NL	L	NL	NL	E	14,14	P	N	N	P/F	P/F	N	N	N	P	P	P	P	**G**

[A] Site of Action described in Technical Informatrion section.
* Includes dry/field beans (Phaseolus, Vigna spp.: adzuki, kidney, pinto, navy, white, pink, lima, and small red), snap beans (snaps, succulents), garbanzo/chickpea, lentil, lupine (phaseolus spp.: grain, white, sweet and white sweet lupine). Efficiency ratings do not imply a product is labeled for all crops.

[1] Snap Beans and Lupine: Charger Max, Dual II Magnum, EverpreX only.
[3] Seedling only.
[4] See label of pigweed species controlled.
[5] 24c, 2ee or Supplemental label.

BROADLEAVES																				
Bindweed, field	Buffalobur	Canada thistle	Cocklebur	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard, wild	Nightshade, black	Nightshade, hairy	Pigweed[4]	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed	Sunflower	Velvetleaf	Wild buckwheat	
PREPLANT																					
U	U	P	P/F	F	F/**G**	**G/E**	**G/E**	F/**G**	P	**G/E**	U	**G/E**	P/F	P	F	P	P	P/F	**E**	P	AIM EC [burndown ratings]
P	F	P	P	P	F	P	F	P	P	**G**	F	**G**	F	P	P	P	P	P	P	P	***CHARGER MAX***/DUAL II MAGNUM/EVERPREX or OUTLOOK
P	F	P	P	P	**G**	**G**	**G**	P	P	**G/E**	F	**G**	**E**	P	P	F/**G**	P	P	P	P	***CHARGER MAX***/DUAL II MAGNUM/EVERPREX or OUTLOOK + SONALAN
P	F	P	P	P	F	**G**	**G**	P	P	**G**	F	**G**	**E**	P	P	F/**G**	P	P	P	P	***CHARGER MAX***/DUAL II MAGNUM/EVERPREX or OUTLOOK + ***TRUST***
P	**G**	P	P	P	F	F	F	F/**G**	P	F/**G**	F/**G**	F	**G**	F	P	P	P	P	P/F	P	EPTAM 7E/EPTAM 20-G
P	**G**	P	P	P	**G**	**G**	**G**	F	P	F/**G**	F/**G**	**G**	**E**	F	P	F	P	P	P/F	P	EPTAM 7E + ***TRUST*** or SONALAN
P	P	P	P	P	**G**	**G**	**E**	P	P	P	P	**G**	**E**	P	P	F/**G**	P	P	P	P	***FRAMEWORK 3.3 EC***/PROWL H20
P	**G**	P	P	P	**G**	**G**	**G**	F	P	**G**	F/**G**	**G**	**E**	F	P	F/**G**	P	P	P/F	P	***FRAMEWORK 3.3 EC***/PROWL H20 + EPTAM 7E
P	U	P	P	**G**	U	**G**	P	P	**E**	**G**	P/F	**G**	U	P	P	P	P	P	P/F	P	PURSUIT
P	N	N	P	P	U	P/F	**G**	F	**E**	**E**	F	**E**	F	**G**	F	P	F/**G**	F	P	P	REFLEX/***AGENT 1.88*** [PP surface/PRE]
F	F	**G**[3]	**E**	**G**	**G**[1]	**E**	**E**	**G**	**E**	**E**	**G**	**E**	**G**	**G**	**G**	**E**	**E**	**G**	**G**	**E**	SHARPEN [burndown ratings]
P	P	P	P	P	**G**	**G/E**	**E**	P	P	F	F	**E**	**E**	P	P	F/**G**	P	P	P	F/**G**	SONALAN
F	U	P	F	**G/E**	P/F	**E**	**E**	**G/E**	F	**E**	P	**E**	F	F	P	**G/E**	**G**	P/F	**E**	U	SPARTAN CHARGE
P	P	P	P	P	**G**	**G**	**G**	P	P	P	P	**G**	**E**	P	P	F/**G**	P	P	P	P	***TRUST***/TREFLAN HFP
U	U	P	P/F	F	F/**G**	**G/E**	**G/E**	F/**G**	P	**G/E**	U	**G/E**	P/F	P	F	P	P	P/F	**E**	P	VIDA [burndown ratings]
PREEMERGENCE																					
P	F	P	P	P	F	P	F	P	P	**G**	F	**G**	F	P	P	P	P	P	P	F	***CHARGER MAX***/DUAL II MAGNUM/EVERPREX
N	P	N	**G**	F	U	P/F	F	N	**E**	P	N	**E**	P	F/**G**	U	P	P	**G**	**G**	P	***HERBIVORE***/PERMIT
P	F	P	P	P	F	P	F	P	P	**G**	F	**G**	F	P	P	P	P	P	P	F	OUTLOOK
F	U	P	F	P/F	P/F	**E**	**E**	**G/E**	F	**E**	P	**E**	F	F	P	**G/E**	**G**	P/F	**E**	U	SPARTAN CHARGE

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

BEAN HERBICIDE PERFORMANCE RATINGS *continued*

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR = (65-80%)
P = POOR = (<65%)
N = NONE
U = UNKNOWN

	CROPS LABELED							GRASSES												
	Dry/Field Beans	Snap Beans	Garbanzo/Chickpea	Lentil	Lupine	CROP TOLERANCE	SITE OF ACTION[A]	Barnyardgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Quackgrass	Sandbur	Shattercane/Sorghum	Volunteer barley	Volunteer wheat	Wild oat	Wild proso millet	Yellow nutsedge
POSTEMERGENCE																				
ASSURE II/TARGA *(quizalofop)*	L	L	L	L	NL	E	1	**E**	**E**	**E**	**E**	**G/E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**E**	P
BASAGRAN/BASAGRAN 5L *(bentazon)*	L	L	NL	NL	NL	E	6	P	P	P	P	P	P	P	P	P	P	P	P	**G**
BEYOND XTRA *(imazamox)*	L[3]	NL	NL	L[3]	NL	G/E	2	**F/G**	**G**	**E**	**E**	**G**	F	F	**G**	**G**	**F/G**	**F/G**	**G**	F
POAST *(sethoxydim)*	L	L	L	L	NL	E	1	**E**	**E**	**E**	**E**	**E**	F	**E**	**E**	**G**	**G**	**E**	**E**	P
PURSUIT *(imazethapyr)*	L	L	NL	NL	NL	G	2	F	F	F	**F/G**	**F/G**	P	P	**E**	P	F	F	F	P/F
PURSUIT *(imazethapyr)* + ***BASAGRAN*** *(bentazon)*	L	L	NL	NL	NL	G/E	2,6	F	F	F	**F/G**	**F/G**	P	P	**E**	P	F	F	F	**G**
REFLEX/***AGENT 1.88*** *(fomesafen)*	L	L	NL	NL	NL	F/G	14	P	P	P	P	P	P	P	P	P	P	P	P	P
SECTION THREE/CLEANSE *(clethodim)*	L	L	NL	L	NL	L	**E**	1	**E**	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	P
HARVEST AID																				
GRAMOXONE SL 3.0 ‡ *(paraquat)* or DEFOL *(sodium chlorate)*	L	L	L	L	L	N	22	**G**	**G**	**G**	**G**	**G**	P	**G**	**G**	**G**	**G**	**G**	**G**	F
SHARPEN *(saflufenacil)*	L					N	14	N	N	N	N	N	N	N	N	N	N	N	N	N
VALOR SX/VALOR EZ/PANTHER SC/ TUSCANY SC/CHATEAU EZ *(flumioxazin)*	L	NL	NL	NL	NL	N	14	P	P	P	P	P	P	P	P	P	P	P	F	P

[A] Site of Action described in Technical Informatrion section.
[1] See label of pigweed species controlled.
* Includes dry/field beans (Phaseolus, Vigna spp.: adzuki, kidney, pinto, navy, white, pink, lima, and small red), snap beans (snaps, succulents), garbanzo/chickpea, lentil, lupine (Phaseolus spp.: grain, white, sweet and white sweet lupine). Efficiency ratings do not imply a product is labeled for all crops.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																				
Bindweed, field	Buffalobur	Canada thistle	Cocklebur	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard, wild	Nightshade, black	Nightshade, hairy	Pigweed[1]	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed	Sunflower	Velvetleaf	Wild buckwheat	
POSTEMERGENCE																					
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	ASSURE II/TARGA
P/F	N	**G**	**E**	**E**	N	F	F	F	**E**	P	**G**	P	F	F/**G**	P/F	P	**E**	**G/E**	**G/E**	F/**G**	***BASAGRAN***/BASAGRAN 5L
P	F	P	**E**	**E**	F	**G**	F/**G**	**G**	**E**	**E**	**G**	**E**	**G**	F/**G**	F/**G**	**G**	**E**	**E**	**E**	F/**G**	BEYOND XTRA
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	POAST
P	F	P	**G**	**G**	F	**G**	P/F	F	**E**	**E**	F/**G**	**E**	N	P/F	P	P	F/**G**	F/**G**	**G**	P/F	PURSUIT
P/F	F	**G**	**E**	**E**	F	**G**	F	F	**E**	**E**	**G**	**E**	**G**	F/**G**	P/F	P	**E**	**G/E**	**G/E**	F/**G**	PURSUIT + ***BASAGRAN***
F	F	P	P	F/**G**	U	F	P/F	P	**E**	**G**	F	**E**	U	**G**	F/**G**	P	**G**	F	P/F	P	REFLEX/***AGENT 1.88***
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	***SECTION THREE/CLEANSE***
HARVEST AID																					
P	U	P	F	P	**G**	F/**G**	**G**	**G**	**E**	F	F	F/**G**	U	**G**	**G**	**E**	**G**	F	**G**	F	GRAMOXONE SL 3.0 ‡ or DEFOL
P	U	P	F	P	**G**	F/**G**	**G**	**G**	**E**	F	F	F/**G**	U	**G**	**G**	**E**	**G**	F	**G**	F	SHARPEN
F	P	P	F	F	F	F	F	**G**	**G**	**G**	**G**	F	**G**	F/**G**	F	**G**	**G**	F	**E**	**E**	VALOR SX/VALOR EZ/PANTHER SC/TUSCANY SC/ CHATEAU EZ

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

BEAN HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Labled Crops[2]	Comments/Restrictions	GPA[3]		Rainfast (hrs)	Intervals[1] (Days)		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
AGENT 1.88	PP PRE POST	D,S	PP or PRE in Regions 1-4 to emerged broadleaves. Before crop emerges. PHI 30 days for snaps, 45 days for dry beans.	10 10	5 5	1 0	NO	NO	45,30
AIM EC/SHARK EW	PP PH	D,S,G,L,U	To emerged weeds until 1 day after planting. When 80-90% of seed pods are yellow or buck skin in color; only 30% of green leaves remain.	15	5		NR	NR	NR
ANTHEM FLEX	PP,PRE	G,L	PP up to 30 days before planting. PRE prior to cracking or emergence; Plant min. 1" deep and close furrow.	10	3	1-4	NR	NR	NR
ASSURE II	POST	D,S,G,L	Apply to young actively growing grass. PHI 30 for D, 15 for S, 60 for G and L.	10-15	3	1	NO	NO	15-60
AUTHORITY SUPREME	PP,PRE PPI	G	Before planting and <3 days after planting. Do not apply if sprouts are close to surface or after crop emergence. Incorporate 1-2" (but not >2") before planting.	10	5		NR	NR	NR
BASAGRAN/ BASAGRAN 5L	POST	D,S	Beans must have at least 1st trifoliate leaf expanded.	10-20	5	4	NR	NR	30
BEYOND XTRA	POST PRE	D,L,S	Apply to dry beans with at least one fully expanded trifoliate and prior to bloom. Do not apply to snap beans during flowering. Clearfield lentil only, 2-6 leaf stage crop. Apply up to 3 days after planting. PPI 2".	10	5	1	NR	NR	NR
BROADAXE XC	PP, PRE, PPI	G	FALL after harvest or fallow. Apply when <55 °F and falling. PP,PRE,PPI: Apply up to 3 days after planting. PPI ≤2".	10	5	0	60,120	60,120	NR
CHARGER BASIC/ DUAL MAGNUM	PP PRE	D,S,G,L,U	Fall in certain areas, may incorporate. PPI 2" up to 14 days before planting. PRE before crop and weed emergence.	10	2		60	NR	NR
CHARGER MAX/ DUAL II MAGNUM/ EVERPREX	PP PRE	D,S,G,L,U	Fall in certain areas, may incorporate. PPI 2" up to 14 days before planting. Charger Max not labeled for lentils. PRE before crop and weed emergence. Charger Max not labeled for lentils.	10	2		60	NR	NR
COBRA	PRE	S	Supplemental label OR, TN (exp. date not given): Apply after planting, no later than 48 hours following planting.	10	7-10				55
COMMAND 3ME	PRE	S	Certain varieties may have potential for injury or loss when using this product; consult qualified crop advisers.	10	NO	-	NL	NL	45
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP PRE	D,S,G,L,U	Apply PP or PRE prior to crop emergence to emerged weeds.	3-40	3-15	S	56	56	56
DIMETRIC EXT/ ***DIMETRIC LIQUID***	PRE POST	G,L L	PRE before crop emergence. Ground GPA see label. Incorporate 1-2" by equipment in dry conditions. POST to lentils before 6" tall.	10-40 20	5 lentils only 5 lentils only	6-8	40	40	NR-G, 75-L
EPTAM 7E	PP	D,S	PPI fall in MN, ND. PP apply just before or after planting or at lay-by and incorporate.	1-50	NL		45	45	NR
EPTAM 20-G	PP	D,S	PPI fall in MN, ND. PP apply just before or after planting or at lay-by and incorporate.		NL		45	45	NR
FAR-GO	PP PRE	G,L	Apply just before or after seeding and incorporate.	10	NL		NR	NO	NR
FRAMEWORK 3.3 EC or PROWL H2O	PP PRE	D,S,G,L,U	PPI 1-2" up to 60 days before planting. PRE for sweet lupines up to 2 days after planting.	10	5		NO	NO	NR
FUSILADE DX	POST	D	Apply up to 60 day PHI.	5-40	5	1	NR	NR	60
GOALTENDER	PRE	G	Prior to weed or crop emergence in AZ, CA.	20			NO	NO	

See notes and footnotes at end of table

BEAN HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

Herbicide	Application Timing[1]	Labled Crops[2]	Comments/Restrictions	GPA[3]		Rainfast (hrs)	Intervals[1] (Days)		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
GRAMOXONE SL 3.0 ‡	PP PRE PH	D,S,G,L,U	Apply PP or PRE prior to crop emergence to emerged weeds. PH when crop is mature and ≥80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green.	10 10	5	0.5	NR	NR	 7
HERBIVORE/ PERMIT	PRE POST	D,S D,S	After planting but prior to soil cracking. Snap/succulent Herbivore only. Row middle/furrow, avoid contact with planted crop. 24c for Herbivore on dry beans in MN, NE (exp. date not given): 1-3 trifoliates but before flowering.	10-20 10	3-15	4	NR	NR	NR 30
OUTLOOK	PP PRE POST	D,G,L D	PP up to 45 days before planting. PPI 1-2" up to 14 days before planting. PRE before crop emergence. POST from 1st to 3rd trifoliate and before weeds emerge. Do not use PPI or POST on garbanzo or lentil.	5	2		NR	NR	70
PANTHER SC			SEE TUSCANY SC						
PERMIT			SEE HERBIVORE						
POAST	POST	D,S,G,L	Apply to young actively growing grass. PHI 30 for beans and peas, 15 for S, 50 for L.	5-20	5	1	NR	NR	15,30
PROWL H2O			SEE FRAMEWORK 3.3 EC						
PURSUIT	PP PRE POST	D,S,G,L,U D,S	PPI up to 7 days before planting. PRE up to 3 days after planting. POST- do not apply until beans have at least 1 fully expanded trifoliate or peas are 3" high. Kidney beans POST only. PHI 30 days for lima and snap beans. Ground only for snaps and red kidney beans. See label for state restrictions.	10	5	1	NR	NR	30,60
REFLEX	PP PRE POST	D,S,G,U	PP or PRE in Regions 1-4 to emerged broadleaves. Before crop emerges. PHI 30 days for snaps, 45 days for dry beans.	10 10	5 5	1 0	NO	NO	45,30
ROUNDUP POWERMAX 3; RT 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	PP PRE	D,S,G,L,U	Apply for control of emerged weeds prior to crop emergence. Before crop emerges.	3-40	3-15	S	56	56	56
SECTION THREE/ ***CLEANSE***	POST	D,S,G,L	Apply to young actively growing grass.	10	3	1	NR	NR	30
SELECT MAX	POST	D,S,G,L,U	Apply to young actively growing grass.	10-40	5	1	NR	NR	30
SEQUENCE	PP PRE	D,S,G,U	Apply up to 30 days before planting. PRE before crop emergence.	10-40	3-15	S	120	NR	NR
SHARPEN	PP PRE PH	G,L G,L D,G,L	Apply as burndown or PPI. Before crop energence or cracking stage. Apply at physiological maturity.	5	3	1	65 NO	65 NO	NR 2
SONALAN HFP	PP	D,G	Fall with fertilizer. Fall appl. from Oct. 1-Dec. 31. Incorporate 2-3" within 2 days. Spring-incorporate any time after January 1.	5	NL		NO	NO	NR
SONALAN 10G	PP	D,G,L	Apply within 21 days of planting and incorp. 2-3" within 2 days. Fall appl. from Oct. 1-Dec. 31. 24c ND (12/2025) for FALL lentils.	NA	NL		NO	NO	NR
SPARTAN CHARGE	PP,PRE	D,G	Chickpea: PP fall or spring or PRE up to 3 days after planting. 24c AK for cowpeas (exp. date not given). 24c ND (exp. 1/2025) for dry beans.	10	5	1	NR	NR	NR
TARGA	POST	D,S,L	Apply to young actively growing grass. PHI 30 for D, 15 for S, 60 for G and L.	10-15	3-5	1	NL	NL	15-60
TRUST/ TREFLAN HFP or TREFLAN TR-10	PP PRE	D,S,L G	Apply and incorporate before planting. Apply within 2 days after planting.	5-40	5-10		NR	NR	NR

See notes and footnotes at end of table

BEAN HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

Herbicide	Application Timing[1]	Labled Crops[2]	Comments/Restrictions	GPA[3]		Rainfast (hrs)	Intervals[1] (Days)		
				Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
TUSCANY SC/ PANTHER SC	PP,PRE	D,G,L	PP or PRE up to 2 days after planting for weed suppression in D, L only in AZ, CA, CO, HA, ID, MT, NE, OR, WA, but in all states for G.	10	7-10	1	NR	NR	NR
	PH	D,G,L	PH in all states when D,G crop is mature and ≥80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green, or when L pods are 80% yellow to tan color and 20% are yellow color.						5
VALOR EZ/CHATEAU EZ	PP,PRE	D,G,L	PP or PRE up to 2 days after planting for weed suppression in D, G only in AZ, CA, CO, HA, ID, MT, NE, OR, WA.	10	7-10	1	NR	NR	NR
	PH	D,G,L	PH in all states when D,G crop is mature and ≥80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green, or when L pods are 80% yellow to tan color and 20% are yellow color.						5
VALOR SX	PH	D,L	PH in all states when D crop is mature and ≥80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green, or when L crop pods are 80% yellow to tan color and 20% are yellow color.	10	7-10	1	NR	NR	5
VARISTO	POST	D,S	Before bloom stage but after at least one fully expanded trifoliate leaf to actively growing weeds. Use may lead to crop injury, loss, or damage: Test product to determine its suitability. Weed control at cool temperatures improves by delaying application for 48 hours from the time temperature is >55 °F if it was <55 °F for ≥10 hours.	10-20	5	4	NL	NL	30
VIDA	PP	D,S,G,L,U	Burndown: Apply up to 1 day before planting.	10	5	1	NL	NL	NL

[1]Application Timing and Intervals
PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
POST - Postemergence
PGR - Plant growth regulator
PH - Preharvest
NA - Not applicable
NL - No related information on label
NR - No restrictions
NO - Not permitted
Delay-M - Delay until maturity.
S - Heavy rainfall soon after application may require retreatment.

[2] D – dry/field beans (Phaseolus, Vigna spp.: adzuki, kidney, pinto, navy, white, pink, lima, and small red), S – snap beans (snaps, succulents), G – garbanzo/chickpea, L – lentil, U – lupine (phaseolus spp.: grain, white, sweet and white sweet lupine).

[3] Includes labeled minimum or range.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PREPLANT OR PREEMERGENCE		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC/SHARK EW	D,S,G,L,U	**All soil textures:** Up to 2 fl oz + 0.5 gal HSOC-MSO or HSOC* or 2 pt NIS/100 gal			PP or PRE. Apply no later than 1 day after planting. Burndown. Add Aim EC to tank before other herbicides. See label for additional adjuvant and fertilizer recommendations.
ANTHEM FLEX	G,L	*<3% O.M.*			For early PP and reduced tillage systems, use higher rate in range. Max. 5 fl oz/A/ application. Max. 3 applications/year. 14-day min. application interval. See label notes on dry weather.
		Do not use	2.75-3.25 fl oz	3.5-4.5 fl oz	
		>3% O.M.			
		Do not use	3-4.5 fl oz	4-5 fl oz	
AUTHORITY SUPREME	G	*<1.5% O.M.*			PP, PRE or PPI. Higher rates for soils with pH <7.2. Do not apply >15.4 fl oz/A/year. Rainfall and/or irrigation of ≥0.5″ prior to weed emergence may be needed for activation - see label. Verify sensitivity of crop variety with local Extension. FALL: Authority Supreme may be broadcast after crop harvest when soil temperatures at the 4″ depth are sustained at <55 °F and before the ground freezes to control weeds in minimum or no tillage fields planted the following spring. Do not apply to frozen soils.
		4.3-5.8 fl oz	5.8-8.7 fl oz	5.8-8.7 fl oz	
		1.5-3% O.M.			
		5.8-8.7 fl oz	7.2-11.5 fl oz	8.7-13 fl oz	
		>3% O.M.			
		7.2-11.5 fl oz	8.7-13 fl oz	10-15.4 fl oz	
BROADAXE XC	G	*<1.5% O.M.*			PP, PRE, or PPI. Fall after harvest or fallow fields when soil temperature is 55° F and falling. See label for timing and geographic restrictions. Apply up to 3 days before planting. PPI ≤2″. Maximum 38.7 fl oz/A/crop year. For soils with pH >7.2, use lowest rate for OM and texture. Do not use on soils with <1% OM.
		Do not use	19-26 fl oz	19-26 fl oz	
		1.5-3% O.M.			
		19-26 fl oz	21-32 fl oz	26-32 fl oz	
		>3% O.M.			
		21-26 fl oz	26-32 fl oz	32-38.7 fl oz	
CHARGER MAX/ DUAL II MAGNUM/EVERPREX/ ***CHARGER BASIC***/ DUAL MAGNUM	D,S,G,L,U	1-1.33 pt	1.33-1.67 pt	1.33-2 pt	PPI or PRE. Shallow incorporation within 14 days will improve performance and reduce crop injury. Only Charger Basic/Dual Magnum is labeled on lentils. See label for fall application. Note 10.
CHARGER MAX/ DUAL II MAGNUM/EVERPREX/ ***CHARGER BASIC***/ DUAL MAGNUM + ***TRUST***/TREFLAN HFP	D,S	**All soil textures:** 1-2 pt + 1-2 pt			PPI up to 14 days before planting.
COBRA	S	**All soil textures:** 8-16 fl oz			Supplemental label OR, TN (exp. date not given): Use 8-12 fl oz/A in OR and 10-16 fl oz/A in TN. Use higher rate on coarse texture soils. Do not apply on soils with high sand content.
COMMAND 3ME	S	**All soil textures:** 0.4-0.67 pt			Use lower rate on coarse soils and higher rate onfine soils. See label.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	D,S,G,L,U	**All soil textures:** Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal or WC+NIS*			PP, PRE or at-planting. Apply for control of emerged weeds prior to crop emergence. See label for perennial rates.
DIMETRIC EXT or ***DIMETRIC LIQUID***	G,L	**All soil textures:** 0.25-0.5 lb or 0.66-1 pt			PRE. Incorporation by rain or mechanical is essential. May incorporate after PRE application. Lentils in ID, OR, and WA only (do not apply to Estin variety); garbanzo in CA, ID, OR, and WA.
EPTAM 7E	D,S	**All soil textures:** 2.25-4.25 pt			PP or PPI. Rate is dependent on method of application - see label. Apply at planting, or just before planting and incorporate at once. Or meter into irrigation water before or immediately after planting; or apply as directed spray at last cultivation. Northern region: Do not apply >3.5 pt/A on small white beans or green beans on coarse soils. Notes 1,2,3,5.
		4.5 pt	5.25 pt	5.25 pt	FALL in MN, ND only. Apply after Oct. 15 untill soil freeze-up, and incorporate. Notes 2,3,5.
EPTAM 7E + ***FRAMEWORK 3.3 EC*** or SONALAN or ***TRUST***/TREFLAN HFP		2.5-4.5 pt + 1.2-2.4 pt or 1.25-2 pt or 1-1.5 pt	3-4.5 pt + 1.8-3.6 pt or 1.75-2.5 pt or 1.5 pt	3-4.5 pt + 2.4-3.6 pt or 2.25-3 pt or 1.5 pt	PPI. Make application just before planting and incorporate immediately. Notes 2,3,5. Notes 3,4,5,7. With Sonalan use 2.5-4.5 pt/A (2.5-3.5 pt/A Eptam 7E - MN, ND, SD only). Notes 3,7. With Trust, use only 2.5-3.5 pt/A Eptam 7E. Notes 3,5,6.

See notes and footnotes at end of table.

BEAN HERBICIDE APPLICATION RATES *continued*

PREPLANT OR PREEMERGENCE *(continued)*		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Fine**	**Comments/Restrictions**
EPTAM 7E + DUAL II MAGNUM/ EVERPREX/ DUAL MAGNUM	D	2.5-3.5 pt + 0.8-1 pt	3.5-4.5 pt + 1-1.33 pt	3.5-4.5 pt + 1.33-1.67 pt	PPI. Apply just before planting and incorporate at once. Notes 2, 3, 5, 10.
EPTAM 20-G	D,S	15-20 lb 20 lb	15-20 lb 22.5 lb	15-20 lb 22.5 lb	PPI. Apply just before or immediately after planting, or at last cultivation. Incorporate immediately after application. Notes 1,5. FALL in MN, ND only. Incorporate immediately after application. Note 5.
FAR-GO	G,L	**All soil textures:** 1.25 pt			PPI or PRE inc. Incorporate twice. Apply just before or after seeding. Use lower rates on light soils. For use only in: CO, ID, KS, MN, MT, NE, NV, ND, OR, SD, UT, WA, WY.
FRAMEWORK 3.3 EC or PROWL H2O	D,S,G,L,U	*Northern States <3% O.M.*			PPI. For ID, MN, MT, ND, OR, SD, WA and WY. Apply before planting and incorporate to the top 1-2 inches prior to planting and within 7 days of application. Can be applied up to 60 days prior to planting. Do not use on peat or muck soils. See label for FALL PP rates in ID, MN, MT, ND, OR, SD, WA and WY. Apply PRE up to 2 days after planting for sweet lupines. Do not feed bean hay, vines, or forage or graze livestock in treated bean fields. May be tank mixed wth Dual II Magnum/Dual Magnum or Eptam 7E. May be applied in chickpeas in conventional tillage systems as post-plant PRE up to 2 days after planting in ID, OR, and WA. Up to 1.5 pt/A. Additional post-plant PRE for dry beans in CO, ID, KS, MT, NE, MI, WY. Apply up to 2 pt/A within 1 day of planting.
		2.4 pt 2 pt	3 pt 2.5 pt	3.6 pt 3 pt	
		Northern States >3% O.M.			
		2.4 pt 2 pt	3.6 pt 3 pt	3.6 pt 3 pt	
		Southern States or Lentils			
		1.8 pt 1.5 pt	2.4 pt 2 pt	3.6 pt 3 pt	
GOALTENDER	G	**All soil textures:** 0.5 pt			PRE before crop or weed emergence in AZ and CA only. See label for precautions.
GRAMOXONE SL 3.0 ‡	S	**All soil textures:** 1.3- 2.7 + 2 pt NIS/100 gal*			PP or PRE prior to crop emergence to lima and snap beans. Min. 7-day application interval. Max. 8 pt/A/year. Max. 3 applications/year.
HERBIVORE/PERMIT	D,S	**All soil textures:** 0.5-0.67 oz			PRE. Apply after planting but prior to soil cracking. Can be applied POST at 0.5-1 oz/A between rows. Avoid contact with the crop. Snap/succulent bean Herbivore only.
OUTLOOK	D,G,L	12-18 fl oz	14-21 fl oz	14-21 fl oz	PP, PPI shallow or PRE. 12 fl oz/A maximum for dry beans PRE if O.M. <1.5%. PP surface or PRE only for garbanzo and lentil. May be tank mixed with Eptam 7E, Prowl H2O, Sonalan or Treflan. See tank mix partner for crops labeled.
PURSUIT	D,S,G,L,U	**All soil textures:** Up to 3 fl oz			PPI or PRE. User accepts crop risks and consequences. Consult label for states and other specific crop and use rates. PHI 30-60 days.
REFLEX or AGENT 1.88	D,S,G,U	**All soil textures:** 1-1.5 pt or 1-1.6 pt			PP or PRE to emerged broadleaves; rate is geography-dependent (Region 1-5, see label maps). Soil moisture required for soil residual activity. Note 2.
ROUNDUP POWERMAX 3; RT 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	D,S,G,L,U	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums.			PP, PRE or at-planting. Apply for control of emerged weeds prior to crop emergence. See label for perennial rates. May use other glyphosate products at greater or lesser volumes; see individual labels.
SEQUENCE	D,S,G,U	**All soil textures:** 2.5-4 pt + 8.5-17 lb AMS/100 gal*			PP or PRE. Apply up to 30 days before planting and before crop emergence. Soil type and location restrictions apply. PHI is 120 days for hay. Do not apply more than once per crop.
SHARPEN	G,L	**All soil textures:** 1 fl oz + 1 pt HSOC-MSO* + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal			PP or PRE. Apply as a burndown or before crop emergence or cracking stage. Do not apply with or within 30 days of flumioxazin or sulfentrazone.
SONALAN HFP or SONALAN 10G	D,G,L	1.5-2 pt or 5.5-7.5 lb	2-2.5 pt or 7.5-9.5 lb	2.5-3 pt or 9.5-11.5 lb	PPI. Apply within 21 days of planting and incorporate 2-3" within 2 days. PPI fall from Oct. 1-Dec. 31. See label for higher rates on nightshade or groundcherry. Not for use in CA.
SONALAN HFP + DUAL II MAGNUM/EVERPREX	D,G	1.25-2 pt + 1-1.33 pt	1.75-2.5 pt + 1.33-1.67 pt	2.25-3 pt + 1.33-2 pt	PPI. Apply within 21 days of planting and incorporate 2-3" within 2 days. PPI Oct. 1 – Dec. 1 in MN, ND, or SD. Notes 3, 7.

See notes and footnotes at end of table.

PREPLANT OR PREEMERGENCE *(continued)*		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Fine**	**Comments/Restrictions**
SPARTAN CHARGE	D,G	*<1.5% O.M.*			PP fall or spring or PRE up to 3 days after planting for dry chickpea only. For soils with pH>7.2 use lowest rate in range. Read vegetable disclaimer for dry field pea. Apply to dry beans in MN and ND PP or PRE before planting. Spartan Charge contains carfentrazone for added burndown of small broadleaf weeds in combination with glyphosate. Requires WC+NIS* or AMS if tank-mixed with glyphosate or HSOC-MSO* if applied alone. 24c AK for cowpeas (exp. date not given); see label for rates and geographical restrictions. 24c ND (exp. 1/2030), MN (exp. date not given) for dry beans; see label for ph-O.M.-dependent rates.
		3-3.75 fl oz	3.75-5.75 fl oz	3.75-5.75 fl oz	
		1.5-3% O.M.			
		3.75-5.75 fl oz	5-7.75 fl oz	5.75-7.75 fl oz	
		>3% O.M.			
		5-7.75 fl oz	5.75-8.5 fl oz	6.5-10.2 fl oz	
TRUST/TREFLAN HFP or TREFLAN TR-10	D,S,L	*Beans - dry or fresh*			PPI. For beans use 1.5 pt/A or 7.5 lb/A on coarse or medium soils with 2-5% O.M. See label for additional rates on fine soils and all soils with higher organic matter content.
		1 pt or 5 lb	1-1.5 pt or 5-7.5 lb	1.5-2 pt or 7.5-10 lb	
		Snap and lima beans			
		1 pt or 5 lb	1 pt or 5 lb	1.5 pt or 7.5 lb	
VALOR EZ/PANTHER SC/ TUSCANY SC/CHATEAU EZ	D,G,L	**All soil textures:** 1.5 fl oz D,L 2 fl oz G			PP or PRE. Valor EZ up to 2 days after planting for weed suppression in D,G,L only in AZ, CA, CO, HA, ID, MT, NE, OR, WA; Tuscany SC/Panther SC up to 2 days after planting for weed suppression in D,L only in AZ, CA, CO, HA, ID, MT, NE, OR, WA, but in all states for G. See label for max. rate/application, max. applications/year, and max. fl oz/A/year.
VIDA	D,S,G,L,U	**All soil textures:** 0.5-2 fl oz + 0.5 gal HSOC-MSO or HSOC* or 2 pt NIS/100 gal			Apply no later than 1 day before planting.

[1] D – dry/field beans (Phaseolus, Vigna spp.: adzuki, kidney, pinto, navy, white, pink, lima, and small red), S – snap beans (snaps, succulents), G – garbanzo/chickpea, L – lentil, U – lupine (Phaseolus spp.: grain, white, sweet and white sweet lupine).

[2] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay. O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

Note 1: Do not feed or pasture vines to livestock for 45 days. No harmful soil residues should remain after harvest.

Note 2: May be applied through sprinkler irrigation systems.

Note 3: May be applied in fluid fertilizers.

Note 4: Do not graze or feed forage from treated fields to livestock.

Note 5: Do not use on Adzuki beans, cowpeas (blackeye peas, blackeye beans), soybeans, lima beans, Mung beans, Garbanzo beans, or other flat-podded beans except Romano.

Note 6: Do not plant oats or sorghum for 12 months. If less than 20″ of water was used to produce crop, wait 18 months.

Note 7: See label for interval for planting sugarbeets.

Note 8: For certain weeds, the addition of UAN or AMS may be beneficial (see herbicide label).

Note 10: Do not cut for hay within 120 days of application.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BEAN HERBICIDE APPLICATION RATES *continued*

POSTEMERGENCE			
Herbicide	**Labeled Crops[1]**	**Rate/Acre**	**Comments/Restrictions**
ASSURE II	D,S,G,L	6-10 fl oz/acre + 0.5 gal HSOC-COC*/100 gal	Use 10 oz/A for quackgrass, 6 oz/A for wild proso millet and 8 oz/A for other annual grasses. Increase Assure rate 2 oz when tank mixing with Basagran. 30 day PHI for D, 15 for S, 60 for G and L. Note 4.
BASAGRAN/BASAGRAN 5L	D,S	1-2 pt/0.8-1.6 + 0.5-1 pt HSOC-COC*	Apply to actively growing weeds at sizes and rates indicated on label. Use low rate on Adzuki beans. Beans must have at least 1st trifoliate leaf expanded. 30 day PHI. COC on snap bean may increase injury.
BEYOND XTRA	D,L,S	4-6 fl oz	D,S: See label for additional information on rates, use of COC* and AMS or liquid N, as well as mixing with Basagran to limit crop response. Do not apply to garbanzo beans or chickpea. PHI 0 days, apply before bloom. L: For Clearfield lentil only: Apply at 2-6 leaf stage of lentil; NIS and a nitrogen based fertilizer must be added for optimum weed control.
CLEANSE	D,S,L	6-16 fl oz + 0.5 gal HSOC-COC/100 gal*	See label for rates for specific grass heights. PHI 30 days dry, 21 snap. Use Superb HC* at 0.5 qt/A by ground or 1% v/v (but not less than 0.5 pt/A) by air.
DIMETRIC EXT or ***DIMETRIC LIQUID***	L	0.17-0.33 lb or 0.33-0.66 pt	POST. ID, OR, and WA, only. Apply before crop is 6" tall. Crop injury may occur. Do not apply to Estin variety. PHI 75 days.
FUSILADE DX	D	Up to 24 fl oz + 1-2 qt HSOC-COC* or 1-2 qt NIS/100 gal	Maximum 48 fl oz/A/year. Minimum 14 days between applications. PHI 60 days.
HERBIVORE/PERMIT	D,S	0.5-1 oz + 1 qt NIS/100 gal	Snap/succulent bean Herbivore only. Row middle/furrow, avoid contact with planted crop. 24c for Herbivore on dry beans in MN,NE (exp. date not given): Apply when beans have 1-3 trifoliates but before flowering.
OUTLOOK	D	12-21 fl oz	Apply from 1st to 3rd trifoliate and before weeds emerge.
PERMIT		SEE HERBIVORE	
POAST	D,S,G,L	8-40 fl oz + 1 pt HSOC-COC*	In Midwest, use 8-24 oz/A for annuals and 16-24 oz/A for perennials. In PNW, use 24-32 oz/A for perennials. 30 day PHI for dry beans and pea, 15 days for succulent beans and 50 days for lentil. Note 8.
PURSUIT	D,S,G,L,U	Up to 3 fl oz + 2 pt NIS/100 gal	Use rate and restrictions vary by bean type, variety and soil. Crop tolerance is marginal. 60 day PHI. Do not apply until beans have one fully expanded trifoliate. See label for specific crops and states.
REFLEX***/AGENT 1.88***	D,S	0.75-1.5 pt/0.75-1.6 pt + 1-2 qt NIS or 0.25-0.5 gal HSOC-COC/100 gal*	Use rates and seasonal use patterns vary by region, see label. Do not use liquid nitrogen as an adjuvant. Use a minimum of 10-20 GPA by ground and 5 GPA by air. Do not chemigate. Do not graze or harvest for forage or hay. Include adjuvants at or after 4 trifoliate dry or 1 trifoliate snap beans growth stage. Supplemental Label (Exp. date not given)- For Control of Certain Weeds in Dry Beans & Snap Beans, regions 1, 2, 3,& 4. 24c for Reflex: ND, (Expires 12/2028) for weed Control in Dry Beans in ND west of U.S. Highway 281 in Various counties.
SECTION THREE	D,S,G,L	4-10.67 fl oz + 1 pt HSOC-COC or HSOC-MSO or WC+NIS 2.5-5 gal/100 gal*	30 day PHI. Maintain a 14 day interval for repeat application.
SELECT MAX	D,S,G,L,U	9-32 fl oz: D, G, L, U (dry) 9-16 fl oz: S (succulent) + 1 qt NIS/100 gal	AMS should be added. PHI 30 days dry (D, G, L, U) and 21 days succulent (S) and edible podded. If tank mixing, follow adjuvant recommendations of tank mix partner.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre**	**Comments/Restrictions**
VARISTO	D,S	16-21 fl oz	After one fully-expanded trifoliate leaf but before bloom stage to actively growing weeds at heights specified on label. Adjuvant and nitrogen fertilizer must be used. In MN, MO, ND, SD and WY use 11 fl oz/A mixed with 16 fl oz/A Basagran 5L and a graminicide to control volunteer canola and mustard species weeds.
HARVEST AID			
AIM EC/SHARK EW	D,S,G,L,U	**All soil textures:** 1.0-6.1 fl oz	For optimal peformance use 15-30 GPA with MSO type adjuvant.*
GRAMOXONE SL 3.0 ‡	D,G,L,U	0.8-1.3 pt + 2 pt NIS/100 gal	Apply when at least 80% of pods are yellowing and no more than 30-40% of leaves are still green. Max. 2 pt/A or 1.3 pt/A as harvest aid. Max. 3 PP/PRE applications/year; max. 2 harvest aid applications/year. Do not graze or harvest for animal feed following harvest aid application. Not labeled in CA. 7-day PHI. 2 pt NIS/100 gal by air.
GLYPHOSATE	D,G,L	See label	Apply in 3-20 GPA water when crop is physiologically mature - hard dough and ≤30% moisture. May use other glyphosate products at greater or lesser volumes; see individual labels for Roundup PowerMAX 3; WeatherMAX/Honcho K6/Credit Xtreme/Cornerstone Plus PHI from 7-14 days.
SHARPEN	D,G,L	1-2 fl oz + 1 pt HSOC-MSO* + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal	Apply when dry edible beans (Phaseolus spp only) have reached physiological maturity, at least 80% yellow/brown pods and no more than 30% green leaves for vine type beans and no more than 40% green leaves for both type beans. PHI 2 days. May be mixed with glyphosate. Use ≥10 GPA by ground or ≥5 GPA by air. Do not use on seed production beans. May do sequential, but maximum of 2 fl oz/A/season. Note 4.
VALOR EZ/PANTHER SC/ TUSCANY SC/CHATEAU EZ	D,G,L	1.5-3 fl oz	Harvest aid in all states for D,G at 3 fl oz/A when crop is mature and ≥80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green, and for L at 1.5-2 fl oz/A when pods are 80% yellow to tan color and 20% are yellow color. Apply in ≥15 GPA. Include 1 qt/A MSO.* 1-2 qt/A UAN or 2-2.5 lb/A AMS may improve desiccation. PHI 5 days. See label for max. rate/application, max. applications/year, and max. fl oz/A/year.
VALOR SX	D,L	1.5-3 oz	Harvest aid in all states for D at 3 oz/A when crop is mature and ≥80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green, and for L at 1.5-2 oz/A when pods are 80% yellow to tan color and 20% are yellow color. Apply in ≥15 GPA. Include 1 qt/A MSO.* 1-2 qt/A UAN or 2-2.5 lb/A AMS may improve desiccation. PHI 5 days. See label for max. rate/application, max. applications/year, and max. fl oz/A/year.

[1] D – dry/field beans (Phaseolus, Vigna spp.: adzuki, kidney, pinto, navy, white, pink, lima, and small red), S – snap beans (snaps, succulents), G – garbanzo/chickpea, L – lentil, U – lupine (Phaseolus spp.: grain, white, sweet and white sweet lupine).

[2] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay. O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

Note 1: Do not feed or pasture vines to livestock for 45 days. No harmful soil residues should remain after harvest.

Note 2: May be applied through sprinkler irrigation systems.

Note 3: May be applied in fluid fertilizers.

Note 4: Do not graze or feed forage from treated fields to livestock.

Note 5: Do not use on Adzuki beans, cowpeas (blackeye peas, blackeye beans), soybeans, lima beans, Mung beans, Garbanzo beans, or other flat-podded beans except Romano.

Note 6: Do not plant oats or sorghum for 12 months. If less than 20" of water was used to produce crop, wait 18 months.

Note 7: See label for interval for planting sugarbeets.

Note 8: For certain weeds, the addition of UAN or AMS may be beneficial (see herbicide label).

Note 10: Do not cut for hay within 120 days of application.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BEAN LABELED INSECTICIDES

INSECTICIDE	Labeled Crop***					PRE-HARVEST INTERVAL FOR BEANS	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT														
	DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)				APHID**	ARMYWORM	BEAN LEAF BEETLE**	BLISTER BEETLE	CABBAGE LOOPER	CUCUMBER BEETLE	CUTWORM	EARWORM	EUROPEAN CORN BORER	FLEAHOPPER	GARDEN SYMPHYLAN	GRASSHOPPER	GREEN CLOVERWORM	LEAFHOPPER**
ABAMEX ‡ or ABBA ULTRA ‡	D	S	G		U	7	-	8-16 fl oz or 4-8 fl oz														
ADMIRE PRO	D	S	G	L	U	21,7	–	7-10.5 fl oz - soil	●													●
								1.2 fl oz - foliar	●													●
ADVISE FOUR/ NUPRID 4F MAX	D	S	G	L	U	21	–	8-12 fl oz	●													●
AGREE WG	D					–	–	0.5-2 lb		●											●	
AGRI-MEK SC ‡	D	S	G		U	7	–	1.75-3.5 fl oz														
ASANA XL ‡	D	S	G	L		3,21	NO	2.9-5.8 fl oz														●
								5.8-9.6 fl oz	●	●S			●	●	●	●	●			●	●	
ASSAIL 30 SG		S				7	–	2.5-5.3 oz	●		●			●								●
								4.5-5.3 oz														
AVAUNT	D		G	L	U	7	–	3.5-6 oz								●	●					
BAYTHROID XL ‡	D		G	L	U	7	NO	0.8-1.6 fl oz							●							●
								2.4-3.2 fl oz		●	●	●	●	●		●	●			●	●	
								3.2 fl oz	●S													
BESIEGE ‡	D	S	G	L	U	7,21	NO	5-8 fl oz							●						●	
								6-10 fl oz	●	●	●	●				●	●	●		●		●
								10 fl oz		●S												
BLACKHAWK	D	S	G	L	U	3,28	NO	1.7-3.3 oz									●					
								2.2-2.3 oz		●			●			●						
								2.5-3.3 oz														
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	D	S	G	L	U	14	–	At-plant: 3.4-6.8 fl oz PPI & PRE: 6.8-8.5 fl oz (Capture LFR only)		●					●							
								Foliar: 2.1-8.5 fl oz (Capture LFR only)												●		●
								Foliar: 2.8-8.5 fl oz (Capture LFR only)	●	●	●		●	●	●	●	●			●		
								Foliar: 6.8-8.5 fl oz (Capture LFR only)														

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LEAFMINER	LOOPER	LYGUS BUG	MEXICAN BEAN BEETLE	MITE	NEMATODE	PACIFIC MITE	PLANT BUG	SEED CORN MAGGOT**	STINKBUG	TARNISHED PLANT BUG	THRIPS**	TWO-SPOTTED SPIDER MITE	VELVETBEAN CATERPILLAR	WESTERN BEAN CUTWORM	
	●				●											Apply in min. 10 GPA by ground, ≥5 GPA by air. Max. 16 fl oz/A or 8 fl oz/A per application, max. 48 fl oz/A or 24 fl oz/A per year. 6-day min. application interval. Do not make >2 sequential applications of this or any other abamectin-containing product. Cowpeas: Only use if grown for seed. PHI 7 days.
												●				PHI 21 days soil application, 7 days foliar application. Maximum 10.5 fl oz (0.38 lb a.i.)/A allowed per crop season. Soil: 7-10 fl oz/A at planting directed on or below seed or in a narrow band over seed incorporated 1-1.5" followed by irrigation within 24 hours; may also be applied in a band directly below seed row in bedding operation 7 or fewer days before planting; see label for chemigation; max. 10.5 fl oz/A/season. Foliar: 1.2 fl oz/A; max. 3.6 fl oz/A/season.
												●So				Soil application in-furrow, narrow band over row, or chemigation into root zone. Use 1.4 fl oz/A foliar. PHI 7 days foliar.
		●												●		Apply in min. 20 GPA by ground, 2-10 GPA by air. May be applied by sprinkler irrigation; see label. Label lists "beans" only.
	●				●											Must be mixed with non-ionic activator type wetting, spreading and/or penetrating adjuvant. Apply in min. 10 GPA by ground, ≥5 GPA by air. Max. 3.5 fl oz/A/application, max. 10.25 fl oz/A/year. 6-day min. application interval. Do not make >2 sequential applications of this or any other foliarly applied abamectin-containing product. Cowpeas: Only use if grown for seed.
				●												PHI 3 days for snap, 21 days for other beans. May be applied by sprinkler irrigation; see label. Max. 0.21 lb a.i./A/season. Aphid: Pea aphid and soybean aphid (except CA).
		●												●	●	
				●												Do not make >3 applications/calendar year. Max. 16 oz/A/calendar year. 7-day min. application interval. Aphid, Thrips: Control varies with species; see label.
												●				
																Max. 24 oz/A/crop, max. 72 oz/A/year, max. 4 applications/A/crop. Min. application interval 7 days.
		●	●	●				●		●	●			●		Max. 3.2 fl oz/A/14-day interval, max. 6.4 fl oz/A/season. May be applied by sprinkler irrigation; see label. Aphid: Suppression only. Armyworm: Controls 1st and 2nd instar beet, fall, and yellow-striped armyworm.
				●										●		Check for labeled edible podded, succulent shelled or dried shelled species. PHI 7 days edible and succulent and 21 days dried. Armyworm: Apply 9 fl oz/A for suppression of beet armyworm.
		●	●					●		●		●			●	
	●S	●S											●S			
																PHI 3 days for succulent (max. 20 oz/A/season) or 28 days for dry (max. 8.3 oz/A/season). Min. 5-day application interval. Max. 6 applications per year. Earworm: Use a minimum of 2.2 oz/A. European corn borer: Begin applications when moth flight first appear; use lower rate in range to control eggs/larvae every 3 days. Leafminer, Thrips: Improved control with use of adjuvant.
		●														
	●											●				
									●							See individual labels for specific target insects and rates. At-plant: Lower rate range; apply band rate of 0.2-0.39 fl oz/1000' row as 5-7" band over row on surface, or as 5-7" T-band over open furrow; or apply in-furrow; or apply as broadcast (to control Army cutworm and cutworm spp. and True armyworm and armyworm spp.); do not apply >0.1 lb a.i./A/season at-plant. PPI & PRE: Higher rate range. Foliar: Min. 7-day application interval; higher rate range for Lygus spp. and Carmine mite control. May be applied by sprinkler irrigation; see label. Max. 0.3 lb a.i./A/season including all application methods and bifenthrin products.
	●	●		●	●		●	●		●	●	●	●			
			●		●											

BEAN LABELED INSECTICIDES *continued*

INSECTICIDE	Labeled Crop***					PRE-HARVEST INTERVAL FOR BEANS	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT														
	DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)				APHID**	ARMYWORM	BEAN LEAF BEETLE**	BLISTER BEETLE	CABBAGE LOOPER	CUCUMBER BEETLE	CUTWORM	EARWORM	EUROPEAN CORN BORER	FLEAHOPPER	GARDEN SYMPHYLAN	GRASSHOPPER	GREEN CLOVERWORM	LEAFHOPPER**	
CAPTURE 3RIVE 3D ‡	D		G	L	U	0	–	3.2-8 fl oz; 0.19-0.46 fl oz/1000' row		●					●								
COMITE ‡	D					14	NO	32-48 fl oz															
CORAGEN	D	S	G	L	U	1	–	At-plant: 5-7.5 fl oz		●						●	●						
								Foliar: 2-5 fl oz												●			
								Foliar: 3.5-7.5 fl oz		●						●	●						
								Foliar: 7.5 fl oz															
DIMATE 4E	D	S	G	L		0	NO	0.5-1 pt	●		●									●		●	
DIPEL ES	D			L		0	–	1-2 pt													●		
								2-4 pt		●													
ELEVEST ‡	D	S	G	L	U	3,14	–	4.8-9.6 fl oz							●					●		●	
								5.6-9.6 fl oz	●	●	●		●	●		●	●						
								7.7-9.6 fl oz															
								9.6 fl oz															
ENTRUST SC	D	S	G	L	U	3,28	see comment	3-6 fl oz									●						
										●			●			●							
ETHOS ELITE LFR ‡	D	S	G	L	L	–	–	At-plant: 3.4-8.5 fl oz		●					●								
ETHOS XB ‡	D	S	G	L	L	14,3	–	At-plant: 3.4-8.5 fl oz PPI & PRE: 6.8-8.5 fl oz		●					●								
								Foliar: 2.1-8.5 fl oz												●		●	
								Foliar: 2.8-8.5 fl oz	●	●	●			●	●	●	●			●	●		
								Foliar: 6.8-8.5 fl oz															

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LEAFMINER	LOOPER	LYGUS BUG	MEXICAN BEAN BEETLE	MITE	NEMATODE	PACIFIC MITE	PLANT BUG	SEED CORN MAGGOT**	STINKBUG	TARNISHED PLANT BUG	THRIPS**	TWO-SPOTTED SPIDER MITE	VELVETBEAN CATERPILLAR	WESTERN BEAN CUTWORM	
																For use in a 3RIVE 3D system only. Must be applied in-furrow with seed. Maximum 0.1 lb a.i./A/season at-plant, 0.3 lb a.i./A/season all application methods.
													●			For beans west of Rocky Mts. only. Apply high rate to areas with high infestation and areas with historically high infestations. Min. 20 GPA by ground, 10 GPA by air. Do not apply >72 fl oz/A/year. Do not make >2 applications/season. Min. 21-day spray interval.
																Apply higher rates for heavy infestations. Do not make >4 applications/A/crop or >12 applications/calendar year. Max. 15.4 fl oz/A/crop. At-plant: In-furrow spray. Leafminer: See label for species control/suppression. Grasshopper: See label for application timing and adjuvant recommendations.
		●													●	
	●															
	●		●	●	●											Max .single application rate 1 pt/A. Max. 2 pt/A/year. 14-day retreatment interval. Lentil: Labeled only for aphids (0.33-1 pt/A) and lygus bugs (1 pt/A).
		●												●		Bt insecticide. Armyworm: Control of small armyworms, first and second instars, when populations are light; apply full coverage sprays.
																Max. 19.2 fl oz/A/year. Max. 2 applications/A/year. Max. 2 sequential applications before rotating to different MOA. Min. 3-day retreatment interval. See label for timing notes. Min. 5 GPA by air (see label re. adjuvant options). Grasshopper control improves with addition of MSO at 1% v/v. Coverage is essential for control of mites. PHI 3 days for succulent, 14 days for dried.
								●		●		●			●	
			●										●			
	●															
																PHI 3 days succulent, 28 days dry. Do not feed forage or hay to meat or dairy animals. May be applied by sprinkler irrigation; see label. Use higher rate for heavy infestation or large insects.
	●	●										●				
																At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed, or broadcast; see label for guidance. Max. bifenthrin 0.3 lb/A/season dry beans and 0.2 lb/A/season succulent beans, including all application methods. Product also contains fungicide; see Bean Diseases.
																Max. 0.3 lb bifenthrin a.i./A/season dry beans, 0.2 lb bifenthrin a.i./A/season succulent beans, including all application methods. Product also contains fungicide; see Bean Diseases. At-plant: Apply as 5-7" band over row on soil surface, 5-7" T-band over open furrow, or in-furrow with seed; apply broadcast to control Army Cutworm, Cutworm spp., True Armyworm or Armyworm spp. PRE: Apply in min. 10 GPA. PPI: Can be tank-mixed/applied with PPI herbicides; incorporation should not be deeper than 3" in min. 10 GPA. Foliar: Min. application interval 7 days dry beans, 3 days succculent beans. PHI 14 days for dry beans, 3 days for succulent beans.
	●	●	●					●		●	●	●	●		●	

BEAN LABELED INSECTICIDES *continued*

INSECTICIDE	Labeled Crop*** DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)	PRE-HARVEST INTERVAL FOR BEANS	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT APHID**	ARMYWORM	BEAN LEAF BEETLE**	BLISTER BEETLE	CABBAGE LOOPER	CUCUMBER BEETLE	CUTWORM	EARWORM	EUROPEAN CORN BORER	FLEAHOPPER	GARDEN SYMPHYLAN	GRASSHOPPER	GREEN CLOVERWORM	LEAFHOPPER**
ETHOS 3D ‡	D	S	G	L	L	–	–	At-plant: 0.21-0.52 fl oz/1000' row		●					●							
FASTAC CS ‡	D	S	G	L	U	1,21	–	1.3-3.8 fl oz							●							
								2.7-3.8 fl oz		●	●	●	●	●		●	●				●	●
								3.2-3.8 fl oz	●											●		
GRIZZLY TOO ‡	D	S	G	L	U	7,21	NO	0.96-1.6 fl oz							●						●	
								1.28-1.92 fl oz	●	●	●	●	●	●		●	●	●		●		●
								1.92 fl oz		●S												
HERO ‡	D	S	G	L	U	3,21	–	4-10.3 oz	●	●	●	●	●		●	●	●				●	●
								10.3 oz												●		
INTREPID 2F	D	S	G	L	U	7	–	4-8 fl oz; 8-16 fl oz		●			●				●					
								10-16 fl oz								●S						
LAMBDA-CY AG ‡	D	S	G	L	U	7,21	see comment	1.92-3.2 fl oz							●						●	
								2.56-3.84 fl oz	●	●	●	●	●	●		●	●	●		●		●
								3.84 fl oz		●S												
LANNATE LV ‡ or LANNATE SP ‡	D	S	G	L	U	1,3,14	3,7,14	0.75-1.5 pt or 0.25-1 lb						●								
								0.75-3 pt or 0.25-0.5 lb		●S												
								1.5 pt or 0.5 lb		●					●							
								1.5-3 pt or 1.5-1 lb	●							●	●					
LEVERAGE 360 ‡	D		G	L	U	7	NO	2.4-2.8 fl oz	●	●	●	●	●	●	●	●	●	●		●	●	●
								2.8 fl oz														
LORSBAN ADVANCED ‡	D	S	G	L	U	–	–	PP: 2 pt														
								At-plant: 1.8 fl oz/1000'														

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LEAFMINER	LOOPER	LYGUS BUG	MEXICAN BEAN BEETLE	MITE	NEMATODE	PACIFIC MITE	PLANT BUG	SEED CORN MAGGOT**	STINKBUG	TARNISHED PLANT BUG	THRIPS**	TWO-SPOTTED SPIDER MITE	VELVETBEAN CATERPILLAR	WESTERN BEAN CUTWORM	
									●							For use in a 3RIVE 3D system only. Max. 0.1 lb bifenthrin a.i./A/season as at-plant application. Max. 0.3 lb bifenthrin a.i./A/season dry beans, 0.2 lb bifenthrin/A/season succulent beans, including all application methods. Product also contains fungicide; see Bean Diseases. Apply in-furrow with seed.
															●	PHI 1 for succulent, 21 days for dried. Max. 3.8 fl oz/A. Max. 11.4 fl oz/A/season. 5-day min. application interval. Aphid: Control may be variable. Armyworm: 3.2-3.8 fl oz/A for beet, fall; 2.7-3.8 fl oz/A for all others. Leafminer, Seedcorn maggot: Adult.
	●			●				●	●		●			●		
		●								●		●				
				●										●		PHI 7 days for edible podded and shelled, 21 days for dried shelled. May be applied by sprinkler irrigation; see label. Armyworm: 1.92 fl oz/A for suppression of beet armyworm; 1.28-1.92 fl oz/A for control of all other armyworms.
			●					●		●	●	●			●	
	●S	●S											●S			
	●	●		●					●	●			●	●	●	Succulent: 5-day min. application interval, PHI 3 days. Dried: 7-day min. application interval, PHI 21 days. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. Max 10.3 oz/A/application; max. 27.39 oz/A/season. See label for important resistance information.
			●		●							●				
																Use lower rate range early season, higher rate rants mid-to-late season. See label for types of armyworms controlled. May be applied by sprinkler irrigation; see label.
				●										●		PHI 7 days for edible podded and shelled, 21 days for dried shelled. Succulent and dried shelled beans: No grazing or harvested vines for forage or hay. May be applied by sprinkler irrigation; see label. Armyworm: 3.84 fl oz/A for suppression of Beet armyworm; 2.56-3.84 fl oz/A for control of all other armyworms. Looper: 3.84 fl oz/A for suppression of Soybean looper, 2.56-3.84 fl oz/A for control of other looper spp. Thrips: Does not include Western flower thrips.
		●	●					●		●	●	●			●	
	●S	●S			●S								●S			
				●										●		Lannate LV May be applied by sprinkler irrigation in ID, MT, NV, OR, UT, WA only and for certain insects only; see label. PHI for succulent beans 1 day ≤1.5 pt/A, 3 days >1.5 pt/A; for dry beans 14 days. PHI for succulent vines 3 days, succulent hay 7 days, dry vines/hay 14 days. Armyworm: Lentil labeled only for western yellow striped armyworm. Looper: Not in AL, GA. Stinkbug: See label for important information.
				●												
		●	●					●		●	●	●			●	
		●	●									●				
	●S	●S			●S								●S			Max. 6.4 oz (0.05 lb. a.i.)/A/crop season. Min. reapplication interval 14 days. May be applied by sprinkler irrigation; see label. Armyworm, Bean leaf beetle: First and second instars.
										●						
									●							Not for use in MS. PP broadcast applications in min. 10 GPA by ground; incorporate 1-3″ to improve control. At-plant: 3-5″ band over row in min. 10 GPA; rate based on 30″ row spacing, see label alternate rate/row spacing; do not apply at-plant if PP application was made. NOTE: After 2/28/22 this product no longer has tolerances approved by EPA for food uses.

BEAN LABELED INSECTICIDES *continued*

INSECTICIDE	Labeled Crop*** DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)	PRE-HARVEST INTERVAL FOR BEANS	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT APHID**	ARMYWORM	BEAN LEAF BEETLE**	BLISTER BEETLE	CABBAGE LOOPER	CUCUMBER BEETLE	CUTWORM	EARWORM	EUROPEAN CORN BORER	FLEAHOPPER	GARDEN SYMPHYLAN	GRASSHOPPER	GREEN CLOVERWORM	LEAFHOPPER**
MINECTO PRO ‡	D	S	G		U	7	see comment	7-5 fl oz								●	●					
								10 fl oz														●S
MOVENTO or MOVENTO HL or MOVENTO MPC	D	S	G	L	U	1,7		4-5 fl oz or 2-2.5 fl oz 7.0 - 8.0 fl oz	●													
MUSTANG MAXX ‡	D	S	G	L	U	1,21	–	At-plant: 4 fl oz							●							
								Foliar: 1.28-4 fl oz							●							
								Foliar: 2.72-4 fl oz		●	●	●	●	●		●	●				●	●
								Foliar: 3.2-4 fl oz	●	●										●		
ONAGER	D	S				15	NO	10-24 pt														
PYGANIC EC 1.4$_{II}$	D	S	G	L	U	0	0	16-64 fl oz	●	●		●	●	●		●	●		●	●		●
PYGANIC EC 5.0$_{II}$	D	S	G	L	U	0	0	4.5-15.61 fl oz	●	●		●	●	●		●	●		●	●		●
RADIANT SC	D	S	G	L	U	3,28	–	3-8 fl oz									●					
								4-8 fl oz		●						●						
								5-8 fl oz														
RIDGEBACK	D	S	G		L	7,14	–	3.4-12.8 fl oz														●
								5.5-13.8 fl oz	●	●	●		●	●	●	●	●			●	●	
								11-13.8 fl oz														
								13.8 fl oz														
SENSTAR	D	S	G	L	U	7	NO	8-10 fl oz	●													

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LEAFMINER	LOOPER	LYGUS BUG	MEXICAN BEAN BEETLE	MITE	NEMATODE	PACIFIC MITE	PLANT BUG	SEED CORN MAGGOT**	STINKBUG	TARNISHED PLANT BUG	THRIPS**	TWO-SPOTTED SPIDER MITE	VELVETBEAN CATERPILLAR	WESTERN BEAN CUTWORM	
	●				●								●			Must be mixed with non-ionic activator type wetting, spreading and/or penetrating spray adjuvant (see label). Min. 10 GPA by ground, 5 GPA by air. Do not make >2 sequential applications of this product or any other foliarly applied abamectin-containing product. Maximum 10 fl oz/A/application, 20 fl oz/A/year (0.056 lb abamectin a.i./A/year + 0.4 lb cyantraniliprole a.i./A/year, including seed treatment, soil and foliar). 6-day min. application interval. Use on cowpeas grown for dry seed only; do not allow grazing/feeding on cowpea. No restriction for grazing/feeding other labeled dry or succulent beans.
												●S				
	●S					●S						●S	●S			Max. 10 fl oz/A for Movento or 5 fl oz/A for Movento HL or 16 fl oz of Movento MPC. 7-day min. application interval. PH 1 day for edible podded/succulent beans and peas; 7 days for dry shelled beans and peas.
																PHI 1 day succulent shelled or edible podded, 21 days dried shelled. Cutworm: Apply at-plant in 5-7" band in min. 2-7 GPA or broadcast in min. 10 GPA. Foliar: Apply in min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. Application interval ≥5 days based on local ET. Do not apply >24 fl oz/A/season including at-plant + foliar. Armyworm: 3.2-4 fl oz/A for Beet/Fall armyworm, 2.72-4 fl oz/A for all other armyworm spp. Aphid, Beet/Fall armyworm, Looper, Thrips: See label for important resistance information.
	●			●				●	●		●			●		
		●								●		●				
					●								●			Western U.S. only (see label for geography). For application prior to adult mite buildup (will not control adults). Min. 20 GP by ground, 10 GPA by air. May be applied by sprinkler irrigation; see label. No more than 1 application/year.
	●	●	●	●	●		●	●	●	●	●	●	●	●		OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
	●	●	●	●	●		●	●	●	●	●	●	●	●		OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
																PHI 3 days succulent, 28 days dry. Do not make >6 applications year. Min. treatment interval: 3-day for European corn borer, 4-day for all other pests. May be applied by sprinkler irrigation; see label. Armyworm: Not for yellow-striped or western yellow-striped.
		●														
	●											●				
																Treat in accordance with local economic thresholds. Use higher rate for heavy pest populations. 7-day min. application interval for succulent, 14-day min. application interval for dry. Max. 4 applications/year. Max. 2 sequential applications/crop. Max. 27.6 fl oz/A/year. Plant bug (Lygus spp.): 11.0-13.8 fl oz/A. Brown Marmorated Stink bug: 13. 8 fl oz/A. PHI 7 days for succulent, 14 days for dry.
	●	●	●					●		●	●	●	●		●	
			●		●		●									
										●						
	●S											●S				Ground application in 10-50 GPA water. Only whole fields should be treated. Max. 10 fl oz/A/application. Max. 2 applications/season. Max. 20 fl oz/A/crop season. Min. 14-day application interval.

BEAN LABELED INSECTICIDES *continued*

INSECTICIDE	Labeled Crop***					PRE-HARVEST INTERVAL FOR BEANS	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT														
	DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)				APHID**	ARMYWORM	BEAN LEAF BEETLE**	BLISTER BEETLE	CABBAGE LOOPER	CUCUMBER BEETLE	CUTWORM	EARWORM	EUROPEAN CORN BORER	FLEAHOPPER	GARDEN SYMPHYLAN	GRASSHOPPER	GREEN CLOVERWORM	LEAFHOPPER**
SIVANTO 200 SL or SIVANTO PRIME	D	S	G	L	U	7	7	7-10.5 fl oz or 7-14 fl oz	●													●
STEWARD EC	D			L	U	7	NR	6.7-11.3 fl oz								●	●					
THIMET 20-G ‡	D					60	NO	4.5-7 oz/1000' row	●													●
								4.9-9.7 fl oz/1000' row														
TRANSFORM WG	D	S	G		U	7	–	0.75-1 oz	●													
								1.5-2.25 oz														
								2-2.25 oz														
								2.25 oz														
TRIGARD	D	S	G	L	U	7	NR	2.66 oz														
TUNDRA EC ‡/ BRIGADE 2EC ‡/ ***BIFEN 2 AG GOLD*** ‡	D	S	G	L	U	3,14	–	1.6-6.4 fl oz												●		●
								2.1-6.4 fl oz	●	●	●		●	●	●	●	●				●	
								5.12-6.4 fl oz														
VANTACOR	D	S	G	L	U	1	–	At-plant: 1.7-2.5 fl oz		●						●	●					
								Foliar: 0.7-1.7 fl oz												●		
								Foliar: 1.2-2.5 fl oz		●						●	●					
								Foliar: 2.5 fl oz														
VELUM PRIME	D	S	G	L	U	14	No	At Plant: 4 to 6 Fl oz (Soil applied)														
WARRIOR II ‡	D	S	G	L	U	7,21	NO	0.96-1.6 fl oz							●						●	
								1.28-1.92 fl oz	●	●	●	●	●	●		●	●	●		●		●
								1.92 fl oz		●S												
XENTARI	D			L		0	NR	0.5-1.5 lb		●												
								0.5-2 lb													●	

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LEAFMINER	LOOPER	LYGUS BUG	MEXICAN BEAN BEETLE	MITE	NEMATODE	PACIFIC MITE	PLANT BUG	SEED CORN MAGGOT**	STINKBUG	TARNISHED PLANT BUG	THRIPS**	TWO-SPOTTED SPIDER MITE	VELVETBEAN CATERPILLAR	WESTERN BEAN CUTWORM	
																10-day min. application interval. Max. 28 fl oz/A/year Sivanto 200 SL/Sivanto prime. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL.
																Max. 4 applications/A/crop. Max. 45 fl oz/A/crop. Max. 135 fl oz/A/year. 7-day min. application interval. Apply in 20-100 GPA by ground.
			●		●				●			●				Edible beans only. Do not place granules in direct contact with seed. Max. 1 application/crop season. Use high rate under heavy pest pressure. Seed Corn Maggot: Apply granules in band over row and light incorporate. All other pests: Drill granules to the side of seed. Do not place in direct contact with seed.
				●												
								●								Do not make applications <14 days apart. Do not make >4 applications/crop nor >2 consecutive applications/crop. Do not apply >8.5 oz/A/year (0.266 lb ai sulfoxaflor/A/year).
										●S						
												●S				
	●															See label for applicable Phaseolus spp. and Vigna spp. Do not apply to dried cowpeas. Apply as foliar spray as soon as leafminers first appear. Apply in min. 10 GPA by ground, 5 GPA by air. 7-day min. application interval. Do not apply >0.125 lb a.i./A/7-day interval, or >0.75 lb a.i./A/crop season. Do apply >6 times/season.
																Do not exceed 12.8 fl oz/season. Succulent: PHI 3 days. Dried: PHI 14 days, 7-day min. application interval. May be applied by sprinkler irrigation; see label. Apply in ≥2 GPA by air, 10 GPA by ground.
		●			●			●		●	●	●			●	
			●										●			
																Apply higher rates for heavy infestations. Soil application: In-furrow spray. Foliar application or overhead chemigation. Do not make >4 applications/A/crop or >12 applications/calendar year. Max. 5.1 fl oz/A/crop. At-plant: In-furrow spray. Leafminer: See label for species control/suppression. Grasshopper: See label for application timing and adjuvant recommendations. 2ee CO, ID, NE, OR, WA, WY (exp. 12/2026) for control of colorado potato beetle.
		●													●	
	●															
						●S SO										Soil Application Apply in seed furrow and cover with soil, or chemigation into root-zone through low-pressure drip or trickle irrigation. Not labeled for use in AZ, CA, HI.
				●										●		PHI 7 days for edible podded and shelled, 21 days for dried shelled. May be applied by sprinkler irrigation; see label. Armyworm: 1.92 fl oz/A for suppression of beet armyworm; 1.28-1.92 fl oz/A for control of all other armyworms.
			●					●		●	●	●			●	
	●S	●S											●S			
		●												●	●	May be applied by sprinkler irrigation; see label. Armyworm: 1st and 2nd instar for best results. Looper: 0.5-2 lb/A for Soybean looper; 0.5-1.5 lb/A for all other loopers.
		●														

BEAN LABELED INSECTICIDES *continued*

INSECTICIDE	Labeled Crop***					PRE-HARVEST INTERVAL FOR BEANS	PRE-HARVEST INTERVAL FOR GRAZING/FORAGE	RATE PER ACRE	INSECT														
	DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)				APHID**	ARMYWORM	BEAN LEAF BEETLE**	BLISTER BEETLE	CABBAGE LOOPER	CUCUMBER BEETLE	CUTWORM	EARWORM	EUROPEAN CORN BORER	FLEAHOPPER	GARDEN SYMPHYLAN	GRASSHOPPER	GREEN CLOVERWORM	LEAFHOPPER**	
XPEDIENT PLUS V ‡	D	S	G	L	U	-	NR	At plant: 2.56-5.12 fl oz		●					●								

Products may control/suppress many other insects; see label
See Insecticide Resistance Management in the Technical Information section.
● - control; ●S - suppression; ●So - soil application

* - 24c, 2ee or Supplemental label; see Comments and Restrictions
** See Seed Treatment Section for additional control options.

BEE ALERT

See Insecticide Classification in the Technical Section for information on insecticide toxicity to bees.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LEAFMINER	LOOPER	LYGUS BUG	MEXICAN BEAN BEETLE	MITE	NEMATODE	PACIFIC MITE	PLANT BUG	SEED CORN MAGGOT**	STINKBUG	TARNISHED PLANT BUG	THRIPS**	TWO-SPOTTED SPIDER MITE	VELVETBEAN CATERPILLAR	WESTERN BEAN CUTWORM	
	●															At plant: Apply as 5-7" band over row, 5-7"T-band over open furrow, or in furrow with seed. Cutworm, Armyworms: Apply as broadcast to soil surface. Max. 0.1 lb a.i./A/season/at plant application.

*** D – dry/field beans (Phaseolus, Vigna spp.: adzuki, kidney, pinto, navy, white, pink, lima, and small red), S – snap beans (snaps, succulents), G – garbanzo/chickpea, L – lentil, U – lupine (Phaseolus spp.: grain, white, sweet and white sweet lupine).

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BEAN INSECT MANAGEMENT GUIDELINES



APHID: **ET:** one or more colony of 30+ aphids per plant. Cruiser and Gaucho seed treatments provide early season protection.



ARMYWORM: **ET:** treat when > 25-30% of the foliage is destroyed or if significant injury to the pods is evident.



BEAN LEAF BEETLE: **ET:** treatment is suggested if 50% defoliation of seedlings or 25% defoliation during pod set or filling.



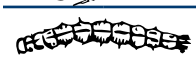
CUTWORM: **ET:** treat when one cutworm or more is found per 3' of row and the larvae are small (less than 3/4'' long).



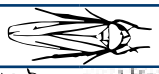
EUROPEAN CORN BORER OR CORN EARWORM: Adults feed on flowers and foliage. Blister beetles are highly toxic (produce cantharidin) to horses and poultry and are occasionally trapped or crushed by the crimper and thus retained in the hay. The old harvest method of cutting the hay and allowing it to dry before raking and bailing allows beetles to escape. Early cutting avoids most problems as the beetles are attracted to flowers and don't build up in the alfalfa till bloom. No economic level has been established for blister beetles, but if beetle swarms are noted in the field and the crop is destined for horses, an insecticide treatment may be justified.



GRASSHOPPER: **ET:** treat when 20 or more adults per square yard in field margins or 8-14 per square yard are occurring in the crop.



GREEN CLOVERWORM: The only larva to wiggle violently when touched. **ET:** >25% defoliation or if there are >15 larvae at green pod stage.



LEAFHOPPER: Early season protection is provided by Cruiser seed treatment. **ET:** treat when there is an average of one or more leafhopper per trifoliate or 0.5-1 adult/sweep or 1 nymph/10 leaves.



MEXICAN BEAN BEETLE: **ET:** control of first generation needs to be considered if defoliation reaches 40-50%. Control of second generation should be attempted at 1 larvae/plant or if defoliation exceeds 10-20%.



WESTERN BEAN CUTWORM: Scout for larvae in the evening because they hide in the soil during the day. If a field has been or is going to receive a foliar treatment for Mexican bean beetle, it is unlikely that it will need to be treated for Western bean cutworm. **ET:** in irrigated beans 2 larvae/row foot and in dryland, 1 larva/2 feet of row or treat when about 4-8% of pods show feeding.



SPITTLEBUG: Nymphs of this small, leafhopper-like insect can cause economic damage to the first cutting. **ET:** Treatment is warranted when spittle masses average 1 or more per stem.



WEBWORM: Greenish caterpillars up to 3/4"with 3 dark spots on the sides of each abdominal segment destroy foliage inside web. If hay is within 2 weeks of cutting, mow instead of trying to kill worms. When spraying use sufficient volume to penetrate the webbing. **ET:** treat if webbing and defoliation are abundant.

BEAN LABELED FUNGICIDES

	LABELED CROP					DISEASE*																	
FUNGICIDE	DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)	ALTERNARIA BLIGHT	ALTERNARIA LEAF SPOT	ANTHRACNOSE	ASCOCHYTA BLIGHT	ASCOCHYTRA LEAF AND POD SPOT	ASCOCHYTA LEAF SPOT	BOTRYTIS GRAY MOLD	BROWN SPOT	COMMON BLIGHT	DOWNY MILDEW	HALO BLIGHT	MYCOSPHAERELLA BLIGHT	POWDERY MILDEW	PYTHIUM	RHIZOCTONIA ROOT ROT	RUST	SOUTHERN BLIGHT	WEB BLIGHT	WHITE MOLD (SCLEROTINIA)
ACTINOVATE AG	D	S	G	L	U	●	●					●			●			●	●	●				●
ALTIPRO	D		G	L	U			●	●	●							●							●
APROACH	D		G	L	U	●	●	●	●		●				●		●	●			●			●
APROVIA TOP	D		G	L	U	●		●	●								●	●						
BADGE SC/BADGE X2	D	S	G	L	U			●					●	●	●	●								
BIO-TAM 2.0	D	S	G	L	U														●	●				●
BLOCKER 10G		S																		●				
BRAVO ULTREX/BRAVO WEATHER STIK/PRAIZ	D	S	G		U			●	●			●[3]			●						●			
CANNONBALL WG	D	S	G		U							●												●
CHAMP DRY PRILL/ CHAMP WG	D	S											●	●		●								
CHAMP FORMULA 2 FLOWABLE	D	S											●	●	●	●								
CHAMPION++	D	S											●	●	●	●								
CONTANS WG	D	S	G	L	U																			●
CUPROFIX ULTRA 40 DISPERSS	D												●	●	●	●					●			
DELARO 325 SC			G	L				●	●			●												●
ENDURA	D	S	G	L	U				●			●									●			●
ETHOS ELITE LFR ‡	D	S	G	L	U														●S	●S				
ETHOS XB ‡	D	S	G	L	U													●S	●S	●S	●S			●S
ETHOS 3D ‡	D	S	G	L	U														●S	●S				
EVERLON/PRIAXOR	D	S	G	L	U		●	●	●			●			●		●	●			●			●S
FONTELIS	D	S				●	●	●	●		●							●		●	●			●
FORUM[2]	D														●									
HEADLINE SC	D	S	G	L	U	●	●	●	●	●					●		●	●			●			
INSPIRE SUPER	D		G			●	●	●	●	●	●	●						●[6]						
KOCIDE 3000	D												●	●		●								
LUNA EXPERIENCE	D	S	G	L	U													●			●			
LUNA FLEX	D	S	G	L	U	●	●	●	●												●			●
MICROTHIOL DISPERSS	D																	●						
MINUET	D	S	G	L	U														●So	●So				
MIRAVIS NEO	D	S	G		U	●	●	●	●								●	●			●		●	●S
MIRAVIS TOP	D		G	L	U	●	●	●S	●								●	●			●			●S
OMEGA 500F	D	S			U							●												●
ONSET 3.6L	D																				●			
PREVISTO	D												●	●	●	●								
PROLINE 480 SC	D		G	L	U				●												●[1]			●
PROPULSE	D		G	L	U			●	●								●							●
PROVYSOL	D	S	G	L	U	●	●		●								●	●			●			
QUADRIS OPTI	D		G		U			●													●			
QUADRIS TOP	D			L		●	●	●	●	●														
QUILT XCEL/AFRAME PLUS	D	S	G		U	●	●	●	●	●	●										●	●	●	
RALLY 40WSP		S																			●			

See notes and footnotes at end of table.

BEAN LABELED FUNGICIDES *continued*

	LABELED CROP					DISEASE*																	
FUNGICIDE	DRY/FIELD BEANS (D)	SNAP BEANS (S)	GARBANZO/CHICKPEA (G)	LENTIL (L)	LUPINE (U)	ALTERNARIA BLIGHT	ALTERNARIA LEAF SPOT	ANTHRACNOSE	ASCOCHYTA BLIGHT	ASCOCHYTA LEAF AND POD SPOT	ASCOCHYTA LEAF SPOT	BOTRYTIS GRAY MOLD	BROWN SPOT	COMMON BLIGHT	DOWNY MILDEW	HALO BLIGHT	MYCOSPHAERELLA BLIGHT	POWDERY MILDEW	PYTHIUM	RHIZOCTONIA ROOT ROT	RUST	SOUTHERN BLIGHT	WEB BLIGHT	WHITE MOLD (SCLEROTINIA)
REVYLOK	D	S	G	L	U		●		●								●	●			●			
REVUS		S													●									
RIDOMIL GOLD COPPER		S													●				●					
RIDOMIL GOLD SL	D	S	G	L	U														●So	●So				
ROVRAL 4F	D	S	G		U							●												●
SERENADE ASO	D	S	G	L	U														●So	●So	●			●
SERENADE OPTI	D	S	G	L								●												●
STRATEGO YLD/ ***PROTEGAM YLD***			G	L				●	●			●												
SWITCH 62.5WG	D	S	G		U	●	●	●	●	●	●										●	●	●	
TETRABAN	D	S	G	L	U	●	●	●	●	●	●									●So	●	●	●	
TILT	D	S	G	L	U			●				●												●
TOPSIN 4.5FL/TOPSIN M WSB/T-METHYL 4.5 F/T-METHYL 70 WSB	D	S	G		U														●So	●So				
ULTRA FLOURISH	D	S	G	L	U										●[7]				●					
UNIFORM	D		G		U	●	●	●	●		●							●			●			●
VELTYMA	D	S	G	L	U	●	●		●						●S		●	●			●			
ZORINA	D	S	G	L	U	●	●		●			●					●	●			●			●

* Many other diseases may be controlled, see label.
● - control; ●S - suppression; ●So - soil application
See Fungicide Resistance Management in the Technical Information section.
[1] Dry bean only.
[2] Lima bean, succulent seed only.
[3] Snap bean only; Ultrex and WeatherStik only.
[4] Dry or snap bean only (not succulent).
[6] Garbanzo/Chickpea only.
[7] Succulent shelled bean only.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions..

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
			SOIL APPLICATION		
ACTINOVATE AG	D,S,G,L,U	3-12 oz	0	0	See label for soil-borne diseases controlled/suppressed. At plant, in-furrow in 10-200 GPA. May be applied by drip, overhead or other irrigation systems; see label. May also be used as seed treatment; see label.
BLOCKER 10G	S	1 lb/1000' row (bush) 1-2 lb/1000' row (pole)	–	NO	Apply in furrow as 12-15" band over seed at planting time and immediately cover soil.
ETHOS ELITE LFR ‡	D,S,G,L,U	At-plant: 0.2-0.49 fl oz/1000' row	–	–	At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed, or broadcast; see label for guidance. Max. bifenthrin 0.3 lb/A/season dry beans and 0.2 lb/A/season succulent beans, including all application methods. Product also contains insecticide; see Bean Insects.
ETHOS XB ‡	D,S,G,L,U	At-plant: 3.4-6.8 fl oz PPI & PRE: 6.8-8.5 fl oz	14	–	Max. 0.3 lb bifenthrin a.i./A/season dry beans, 0.2 lb bifenthrin a.i./A/season succulent beans, including all application methods. Product also contains insecticide; see Bean Insects. At-plant/PRE/PPI: Suppression of "damping off," seedling blights, and root or crown diseases caused by Pythium, Rhizoctonia, Fusarium, or Phytophthora. At-plant: Apply as 5-7" band over row on soil surface, 5-7" T-band over open furrow, or in-furrow with seed; apply broadcast to control Army Cutworm, Cutworm spp., True Armyworm or Armyworm spp. PRE: Apply in min. 10 GPA. PPI: Can be tank-mixed/applied with PPI herbicides; apply in min. 10 GPA; incorporation should not be deeper than 3".
ETHOS 3D ‡	D,S,G,L,U	At-plant: 0.21-0.52 fl oz/1000' row	–	–	For use in a 3RIVE 3D system only. Suppression of "damping off," seedling blights, and root or crown diseases caused by Pythium, Rhizoctonia, Fusarium, or Phytophthora. Apply in-furrow with seed. Max. 0.1 lb bifenthrin a.i./A/season as at-plant application. Max. 0.3 lb bifenthrin a.i./A/season dry beans, 0.2 lb bifenthrin/A/season succulent beans, including all application methods. Product also contains insecticide; see Bean Insects.
FONTELIS		1.2-1.6 fl oz	0	–	Apply at-plant, in-furrow or transplant seedling application.
MINUET	D,S,G,L,U	12-24 fl oz	0	NR	Bacillus subtilis is an biological fungicide. Apply in-furrow at planti. OMRI listed. May be applied as soil surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
PROLINE 480 SC	D,S,G,L,U	2.6 - 5.0 fl oz	7	–	In-furrow use: Apply up to 5.0 fl oz/A per 1000 row feet if on 30 inch row spacing in the furrow at planting. See the label for additional use directions and rate chart for various row spacings. A maximum of 17.1 fl oz (0.534 lbs prothioconazole) including seed treatment, soil and foliar applications, may be applied per acre per year.
PROPULSE	D,G,L,U	6 - 10.0 fl oz	14	NO	In-furrow spray during planting directed on or below seed, for disease management of Rhizoctonia rots, Nematodes and Fusarium wilt . Maximum annual application rate: 34.2 fl oz/A/season of Propulse (0.446 lb/acre fluopyramand 0.534 lb/acre prothioconazole) from all sources including seed treatment, soil and foliar applications.
RIDOMIL GOLD SL	D,S,G,L,U	0.5-1 pt	–	NO	PPI (broadcast or band): Apply in water or liquid fertilizer; incorporate in the top 2" of soil. Or soil spray (broadcast or band) in water or liquid fertilizer at planting.
SERENADE ASO	D,S,G,L,U	0.5-4 qt	–	–	Bacillus subtilis is a biological fungicide. Drench at planting or at any stage of growth; shanked-in and injected; in-furrow. See label for additional information.
TETRABAN	D,S,G,L,U	0.4-0.8 fl oz/1000' row	0,14	–	PHI 14 days for dry bean and dry pea seeds, 0 days for succulent beans and peas. See label for application instructions and in-furrow or banded rates.
UNIFORM	D,S,G,L,U	0.34 fl oz/1000' row			Apply in-furrow in a 7" band.

See notes and footnotes at end of table.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
					FOLIAR
ACTINOVATE AG	D,S,G,L,U	3-12 oz	0	0	See label for foliar diseases controlled/suppressed. Apply in 10-150 GPA. Reapply every 7-14 days depending on disease pressure and environmental conditions. Best to use spreader-sticker (adjuvant). May be applied by air; see label.
ALTIPRO	D, G, L, U	12 fl oz	14	7	Begin fungicide applications preventatively and continue as needed on a 10- to 14-day interval. Use the shorter specified intervals when conditions are favorable for severe disease pressure. Ground application volume of 10 gallons/Acre. Aerial minimum application volume of 5 gallons/Acre. Maximum Annual Applications: Do not exceed 3 applications of this product per year; and to limit the potential for development of disease resistance to this fungicide, do not make more than 2 sequential applications of Altipro or any Group 11 containing fungicide before rotating with a fungicide from a different Group.
APROACH	D,G,L,U	6-12 fl oz	14,0	–	PHI 14 days for seed, 0 days for vine and hay. Apply prior to disease development, continue on 7-14 day interval. 8-12 fl oz/A for white mold. Notes 1,2.
APROVIA TOP	D,G,L,U	10.5-11 fl oz	14	–	For control of diseases in dried shelled beans only. No more than 2 applications on a 7-day interval. All other applications must be applied no closer than a 14-day interval. No more than 22 fl oz/A/year. See label for annual a.i. restrictions.
BADGE SC or BADGE X2	D,S	0.5-2 pt or 0.5-2 lb	0	NR	For protective sprays make first application when plants are 6" high. Higher rates when disease pressure is high. Badge X2 is OMRI listed.
BIO-TAM 2.0	D,S,G,L,U	2.5-5 lb	–	–	Can be applied in-furrow (1.5-3 oz/1000 row') and banded (2.5-3 lb/A). Broadcast apply at sowing, restart of vegetative growth and before the infection risk period. Note 2.
BRAVO WEATHER STIK/ ***PRAIZ*** or BRAVO ULTREX	D,S,G,L,U	1.375-2 pt or 1.25-1.8 lb	7, 14	NO	Use up to 3 pt/A, 3.6 lb/A, or 1.25-2.7 pt/A for snap beans. Use sufficient water to obtain coverage. Repeat at 7-10 day intervals. PHI 7 days for snaps. Notes 1, 2.
CANNONBALL WG	D,S,G,U	7 oz	7	–	Begin prior to onset of disease development and repeat at 7 days. For white mold, apply the first time at 10-20% bloom. Maximum 2 sequential and 28 oz/A total. Notes 1, 2.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG	D,S	0.67-2 lb or 0.66-2 pt or 1.0-1.5 lb	–	–	Begin when plants are 6" high; repeat on 7- to 14-day intervals depending on local conditions. Max. 2.0 lb or 2.0 pt or 1.5 lb/A/application. Max. 12.6 lb or 13.0 pt or 9.48 lb/A/year.
CHAMPION++	D,S	0.5-1.25	0	NR	Max. 15.8 lb/A/year. Protective sprays when plants are 6"; repeat at 7- to 14-day intervals.
CONTANS WG	D,S,G,L,U	1-4 lb	0	–	Apply prior to planting, at planting, or after crop emergence. Incorporate into soil to 2". Make 2 applications, but no more than 8, for maximum efficacy. Note 2.
CUPROFIX ULTRA 40 DISPERSS	D	0.75-2 lb	–	–	Use high rates when conditions favor disease development. For protective sprays, make first application when plants are 6 inches high and repeat on a 7-14 day schedule depending upon environmental conditions. Notes 1, 2.
DELARO 325 SC	G,L	12 fl oz	30	7	Begin applications preventively and continue on a 10- to 14-day schedule. No more than 2 applications/year.
ENDURA	D,S,G,L,U	8-11 oz	21, 7	–	Use 8-11 oz/A for dried and succulent beans and 6 oz/A for chick pea and lentil. Maximum of 2 applications/season. PHI 7 days for succulent beans. Apply at the beginning of flowering or prior to onset of disease. NIS at 0.25% v/v may improve performance. Notes 1, 2.

See notes and footnotes at end of table.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
			FOLIAR *(continued)*		
ETHOS XB ‡	D,G,L,U	2.1-8.5 fl oz	14	–	Foliar: Suppression of white mold, gray mold, powdery mildew, rusts. Max. 0.3 lb bifenthrin a.i./A/season dry beans, 0.2 lb bifenthrin a.i./A/season succulent beans, including all application methods. Foliar: Min. application interval 7 days dry beans, 3 days succculent beans. Product also contains insecticide; see Bean Insects.
EVERLON/ PRIAXOR	D,S,G,L,U	4-8 fl oz	7, 21	14	Apply prior to when conditions favor disease development and continue on 7-14 day schedule. Use higher rate and shorter interval when disease pressure is high. Maximum 16 fl oz/A/season. Maximum 2 applications before rotating to another mode of action. Apply 6-8 fl oz/A for suppression of white mold. PHI for snap beans is 7 days. Do not use with EC or solvent-based products, COC, MSO, OS, MSO/OS, or NIS.
FONTELIS	D,S	14-30 fl oz	0	–	Begin applications prior to disease development and continue on a 7-14 day schedule. Maximum 2 sequential applications before switching to a different mode of action. Maximum 72 fl oz/A/year. For control of white mold, make a preventative application at beginning bloom and follow with a 2nd application 7-10 days later. Apply at 1.2-1.6 fl oz/1000' row at plant, in-furrow or seed transplant for control of rhizoctonia.
FORUM	D	6 fl oz	–	–	Lima bean, succulent seed only. Apply as a preventative spray.
HEADLINE SC	D,S,G,L,U	6-9 fl oz	7, 21	14	Use on Phaseolus, Vigna, and Lupinus spp., and chickpea. Apply at the beginning of flowering or onset of diseases. Maximum of 2 applications per season. NIS at 0.25% v/v may improve performance. PHI 7 days snaps. Notes 1, 2.
INSPIRE SUPER	D,G	16-20 fl oz	14	–	Use sufficient water volume for thorough coverage. For dry bean: Minimum 15 GPA by ground, 10 GPA by air. For garbanzo/chickpea: Minimum 15 GPA by ground, 5 GPA by air. For chemigation of either dry bean or garbanzo/chickpea, apply in 0.1-0.25"/A.
KOCIDE 3000	D	0.5-1.25 lb	–	–	Use higher rate for severe disease. For protective spray, apply when plants are 6" tall and repeat on a 7-14 day schedule. Notes 1, 2.
LUNA EXPERIENCE	D,S,G,L,U	8.0 to 12.0 fl oz	14	14	Apply at the critical timings for disease control. Continue as needed on a 10- to 14-day interval. Use higher rates when disease pressure is severe. Follow resistance management guideline on the label. Ground Application: apply in sufficient water to ensure thorough coverage of foliage. Aerial Application: 2 GPA of water.
LUNA FLEX	D,S,G,L,U	11.0 to 13.6 fl oz	No	No	Apply at the critical timings for disease control. Continue as needed on a 10- to 14-day interval. Use higher rates when disease pressure is severe. Follow resistance management guideline on the label. Ground Application: apply in sufficient water to ensure thorough coverage of foliage. Aerial Application: 2 GPA of water. Do not allow livestock to graze forage or hay and do not harvest forage or hay for food or feed.
MICROTHIOL DISPERSS	D	3-10 lb	–	–	80% wettable sulfur. Apply at early leaf stage and repeat at 10-14 day intervals. Notes 1, 2.
MIRAVIS NEO	D,G,U	13.7 fl oz	14	see comment	Max. 27.4 fl oz/A/year. Max. 2 applications at max. rate/year. 14-day min. application interval. An adjuvant may be used. For white mold suppression, first application should be at R1 to R2; if second application needed, apply 14 days later at R3. Apply by ground, air, or sprinkler irrigation. Do not make >2 applications of this or other Group 7, 3, 11 fungicides before rotating to a different MOA. G/F: Do not use on cowpea intended for livestock feeding.
MIRAVIS TOP	D,G,L,U	9-14 fl oz	14		Max. 56 fl oz/A/year. Max. 4 applications at max. rate/year. 14-day min. application interval. An adjuvant may be used. For white mold suppression, first application should be at R1 to R2; if second application needed, apply 14 days later at R3. Apply by ground (min. 15 GPA), air (min. 10 GPA), or sprinkler irrigation. Do not make >2 applications of this or other Group 3, 7 fungicides before rotating to a different MOA. G/F: Do not feed or harvest cowpea forage or hay.
OMEGA 500F	D,S,U	0.5-0.85 pt	14, 30	–	Make first application at 10-30% bloom. A second may be made 7-10 days later. PHI 14 days edible podded and succulent beans and 30 days for dry beans. Note 2.
ONSET 3.6L	D	4-6 fl oz	14	–	May be used on fresh and dry beans, except succulent. PHI 14 days fresh beans.
PHOSTROL	D,S,G,L,U	2-5 fl oz	0	–	Cottony leak (Pythium): Apply 4-5 pt/A by air or ground in min. 10 GPA water at full bloom, then 10-14 days later. Downy Mildew edible-podded, succulent, dry bean only): Apply 4 pt/A at 7-day intervals. Downy mildew L: Apply 2-4 pt/A in diluted solution to thoroughly wet foliage with normal irrigation schedule, at 2- to 3-week intervals.
PREVISTO	D	1-2 qt	0	NR	For protective sprays make first application when plants are 6" high. Higher rates when disease pressure is high.

See notes and footnotes at end of table.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
FOLIAR *(continued)*					
PROLINE 480 SC	D,G,L,U	5.7 fl oz	7	–	Apply by ground (minimum of 20 GPA), aerial or chemigation at early flowering or the first sign of disease. Use the higher use rate when conditions are favorable for severe disease pressure and/or when growing less disease resistant varieties. Labeled for use in grain, sweet, white and white sweet lupins, field, kidney, dry lima, navy, pinto and tepary beans, adzuki bean, blackeyed pea, catjang, cowpea, crowder pea, moth bean, mung bean, rice bean, southern pea and urd bean, dry broad bean, guar, ablab bean, field pea and pigeon pea. A maximum of 17.1 fl oz (0.534 lbs prothioconazole from all sources) may be applied per acre per year.
PROPULSE	D,G,L,U	8-13.6 fl oz	14	NO	Begin fungicide applications preventatively and repeat on 7-14 day interval for white mold and 10-14 day interval for ascochyta blight and mycosphaerella blight. Maximum 34.2 fl oz/A/season. Note 2.
PROVYSOL	D,G,L,U	2.5-5 fl oz	21	21	Max. 5 fl oz/A/application. Max. 3 applications/year at 5 fl oz/A, or max. 6 applications/year at 2.5 fl oz/A. Max. 15 fl oz/A/year. 7- to 14-day min. application interval.
QUADRIS OPTI	D,G,U	1.6-2.4 fl oz	14	–	Do not make more than 2 sequential foliar applications of Quadris Opti or other QoI fungicide before alternating to fungicide with alternate MOA. Do not make more than 4 applications/A/year. Do not mix with COC, MSO or silicone adjuvant. Notes 1, 2.
QUADRIS TOP	G	8-14 fl oz	14	–	Begin prior to disease onset when conditions are conducive for disease and continue on a 14-day schedule. Maximum 2 sequential and 56 fl oz/A total. Application with high rates of silicone- or oil-containing adjuvants may cause crop injury under high temperatures. Do not exceed 0.125% v/v. Notes 1, 2.
QUADRIS TOP	D,L	12-14 fl oz	14	NR,NO	For dried seed only. Apply when conditions are conducive for disease and repeat on 14-day interval. Maximum 2 sequential applications before alternating to fungicide with different mode of action. Do not apply >56 fl oz/A/crop/year. Do not feed or harvest cowpea forage and hay.
QUILT XCEL/ AFRAME PLUS	D, S, G, U	10.5-14 fl oz	7, 14	–	Apply when conditions are conducive for disease and repeat on 7-14 day interval. Maximum 3 applications. May cause crinkled or greener leaves on some varieties. PHI 7 days for succulent and 14 days for dry beans.
RALLY 40WSP	S	4-5 oz	0	–	Snap beans only. 2ee (exp. date not given) for aerial application in AR, IL, IN, IA, MI, MN, MO, OR, TX, WA, and WI. Notes 1, 2.
REVUS	S	8 fl oz	1	NL	Begin applications prior to disease development and continue on a 7-10 day interval. Max. 2 sequential applications before switching to a different mode of action. Maximum 32 fl oz/A/year.
REVYLOK	D, S, G, U	4.5-6.5 fl oz	21	21	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. 7-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
RIDOMIL GOLD COPPER	S	1 pack (5 lb.)/2.5 A	3	–	Begin applications at onset of disease and continue on 7-day interval. Maximum 4 applications/season.
ROVRAL 4F	D,S	1.5-2 pt	–	14, 45	Apply as a foliar spray at first bloom to when 10% of the plants have one open bloom and again 5-7 days later or up to peak bloom, if conditions are favorable for disease development. Maximum of two applications/year with the last application made no later than peak bloom. Do not feed snap or succulent bean hay to livestock. PHI 45 days dry bean hay. PHI 14 days forage. Notes 1, 2.
SERENADE ASO	D,S,G,L,U	0.5-4 qt	–	–	Bacillus subtilis is a biological fungicide. Begin applications soon after emergence or transplant and when environmental conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed.
SERENADE OPTI	D,S,G,L	14 - 20 oz	0	0	Bacillus subtilis is a biological fungicide. Begin application when conditions are conducive to disease development. Repeat on 7- to 10-day intervals or as needed. For ground applications ensure thorough coverage of all foliage. 3 GPA minimum carrier volume for aerial application. Ensure use of this product conforms to resistance management strategies, which may include rotating and/or tank-mixing with other products with different modes of action.
STRATEGO YLD/ ***PROTEGAM YLD***	G,L	4-4.8 fl oz	30	7	Max. 2 applications/year at 10- to 14-day interval. Max. 2 sequential applications before switching to different MOA. Apply by ground, sprinkler irrigation or aerial spray.
SWITCH 62.5WG	D,S,G,U	11-14 oz	7	–	Begin applications prior to or at onset of disease and repeat on 7-day intervals. For white mold, make the first application at 10-20% bloom. After 2 applications, rotate to another mode of action. Notes 1, 2.

See notes and footnotes at end of table.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
FOLIAR *(continued)*					
TETRABAN	D,S,G,L,U	6-15.5 fl oz	0,14	–	PHI 14 days for dry bean and dry pea seeds, 0 days for succulent beans and peas.
TILT	D,S,G,U	4 fl oz	7	–	Apply when conditions are conducive to disease and apply up to 3 times on 7-14 day interval. PHI 7 days is for succulent beans only.
TOPSIN 4.5 FL/T-METHYL 4.5 F or TOPSIN M WSB/ T-METHYL 70 WSB	D,S,G,U	20-40 fl oz or 1-2 lb	14, 28	–	Single application: apply 30-40 fl oz/A or 1.5-2 lb/A at 100% bloom (every plant has at least one open bloom). Sequential applications: apply 20-30 fl oz/A or 1-1.5 lb/A at 10-30% bloom (10-30% of the plants have at least one open bloom) and a second application 4 to 7 days later. PHI 28 days for dry and 14 days for succulent. Notes 1, 2.
ULTRA FLOURISH	D,S,G,U	see comment	3	–	Max. 2 pt/A/crop for soil applications. Max. 1.6 pt/A/crop for foliar applications. For damping-off, root rot (Pythium spp.) in succulent or dried legume vegetables (see label for complete list): 1-2 pt/A) as PPI (broadcast or band) or surface application (broadcast or band). For downy mildew (Phytophthora) in succulent shelled beans (see label for complete list): 0.25-0.4 pt/A foliar application (ground or air); apply at 14-day intervals.
VELTYMA	D,S,G,U	7-10 fl oz	21	21	Max. 10 fl oz/A/application. Max 2 applications/A/year. Max. 20 fl oz/A/year. 7- to 14-day min. application interval. 8-10 fl oz/A for downy mildew suppression.
ZORINA	D,S,G,L,U	18.5 - 20.0 fl oz			Apply prior to disease development. The minimum retreatment interval is 7 days. Maximum of 20 fl ozs /A/Application. Maximum 3 applications at 20 fl ozs/A/year, 60 fl ozs/A/year. Maximum of 2 sequential applications before alternating to a labeled non-Group 3 or group 7 fungicide. Do not feed pea and bean commodities to livestock. Notes 1,2.

PHI – preharvest interval days. G/F – grazing and feeding interval days. NO – do not graze or feed.

* D – dry/field beans (Phaseolus, Vigna spp.: adzuki, kidney, pinto, navy, white, pink, lima, and small red), S – snap beans (snaps, succulents), G – garbanzo/chickpea, L – lentil, U- lupine (phaseolus spp.: grain, white, sweet and white sweet lupine).

NOTE 1: May be applied by air.

NOTE 2: May be applied by chemigation.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

CANOLA HERBICIDE APPLICATION RATES

PREPLANT OR PREEMERGENCE		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC	C	**All soil textures:** Up to 2 fl oz + 2 pt NIS or 0.5 gal HSOC-COC or HSOC-MSO*/100 gal			PP or PRE up to 1 day after planting. Apply to weeds <4" tall. Burndown.
CLEANSE	C,M	**All soil textures:** 4-6 fl oz + 0.5 gal HSOC-COC or HSOC-MSO*/100 gal			Apply prior to canola bolting (or injury may occur) to actively growing grass. Maximum 6 fl oz/A/season. 70 day PHI. May be tank mixed with Liberty 280 SL/ Total SL.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	C	**All soil textures:** Up to 2 qt or 1.5 pt + 8.5-17 lb AMS/100 gal or WC+NIS as needed*			For use with Roundup Ready canola. PP or PRE before crop emergence. See label for perennial rates.
ELEVORE	C	**All soil textures:** 1 fl oz			PP burndown to actively growing weeds up to 14 days before planting. Use with MSO.
LIBERTY ULTRA or LIBERTY 280 SL or ***TOTAL/TOTAL SL*** or ***TOTAL 2.3***	C	**All soil textures:** 19-29 fl oz 32-43 fl oz or 29-43 fl oz or 29-36 fl oz			Burndown, PP or PRE at higher rates before crop emergence for non-LibertyLink and LibertyLink canola. Do not make POST applications if Total or Total 2.3 is used for burndown. Maximum 58 fl oz/A/sesason of Liberty Ultra; 87 fl oz/A/ season Liberty 280 SL, 72 fl oz/A/season Total, 43 fl oz/A/season Total SL (36 fl oz/A season in CA) and 36 fl oz/A/season Total 2.3. Add 1.5-3 lb/A AMS. Warm temperatures, high humidity, and bright sunlight improve the performance. Products containing Glufosinate require sunlight for activity. For best results, make applications between sunrise and 2 hours before sunset. Apply in at least 15 GPA of water with 80° or 110° nozzles using 30-60 PSI or greater depending on nozzle used. Prior to applications of Liberty Ultra, refer to section 12.0 of the product label titled Endagered and threatened species protections requirements. You must follow all directions and restrictions contained in any applicable ESA bulletins for the area where you are applying Liberty Ultra.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	C,CR,M,R	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums			For use only on Roundup Ready (RR) or TruFlex Roundup Ready (TRR - Roundup brands only) canola; check labels. For RR spring and winter canola for all PP, at-plant or PRE applications before crop emergence; use when weeds have emerged prior to application; rates vary with weed species present and size of weeds being sprayed; perennial weeds may not be at the proper stage for complete control; apply in 10-40 GPA. For POST applications, see label. For TRR spring canola for all PP, at-plant and PRE applications before crop emergence and for POST (see label). For non-RR C, CR, M, R for all PP, at-plant and PRE applications before crop emergence.
RT 3	C,CR,M,R	**All soil textures:** Up to 44 fl oz + 8.5-17 lb AMS/100 gal or WC+NIS*			PP or PRE but before crop emergence. For use in CO, ID, MN, MT, NE, NV, NM, ND, OK, OR, SD, TX, UT, WA, WY and in certain counties of KS, NE, NM, OK, TX.
SONALAN HFP or SONALAN 10G	C,CR,R	1.5 pt or 5.5 lb	2 pt or 7.5 lb	2.5 pt or 9.5 lb	PPI in spring or fall. Thoroughly mix into top 2-3 inches of soil. Controls ALS resistant and dicamba tolerant kochia biotypes.
TOTAL/TOTAL 2.3/TOTAL SL	SEE LIBERTY 280 SL				
TRUST/TREFLAN HFP or TREFLAN TR-10	C,CR,M,R	1 pt or 5 lb	1.5 pt or 7.5 lb	2 pt or 10 lb	PPI in spring or fall. Follow recommended procedures for incorporation and application. Set equipment to incorporate to a depth of 3-4" with equipment specified by the label. Use 7.5 lb/A TR-10 or 1.5 pt/A Trust for mustard seed on fine soils.
VIDA	C,CR,M,R	**All soil textures:** 0.5-2 fl oz + 2 pt NIS or 0.5 gal HSOC-COC or HSOC-MSO*/100 gal			Apply no later than 1 day before planting.
ASSURE II	C,CR	**All soil textures:** 7-10 fl oz + 0.5 gal HSOC-COC*/100 gal			See label for recommendation on rates required and weed sizes for specific weeds. Apply to actively growing grass weeds. 60 day PHI.
BEYOND XTRA	C	**All soil textures:** 4 fl oz + 1 qt NIS/100 gal + 2.5% UAN/AMS*			Use only on Clearfield (IMI tolerant) canola. Apply to canola from the cotyledon stage up to prior to the bloom stage when the majority of weeds are 1-3" in height. Maximum rate is 4 oz/A per season. PHI 60 days.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	C	**All soil textures:** 16-24 fl oz or up to 12-18 fl oz + 8.5-17 lb AMS/100 gal + WC+NIS as needed.*			For Roundup Ready canola from emergence to 6-leaf. Use 16-32 fl oz/A or 12-24 fl oz/A. For sequential, use 32 fl oz/A or 24 fl oz/A from 1-3 leaf and again ≥10 days but before 6 leaf canola. 2ee (exp. date note given) for Cornerstone 5 Plus for RR spring canola: 12-18 fl oz/A for up to 6-leaf, 12 fl oz/A from 1-3 leaf and again at ≥ 10 days but before 6-leaf canola. See label for crop injury potential at higher rates. PHI 60 days. See labels for state restrictions. Maximum use rates and rates for growth stages vary by specific label.

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Fine**	**Comments/Restrictions**
LIBERTY ULTRA or LIBERTY 280 SL or ***TOTAL/TOTAL SL*** or ***TOTAL 2.3***	C	**All soil textures:** 15-19 fl oz or 22-29 fl oz or 22-29 fl oz or 22 fl oz			POST applications allowed on LibertyLink canola from cotyledon to early bolt stage. Do not make POST applications if Total or Total 2.3 was used for burndown. Maximum 58 fl oz/A/season of Liberty Ultra if a burndown application was made and 39 fl oz/A/season for post emerge applications; 87 fl oz/A/season Liberty 280 SL, 72 fl oz/A/season Total, 43 fl oz/A/season Total SL (36 fl oz/A season in CA) and 36 fl oz/A/season Total 2.3. Add 1.5-3 lb/A AMS. Minimum 7 day retreatment interval between post emerge applications. Liberty Ultra and Liberty 280 SL pre harvest interval is 65 days.
PANOFLEX	C,R	**All soil textures:** 0.3-0.6 oz			Burndown treatment when weeds have emerged and actively growing. Apply to crop stubble or fallow treatment. PP apply 60 days or more before planting. Include NIS, HSOC-COC or HSOC-MSO with UAN/AMS*.
POAST	C,CR,R	**All soil textures:** 0.5-2.5 pt + 1 pt HSOC-COC or HSOC-MSO*			Apply to actively growing grasses. Rates vary with grass species. See label for recommendations and restrictions. Apply when grass is 2-4" tall. Volunteer corn can be controlled at 6-18" tall. Apply in 5-20 GPA of water at 40-60 psi. Flat fan or hollow cone nozzles are required. 60 day PHI.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	C	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal or WC+NIS*			For use only on Roundup Ready (RR) or TruFlex Roundup Ready (TRR - Roundup products only) canola. For RR spring canola: Apply single application from emergence to 6-leaf; for sequential, apply at 1-3 leaf and no later than 6-leaf canola and ≥10 days apart. Check labels for max. in-crop applications/A. 60 day PHI; see label for hybrid-seed production instructions. For RR winter canola: Apply from emergence to canopy closure in fall and prior to bolting in spring; see labels for fall rates to ≥2-leaf canola and again in spring before bolting and ≥60 days apart. 60 day PHI for grain, 0 day for open grazing. For TRR spring canola: Check labels for max. in-crop applications from emergence through harvest, or max. in-crop applications from emergence through 6-leaf. See label for hybrid-seed production instructions.
SECTION THREE	C,M	**All soil textures:** 2.67-5.33 fl oz			Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS, or 8.5-17 lb/100 gallons of AMS.* Do not apply after crop has begun bolting.
SELECT MAX	C,M	**All soil textures:** 6-12 fl oz + 1 qt NIS/100 gal			Do not apply after canola has begun bolting. PHI 70 days. Use 6 fl oz when mixing with Liberty 280 SL/Total SL for LibertyLink canola.
STINGER/STINGER HL	C,CR,R	**All soil textures:** 1/4-1/2 pt or 0.15-0.3 pt			Apply to crop in the 2-6 leaf stage. Apply by ground in 10 to 20 gallons total spray volume per acre or min. of 5 gallons per acre by air. 50 day PHI.
TARGA	C,CR	**All soil textures:** 4-18 fl oz + 0.5 gal HSOC-COC*/100 gal			See label for recommendation on rates required and weed sizes for specific weeds. Apply to actively growing grass. PHI 60 days.
PREHARVEST					
REGLONE/DIQUAT 2L	C	**All soil textures:** 1.5-2 pt			Desiccant. Apply in 5 GPA by ground or 15 GPA by air. Harvest no later than 10 days after application. PHI 7 days.
ROUNDUP POWERMAX; POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	C,CR,M	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal or WC+NIS*			Do not make preharvest application if it will exceed the labeled max. application rate for all PRE and selective equipment applications. All min. 7 days until harvest or feeding to livestock.
SHARPEN	C,CR,M,R	**All soil textures:** 1-2 fl oz			Spray over top by ground or air at physiological maturity, when seeds in middle of pods have started to turn in color. Allow up to 10 days for optimum desiccation effect. Max. 2 fl oz/A for desiccation uses, which do not count toward annual per acre maximums for other uses. Do not use on crops grown for seed production. PHI 3 days.

[1] C – canola, CR – crambe, M – mustard seed, R – rape seed.
[2] Coarse – Sand,loamy sand,sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.
O.M. – Soils with low organic matter - use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

CANOLA LABELED INSECTICIDES

INSECTICIDE	LABELED CROP***				PHI FOR CANOLA	PHI FOR GRAZING/FEEDING	RATE PER ACRE	INSECT				COMMENTS AND RESTRICTIONS
	CANOLA (C)	CRAMBE (CR)	MUSTARD (M)	RAPE SEED (R)				APHID	ARMY CUTWORM	DIAMONDBACK MOTH**	FLEA BEETLE	
BESIEGE ‡	C				21	–	5-10 fl oz	●	●	●	●	Max. 28 fl oz/A/year. 5-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. Max. 4 applications/A/crop. If using adjuvant, only NIS.
CARBINE 50WG	C	CR	M	R	7	–	2.8 oz	●				Apply when insects first appear. Max 2 applications before rotating to different MOA. Max. 2.8 oz/A/ application. Max 8.4 oz./A/year. Max 3 applications/ year. Min. 7 day application interval.
CORAGEN	C	CR	M	R	1	–	3.5-7.5 fl oz			●		Max. 15.4 fl oz/A/calendar year. 5-day min. application interval. Min. 10 GPA by ground, 5 GPA by air. Max. 4 applications/A/calendar year.
DELTA GOLD ‡	C	CR		R	7	–	0.8 fl oz			●	●	Min. 5 GPA by ground, 2 GPA by air. Max. 1.5 fl oz/A/ growing season. 7-day min. application interval.
ETHOS ELITE LFR ‡	C	CR		R	–	–	6.83 fl oz	●	●			At-plant: Appy as 5-7" band over open furrow (T-band), or in-furrow with seed. Max. 0.08 lb bifenthrin/A/year including all application timings and methods. Product also contains fungicide; see label for list of suppressed diseases.
GRIZZLY TOO ‡	C						0.96-1.92 fl oz		●	●	●	Max. 5.76 fl oz/A/year. Apply by ground in sufficient water to obtain full coverage; min. 2 GPA by air.
							1.92 fl oz	●				
HERO ‡	C	CR		R	35	–	2.6-5.5 oz		●		●	Max. 5.5 oz/A/application. Max. 11 oz/A/season. 14-day min. application interval. Min. 10 GPA by ground, 2 GPA by air.
							4-5.5 oz	●		●		
LAMBDA-CY AG ‡	C				7	–	1.92-3.84 fl oz		●	●	●	Max. 0.72 pt/A/year. Apply by ground in sufficient water to obtain full coverage; min. 2 GPA by air.
MUSTANG MAXX ‡	C	CR	M	R	7	–	4 fl oz	●	●	●	●	Max. 24 fl oz/A/season. 7-day min. application interval.
RIDGEBACK	C	CR	M	R	35	-	4.5-5.5 fl oz	●	●	●	●	Treat in accordance with local economic thresholds. Use higher rate for heavy pest populations. 14-day min. application interval. Max. 2 applications/year. Max. 11.0 fl oz/A/year. Do not apply between 3 days prior to bloom and until after petal fall.
TRANSFORM WG	C	CR	M	R	14	14	0.5-0.75 oz	●				Max. 1.5 oz/A/year. Max. 2 applications/year. 14-day min. application interval. Min. 5-10 GPA by ground, 3 GPA by air. Do not apply until after petal fall. Do not apply at any time between 3 days prior to bloom until after petal fall.
TUNDRA EC ‡/BRIGADE 2EC ‡/ ***BIFEN 2 AG GOLD*** ‡	C	CR		R	35	–	2.1-2.6 fl oz	●	●	●	●	Max. 5.12 fl oz/A/season. 14-day min. application interval. Min. 10 GPA by ground, 2 GPA by air.

INSECTICIDE	LABELED CROP***				PHI FOR CANOLA	PHI FOR GRAZING/FEEDING	RATE PER ACRE	INSECT				COMMENTS AND RESTRICTIONS
	CANOLA (C)	CRAMBE (CR)	MUSTARD (M)	RAPE SEED (R)				APHID	ARMY CUTWORM	DIAMONDBACK MOTH**	FLEA BEETLE	
VANTACOR	C	CR	M	R	1	–	1.2-2.5 fl oz			●		Max. 5.1 fl oz/A/calendar year. 5-day min. application interval. Min. 10 GPA by ground, 5 GPA by air. Max. 4 applications/A/calendar year.
WARRIOR II ‡	C				7	–	0.96-1.92 fl oz		●	●	●	Max. 5.76 fl oz/A/year. Apply by ground in sufficient water to obtain full coverage; min. 2 GPA by air.
							1.92 fl oz	●				

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions
** Pyrethroid resistance in this insect is common.
*** C – canola, CR – crambe, M – mustard seed, R – rape seed.
PHI - preharvest interval.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

BEE ALERT

See Insecticide Classification in the Technical Section for information on insecticide toxicity to bees.

CANOLA INSECT TREATMENT GUIDELINES



DIAMONDBACK MOTH: ET: Seedling through early flowering – 1-2 larva per plant or 10-15 larva per square foot. Pod stage 1-3 larva per plant or 20-30 larva square foot.



FLEA BEETLE: ET: Scout daily and treat if injury approaching 25% defoliation of cotyledons and true leaves. Feeding and movement increases with warm, sunny weather.

CANOLA LABELED FUNGICIDES

FUNGICIDE	LABELED CROP				DISEASE*		
	CANOLA (C)	CRAMBE (CR)	MUSTARD (M)	RAPE SEED (R)	ALTERNARIA BLACK SPOT	BLACK LEG	WHITE MOLD
APROACH	C		M		●	●	●
CONTANS WG	C	CR	M	R			●
ELATUS	C	CR	M	R	●	●	
ENDURA	C						●
EVERLON/PRIAXOR	C	CR		R	●	●	●S
HEADLINE SC				R	●	●	
MIRAVIS NEO	C	CR	M	R	●	●	●S
PROLINE 480 SC	C	CR	M	R		●	●
PROPULSE	C	CR		R			
PROVYSOL	C	CR	M	R	●	●	
QUASH	C						●
SERENADE ASO	C	CR	M	R			●S
TETRABAN	C	CR	M	R	●	●	
TILT	C	CR	M	R	●	●	●
TOPSIN M WSB/T-METHYL 70 WSB	C	CR					●
VELTYMA	C	CR	M	R	●	●	
VIATUDE	C			R	●	●	●
ZORINA	C	CR	M	R	●	●	●

* Many other diseases may be controlled, see label.
● - control; ●S - suppression
See Fungicide Resistance Management in the Technical Information section.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
APROACH	C,M	6-12 fl oz	28	–	Apply prior to disease development, continue on 7-14 day interval. Use 8-12 fl oz/A for white mold at 20-50% bloom. Max. 24 fl oz/A/year. Max. 2 applications/year. Notes 1,2.
CONTANS WG	C,CR,M,R	1-4 lb	0	NR	Apply prior to planting, at planting, or after crop emergence. Incorporate into soil to 2". Make 2 applications, but no more than 8, for maximum efficacy. Note 2.
ELATUS	C,CR,M,R	7.3 lb	30	NR	Apply by ground, air (except in NY) or chemigation. For black leg (Phoma) apply during rosette between 2nd true leaf and bolting. For Alternaria, apply at end of flowering/early pod set. For all other foliar diseases, appy at first sign of disease. No more than one pod set. For all other foliar pod set. For all other foliar diseases, appy at first sign of disease. No more than one diseases, appy at first sign of disease. No more than one application per year. See label for annual a.i. maximums.
ENDURA	C	5-6 oz	21	Yes	Controls sclerotinia stem rot. Begin applications at 20-50% flowering or prior to disease onset. Do not apply more than twice per season. NIS at 0.25% v/v may improve performance. Notes 1, 2.
EVERLON/ PRIAXOR	C,CR,R	4-8 fl oz	21	–	For control of black leg, apply at 2-4 leaf stage. For optimal control of blackspot, apply at early pod development. For suppression of white mold, apply at 20-50% flowering prior to onset of disease. Maximum 16 fl oz/A/season. Maximum 2 applications before rotating to another mode of action.
HEADLINE SC	R	6-12 fl oz	21	NR	For blackleg, apply at 2- to 4-leaf stage. For blackspot, apply at early pod development. No more than 2 sequential applications before alternating to non-Group 11 fungicide with different MOA.
MIRAVIS NEO	C,CR,M,R	13.7 fl oz	30	–	Max. 13.7 fl oz/A/application. Max. 13.7 fl oz/A/year. Max. 1 application/year. Do not make >2 applications of this or other Group 7, 3, 11 fungicides before rotating to a fungicide in different groups.
PROLINE 480 SC	C,CR,M,R	4.3-5.7 fl oz	36	NO	Controls white mold (sclerotinia stem rot). Begin applications at 25-50% bloom. 2ee for black leg control (exp. date not given) in KS, MN, MT, ND, OK and SD. Maximum of 2 applications/season, applied at 14 day intervals. Note 1.
PROPULSE	C,CR,R	9.0 fl oz	36	NR	Label listed as control of Sclerotinia stem rot, Powdery mildew, Alternaria blackspot. Apply by ground, air, or chemigation application equipment. Recommended carrier application rate 10 to 20 GPA by ground or 2 to 5 GPA/A by air. Apply when the crop is in 20 – 50% bloom stage, preferably prior to petals beginning to fall. Continue as needed on a 14-day interval as long as the maximum annual rate is not exceeded. Refer to the label for additional rates. Maximum annual application rate: 18.0 fl oz/A (0.234 lb/acre fluopyram and 0.234 lb/acre prothioconazole) from all sources, per year.
PROVYSOL	C,CR,M,R	2.5-5 fl oz	21	21	Max. 5 fl oz/A/application. Max. 2 applications/year at 5 fl oz/A, or max. 4 applications/year at 2.5 fl oz/A. Max. 10 fl oz/A/year. 14-day min. application interval. Blackleg: Apply at 2- to 4-leaf stage. Blackspot: Apply at early pod development.
QUASH	C	2-4 oz	35	NO	Controls white mold (Sclerotinia stem rot). Begin applications at 20-50% bloom. NIS at 0.25% v/v may improve performance. Can apply through chemigation.
SERENADE ASO	C,CR,M,R	2-6 qt	–	–	Bacillus subtilis is a biological fungicide. Begin application soon after emergence and when environmental conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed. Use higher rates and shorter application intervals under heavy disease pressure.
TETRABAN	C,CR,M,R	6-15.5 fl oz	30	–	In general, apply by ground, air or irrigation 6-7 fl oz/A at early bud, followed by 14 fl oz/A about 45 days before harvest (a 3rd application of 7 fl oz may be made 30 days before harvest). Canola: For blackleg, apply at 2- to 4-leaf stage; For Alternaria and Sclerotinia apply harvest). Canola: For blackleg, apply at 2- to 4-leaf stage; For Alternaria and Sclerotinia apply at 10-25% flowering (3-7 days after first flower); For Alternaria alone can be applied at pod stage (95% petal fall).
TILT	C,CR,M,R	2.6-4 fl oz	30	NR	For Alternaria, make application at the end of flowering/early pod set. Can apply through chemigation. For black leg control apply during rosette stage between 2nd true leaf and bolting. For alternaria apply at the end of flowering/early pod set. Note 1,2.
TOPSIN M WSB/ T-METHYL 70 WSB	C,CR	1-2 lb	40	–	Control of white mold, sclerotinia stem rot. For MN, ND, and MT (East of I-15). Apply 1-2 lb/A once at 20-50% flowering or 1 lb/A twice at 20-30% flowering and at 40 to 50% flowering. Maximum of 2 lb per season. Thorough coverage of flowers is essential. Notes 1, 2.

See notes and footnotes at end of table.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
VELTYMA	C,CR,M,R	7-10 fl oz	21	21	Max. 10 fl oz/A/application. Max 2 applications/A/year. Max. 20 fl oz/A/year. 14-day min. application interval. Blackleg: Apply at 2- to 6-leaf stage. Blackspot: Apply at early pod development.
VIATUDE	C,R	8 - 16 fl oz	36	NL	Check the label for labeled states. Apply prior to disease development and continue on 10-14 day interval. Use sufficient spray volume for thorough coverage. For White Mold, begin applications at 20-50% bloom, For White Mold and other labeled diseases begin applications prior to the onset of disease on a 10- to 14-day interval. Use the higher rate and shorter application interval for heavy disease pressure and when conditions are favorable to disease development. Ground, aerial or sprinkler irrigation application. Maximum 16 fl oz per application and 48 fl oz/A/year. Use of surfactants and tank mix partners that solubolize the leaf cuticle increase the potential for crop response. 180 day rotational interval for all no labeled crops. Avoid application of more than two consecutive sprays of the same group per season.
ZORINA	C,CR,M,R	15.0-20.0	21	NL	Apply prior to disease development. The minimum retreatment interval is 14 days. Maximum application rate of 20 fl ozs/A/Application, Maximum of 2 applications at 20 fl ozs/A/Year. Maximum of 40 fl ozs/A/Year. Make more then 2 sequential applications of Zorina before alternating to a labeled non-Group 3 or non-Group 7 fungicide. Notes 1 and 2 below.

* C - canola, CR - crambe, M - mustard seed, R - rape seed. PHI – preharvest interval days.
G/F – grazing and feeding interval days.

NOTE 1: May be applied by air.
NOTE 2: May be applied through sprinkler irrigation systems (see label).

COTTON HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	SOIL ACTIVITY	SITE OF ACTION[A]	GRASSES															
			Barnyardgrass	Bluegrass, annual	Berumdagrass	Cheat/Downy brome	Crabgrass	Fall Panicum	Foxtail	Foxtail barley	Goosegrass	Johnsongrass (Seedling)	Johnsongrass (Rhizome)	Little barley	Ryegrass	Signalgrass	Volunteer wheat	Yellow nut sedge
BURNDOWN HERBICIDE																		
AIM EC *(carfentrazone-ethyl)*	N	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
AIM EC + ***2,4-D*** *(carfentrazone-ethyl + 2,4-D)*	N	14,4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
AIM EC + CLARITY *(carfentrazone-ethyl + dicamba)*	Y	14,4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CORNERSTONE 5 PLUS[B] *(glyphosate)*	N	9	**E**	**E**	U	**G**	**E**	**E**	**E**	**E**	**G**	**E**	U	**E**	**G**	**E**	**E**	F
CRUSHER/LEADOFF *(rimsulfuron + thifensulfuron-methyl)*	Y	2,2	**G**	**E**	U	U	**G**	U	**E**	U	U	U	U	U	**G**	F	F	F
ENLIST ONE + GLYPHOSATE, or ENLIST DUO *(2,4-D + glyphosate)*	N	4,9	**G/E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	F/**G**
ENVOKE *(trifloxysulfuron)*	Y	2	P	P	U	P	F	U	P	P	P	P	U	P	P	P	P	**G/E**
FIRSTSHOT SG *(thifensulfuron-methyl + tribenuron-methyl)*	N	2,2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
GRAMOXONE SL 3.0 ‡ *(paraquat)*	N	22	**G**	**E**	U	F	**E**	**E**	F/**G**	**G**	**G**	**E**	P	**E**	F	**E**	F/**G**	P
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH *(glufosinate-ammonium)*	Y	10	**G**	P/F	U	U	F	U	**E**	F	F/**G**	**E**	P	F	P/F	**E**	P	P
SHARPEN *(saflufenacil)*	Y	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
STERLING BLUE *(dicamba)*	Y	4	P	P	N	P	P	P	N	P	P	P	P	P	P	P	P	P
VIDA *(pyraflufen-ethyl)*	N	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
2,4-D LV4; LV6 *(2,4-D)*	Y	4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

[A] Site of Action described in Technical Information section.
[B] May use other glyphosate products at greater or lesser volumes; see individual labels for Roundup PowerMAX 3; WeatherMAX/Honcho K6/Credit Xtreme/Cornerstone Plus.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Section for more information on use restrictions.

BROADLEAVES																								
Bittercress	Broadleaf dock, seed.	Buttercup	Carolina geranium	Chickweed	Cocklebur	Common ragweed	Coreopsis	Dock, curly (seedling)	Hemp sesbania	Henbit	Horse weed	Knotweed	Lambsquarters, common	Morningglory, annual	Palmer amaranth	Pepperweed, Virginia	Pigweeds	Prickly lettuce	Prickly sida	Primrose	Smartweed, Pennsylvania	Spurge	Tropical spiderwort	Velvetleaf	Vetch, hairy	BURNDOWN HERBICIDE (RATE)
F	U	F	F	F	F	P	U	**G**	**E**	F	F	F	**E**	**E**	**E**	F	**E**	**G**	F	F	**G**	**G**	U	**E**	P	AIM EC
G	U	**E**	**G**	**G**	**G**	F	U	**G**	**E**	F	**G**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**G**	**G**	U	**E**	**G**	AIM EC + ***2,4-D***
E	U	**E**	**G**	**E**	**G**	**G**	U	**E**	**E**	**G**	**G**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	**E**	**E**	U	**E**	**G**	AIM EC + CLARITY
E	P	**E**	F	**E**	**G/E**	**E**	**G**	F	F	F	**G**	F	**G**	**E**	**G/E**	**E**	**E**	F	**G/E**	P/F	F	**E**	F/**G**	**G**	P	***CORNERSTONE 5 PLUS***
E	U	U	U	**E**	U	U	U	U	U	**E**	F	U	**E**	U	U	**E**	**E**	U	U	**E**	**E**	U	U	**E**	U	CRUSHER/LEADOFF
E	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	**G**	**E**	**G**	**E**	**G/E**	**E**	**G**	**E**	**G/E**	**E**	**G**	**E**	**G/E**		**G**	**E**	F/**G**	ENLIST ONE + GLYPHOSATE, or ENLIST DUO
U	U	U	U	U	**G**	**G**	U	U	**E**	U	U	U	**G**	**E**	U	U	**G**	U	U	U	F	U	U	F	U	ENVOKE
E	P/F	**E**	U	**G**	U	**E**	U	F/**G**	U	F	P/F	U	U	U	P	**E**	U	F	P	F	F	**E**	U	U	F	FIRSTSHOT SG
E	F	**G**	**G/E**	**E**	P/F	**G**	U	U	P/F	**E**	P/F	P/F	**E**	**G**	U	U	**G**	F	P	F	P/F	**E**	**E**	**G**	**G**	GRAMOXONE SL 3.0 ‡
F	**G**	F	U	**E**	**G/E**	**E**	U	**G**	**G**	**G**	**G**	F	**G**	F/**G**	F/**G**	U	**G**	U	F	**G**	**G**	**E**	P	**G**	U	LIBERTY ULTRA/LIBERTY 280 SL/ ***TOTAL*****/*****TOTAL 2.3*****/*****TOTAL SL***/CHEETAH
G	F	U	**E**	**E**	U	**G**	U	U	U	**E**	**E**	**E**	**E**	U	U	F	**G**	**E**	U	**G**	**E**	U	U	**E**	F	SHARPEN
G	**G/E**	F	**G**	**G**	**E**	**E**	F	**G/E**	U	F	**E**	**G**	F	U	**G**	P	**G**	**G**	**G**	**G/E**	F/**G**	**E**	U	**G/E**	**E**	***STERLING BLUE***
F	U	F	F	F	F	P	U	**G**	**E**	F	F	F	**E**	**E**	**E**	F	**E**	**G**	F	F	**G**	**G**	U	**E**	P	VIDA
E	F	**G**	P/F	F	**E**	**G**	U	U	U	P/F	**G**	P	**G**	**G**	U	**G/E**	**G**	**G**	U	**E**	F	F	U	**G/E**	**E**	***2,4-D LV4; LV6***

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

COTTON HERBICIDE PERFORMANCE RATINGS *continued*

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES									
			Barnyardgrass	Bermudagrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Foxtail	Goosegrass	Johnsongrass, seed.	Johnsongrass, rhiz.	Yellow nutsedge[4]
PREPLANT OR PREPLANT INCORPORATED												
AIM EC + ***STERLING BLUE*/*CLARIFIER***/CLARITY *(carfentrazone + dicamba)*	F/G	14,4	N	N	N	N	N	N	N	N	N	N
FRAMEWORK 3.3 EC or PROWL H2O or ***TRUST***/TREFLAN HFP *(pendimethalin* or *trifluralin)*	G	3	**E**	P	**E**	**E**	**E**	**E**	**E**	**E**	P	P
SHARPEN [burndown ratings] *(saflufenacil)*	E	14	N	N	N	N	N	N	N	N	N	N
TRUST/TREFLAN HFP + COTORAN 4L *(trifluralin + fluometuron)*	G	3,7	**E**	P	**E**	**E**	**E**	**E**	**E**	**E**	P	P
VALOR SX/VALOR EZ/PANTHER SC /TUSCANY SC *(flumioxazin)*	G	14	P	N	P	F	F	F	P	P/F	P	N
VIDA *(pyraflufen-ethyl)*	F/G	14,4	N	N	N	N	N	N	N	N	N	N
PREEMERGENCE												
CAPAROL 4L *(prometryn)*	G	5	**G**	P	F	F	P	P	P	P	P	P
COMMAND 3ME *(clomazone)*	F	13	**G**	P	**E**	**E**	**E**	**E**	**E**	**E**	P	P
COTORAN 4L + MSMA 6 PLUS *(fluometuron)*	G	7	F	P	**G**	**E**	**G**	F/**G**	**G**	F	P	P
CHARGER BASIC/DUAL MAGNUM *(s-metolachlor)*	G	15	**E**	P	**G**	**E**	**G**	**G/E**	**G**	**G**	P	**E**
FRAMEWORK 3.3 EC or PROWL H2O *(pendimethalin)*	G	3	**E**	P	**E**	**E**	**E**	**G**	**E**	**E**	P	P
KARMEX DF *(diuron)*	G	7	F	P	**G**	**G**	**G**	P	**G**	F	P	P
REFLEX/***AGENT 1.88****(fomesafen)*	F/G	14	P/F	N	F	F	P/F	P	P/F	P/F	P	F
STAPLE LX *(pyrithiobac sodium)*	G	2	P	P	P	P	P	P	P	P	P	F
POSTEMERGENCE DIRECTED												
AIM EC *(carfentrazone)*	F/G	14	P	P	P	P	P	N	P	P	P	P
ANTHEM FLEX *(pyroxasulfone + carfentrzone)*	G	14,15	**E**	F	**G**	**E**	**G**	**G**	**G**	**G**	P	P
CAPAROL + MSMA 6 PLUS *(prometryn + msma)*	G	5,17	**G**	P	**E**	**E**	**G**	F/**G**	**E**	**E**	P	F
COBRA *(lactofen)*	F	14	P	P	P	P	P	P	P	P	P	P
COBRA + MSMA 6 PLUS *(lactofen + MSMA)*	F	14,17	**G**	P	**G**	**G**	**G**	F	**G**	**G**	P	F
COTORAN 4L + MSMA 6 PLUS *(fluometuron + MSMA)*	G	7,17	**G**	P	**E**	**E**	**G**	F	F	**G**	F	F
ENVOKE *(trifloxysulfuron)*	G[1]	2	P	P	P	P	P	P	P	P	P	**G/E**
GOAL 2XL + MSMA 6 PLUS *(oxyfluorfen + MSMA)*	F	14,0	**G**	P	**G**	**G**	**G**	**G**	**G**	**G**	P/F	P/F
KARMEX DF + MSMA 6 PLUS *(diuron + MSMA)*	F	5,0	**E**	P	**E**	**E**	**E**	**G**	**E**	**E**	F	F
MSMA 6 PLUS *(MSMA)*	G	0	**G**	P	**G**	**G**	**G**	**G**	P	**G**	P	P
REFLEX/***AGENT 1.88*** *(fomesafen)*	F	14	P/F	N	P/F	P/F	P/F	P	P/F	P/F	P	F
SEQUENCE[3] *(glyphosate + s-metolachlor)*	E	9,15	**G/E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	P
SUPREND *(prometryn + trifloxysulfuron)*	G	5,2	**E**	P	**G**	**G**	F	U	F	**G**	P	**E**
VALOR SX/VALOR EZ /PANTHER SC/TUSCANY SC/CHATEAU EZ + MSMA 6 PLUS *(flumioxazin + MSMA)*	F/G	14,0	**G**	F	**G**	**G**	**G**	F/**G**	**E**	**G**	P	**G**
VIDA *(pyraflufen-ethyl)*	F/G	14	P	P	P	P	P	N	P	P	P	P

[A] Site of Action described in Technical Information section.
[1] Directed, F/G POST.
[2] Best control of 1-2 leaf stage. Poor control of small flower morningglory.
[3] Labeled PP, PRE or POST to Roundup Ready cotton.
[4] Purple is generally more difficult to control.

BROADLEAVES																
Cocklebur	Hemp sesbania	Hophornbean copperleaf	Jimsonweed	Lambsquarters, common	Morningglory, annual	Palmer Amaranth	Pigweed[5]	Purslane	Ragweed, common	Sicklepod	Sida, prickly (teaweed)	Smartweed, Pennsylvania	Spurge	Spurred anoda	Velvetleaf	
PREPLANT OR PREPLANT INCORPORATED																
E	**G/E**	**G/E**	**G/E**	**G/E**	**G/E**	**G**	**G/E**	**G/E**	**G/E**	U	**G/E**	**E**	F/**G**	F/**G**	**G/E**	AIM EC + ***STERLING BLUE*/*CLARIFIER***/ CLARITY
P	P	P	P	**G**	P	F/**G**	**G**	**E**	P	P	P	P	P	P	P	***FRAMEWORK 3.3 EC*** or PROWL H2O or ***TRUST***/TREFLAN HFP
F	P	U	U	**E**	**G**	F	**E**	U	**E**	P	**E**	**G**	U	F	**E**	SHARPEN [burndown ratings]
F	P	**G**	F	**E**	F	**G/E**	**G**	**E**	**E**	P/F	F	F	F	P	P	***TRUST***/TREFLAN HFP + COTORAN 4L
P	P/F	**G**	**G**	**G**	F/**G**	**E**	**E**	**G**	F/**G**	F/**G**	**G**	F	**E**	U	F	VALOR SX/VALOR EZ/PANTHER SC/ TUSCANY SC
E	**G/E**	**G/E**	**G/E**	**G/E**	**G/E**	**G**	**G/E**	**G/E**	**G/E**	U	**G/E**	**E**	F/**G**	F/**G**	**G/E**	VIDA
PREEMERGENCE																
F	P	P	F	F	**G**	F	**G**	**G**	F	F	**G**	P	F	F	P	CAPAROL 4L
F	P	P	**G**	**G**	P	F	F	**E**	**G**	P	**E**	F	F	**G**	**E**	COMMAND 3ME
G	F	**E**	F	**E**	**G**	F	**E**	**E**	**E**	P/F	**G**	F	F	F	P	COTORAN 4L + MSMA 6 PLUS
P	P	P	P	P	P	**G**	**G**	P	P	P	P	P	P	P	P	***CHARGER BASIC***/DUAL MAGNUM
P	P	P	P	**G**	P	**G/E**	**G**	**E**	P	P	P	P	P	P	P	***FRAMEWORK 3.3 EC*** or PROWL H2O
F	P	**E**	F	**E**	**G**	F	**G**	**E**	**G**	F	F	F	F	P	P	KARMEX DF
P	P/F	U	U	**G**	F	**E**	**E**	**G**	**G/E**	P/F	**G**	P	P/F	F	P	REFLEX/***AGENT 1.88***
P	F	P	F	P	F	P	**G**	P	P	P	**G**	**G**	**G**	**G**	**E**	STAPLE LX
POSTEMERGENCE DIRECTED																
G	**G/E**	F/**G**	**G/E**	**G/E**	**E**	**G**	**G/E**	**G/E**	F	P	F	**G/E**	F/**G**	**G**	**G/E**	AIM EC
P	F	F	F	**G**	F	**E**	**E**	F	F	P	**G**	F	F	F	**G**	ANTHEM FLEX
E	P	**E**	**E**	**G**	**G**	**E**	**E**	**G**	**G**	F	**G**	P	F	P	F	CAPAROL + MSMA 6 PLUS
G/E	F	**E**	**G/E**	F	P/F	F	**G**	F	**G**	P/F	**G**	**G**	F	F	F	COBRA
E	F	**E**	**G**	F	F	F	**G**	**E**	**G**	P/**E**	**G**	**G**	**G**	F	F	COBRA + MSMA 6 PLUS
E	P	**E**	**G**	**E**	**G**	**G**	**E**	P	**G**	F	**G**	F	F	F	F	COTORAN 4L + MSMA 6 PLUS
G	**E**	F	F	**G**	**E**[2]	F	**G**	U	**G**	**E**	P	P	P	P	**G**	ENVOKE
G/E	**G**	**G/E**	**G/E**	F	**G**	**G**	**G/E**	**G/E**	**G**	**G**	P	**G**	P	P	P	GOAL 2XL + MSMA 6 PLUS
E	P	**E**	**E**	**E**	**G**	**E**	**E**	**G**	**G**	F	**G**	F	F	P	P	KARMEX DF + MSMA 6 PLUS
E	P	P	P	P	P	P	P	**G**	P	P	P	P	P	P	P	MSMA 6 PLUS
F	**G/E**	**G/E**	**G**	F	**G**	**E**	**E**	**G**	**G**	P	**G/E**	**G**	**G**	P	F	REFLEX/***AGENT 1.88***
G/E	P	F	**G/E**	F	F	**G**	**G/E**	**E**	**G/E**	**G**	F	P	**G**	F	**G**	SEQUENCE[3]
G	**E**	**G/E**	U	U	**G/E**	**G**	F/**G**	U	**G**	**G/E**	F/**G**	**G**	F	U	**G**	SUPREND
E	**G**	**G**	**G**	**G**	**E**	**G**	**E**	**E**	**G**	**E**	**G**	**G/E**	**E**	**E**	**G**	VALOR SX/VALOR EZ /PANTHER SC/ TUSCANY SC/CHATEAU EZ + MSMA 6 PLUS
G	**G/E**	F/**G**	**G/E**	**G/E**	**E**	**G**	**G/E**	**G/E**	F	P	F	**G/E**	F/**G**	**G**	**G/E**	VIDA

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES									
			Barnyardgrass	Bermudagrass	Broadleaf signalgrass	Crabgrass	Fall panicum	Foxtail	Goosegrass	Johnsongrass, seed.	Johnsongrass, rhiz.	Yellow nutsedge
POSTEMERGENCE BROADCAST												
ASSURE II/TARGA *(quizalofop)*	E	1	**G/E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	P
CORNERSTONE 5 PLUS/GLYPHOSATE** *(glyphosate)*	G/E	9	**G/E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	P
ENLIST ONE + GLUFOSINATE** *(2,4-D + glufosinate)*	E	4,10	**G**	F/**G**	U	**G**	**G**	**G**	**G**	**E**	F	F/**G**
ENLIST ONE + GLYPHOSATE, or ENLIST DUO** *(2,4-D + glyphosate)*	E	4,9	**G/E**	**G/E**	U	**E**	**E**	**E**	**E**	**E**	**G**	F/**G**
ENVOKE *(trifloxysulfuron)*	F/G	2	P/F	P	P	F	P	P	P	P	P	**G/E**
FUSILADE DX or FUSION *(fluazifop* or *fluazifop + fenoxaprop)*	E	1,1	**G**[1]	**E**	**G/E**	**G**[1]	**G**[1]	**E**	**E**	**E**	**E**	P
LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH[2] *(glufosinate)*	E	10	**G/E**	F	**G**	**G**	**G**	**G**	**G**	**E**	F	F
POAST *(sethoxydim)*	E	1	**G/E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	P
SECTION THREE/SELECT MAX/***CLEANSE*** *(clethodim)*	E	1	**G/E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	P
STAPLE LX *(pyrithiobac sodium)*	E	2	P	P	P	P	P	P	P	P	P	F

[A] Site of action described in Technical Information section
**May use other glyphosate products at greater or lesser volumes; see individual labels for Roundup PowerMAX 3; WeatherMAX/Honcho K6/Credit Xtreme/Cornerstone Plus.
[1] Fusion provides better control.
[2] Labeled for other timings; ratings are the same. LibertyLink only.
[3] Best control of 1-2 leaf stage. Poor control of small-flower morningglory.
[4] See label of pigweed species controlled.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																
Cocklebur	Hemp sesbania	Hophornbean copperleaf	Jimsonweed	Lambsquarters, common	Morningglory, annual	Palmer Amaranth	Pigweed[4]	Purslane	Ragweed, common	Sicklepod	Sida, prickly (teaweed)	Smartweed, Pennsylvania	Spurge	Spurred anoda	Velvetleaf	
																POSTEMERGENCE BROADCAST
P	P	P	P	P	P	N	P	P	P	P	P	P	P	P	P	ASSURE II/TARGA
G/E	P	F	**G/E**	**G/E**	F	**G**	**G/E**	**E**	**G/E**	**G**	F	P	**G**	F	**G**	***CORNERSTONE 5 PLUS***/GLYPHOSATE**
E	**E**	U	U	**G/E**	**E**	**G/E**	**G/E**	U	U	U	U	**G/E**	**G/E**	U	**E**	ENLIST ONE + GLUFOSINATE**
E	**G**	U	U	**G/E**	**E**	**G**	**G/E**	U	U	U	U	F/**G**	**G/E**	U	**E**	ENLIST ONE + GLYPHOSATE, or ENLIST DUO**
G	**E**	F	F	**G**	**E**[3]	F	**G**	U	**G**	**E**	P	F	P	P	F	ENVOKE
P	P	P	P	P	P	N	P	P	P	P	P	P	P	P	P	FUSILADE DX or FUSION
E	**G/E**	**G/E**	**G/E**	**G**	**E**	**G**	F/**G**	**G**	**G**	F	**E**	**G**	F/**G**	F/**G**	**G/E**	LIBERTY ULTRA/LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH[2]
P	P	P	P	P	P	N	P	P	P	P	P	P	P	P	P	POAST
P	P	P	P	P	P	N	P	P	P	P	P	P	P	P	P	***SECTION THREE***/SELECT MAX/***CLEANSE***
G	**E**	P	F/**G**	P	**G**	F	**G**	**G**	P/F	P/F	**G**	**E**	F	**E**	**E**	STAPLE LX

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

COTTON HERBICIDE ADJUVANT RECOMMENDATIONS

PRODUCT (HERBICIDES, HARVEST AIDS AND PLANT GROWTH REGULATORS)	SPRAY ADJUVANTS[1]											
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]		Other
AIM EC	1 qt/100 gal					or	1-2 pt/100 gal	or	0.5-1 pt/100 gal	+	2-4 qt/100 gal UAN
ANTHEM FLEX	1 qt/100 gal	or	1-2 pt/A	or	0.5-1 pt/A	or	1-2 pt/A	or	0.5-1 pt/A		
ASSURE II	1 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal		0.5% v/v MSO or COC by air
CAPAROL	2 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal		POST directed
CLEANSE							1 gal/100 gal; not < 1 pt/A	or	0.5/100; not < 0.5 pt/A	+	2.5-4 lb/A AMS or 1-2 qt/A UAN may be added
COBRA[12]	2 pt/100 gal					or	0.5-1 pt/A	or	0.25-0.5 pt/A		Use COC if bark formation has begun for > 12 inch cotton layby
						or	1-2 pt/A	or	0.5-1 pt/A		
COMPACT 6X	[L]										To improve rainfastness
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***[10]											8.5-17 lb/100 gal AMS
COTORAN 4L											Surfactant not to exceed 0.5% v/v
CRUSHER	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal /100 gal	+	2 qt/A UAN or 2 lb/A AMS
DAZE 4SC	[L]					or	[L]	or	[L]		May use surfactant and COC
DISTINCT	1 qt/100 gal									+	5 qt UAN or 5 lb AMS/100 gal
ENVOKE	1 qt/100 gal					or	0.5-1 gal/100 gal	or	0.25-0.5 gal/100 gal		Directed spray
	1 qt/100 gal										Broadcast
FIERCE EZ	0.25 gal/100 gal										
FIRSTSHOT SG	1-2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	+	2-4 qt/A UAN or 2-4 lb/A AMS
FLEXSTAR GT 3.5[9]	1-2 qt/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	or	2-4 qt/100 gal	or	1-2 qt/100 gal	+	8.5-17 lb AMS/100 gal[6,7]
FOLEX 6 EC	[L]	or	[L]	or	[L]	or	[L]	or	[L]		May use surfactant and oils
FUSILADE DX or FUSION	1-2 qt/100 gal					or	0.5-1 gal/100 gal	or	0.25-0.5 gal/100 gal		1 pt/A NIS or COC by air
GIN OUT	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal		To improve rainfastness
GOAL 2XL	1 qt/100 gal										
GRAMOXONE SL 3.0 ‡	2 pt/100 gal[11]	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal		
HARMONY EXTRA SG	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal		
HERBIVORE	1-2 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal		
LEADOFF	1 qt/100 gal	or	0.5 gal/100 gal	or	1 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	+	2 qt/A UAN or 2 lb/A AMS
LIBERTY ULTRA/ LIBERTY 280 SL/ ***TOTAL***/***TOTAL 2.3***/ ***TOTAL SL***/CHEETAH											May use WC+NIS[7], AMS for arid conditions
LINEX 4L			4 pt/100 gal	or	2 pt/100 gal	or	4 pt/100 gal	or	2 pt/100 gal		
PENTIA	1 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal		To improve rainfastness
PERMIT	1- 2 qt/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	or	1 gal/100 gal	or	0.5 gal/100 gal	+	2-4 qt/A UAN or 2-4 lb/A AMS
PIX WSG							1 gal/A	or	0.5 qt/A		
PREFIX	1-2 qt/100 gal					or	1 gal/100 gal	or	0.5 gal/100 gal		
POAST			1.5 pt/A	or	0.75 pt/A	or	2 pt/A	or	1 pt/A	+	2.5 lb/A AMS or 4-8 pt/A UAN
ROUNDUP POWERMAX; POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6[10]											8.5-17 lb AMS/100 gal
RT 3	[L] (1-2 qt/100 gal)									+	8.5-17 lb AMS/100 gal[6,7]

See notes and footnotes at end of table

PRODUCT (HERBICIDES, HARVEST AIDS AND PLANT GROWTH REGULATORS)	SPRAY ADJUVANTS[1]										
	NIS		MSO[2]		HSOC-MSO[3]		COC[4]		HSOC-COC[5]		Other
SADDLE-UP/SPITFIRE	2-4 pt/100 gal					or	1 qt/A	or	0.5 qt/A	+/or	2-4 qt/A 28% N
SECTION THREE							1 qt/A	or	1 pt/A	+	8.5-17 lb AMS/100 gal or WC+NIS [6,7]
SELECT MAX	1 qt/100 gal									+	2-2.5 lb/A AMS
SEQUENCE[10]											8.5-17 lb AMS/100 gal
SHARPEN			1 gal/100 gal	or	0.75 pt/A					+	8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal
STANCE	[L]										Surfactants reduce rain-safe interval
STAPLE LX[8]	1 qt/100 gal					or	1-2 gal/100 gal	or	0.5-1 gal/100 gal		
STERLING BLUE/ ***CLARIFIER***/CLARITY	1-2 pt/100 gal					or	1 qt/A	or	2 pt/A	+	2-4 qt/A UAN or 2-5 lb/A AMS
SUPREND	1 qt/100 gal					or	0.5-1 gal/100 gal	or	0.25-0.5 gal/100 gal		
TARGA	1 qt/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal	or	1-2 gal/100 gal	or	0.5-1 gal/100 gal		0.5% v/v MSO or COC by air
VALOR SX/VALOR EZ/PANTHER SC/ CHATEAU EZ[13]	0.25 gal/100 gal			or	0.25 gal/100 gal			or	0.25 gal/100 gal	+	2-2.5 lb/A AMS or 1-2 qt/A UAN
VIDA	1 qt/100 gal					or	1-2 pt/100 gal	or	0.5-1 pt/100 gal	+	2-4 qt UAN/100 gal

Always refer to product label for specific information.

[1] When rate ranges are given for adjuvants, higher rates are recommended under dry conditions.

[2] Use a quality MSO like Noble.

[3] Use a quality HSOC-MSO like Optify HSMSO or Destiny HC. HSOC-MSOs are generally used at half the labeled MSO rates.

[4] Use a quality COC like Valcheck COC.

[5] Use a quality HSOC-COC like Optify HSCOC or Superb HC. HSOC-COCs are generally used at half the labeled MSO rates. Do not use Superb HC at less than 1 pt/A at <12.5 GPA. Contact the herbicide manufacturer's representative to verify that they will allow its use.

[6] May use 2.5-5 gal/100 gal WC+NIS; Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

[7] Class Act NG or Flex or Optify A may be used where herbicides require NIS and AMS or a water conditioner. Also, see footnote 5 for glyphosate herbicides.

[8] Up to 2 qt/100 gal NIS or 1 gal/100 gal COC labeled in AZ, KS, NM, OK, and TX.

[9] COC, MSO, or NIS may be added for difficult to control weeds or weeds under adverse conditions.

[10] NIS not recommended for POST glyphosate applications.

[11] 2 pt NIS by air.

[12] Use lower rate of COC for post-directed applications to cotton >6". Use higher rate for layby applications to cotton >12".

[13] Adjuvants can only be used PP with Valor SX/Valor EZ/Panther SC/Chateau EZ. NIS adjuvants only can be used with Valor SX/Valor EZ/Panther SC/Chateau EZ when applied POST directed.

Note: Herbicides not listed do not have specific label instructions regarding additives.

[L] - labeled.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

COTTON HERBICIDE APPL. TIMING AND RESTRICTIONS

Herbicide	Application Timing*	Comments/Restrictions	Do Not Till		GPA[1]		Rainfast (hrs)	Intervals* (Days)			Min. Temp. Required (F°)[2]
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Cotton Harvest	
AGENT 1.88	PP PRE POSTD	Early preplant in certain states. Only to coarse textured soils. From 6" to layby.			10	5	1	NO	NO	70	
ADIOS	HA	Apply to mature cotton.			10-25	2-10	12	NR	NR	5	60
AIM EC	POSTD HA	Directed spray to cotton >6", use hooded sprayer if >5-6 nodes; directed layby >12". 60-70% bolls open.			10 10	NO 5	6 6	NR NO	NR NO	7 7	
ANTHEM FLEX	PP POSTD	Fall after October 1 and less than 55°F. Apply from minimum of 6" to beginning bloom stage. Application to 5-6 nodes or less must be made with hooded or shielded spray equipment; Lay-by >12". Not allowed on coarse soils.			5	3	1	NL	NL	7	
ASSURE II	POST	See label for grass species and size.	7	7	10	3	1	NO	NO	80	
BOLL'D	HA	Apply when number of mature unopened bolls is sufficient to produce the desired crop.	–	–	15	2	4	NR	NR	7	50
CAPAROL 4L/ PROMETYNE	PPI,PRE POSTD	PPI: If broadcast, apply before listing; if banded, apply of partially-finished or finished beds. PRE: Before crop emergence. Aerial PRE only. 3-6" cotton or layby >12".			20	5		NO	NO	NR	
CHEETAH		SEE LIBERTY 280 SL									
CHARGER BASIC/ DUAL MAGNUM	PPI,PRE POST	Fall Sept 1-Dec 1. See label for states with approval for PRE. Apply to cotton up to PHI or Aug 1 in TX, OK, NM, AZ, CA and clay in AR. PHI 100 days for POST over-the-top.			10 10	2 2		NO NO	NO NO	80 80-100	
CHARGER MAX/ DUAL II MAGNUM/ EVERPREX	PPI,PRE POST	See label for states with approval for PRE. 3-12" cotton.			10	2		Y	NO	NO	80
CLARIFIER/ CLARITY		SEE STERLING BLUE									
COBRA	POSTD	Apply to cotton >6"; Layby to cotton >12".			10	NL	0.5	NO	NO	70	
COMMAND 3ME	PRE	Before crop emergence.			10	NL	–	NO	NO	65	
COMPACT 6X	PGR	First application at pinhead square to matchead square or when cotton is 20-30". Sequential applications every 2 weeks as needed.	–	–	2	2	4-8	NR	NR	30	60
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP,PRE POST POSTD HA	Before planting or prior to crop emergence. Apply from ground cracking through 4-leaf stage to Roundup Ready Cotton. Use directed or with hooded sprayer after 4-leaf stage through layby. Apply when > 20% boll crack for Roundup Ready cotton.	– –	– –	10-20 10-20	3-10 3-10	RE RE	NO NO NO	NO NO NO	7 7 7	
COTORAN 4L	PRE POST	Immediately after planting. Apply over-the-top or directed from 3" to first bloom.						NO	NO	60	
CREDIT XTREME		See Roundup.									
CRUSHER	PP	FALL after harvest up to 30-60 days depending on rate.	–	–	15	5		30	30	30	
CUTOUT	HA	Before harvest, when plants are mature and last harvestable bolls have matured.	–	–	10-25	2-10	12	NO	NO	5	
DAZE 4SC	HA	Apply when bolls are mature, >5 days before harvest.	–	–	10	2	24	NO	NO	5	60
DICAMBA MAX 4		See Sterling Blue.									
DISPLAY	HA	Apply when 60-70% of bolls are open.	–	–	10	5	6-8	NR	NR	NR	
DISTINCT	PP	Preplant to emerged broadleaves. Minimum 30 days and 1" precipitation before planting. See label for restrictions. Do not apply west of Rockies. FALL after corn, soybean, or cotton harvest.	–	–	3-50	NL	4	NO	NO	NR	

See notes and footnotes at end of table

Herbicide	Application Timing*	Comments/Restrictions	Do Not Till		GPA[1]		Rainfast (hrs)	Intervals* (Days)			Min. Temp. Required (F°)[2]
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Cotton Harvest	
ELEVORE	PP	Burndown up to 30 days before planting	NL	NL	8	5	1	NL	NL	NL	NL
ENLIST DUO	PP POST	Burndown: For Enlist Cotton or 30 days prior to non-Enlist cotton. See "New Herbicides for Herbicide Tolerant Soybeans Traits" page for more information. Enlist-cotton only: When weeds are small and anytime after cotton emergence but no later than mid-bloom stage.	NL	NL	10-15	NO	RE	NR	NR	NL	NL
ENLIST ONE	PP POST	Burndown for Enlist Cotton (30 days prior to non-Enlist cotton). See "New Herbicides for Herbicide Tolerant Cotton Traits" page for more information. Enlist-cotton only: When weeds are small and anytime after cotton emergence but no later than mid-bloom stage.	NL	NL	10-15	NO	RE	NO	NO	30	NL
ENVERSA	PP,PRE POST	Pre plant and Pre to crop and prior to weed emergence. Aerial application allowed in selected states only, refer to the product label for listed states. POST to crop and prior to weed emergence.	–	–	10	3 - 15	–	NO	NO	NR	NL
ENVOKE	PP POST POSTD	Apply in fall greater than 90 days before planting. Picker cotton must be in the 5th true leaf stage (minimum). Usually ≥6" cotton for picker or stripper cotton.	–	–	10	NL	3	NO	NO	60	
EPTAM 7E	POST	After stand is established. Apply after cotton has 2-4 leaves but not after first bolls open.	–	–	–	–	–	–	–	–	–
EVERPREX		SEE CHARGER MAX									
EXPRESS	PP	Burndown. Delay planting at least 14 days.	–	–	5	2-5	4	NO	NO	NR	
FIERCE EZ	POSTD	≥6" cotton as hooded, ≥16" directed.			10-20	NL	1	NO	NO	60	
FINISH 6 PRO/ TERMINATE	HA	Apply to mature cotton with sufficient mature bolls.	–	–	10	3	6	NR	NR	7	65
FIRSTSHOT SG	PP	Apply more than 14 days before planting.	–	–	5	5		NO	NO	NR	
FLEXSTAR GT 3.5	PP,PRE POSTD	On coarse soils or up to 21 days before planting on medium and fine soils. POST directed to Roundup Ready Flex cotton ≥6" height to layby.	–	–	15	5		NR	NR	70	
FOLEX 6EC	HA	50% open bolls to harvest.	–	–	5	5	2	NR	NO	7	50
FRAMEWORK 3.3 EC/PROWL H20	PP, PPI, PRE POSTD	FALL - Prowl H20 ONLY after Oct. 15 in certain states. PPI - Up to 60 days before planting, incorporate within 7 days. PRE - Up to 2 days after planting. Feeding/grazing ONLY allowed with Prowl H20. After last cultivation, prior to weed emergence.	–	–	10	5	–	see comment	see comment	60	
FREEFALL SC	HA	To mature plants when bolls are mature, at least 5 days before expected day of harvest	–	–	10-25	3-10	24	NO	NO	5	60
FUSILADE DX	POST	Actively growing weeds.	7	7	5-40	5	1	NO	NO	90	
FUSION	POST	Actively growing weeds.	7	7	5-40	5-10	1	NO	NO	90	
GIN OUT	PGR	Early season at 50% matchead square; late season in 4-6th week of blooming.			5-10	2	4-8	NO	NO	30	30
GINSTAR EC	HA	Apply only to mature cotton plants when the last boll you expect to harvest is mature.	–	–	1-5	2-10	12	NO	NR	5	50
GOAL 2XL	POST	Apply to cotton >6". PHI 75 days - (AZ, CA); 90- (other states).			20-40	NL			NO	75, 90	
GOALTENDER	POSTD	Apply directed to cotton >6-8" tall. PHI 75 days - (AZ, CA); 90- (other states).			20	NL				75, 90	
GRAMOXONE SL 3.0 ‡	PP,PRE POSTD HA	Apply before planting or prior to cotton emergence. Directed spray. Avoid contact with crop. PHI varies depending on area and method used.			10	5	0.5	NO	NO	3-7	

See notes and footnotes at end of table

Herbicide	Application Timing*	Comments/Restrictions	Do Not Till		GPA[1]		Rainfast (hrs)	Intervals* (Days)			Min. Temp. Required (F°)[2]
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Cotton Harvest	
HARMONY EXTRA SG	PP	Do not plant within 14 days of application.			10	3	4	NO	NO	NR	
HERBIVORE	POSTD	From emergence to before row closure.	–	–	10-20			NR	NR	28	
HONCHO K6		See Roundup.									
KARMEX DF	PP,PRE	Before planting or crop emergence.			25-40	5		NO	NO		
	POSTD	Apply to cotton >6"; layby to cotton >12".			25	NL		NO	NO		
LEADOFF	PP	FALL after harvest up to 30 days before planting, if using >1.5 oz/A up to 60 days before planting.	–	–	15	5		30	30	30	
LIBERTY ULTRA/ LIBERTY 280 SL/ ***TOTAL*/*TOTAL 2.3*/*TOTAL SL***/ CHEETAH	PP,PRE POST POSTD	Before planting or crop emergence. To early bloom stage on LibertyLink cotton. Hooded sprayers for non-LibertyLink cotton to early bloom.	5	7	15	10	4	NR	NR	70	
LINEX 4L	POST	Begin applications when cotton is 12".	–	–	25	–	–	–	–	76	
MSMA 6 PLUS	POST	Apply to cotton 3 -6" or up to 1st square.						NO	NO		
	POSTD	Apply to cotton 3" to 1st bloom.						NO	NO		
PANTHER SC		See Valor SX									
PENTIA	PGR	First application at pinhead square to matchead square or when cotton is 20-30". Sequential applications every 2 weeks as needed.	–	–	2	2	2-8	NR	NR	30	60
PERMIT	POSTD	From emergence to before row closure.	–		10-20			NR	NR	28	
PIX WSG	POST	See label for timing by geographic area; up to four applications during season.	–	–	2-10	2-5	8	NR	NR	30	60
POAST	POST	See label for grass species and size.	5	7	5-20	5	1	NO	NO	40	60
PREFIX	POSTD	Cotton ≥6" to layby.			10	NL		NO	NO	80	
PROWL H2O		SEE FRAMEWORK 3.3 EC.									
REFLEX	PP PRE POSTD	Early preplant in certain states. Only to coarse textured soils. From 6" to layby.			10	5	1	NO	NO	70	
RESOURCE	PP HA	Burndown prior to crop emergence. Apply when at least 60% of bolls are open.	–	–	10	5	1	28	28	7	
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	PP,PRE POST POST POSTD HA HA	Before planting or prior to crop emergence. Apply from ground cracking through 4-leaf stage to Roundup Ready Cotton. Apply from ground cracking through 60% open bolls in Roundup Ready Flex cotton. Use directed or with hooded sprayer after 4-leaf stage. Apply after 20% boll crack for Roundup Ready cotton. Apply after 60% boll crack to Roundup Ready Flex cotton.	–	–	10-20	3-10	RE	NO	NO	7 7 7	
RT 3	PP,PRE HA	Apply before planting or prior to crop emergence. Apply after sufficient bolls are open.			3-40	3-15	RE	NO	NO	7	
SADDLE-UP/ SPITFIRE	PP HA	21-30 days before planting, when weeds are in 2- to 4-leaf stage and rosettes are <2" across. Apply after sufficient bolls are open.	–	–	5-40	3-10	4	NO	NO	NR	
SECTION THREE/ SELECT MAX/ ***CLEANSE***	POST	See label for grass species and size.	7	7	5-40	3-10	1	NO	NO	60	
SEQUENCE	PP,PRE POST POSTD	Apply to all cotton varieties. 3" to 4-leaf stage. Roundup Ready cotton only. Before 12" and 5th leaf size of quarter. Roundup Ready cotton only.	3	3	10-40 10-20	3-15 NL	RE	NO NO NO	NO NO NO	NR 100 NR	

See notes and footnotes at end of table

Herbicide	Application Timing*	Comments/Restrictions	Do Not Till		GPA[1]		Rainfast (hrs)	Intervals* (Days)			Min. Temp. Required (F°)[2]
			Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Cotton Harvest	
SHARPEN	PP	Apply as a burndown. Wait ≥42 days + 1″ rain before planting.	–	–	5	3	1	NR	NR	NR	
	PH	Apply when 60-70% bolls are open.	–	–	10	5	1	NR	NR	5	
SODIUM CHLORATE	HA				5-30	4-10					
STANCE	PGR	Beginning at matchhead square.			10	2	4-8	NO	NO	30	
STAPLE LX	PRE	Apply prior to crop emergence.			10-40		4	NR	NR	60	
	POST	Apply at or after the 1st true leaf stage. Apply aerial POST only.				3					
	POSTD										
STERLING BLUE*/*CLARIFIER*/ CLARITY/*DICAMBA MAX 4	PP	Burndown only. Up to 8 oz/A. After application, wait for 1″ rainfall/irrigation accumulation + 21 days before planting.	–	–	3-50	1-10	4	NR	NR	NR	50
SUPER BOLL	HA	Apply when number of mature unopened bolls is sufficient to produce the desired crop.	–	–	15	2	4	NR	NR	7	
SUPREND	POSTD	>6″ cotton. Keep spray off of cotton foliage.			10	NL		NO	NO	60	
TARGA	POST	See label for grass species and size.	7	7	10	3	1	NO	NO	80	
TERMINATE		SEE FINISH 6 PRO									
TOTAL*/*TOTAL 2.3*/*TOTAL SL		SEE LIBERTY 280 SL									
TRUST/TREFLAN	PPI	Incorporate within 24 hr.	–	2		5-10				90	
HFP	POST	After 4th leaf stage up to layby.	–	–		5-10				90	
VALOR SX/VALOR EZ/PANTHER SC/ TUSCANY SC/ CHATEAU EZ	PP	Apply up to 30 days (and 1″ precipitation) or before planting conventional cotton or up to 14 or 21 days in no-till or strip-till.			10-20	NL	1	NO	NO	60	
	POSTD	≥12″ cotton as hooded, ≥18″ directed.									
VIDA	PP,PRE	30 days between applications			10	5	1	NR	NR	7	
	POSTD	Do not apply POSTD by air. Apply to cotton with less than 3″ of stem bark using hooded ground equipment or post-directed spray equipment only.			20-30	NO	1	NR	NR	7	
WARRANT	PP,PRE	Before crop emerges.	–	–	10	3-15[3]		NO	NO	NR	
	POST	Apply after cotton completely emerges but before first bloom and before weeds emerge. PP,PRE,POST aerial application in certain states only - see label.									
WARRANT ULTRA	PP	Only to medium and fine soils up to 21 days before planting.	–	–	10	NL		NO	NO	70	
	PRE	Do not apply to emerged cotton.									
	POST	>6″ cotton through layby as directed application.			15	NL					
ZIDUA SC	POST	Post directed (layby) only.	–	–	5	NO		NL	NL	0	

* Application Timing or Intervals:
PP – preplant surface, unless otherwise specified
PRE – preemergence
PPI – preplant incorporated
POST – post broadcast
POSTD – post directed
PGR – plant growth regulator
HA – harvest aid, dessicant, defoliant
NO - do not graze or feed
NR – no restrictions
NL – No related information on label
RE - Heavy rainfall soon after application may require retreatment.

[1] Minimum GPA or range
[2] Minimum temperature for optimum performance
[3] Only in certain states

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BURNDOWN		
Herbicide	**Rate/Acre[1]**	**Comments/Restrictions**
AIM EC/SHARK EW	Up to 1.6 fl oz	Apply alone to burndown failed cotton stands (up to 3-leaf) or banded over row (hooded sprayer) at planting. See label for adjuvant and fertilizer recommendations. See label for tank mixing instructions with glyphosate mixes or other PRE herbicides to enhance glyphosate-resistant marestail control in burndown.
CHEETAH	SEE LIBERTY 280 SL	
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal; include NIS or WC+NIS as needed*	See label for weed species, rates. Apply to actively growing weeds prior to planting. Do not till for at least 7 days. High rate for rhizome Johnsongrass.
CRUSHER or LEADOFF	1-1.3 oz or 1.5-2 oz	PP. Fall after harvest before ground is frozen 60 days before planting if Crusher applied at >1 oz/A or Leadoff at >1.5 oz/A, or 30 days before planting if Crusher applied at 1 oz/A or Leadoff at 1.5 oz/A. Do not apply to soils with <1% OM.
DISTINCT	2-4 oz + 1 qt NIS/100 gal + 5 qt UAN or 5 lb AMS/100 gal*	Apply for control of emerged broadleaf weeds prior to planting cotton. Following an application of Distinct, and a minimum of 1" rainfall or overhead irrigation, a waiting interval of 30 days is required before planting. Do not use in areas with less than 25" rainfall. Not labeled in CA. Do not apply west of Rockies. FALL 2-8 oz/A after corn, soybean or cotton harvest and prior to frost; plant back to cotton 120 days, or 30 days if 1" rainfall or irrigation received.
ELEVORE	1 fl oz	PP burndown to actively growing weeds up to 30 days before planting. Use with MSO.*
ENLIST DUO	3.5-4.75 pt	For Enlist Cotton only or fallow systems to be planted to non-Enlist cotton. Do not apply >14.25 pt/A/use season. Also see EnlistTankMix.com. See "New Herbicides for Herbicide Tolerant Cotton Traits" page for more information.
ENLIST ONE	1.5-2 pt	For Enlist Cotton only or fallow systems to be planted to non-Enlist cotton. Do not apply >6 pt/A/use season. Also see EnlistTankMix.com. 24c AL (exp. date not given) do not apply at wind speeds >10 mph. See "New Herbicides for Herbicide Tolerant Cotton Traits" page for more information.
ENVOKE	0.1 oz + 1 qt NIS/100 gal	Apply with Gramoxone SL 3.0 or glyphosate in fall prior to cotton. Allow at least 90 days before planting. Labeled in AL, AR, FL, GA, KY, LA, MO (bootheel), MS, NC, SC, TN, VA, and parts of OK and TX east of I-35. See label for additional weeds controlled.
EPTAM 7E	2.24 pt	Use specially designed injector units or sweeps. If incorporating, use power driven rotary tillers set to 2-3"; tandem discs may be used in skipss of skip row cotton. Do not apply closer than 4" either side of cotton drill.
EXPRESS	0.3 oz + 0.5-1 gal HSOC-COC or HSOC-MSO/100 gal*	PP. Delay planting ≥14 days. For burndown of emerged weeds. NIS may be used. UAN/AMS may be added.*
FIRSTSHOT SG	0.5-0.8 oz	Apply more than 14 days before planting. In light soils, or soil pH >7.9, extend 7 additional days. May use 0.5-0.6 oz/A in tank mixes. Do not exceed 1 oz/A total if sequential application. Include MSO, COC, NIS plus UAN or AMS.*
FLEXSTAR GT 3.5	3.5-5.3 pt	PP or PRE to coarse soils before crop emergence. Apply to medium and fine soils at 3.5 pt/A up to 21 days before planting. Include NIS, COC, MSO + AMS or UAN.*
FRAMEWORK 3.3 EC or PROWL H2O	*Conv. or Min. Till* **Coarse soil:** 1.2-2.4 pt or 1-2 pt **Medium soil:** 1.8-2.4 pt or 2 pt **Fine soil:** 2.4-3.6 pt or 3 pt *No-Till* **Coarse soil:** 1.8-2.4 pt or 2 pt **Medium soil:** 2.4-3.6 pt or 3 pt **Fine soil:** 3.6-4.8 pt or 4 pt	PP or PRE. Apply up to 15 days before planting. PRE up to 2 days after planting. May be applied in fall after Oct. 15, up to 140 days before planting in AZ,CA,LA,MS,NM,OK,TX. Use 2 pt/A or 2.4 pt/A on coarse and medium soils and 3 pt/A or 3.6 pt/A on fine soils.
GRAMOXONE SL 3.0 ‡	1.7-2.7 pt + 2 pt NIS/100 gal	Apply to emerged weeds prior to crop emergence.
HARMONY EXTRA SG	0.45-0.75 oz + 1 qt NIS/100 gal	PP. Apply in fall or spring. Do not plant within 14 days. For control of winter annual broadleaf weeds including carolina geranium.
LEADOFF	SEE CRUSHER	
LIBERTY ULTRA or LIBERTY 280 SL/***TOTAL SL***/***TOTAL***/***TOTAL 2.3***/ CHEETAH	22-29 fl oz 29-43 fl oz	For use on non-LibertyLink and LibertyLink cotton. Burndown rate range differs for each product and affects subsequent in-season use and rate - see labels for use restrictions, specific rates. Warm temperatures, high humidity, and bright sunlight improve the performance. Products containing Glufosinate require sunlight for activity. For best results, make applications between sunrise and 2 hours before sunset. Apply in at least 15 GPA of water with 80° or 110° nozzles using 30-60 PSI or greater depending on nozzle used.
PANTHER SC	SEE VALOR SX	

See notes and footnotes at end of table

BURNDOWN *(continued)*		
Herbicide	**Rate/Acre[1]**	**Comments/Restrictions**
RESOURCE	2-4 fl oz	PP. Burndown prior to crop emergence. Tank mix with burndown herbicides.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums.	See label for weed species, and annual and perennial rates. Apply to actively growing weeds prior to planting or crop emergence. Do not till for at least 7 days. High rate for rhizome Johnsongrass. May use other glyphosate products at greater or lesser volumes; see individual labels.
RT 3	11-32 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*	PP, PRE or at-planting. For use in CO,ID,MT,NV,ND,OR,SD,TX,UT,WA,WY, and in specific counties in KS,MN,NE,NM,OK.
SEQUENCE	2.5-3.5 pt + 8.5-17 lb AMS/100 gal	PP or PRE. Apply up to 30 days before planting but before crop emergence. State use and soil restrictions apply. See label. Single maximum postemergence use rate for over-the-top applications of GT cotton only, from 2.75 pt/A to 3.5 pt/A.
SHARPEN	1 fl oz + 0.75 pt HSOC-MSO* + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal	Apply to actively growing broadleaf weeds. Delay planting ≥42 days and 1" rainfall in areas with <25" rainfall. One inch rain or irrigation is required. Do not apply to coarse soils with <1.5% O.M. Do not mix with or sequentially apply within 30 days of flumioxazin. Do not apply where at-plant OP or carbamate insecticides have been or will be used. May be tank mixed with many other herbicides.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	Up to 8 fl oz	After application, 1" precipitation/irrigation + 21 days waiting interval required before planting. Do not apply west of Rockies or in areas with <25" rainfall.
TOTAL/***TOTAL 2.3***/ ***TOTAL SL***	SEE LIBERTY 280 SL	
TUSCANY SC	SEE VALOR SX	
VALOR SX or VALOR EZ /PANTHER SC/ TUSCANY SC/CHATEAU EZ	SPRING: 1-2 oz or 1-2 fl oz FALL: 2-4 oz or 2-4 fl oz	FALL apply 2-4 oz/A. No earlier than 10/15 in Region 2 and 11/15 in Region 1 or when soil temperatures fall below 50°(F) at 2". SPRING apply 1-2 oz/A. PP. Apply 30 days or more before planting in conventional cotton. Do not apply >2 oz per application or 4 oz per season. In no-till or strip till, apply at least 14 days prior to planting with 1 oz/A or 21 days with 1.5-2 oz/A, apply 30 days prior to planting in conventional tillage with 1-2 oz/A. One inch rain or irrigation required between application and planting. Strip-till must occur after application.
VIDA	0.5-2 fl oz + 1 qt NIS or 0.5 gal HSOC-COC/100 gal*	Apply in a minimum of 5 GPA by air or 10 GPA by ground.

[1] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay. O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify MSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

PREPLANT OR PREEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
CAPAROL 4L	*PPI - AZ, CA, NM only* DO NOT USE: sand, loamy sand 2.4-3.2 pt: sandy loam in AZ,CA 3.2 pt: sandy loam/loams in NM 4.8 pt: silt loam/clay *PRE* 1.6-5.6 pt: see label for regional soil-type rates and restrictions.			Broadcast to flat soil surface prior to listing, or band over partially finished or finished bed. Incorporate up to 4" immediately after application with PTO-driven equipment, double disk, rolling cultivator (or cultivators in tandem), or bed conditioner. PRE: Apply at planting or shortly after. Use rates vary with region and soil type. Can be used as foundation program for planned two-pass weed control system (see label). See label for winter weed control in TX, CA, and winter/early spring weed control in AL, AR, LA, MO, MS, TN, VA. Notes 1, 2, 4.
CHARGER BASIC/DUAL MAGNUM	*PRE in AR, KS, LA, MS, TN, MO (Bootheel)*			PPI in the top 1 inch immediately before planting up to before weeds emerge. PRE at or after planting but prior to crop and weed emergence. Do not use on sands or loamy sands. FALL Sept 1-Dec. 1 for Italian ryegrass. See label for details.
	0.5-1 pt	0.66-1.33 pt	1-1.33 pt	
	PPI or PRE in NM, OK, TX			
	1 pt	1-1.33 pt	1.33 pt	
CHARGER MAX/ DUAL II MAGNUM/ EVERPREX	*PRE in AR, KS, LA, MS, TN, MO (Bootheel)*			Apply PRE at or immediately after planting, but before crop or weed emergenece. Do not use on sand or loamy sand. PPI in the top 1" immediately before planting up to before weeds emerge.
	0.5-1 pt	0.66-1.33 pt	1-1.33 pt	
	PPI or PRE in NM, OK, TX			
	1 pt	1-1.33 pt	1.33 pt	
+		+	+	
CAPAROL 4L or	DO NOT USE	2.4 pt or	3.2-4.8 pt or	Notes 1, 4.
COTORAN 4L	DO NOT USE	1.2-1.9 pt	1.9-2.4 pt	Notes 1, 2.
COMMAND 3ME	**All soil textures:** 1.33-3.33 pt			Apply PRE in conventional or reduced tillage. Do not incorporate. In-furrow application of Thimet 20-G at 0.75 lb/acre active ingredient must be made to avoid serious crop injury. Do not reduce rate of insecticide when banded. Most effective tank mix partner is Cotoran 4L. See label for special precautions to AVOID DRIFT. Note 2.
COTORAN 4L	2 pt	3 pt	4 pt	Apply immediately after planting. Do not use on coarse soils in west TX or west OK. Notes 1, 2.
ENVERSA	<1.5% OM: 1.25-1.6 qt ≥1.5% OM: 1.25-1.7 qt	<1.5% OM: 1.25-1.7 qt ≥1.5% OM: 1.25-1.9 qt	<1.5% OM: 1.25-1.9 qt ≥1.5% OM: 1.25-2.0 qt	Use the higher rate where heavy weed infestations exist. Application made before weeds emerge or after clean cultivation is necessary as this product will not control emerged weeds. If weeds are emerged at time of application apply a labeled postemergence herbicide with this product to control the emerged weeds. Application of this product with other postemergence or soil applied herbicides may increase the potential for crop injury. Do not exceed a maximum of 2 quarts per acre (1.5 lb ai/acre) of this product as a single application and 4 quarts (3 lb ai/acre) per acre per year when making a second application.
FRAMEWORK 3.3 EC or PROWL H2O	*Conv. or Min. Till*			PPI. Up to 60 days before planting, may be applied in fall after Oct. 15, up to 140 days before planting in AZ, CA, LA, MS, NM, OK, and TX. Use 2.4 pt/A or 2 pt/A on coarse and medium soils and 3.6 pt/A or 3 pt/A on fine soils. Incorporate within 7 days. Also labeled for preplant surface and PRE. Notes 1, 2.
	1.2-2.4 pt or 1-2 pt	1.8-2.4 pt or 2 pt	2.4-3.6 pt or 3 pt	
	No-Till			
	1.8-2.4 pt or 2 pt	2.4-3.6 pt or 3 pt	3.6-4.8 pt or 4 pt	
KARMEX DF	DO NOT USE ON SAND/ LOAMY SAND	1 lb	1.25-2 lb	See label for AZ- and CA-specific rates and instructions. See label for tank mix rates and rotational restrictions. Do not use on soils with <1% O.M. Use only when cotton is planted on raised or flat seed beds. Note 1.
REFLEX/***AGENT 1.88***	1-1.5 pt/1-1.6 pt	1 pt (PP only)	1 pt (PP only)	Apply broadcast or banded in ≥10 gpa. Rainfall or irrigation within 7 days is required. Do not apply to emerged cotton. Apply to medium or fine textured soils 14-21 days prior to planting. 0.5" rain or irrigation required before planting. Do not disturb seed bed after application.
ROUNDUP POWERMAX 3; WEATHER MAX/ CREDIT XTREME/ HONCHO K6	SEE BURNDOWN			

See notes and footnotes at end of table

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
SADDLE-UP	**All soil textures:** PP: ≤1->3 pt			PP: Application rate depends on days to planting and cumulative rainfall/irrigation occuring in 2 or less rainfalls and/or irrigations. For areas with ≥0.5" rainfall/irrigation, use ≤1 pt/A with 21 days PP, 1-3 pt/A with 45 days PP, or >3 pt/A with 120 days PP. For areas with <0.5" rainfall/irrigation, use ≤1 pt/A with 30 days PP, >1-3 pt/A with 90 days PP, or >3 pt/A with 120 days PP. Max. 2 pt/A if O.M. <2%; max. single PP application/crop cycle.
SPITFIRE	**All soil textures:** 1-2.5 pt			Apply 1-1.25 pt/A with min. PP waiting interval of 21 days. Apply 1.25-2 pt/A with min. PP waiting interval of 30 days. See label for rainfall activation requirements. Max. 2 pt/A/growing season. Max. 2 application/year. Do not apply in geographic acres with avg. annual rainfall <25". Min. accumulation of 1" rainfall/irrigation followed by min. PP waiting interval required before planting."
STAPLE LX	1.3-2.1 fl oz	1.3-2.1 fl oz	1.3-2.1 fl oz	Use in AL, AR, AZ, FL, GA, KS, LA, MO, MS, NC, NM, OK, SC, TN, TX, or VA. Do not use on soils with <0.5% O.M. Apply prior to cotton emergence. Can be applied with other PRE herbicides.
TRUST/TREFLAN HFP	1 pt	1.25-1.5 pt	1.5-2 pt	PPI. Spring application. If applied at planting, incorporate within 24 hours. May be mixed with Cotoran 4L and Caparol. Notes 2, 3.
VIDA	**All soil textures:** 0.5-2 fl oz + 1 qt NIS or 0.5 gal HSOC-COC/100 gal*			Apply in a minimum of 5 GPS by air or 10 GPA by ground.
WARRANT	*<1.5% O.M.*			PP, PRE. Apply before crop emerges. Maximum 4 qt/A/season. Do not incorporate.
	1.25-1.6 qt	1.25-1.7 qt	1.25-1.9 qt	
	>1.5% O.M.			
	1.25-1.7 qt	1.25-1.9 qt	1.25-2 qt	
WARRANT ULTRA	**Preemergence Only on Coarse Soils**	**Preplant Only on Medium and Fine Soils**		To avoid severe crop injury, a minimum of 0.5 inch of rainfall or overhead irrigation must occur before planting cotton. Cotton must be planted at least 0.75 inch in depth. Any soil disturbance may reduce weed control of this product. See label Area Use Map for detailed information.
	<1.5% O.M.			
	48-60 fl oz	48 fl oz	48 fl oz	
	>1.5% O.M.			
	48-60 fl oz	48-60 fl oz	48-60 fl oz	

[1] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay. O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

NOTE 1: Do not graze treated cotton fields or feed treated forage to livestock.
NOTE 2: May be applied in liquid fertilizer.
NOTE 3: Do not plant sorghum or oats for 12-18 months (see label).
NOTE 4: Do not use on glandless varieites of cotton.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POSTEMERGENCE		
Herbicide	**Rate/Acre[1]**	**Comments/Restrictions**
	DIRECTED SPRAY[2]	
AIM EC/SHARK EW	Up to 1.6 fl oz	Apply post-directed lay-by to cotton plants ≥12" tall. See label for adjuvant and fertilizer recommendations. PHI 7 days. Note 1.
ANTHEM FLEX	**Coarse soil:** DO NOT USE **Medium soil:** 1.4-2.7 fl oz **Fine soil:** 2.85-3.8 fl oz	POSTD Apply to cotton a minimum of 6 inches tall to beginning bloom stage. Use hooded or shielded sprayers for cotton 5-6 nodes or less. Do not apply to coarse soils. Plant cotton a minimum of 1" deep. Add to tank before other herbicides. Do not allow spray solution to contact cotton foliage, green stem tissue or blooms. 7 day PHI. Note 1.
CAPAROL 4L	1-3.2 pt: see label for regional soil-type rates and restrictions.	POSTD: Prevent spray contact with cotton leaves. Apply to base of cotton plants when they all exceed the minimum recommended heights shown on see label.
CAPAROL 4L + MSMA 6 PLUS	1 pt + 2.66 pt	Apply to 3-6" cotton (do not contact cotton leaves) – weeds under 1" or at layby when cotton is 12" or more in height. See label for higher layby rates. Notes 1, 2.
CHEETAH	SEE LIBERTY 280 SL	
COBRA	12.5 fl oz + 0.25-0.5 pt HSOC-COC or 1 qt NIS/100 gal*	Apply to small actively growing weeds after cotton is >6" tall. See label for tank mixes. At layby, increase rate of HSOC-COC* to 0.5-1 pt/A if cotton >12" tall. Avoid fine droplet contact with cotton. Notes 1, 8.
COTORAN 4L + MSMA 6 PLUS	2-4 pt + 2.66 pt	Apply after cotton is 3" tall to first bloom – weeds less than 2". Not suggested for high rolling plains of TX. Notes 1, 2.
DUAL II MAGNUM/ EVERPREX	0.5-1.33 pt	Apply to cotton for preemergent control of weeds. PHI 80 days. Do not feed or graze. Use rates vary by state - see label.
ENVOKE	0.1-0.15 oz + 1 qt NIS or 1-2 qt HSOC-COC/100 gal*	Apply when picker cotton has ≥ 5 true leaves and when picker or stripper cotton is large enough for directed applications, usually ≥6". Labeled in AL, AR, AZ, FL, GA, KY, LA, MO (bootheel), MS, NC, NM, SC, TN, VA, OK and parts of TX. POST-directed from 0.10-0.25 oz, depending on region. Rates vary by region. See label.
FIERCE EZ	6 fl oz	Max. 2 applications/A/year. Do not make sequential application within 30 days of first application.
FLEXSTAR GT 3.5	3.5 pt	Apply POST-directed to Roundup Ready Flex cotton ≥ 6" tall to layby. Avoid contact with green non-barked plant parts. Include NIS, COC, MSO + AMS or UAN.*
FRAMEWORK 3.3 EC or PROWL H2O	*Conv. or Min. Till* **Coarse soil:** 1.2-2.4 pt or 1-2 pt **Medium soil:** 1.8-2.4 pt or 1.5-2 pt **Fine soil:** 2.4-3.6 pt or 2 pt *No-Till* **Coarse soil:** 1.8-2.4 pt or 2 pt **Medium soil:** 2.4-3.6 pt or 1.5-2 pt **Fine soil:** 3.6-4.8 pt or 2 pt	Apply between rows as directed spray after the last cultivation. Does not control emerged weeds. See label for application timing. Tank-mix if needed.
GOAL 2XL	1-2 pt + 1-2 qt NIS/100 gal	Apply as post-directed spray after cotton is 6" or taller. Thorough weed coverage required. Keep pressure <25 psi to prevent drift to cotton. Weeds should not exceed the 4-leaf stage. Note 1.
GOALTENDER	0.5-1 pt	POST directed to cotton >6-8" tall. May be mixed with other POST herbicides. PHI 75 days in AZ and CA, 90 days other states.
GRAMOXONE SL 3.0 ‡	0.8 to 1.3 pt+ 1 pt NIS/100 gal	Apply to 1-6" weeds as directed spray. Avoid contact with the cotton.
HERBIVORE	0.67-1.33 oz	Apply after crop emergence before row closure prevents applications with hooded equipment. Maximum 1.33 oz/A/year. Not labeled for use in CA. Apply with NIS at 2 qt/100 gal or 0.5 gal/100 gal of HSOC-COC.* Do not mix both together.
KARMEX DF	1.0-2.75 lb	Application rate dependent on soil texture; see label. Max. 3 applications/year. 21-day min. application interval. Note 1.

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre[1]**	**Comments/Restrictions**
	DIRECTED SPRAY[2] *(continued)*	
LIBERTY ULTRA or LIBERTY 280 SL/***TOTAL SL***/***TOTAL***/CHEETAH or ***TOTAL 2.3***/	19-29 fl oz or 29-43 fl oz or 22-43 fl oz	Apply up to early bloom on non-LibertyLink or LibertyLink cotton. In non-LibertyLink cotton use hooded sprayers. Refer to the product label for additional instructions on post directed and hooded sprayer applications. For applications of Liberty Ultra, Apply 19 to 29 fl ozs/A per application depending on weed species, size and density. Up to 3 applications may be applied with a minimum of 10 days between applications up to a maximum of 58 fl ozs/A per year. For applications of Liberty 280 SL/Total SL/ Total/Total 2.3/Cheetah, if first application is >29 fl oz/A, only a single subsequent application of 29 fl oz/A is allowed (2 POST Scenario, not to exceed 72 fl oz/A/year), otherwise three applications of 29 fl oz/A are allowed (3 POST Scenario, not to exceed 87 fl oz/A/year). See labels for details. Application interval 10-14 days Liberty 280 SL/Total SL/Cheetah; 10 days Total/Total 2.3. Prior to applications of Liberty Ultra, refer to section 12.0 of the product label titled Endagered and threatened species protections requirements. You must follow all directions and restrictions contained in any applicable ESA bulletins for the area where you are applying Liberty Ultra.
LINEX 4L	1-3 pt	Do not use on Pima varieties of cotton. Adjust nozzles to avoid contact to cotton leaves. Rates dependent on crop height. PHI 76 days.
MSMA 6 PLUS	2.66 pt	Apply after cotton is 3″ high and before first bloom. More effective at 70° or higher. Notes 1, 2.
PANTHER SC	SEE VALOR SX	
PERMIT	0.67-1.33 oz	Apply after crop emergence before row closure prevents applications with hooded equipment. Maximum 1.33 oz/A/year. Apply with NIS at 2 qt/100 gal or 0.5 gal/100 gal of HSOC-COC.* Do not mix both together.
PREFIX	2-2.33 pt	Apply from ≥ 6″ cotton to layby. Avoid contact with green non-barked parts. Include NIS or COC.*
REFLEX/***AGENT 1.88***	1-1.5 pt/1-1.6 pt + 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal*	Apply post-directed in ≥10 GPA to cotton at least 6″ tall through layby. May be tank mixed with many other herbicides to broaden spectrum of control. Avoid contact with cotton foliage.
SEQUENCE	2.5 -3.5 pt + 8.5-17 lb AMS/100 gal	Apply up to layby: <12″ cotton and before 5th leaf exceeds the size of a quarter. Do not exceed 3.5 pt/A/season.
SUPREND	1-1.5 lb	POST-DIRECTED to small weeds after cotton is >6″ tall. Avoid contact with cotton leaves. Apply to picker and Pima cotton only. Do not apply to furrowed cotton until furrows are leveled. See label for tank mix restrictions. Use in AL, AR, AZ CA, FL, GA, KS, KY, LA, MS, MO Bootheel, NM (certain counties), NC, portions of OK, SC, TN, VA, and TX east of I-35. Note 1.
TOTAL/***TOTAL 2.3***/***TOTAL SL***	SEE LIBERTY 280 SL	
VALOR SX or VALOR EZ/ PANTHER SC/CHATEAU EZ + MSMA 6 PLUS	2 oz or 2 fl oz + 2.66 pt	Apply using a hooded or shielded sprayer when cotton is at least 12″ in height. Always use NIS at 0.25% v/v. Apply as a true ″lay-by″ directed spray when cotton is at least 16″ in height and has 2″ of bark. Do not apply the spray mixture to green cotton tissue. Valor SX/Panther SC + 2.66 pt/A MSMA 6 Plus + 1 qt/A Direx (diuron) is recommended for glyphosate resistant palmer amaranth. Note 1.
VALOR SX or VALOR EZ/ CHATEAU EZ + GLYPHOSATE	1-2 oz or 1-2 fl oz + 0.5-1 lb ai	For Roundup Ready cotton only. Apply using a hooded or shielded sprayer when Roundup Ready cotton is at least 12″ in height. Always use NIS at 0.25% v/v. Apply as a true ″lay-by″ directed spray when cotton is at least 16″ in height and has 2″ of bark. Do not apply the spray mixture to green cotton tissue. Note 1.
VIDA	0.5-2 fl oz + 1 qt NIS or 0.5 gal HSOC-COC/100 gal*	Apply in 20-30 GPA by ground with hooded or directed spray equipment to cotton with less than 3″ of stem bark.
WARRANT ULTRA	48-65 fl oz	Apply to cotton at least 6″ in height through layby as a post-directed application. Use hooded or shielded spray equipment to apply Warrant Ultra Herbicide in cotton that is 6-12″ in height. See label Area Use Map for detailed information.
ZIDUA SC	All soil types, 2.5 - 3.5 fl oz.	Single application only, maximum of 3.5 fl ozs/A per year. Apply postemergence-directed (layby) spray or postemergence spreading of impregnated dry bulk fertilizer. Use may result in temporary growth suppression in cotton. No preharvest interval.

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*				
Herbicide	**Rate/Acre[1]**			**Comments/Restrictions**
		BROADCAST OVER-THE-TOP		
AIM EC/SHARK EW	0.25-0.5 fl oz			Apply broadcast spray in min. 10 FPA by ground, 5 GPA by air to manage maturity. See label for COC recommendations. PHI 7 days. Note 1.
ASSURE II	7-12 fl oz + 0.5 gal HSOC-COC/100 gal*			See label for directions for specific weeds and rates. Note 1.
CHARGER BASIC/ DUAL MAGNUM	0.5-1.33 pt			Apply up to PHI 100 days; or Aug. 1 in TX, NM, OK, AZ, CA and clay soils in AR. Does not control emerged weeds. Use 1.33 pt in VA, NC, SC, GA, FL, AL, TX, OK, NM, AZ, CA, and clay soils in AR. Use 0.5-1.33 pt/A in TN, AR, KS, MS, MO, and LA. State and area restrictions.
CHEETAH	SEE LIBERTY 280 SL			
CLEANSE	6-8 fl oz: annuals 8-16 fl oz: perennials + 0.5 gal HSOC-COC/100 gal*			Apply to actively growing grasses at heights recommended on label. Do not apply within 60 days of harvest. Can tank mix with Cobra and/or MSMA 6 Plus. Apply no less than 1 pt/A of COC adjuvant. Tank mix with glyphosate in Roundup Ready cotton for enhanced control of bermudagrass or volunteer Roundup Ready corn. Notes 1, 3.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	Up to 1 qt or Up to 24 fl oz + 8.5-17 lb AMS/100 gal			Use on Roundup Ready cotton only. Apply from cracking to 4-leaf stage. Single application should not exceed 1 qt or 24 fl oz and no more than 2 applications through 4-leaf. Should have 10 days or 2 nodes between applications. Rescue treatment after 4th leaf may result in boll loss, delayed maturity or yield loss. Apply directed or with hooded sprayer after the 4 leaf stage. Avoid contact with >4 leaf cotton leaves. Do not exceed 4 qt/3 qt total in-crop. Include WC+AMS or NIS* as needed; NIS containing adjuvant not recommended for Cornerstone 5 Plus.
CREDIT XTREME	SEE ROUNDUP			
DUAL II MAGNUM/ EVERPREX	0.5-1.33 pt			Apply to cotton for preemergent control of weeds. PHI 100 days. Do not feed or graze. Use rates vary by state - see label.
ENLIST DUO	4.75 pt			For Enlist Cotton only. One to two applications with a minimum 12-day interval. Do not apply >14.25 pt/A/use season. Also see EnlistTankMix.com. See "New Herbicides for Herbicide Tolerant Cotton Traits" page for more information.
ENLIST ONE	2 pt			For Enlist Cotton only. One to two applications with a minimum 12-day interval. Do not apply >6 pt/A/use season. Also see EnlistTankMix.com. 24c AL (exp. date not given) do not apply at wind speeds >10 mph. See "New Herbicides for Herbicide Tolerant Cotton Traits" page for more information.
ENVERSA	**Soil Texture:** **Coarse:** **Medium:** **Fine:**	<1.5% OM (qts.) 1.25 to 1.6 1.25 to 1.7 1.25 to 1.9	>1.5% OM (qts.) 1.25 to 1.7 1.25 to 1.9 1.25 to 2.0	Apply this product postemergence to cotton and prior to weed emergence if weeds are emerged at time of application apply a labeled postemergence herbicide with this product to control the emerged weeds. The optimum timing and rate of application is when cotton is in 2 to 3 leaf stage or prior to weed emergence at 1.5 qts/acre. Applications may be made in a tank mixture. Application of this product with other postemergence or soil applied herbicides may increase the potential for crop injury. Do not exceed a maximum of 2 quarts (1.5 lb ai/acre) of this product as a single application. Do not exceed 4 quarts (3 lb ai/acre) per acre per year when making a second application, including a postemergence application in cotton. Do not graze treated area or feed treated cotton forage to livestock following application of this product.
ENVOKE	0.1-0.15 oz + 1 qt NIS/100 gal			POST broadcast when picker cotton has reached 5 true leaves. Labeled in AL, AR, AZ, FL, GA, KS, KY, LA, MO (bootheel), MS, NC, NM, SC, TN, VA, OK and certain parts of TX (East of I-35). See label for specific instructions within geographic zones in NM, OK, and certain parts of TX. See label for tank mix restrictions.
FUSILADE DX or FUSION	8-24 fl oz or 6-12 fl oz + 0.5 gal HSOC-COC/100 gal*			Apply to small grasses as per rate table. Apply to 8-12" Johnsongrass before boot stage; to bermudagrass when runner length is 4-8". A second application may be needed. Higher rates are generally for tank mixes or special situations; see labels. Fusilade DX: Min. 14-day application interval. Notes 1, 3, 4.
GRAMOXONE SL 3.0 ‡	0.8-1.3 pt			POST-directed spray (hooded or shielded; precision machine vision directed); see labels. Min. 14-day application interval. Max. 3 POST applications/year.
HONCHO K6	SEE ROUNDUP.			

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre[1]**	**Comments/Restrictions**
BROADCAST OVER-THE-TOP *(continued)*		
LIBERTY ULTRA or LIBERTY 280 SL/ ***TOTAL*/*TOTAL SL***/ CHEETAH or ***TOTAL 2.3***	19-29 fl oz or 29-43 fl oz or 22-43 fl oz	Broadcast over the top on LibertyLink cotton only, from emergence to early bloom. Rate range and restrictions differs for each product and affects subsequent applications and use and rates - see labels for use restrictions, specific rates. Apply with nozzles and pressure that deliver medium to coarse spray droplets. Requires sunlight for activity, applications during warm temperatures, high humidity, and bright sunlight improve the performance. For best results, make applications between sunrise and 2 hours before sunset.
POAST	1-1.5 pt + 1 pt HSOC-COC*	Apply to small grasses or to 8-12" tall Johnsongrass; to Bermudagrass before stolon length exceeds 6". A second application may be needed. See label for special rates. Notes 1, 3, 5.
ROUNDUP POWERMAX 3; ROUNDUP WEATHERMAX/CREDIT XTREME/HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums for Roundup Ready or Flex cotton.	Roundup Ready cotton: Apply from cracking to 4-leaf stage. Single application should not exceed 22 fl oz/A and no more than 2 applications through 4-leaf. Should have 10 days or 2 nodes "incremental growth" between applications. Rescue treatment after 4th leaf may result in boll loss, delayed maturity or yield loss. Apply directed or with hooded sprayer after the 4 leaf stage. Contact of spray on cotton leaves should be avoided to the maximum extent possible. Roundup Ready Flex: Do not exceed 22 fl oz/A by air. An initial application of 22 fl oz/A is recommended. Apply up to 60% open bolls. Maximum total from layby to 60% open bolls is 44 fl oz/A. Do not exceed 2.5 qt/A in crop (4 qt/A for Flex) or 5.3 qt/A total for year for all applications. May use other glyphosate products at greater or lesser volumes; see individual labels.
SECTION THREE	4-10.67 fl oz	Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS, or 8.5-17 lb/100 gallons of AMS.* Can be tank mixed with Cobra or MSMA 6 Plus post directed, or glyphosate to Roundup Ready cotton.
SELECT MAX	9-32 fl oz + 1 qt NIS/100 gal	AMS should be added.
SEQUENCE	2.5- 3.5 pt + 8.5-17 lb AMS/100 gal	Apply from 3" to 4 leaf GT cotton. Do not exceed 3.5 pt/A/season applied postemergence. State and soil restrictions apply. See label.
STAPLE LX	2.6-3.8 fl oz + 1 qt NIS/100 gal	Apply to young, actively growing broadleaf weeds 2" tall over-the-top or as a post-directed spray to cotton beginning at cotyledon stage. May be tank mixed with MSMA 6 Plus, Assure II, glyphosate, Liberty Ultra or Liberty 280SL. In AZ, NM, OK, TX use NIS at 1-2 qt/100 gal or 2-4 qt HSOC-COC/100 gal.* See label for restrictions in NM and west TX. Note 7.
TOTAL*/*TOTAL 2.3*/*TOTAL SL	SEE LIBERTY 280 SL	
VIDA	7-12 fl oz + 0.5 gal HSOC-COC/100 gal*	See label for directions for specific weeds and rates. Note 1.
WARRANT	1.25-2 qt	Apply POST to cotton and prior to weed emergence, and before cotton reaches first bloom. See label for rates based on a texture and O.M.

HARVEST AIDS

Applying products too early can reduce yield. Application too late can decrease activity due to lower temperatures. The choice of a harvest aid and rate depends on factors such as temperature, humidity, canopy density, stage of boll development, foliage (juvenile or mature), need to control regrowth or boll opening and presence or absence of weeds requiring desiccation. See labels.

ADIOS	0.4-1 pt	Apply to mature cotton. PHI 5 days.
AIM EC/SHARK EW	Up to 1.6 fl oz	Defoliate and dessicate cotton and weeds. Apply when at least 60-70% of bolls are open. Can tank mix with other harvest aids. Dense canopy, large cotton or unfavorable weather may require a second application. Max. 3.2 fl oz/A total as harvest aid.
BOLL'D or SUPER BOLL	1.33-2.66 pt: boll opening 0.33 pt: in tank mixes	Boll opening compound that also causes some defoliation. This compound is often tank mixed with defoliant Folex 6 EC.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	Up to 2 qt or Up to 1.5 qt + 8.5-17 lb AMS/100 gal (optional)	Defoliant. Apply after 20% boll crack for Roundup Ready. PHI 7 days. Do not feed or graze treated cotton. Do not apply to cotton grown for seed. Note 1.
CUTOUT	6.4-16 oz	Defoliant. Max. 16 oz/A/year. Apply by ground or air. PHI 5 days. Note 1.
DAZE 4SC	3.2-6.4 fl oz	Rates for pre-conditioning in AZ or CA are 1.6-3.2 fl oz/A. Use rates down to 1.6 fl oz/A may be used in certain tank-mixes. See the label. Include a COC* when applied alone or a surfactant in tank mixes. Apply at least 5 days before harvest. Defoliant that works best in warm weather, night-time lows above 60 °F. Effectively reduces regrowth. Cool weather activity can be improved when used in combination with Finish 6 Pro. COC* or oils may be used. Note 1.

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre[1]**	**Comments/Restrictions**
		HARVEST AIDS *(continued)*
DISPLAY	Up to 1 fl oz	Preharvest aid defoliant. Apply when 60-70% of bolls are open. PHI 7 days. Maximum 2 applications per season no less than 6 days apart.
DUPLOSAN	24 to 48 fl oz + COC at 1% v/v.	24(c) Special Local Needs Label for TX only, expires 12/31/2028, for post-harvest destruction / removal of all cotton including 2,4-D and Dicamba tolerant varieties. Apply 32 – 48 fl oz (2 – 3 pints) of Duplosan Herbicide per acre. For best results apply Duplosan 2 weeks after final cotton harvest. Do not make more than 2 applications / year. Do not harvest cotton treated with Duplosan Herbicide.
FINISH 6 PRO/ TERMINATE	1.33-2.67 pt	See labels for rates based on expected temperature conditions. Boll opener and defoliant with some regrowth suppression. Under difficult defoliation conditions, tank mix with other harvest aid products. To improve mixing and coverage, mixed with adjuvants and/or compatibility agents. Add Finish 6 Pro to the tank prior to the adjuvant.
FOLEX 6 EC	1-1.5 pt	Defoliant used over a broad range of conditions. Does not inhibit regrowth. Reduce rates if temperatures are warm (88 °F or higher) to avoid "stuck leaves." Apply when >50% of bolls are open. Apply up to 2.5 pt/A in CA or AZ. May be used with Finish 6 Pro. PHI 7 days. Note 1.
FREEFALL SC	4-9.6 fl oz	See label for applications rates under normal vs. variable conditions, for defoliation of rank cotton, and AZ bottom defoliation. Max. 2 applications. Max. 9.6 fl oz/A/year. See label for tank mix information.
GINSTAR EC	0.4-1 pt	Performs well under cool and warm conditions. May be mixed with Finish 6 Pro. Apply after last harvestable boll is mature and at least 5 days before harvest.
GRAMOXONE SL 3.0 ‡	0.3-1.3 pt	Add NIS (see labels). Do not exceed 4 applications total. See labels for Southern/Western tank mixes, application timing and related PHIs; stripper or spindle harvested defoliation application timing and related PHIs; and late season dessication/regrowth suppression and related PHIs.
LIBERTY 280 SL/ ***TOTAL SL/TOTAL/ TOTAL 2.3***	Up to 43 fl oz	Post-harvest burndown rate and annual application maximums are dependent on product applied, previous use rates and application programs.
RESOURCE	Up to 8 fl oz + 0.5-1 pt HSOC-COC* or 0.75-1 pt HSOC-MSO*	Defoliant. Apply when at least 60% of bolls are open. 4-8 fl oz: AL, FL, GA, NC, SC, TN (east), VA. 6-8 fl oz: AZ, AR, LA, NM, MS, MO, OK, TN (west), TX. A second application of 4-6 fl oz can be made 7 days later. NIS may be used under ideal conditions. 1-2 qt UAN or 2-2.5 lb AMS may be added. Maximum 14 fl oz/season. PHI 7 days.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums.	Preharvest aid defoliant. Apply after 60% of bolls have opened (20% boll crack for Roundup Ready and 60% boll crack for Flex). Do not apply to cotton grown for seed. PHI 7 days. Note 1. May use other glyphosate products at greater or lesser volumes; see individual labels.
RT 3	11- 44 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*	Apply after sufficient bolls for desired yield have opened. Apply at least 7 days before harvest. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY, and in certain counties in KS, MN, NE, NM, OK.
SHARPEN	1-2 fl oz + 0.75 pt HSOC-MSO* + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal	For use in KS, NM, OK, TX. Apply after 60-70% of bolls have opened. PHI 5 days. May feed gin trash to livestock. Maximum 2 fl oz/A/season.
SODIUM CHLORATE	0.5 gal: defoliant 0.75-1 gal: desiccant	Add 2 qt NIS/100 gal with defoliant rate. Effective on mature leaves, fair on new growth.
TERMINATE	SEE FINISH 6 PRO	

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
[1] For rates with soil texture limitations:
Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.
[2] IMPORTANT: The DIRECTED SPRAY rates are for broadcast application. For directed spray over the row, the chemical rate should be calculated as follows:
[Band Width (in.)/Row Width (in.)] X Rate per Acre Broadcast = Amount Needed per Acre for Banded Application

NOTE 1: Do not graze treated cotton fields or feed treated forage to livestock.
NOTE 2: If formulation of MSMA does not contain surfactant, add 2 qt NIS per 100 gal spray.
NOTE 3: Do not apply if rainfall is expected within 1 hour. Do not cultivate for 7 days before or after application.
NOTE 4: Do not harvest within 90 days, or plant rotational grass crops within 60 days.
NOTE 5: Do not apply within 40 days of harvest.
NOTE 7: Do not apply within 60 days of harvest. Do not apply to Pima cotton varieties. Requires 4-hour rain-free period after application. Do not apply Malathion within 24 hrs of Staple LX. Do not mix with Dimate 4E.
NOTE 8: If using prior to bark formation substitute NIS at 1qt/100 gal for HSOC-COC.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

COTTON GROWTH REGULATOR – SINGLE OR DUAL APPLICATION

Growth Regulator	Rate/Acre	Comments/Restrictions
COMPACT 6X	Low rate multiple applications: AL, AR, AZ, CA, FL, GA, LA, MO, MS, NM, NC, OK, SC, TN, TX, VA 0.33-4.2 fl oz High rate single or fewest multiple applications: AL, AR, AZ, CA, FL, GA, LA, MO, MS, NC, NM, OK, SC, TN, TX, VA and areas excluding Rio Grande Valley in OK & TX 1.33-4.2 fl oz High rate single or fewest multiple applications: Areas including the Rio Grande Valley in OK & TX 2.66-4.2 fl oz	Plant Growth Regulator. See label for specific application timing and rates based on geography and cotton growth stage, including late season application timing and rates. Max. 8.4 fl oz/A/season. Sum of all mepiquat chloride products/formulations must not exceed 0.132 lb/A/season. REI 12 hours. Do not plant another crop within 75 days of treatment.
GIN OUT	Low rate, multiple applications: All states 2-16 fl oz High rate, less frequent applications: All states in areas with history of excessive vegetative growth 8-16 fl oz High rate, less frequent applications: KS, OK, TX in areas where excessive vegetative growth is not a problem 8 fl oz	Plant Growth Regulator. See label for specific application timing and rates based on geography and cotton growth stage. Max. 48 fl oz oz/A/application. Sum of all mepiquat chloride products/formulations must not exceed 0.132 lb/A/season. REI 12 hours. Do not plant another crop within 75 days of treatment.
PENTIA	Pre-pinhead square stage of growth; short-staple and long-staple (Pima) cotton: All states 4-8 fl oz Post-pinhead square stage of growth; short-staple and long-staple (Pima) cotton: AL, AR, FL, GA, LA, MO, MS, NC, SC, TN, VA 8-24 fl oz Short-Staple and Long-Staple (Pima) Cotton: AZ, KS, NM, OK, TX 4-24 fl oz	Plant Growth Regulator. See label for specific application timing and rates based on geography and cotton growth stage, including late season application timing and rates. 48 fl oz oz/A/application. Sum of all mepiquat chloride products/formulations must not exceed 0.132 lb/A/season. REI 12 hours. Do not plant another crop within 75 days of treatment.

COTTON GROWTH REGULATOR – SINGLE OR DUAL APPLICATION *(continued)*

Growth Regulator	Rate/Acre	Comments/Restrictions
PIX WSG	Low rate, multiple applications: AL, AR, AZ, CA, FL, GA, LA, MO, MS, NC, NM, OK, SC, TN, TX, VA 0.1-1.2 oz (Do not exceed 2.35 oz/A/season) High rate, less frequent applications: AL, AR, AZ, CA, FL, GA, LA, MO, MS, NM, NC, SC, TN, VA 0.4-1.2 oz (Do not exceed 2.35 oz/A/season) OK, TX (except Rio Grande Valley) - excessive growth not a problem 0.4-1.2 oz (Do not exceed 2.35 oz/A/season) High rate, less frequent applications: OK, TX – (Including Rio Grande Valley) - excessive growth a problem 0.8-1.2 oz (Do not exceed 2.35 oz/A/season)	See label for specific application timing and rates based on geography and cotton growth stage. Max. 1.2 oz/A/application. Do not apply >2.35 oz/A/season. Sum of all mepiquat chloride products/formulations must not exceed 0.132 lb/A/season. REI 12 hours. Do not plant another crop within 75 days of treatment.
PROGIBB 4%	1-6 fl oz	Plant Growth Regulator. Apply in-furrow to seed or as a foliar application from the cotyledon stage to 7 leaf/node stage. Use higher rate when average temperatures will be <75° F for 14 days after application. Repeat applications as needed. Maximum 3 applications/season.
STANCE	2-4 fl oz	Plant Growth Regulator. Rate based on field examination and the degree of vegetative vigor. For moderate vegetative vigor, use 2 fl oz and, for high vegetative vigor use 3-4 fl oz. For high management, use 4 fl oz; modifiying application interval in addition to rate increase can provide enhanced crop management. A surfactant can reduce rainfast period to 2 hours. Allow a minimum of 7 days between applications. Do not exceed 22 fl oz/A/crop year. PHI 30 days. Do not graze or feed forage.

	ENLIST ONE	ENLIST DUO
Use Rate	1.5-2 pt/A	1.5-2 pt/A
Max Total Use	2 pt/A	2 pt/A
Operating Pressure	Follow manufacturer's recommendations	Follow manufacturer's recommendations
Wind Speed *(MPH)*	0-15	0-15
Rainfast Period *(hours)*	24	24
Allowed Application Timing	No Restrictions	No Restrictions
Buffer Zone *(feet)*	30 downwind	30 downwind
Application Volume *(minimum)*	10-15 GPA	10-15 GPA
Sprayer Speed *(Maximum)*	Unlisted	Unlisted
Nozzles and Tank-Mixes Approved	Enlisttankmix.com	Enlisttankmix.com

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

COTTON LABELED INSECTICIDES

INSECTICIDE	INSECTICIDE CLASS	RE-ENTRY PERIOD (HOURS)	PRE-HARVEST INTERVAL FOR COTTON	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	IN-FURROW OR SEED TREATMENT INSECTS							AFTER PLANTING INSECTS				
						APHID	CUTWORM	FLEAHOPPER	NEMATODE	PLANT BUG	THRIPS	WHITE FLY	APHID	ARMYWORM	BEET ARMYWORM	BOLL WEEVIL	BOLLWORM
ABAMEX ‡ or ABBA ULTRA ‡	A	12	20	NO	4-6 fl oz or 2-3 fl oz												
ADMIRE PRO	NI	12	14	NO	0.9-1.7 fl oz	●							●				●
					1.3-1.7 fl oz												
					7.4-9.2 fl oz	●				●	●	●					
ADVISE FOUR/ NUPRID 4F MAX	NI	12	–	NO	1-2 fl oz								●				●
					2 fl oz												
					0.65 fl oz/1000' row	●				●	●	●					
AERIS ‡	C,SP	–	–	–	25.6 fl oz/cwt	●	●	●	●S	●	●						
AGRI-MEK SC ‡	A	12	20	NO	1-3.5 fl oz												
ASANA XL ‡	SP	12	21	NO	5.8-9.6 fl oz								●S		●S	●	●
ASSAIL 30 SG or ASSAIL 70WP	NI	12	28	–	1.5-2.5 oz or 0.6-1.1								●				
					2.5-4 oz or 1.1-1.7 oz												
					2.5-5.3 oz or 1.1-2.3 oz												●
					4-5.3 oz or 1.7-2.3 oz												
AVICTA DUO COTTON ‡	A,NI	–	–		see label for per seed rate	●		●	●								
BAYTHROID XL ‡	SP	12	0	NO	0.8-1.6 fl oz												
					1.6-2.6 fl oz								●		●	●	●
					3.2 fl oz									●			
BELAY INSECTICIDE	NI	12	21		3-5 fl oz								●				
BESIEGE ‡	SP,DI	24	21	NO	5-6 fl oz												
					6.5-12.5 fl oz								●S	●	●	●	●
					10-12.5 fl oz												
BIDRIN 8 ‡	OP	72	30	NO	early season: 1.6-3.2 fl oz								●S			●	
					late season: 4-8 fl oz												
BLACKHAWK	SPI	4	28	–	1.6-3.2 oz												●
					2.4-3.2 oz									●	●		
BRACKET 97/ ORTHENE 97	OP	24	21	NO	0.28-0.4 lb/cwt	●	●				●						
					0.5-1 lb	●	●				●						
					2.5-3 oz												
					0.25 lb												
					0.25-1 lb								●				
					0.5-1 lb												●
					0.75 lb												
					1 lb									●			

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(continued)*										COMMENTS AND RESTRICTIONS
	BUDWORM, TOBACCO**	CUTWORM	FLEAHOPPER	LOOPERS, CABBAGE AND SOYBEAN	PLANT BUG	SPIDER MITE	STINKBUG	THRIPS	WHITEFLY	
						●				Control may improve when mixed with surfactant such as NIS. Apply 4-6 fl oz/A or 2-3 fl oz/A early season and when cotton is <10"; otherwise use 8-16 fl oz/A or 4-8 fl oz/A. See label for rates west of the Rockies. Max. 16 fl oz/A or 8 fl oz/A per application, max. 32 fl oz/A or 16 fl oz/A per year. 21-day min. application interval. Do not make >2 sequential applications of this or any other abamectin-containing product.
	●		●		●		●			Foliar or in-furrow, during planting, on or below seed or root zone chemigation. Plant bug: 1.3-1.7 fl oz/A to suppress Lygus hesperus. Bollworm/Budworm: Egg control only. Stinkbug: Southern green and green stink bugs.
					●S				●S	
	●		●		●		●	●		Foliar or in-furrow, during planting, on or below seed or root zone chemigation. Plant bug: 2 fl oz/A to suppress Lygus hesperus. Bollworm/Budworm: Egg control only. Stinkbug: Southern green and green stink bugs.
					●S				●S	
										For use only in commercial seed treatment equipment; for early season protection. Delinted seed only.
						●				Must be mixed with surfactant such as NIS. Apply 1-1.25 fl oz/A when cotton is <10"; otherwise use 1.75-3.5 fl oz/A.
	●	●	●	●	●		●	●	●S	May be applied through sprinkler irrigation systems; see label. Bollworm/Budworm: Resistant insects may occur. Cabbage looper only. Controls green, suppresses brown stink bug.
			●							Begin applications when thresholds have been reached; thorough coverage is important. Do not make >4 applications/year. Do not apply >once every 7 days. Bollworm/Budworm: Egg control only. Whitefly: See label for adult control application instructions; applications for ovicidal control will not provide control of migrating adults.
								●		
	●				●					
									●	
										Use only in Syngenta-certified cottonseed treatment facilities; see label.
		●						●		Max. 3.2 fl oz/A/5-day interval. Max 19.2 fl oz/A/crop season. Do not make >6 applications of synthetic pyrethroids/cotton crop/growing season. Pyrethroids do not work systemically to protect new growth. May be applied through sprinkler irrigation systems; see label. See label for important resistance management information. Armyworms: 1st and 2nd instar. Bollworm/Budworm: Includes ovicidal control of Cotton bollworm and Tobacco budworm. Loopers: 1.6-2.6 fl oz for Cabbage looper; 3.2 fl oz/A for Soybean looper only. Whitefly: adult.
	●		●	●	●		●		●S	
				●						
			●		●		●	●S	●S	Apply by ground or in min. 3 GPA by air. Max. 0.2 lb a.i./A/year. Do not make >1 application/year; do not apply after pinhead square formation. Aphids: Will not control in regions where insensitivity to neonicotinoids has been reported.
		●						●		Max. 31 fl oz/A/year. Max. 4 applications/A/crop. Do make >10 synthetic pyrethroid applications/crop/year. 5-day min. application interval. Do not use <10 GPA by ground or <2 GPA by air. Armyworm: 1st and 2nd instar only. Plant bug/Whitefly: See label for important resistance management information.
	●		●		●		●		●S	
				●						
			●			●S		●		Max. 3.2 fl oz/A and only 1 application during early season (emergence to pre-bloom); max. 16 fl oz/A with 14-day min. application interval during late season (first bloom to 30 days prior to harvest). Boll weevils: Use 3.2 fl oz/A.
					●		●			
	●									See label for application timing and resistance management information. 5-day min. application interval. Max. 20 oz/A/year. Thrips: Improved control with addition of adjuvant.
				●				●	●	
										Seed treatment: Effective reduction of aphids/thrips for up to 3 weeks; includes Western flower thrips; effective reduction of Black (greasy) cutworm through 3rd-4th leaf stage. In-furrow: Ground applications in 3-5 GPA. Foliar: In min. 10-25 GPA. See label for information about application by air. Cutworm: Black (greasy) cutworm. Armyworm: Excludes Beet armyworm. Bollworm/Budworm: East of Rockies (see label for early vs. mid- to late-season rates, egg rate, and AZ, CA rates); Pink bollworm use 1 lb/A. Loopers: Cabbage looper only. Thrips: Includes Western flower thrips. Whitefly: Excludes Sweetpotato and Silverleaf whitefly.
								●		
			●							
					●					
	●								●	
		●					●			

INSECTICIDE	INSECTICIDE CLASS	RE-ENTRY PERIOD (HOURS)	PRE-HARVEST INTERVAL FOR COTTON	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	IN-FURROW OR SEED TREATMENT INSECTS							AFTER PLANTING INSECTS					
						APHID	CUTWORM	FLEAHOPPER	NEMATODE	PLANT BUG	THRIPS	WHITE FLY	APHID	ARMYWORM	BEET ARMYWORM	BOLL WEEVIL	BOLLWORM	
CARBINE 50WG	PC	12	30	–	1.4-2.8 oz								●					
					1.7-2.8 oz													
CENTRIC 40WG ‡	NI	12	21	NO	1.25-2.5 oz								●					
					2-2.5 oz													
COMITE ‡	CD	6 days	50	NO	16-32 fl oz													
CONFIRM 2F	E	4	14	NL	4-16 fl oz										●			
					8-16 fl oz									●				
CORAGEN	DI	4	21		3.5-7 fl oz									●	●		●	
					5-7.5 fl oz													
CRUISER 5FS	NI	12	–	–	0.3-0.375 mg a.i./seed	●		●		●S	●							
DANITOL 2.4 EC ‡	SP	24	21	NO	8-16 fl oz								●					
					10.33-16 fl oz									●	●		●	
DELTA GOLD ‡	SP	12	21	NO	1.1-1.6 fl oz													
					1.6-2.6 fl oz								●S	●	●	●	●	
DENIM ‡	A	48	21	NO	6-8 fl oz										●			
					8-12 fl oz									●			●	
DIMATE 4E	OP	48	14	NO	0.25-1 pt								●					
					0.5 pt													
DIMILIN 2L ‡	GR	12	14	–	2-4 fl oz										●	●		
					4-8 fl oz									●	●	●		
					6-8 fl oz										●			
DIPEL ES	Bt	4	0	0	1-6 pt										●		●	
					2-6 pt									●				
ELEVEST ‡	SP,DI	12	21	NO	4.8-9.6 fl oz								●			●		
					5.6-9.6 fl oz										●		●	
ENDIGO ZCX ‡	NI,SP	24	21	NO	4.0-4.5 fl oz									●		●	●	
					4.5 fl oz								●					

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(continued)*										COMMENTS AND RESTRICTIONS
	BUDWORM, TOBACCO**	CUTWORM	FLEAHOPPER	LOOPERS, CABBAGE AND SOYBEAN	PLANT BUG	SPIDER MITE	STINKBUG	THRIPS	WHITEFLY	
										Low rates can be used for early season control of low pest densities or when tank mixing. Min. 5 GPA by ground, 3 GPA by air. Max. 2.8 oz/A/application. Max. 8.4 oz/A/year. 7-day min. application interval. May be applied through sprinkler irrigation systems; see label.
			●		●					
			●		●					Max. 5 oz/A/growing season. Min. 10 GPA by ground, 3 GPA by air. Plant bug: 1.25-2.4 oz/A for control of Clouded and Tarnished plant bugs; 2-2.5 oz/A for suppression of Lygus hesperus. Stinkbug: Controls green, suppresses brown stink bug. Except for aphids, pest control may require 2 applications made at 5- to 10-day interval.
					●S		●S	●	●	
						●				East of Rocky Mts. (see label for AZ, CA timing and rates): Early 16 fl oz/A; mid-season to layby 16-32 fl oz/A; layby to boll opening 32 fl oz/A. May be phytotoxic to young cotton under certain conditions; see label. Max. 64 fl oz/A/year. Apply only before bolls open. Max. 2 applications/season. 21-day min. application interval.
										Use of spreader-binder recommended to maximize coverage and distribution of spray mixture. Max. 16 fl oz/A/application. Max. 64 fl oz/A/year. Beet Armyworm: 4- 8 fl oz/A early season; 8-16 fl oz/A when infestations occur under conditions in which thorough coverage is more difficult, with reapplication every 10 to 14 days.
				●						
	●									Max. 4 applications/A/year. Max. 15.4 fl oz/A/year. Bollworm/Budworm: In non-transgenic/non-Bt cotton make 1st applications at 5-7 fl oz/A and subsequent applications at 3.5-7 fl oz/A. Loopers: Control of Cabbage looper; suppression of Soybean looper.
				●						
										Use on delinted cotton only. Plant treated seed according to dates and soil temperatures recommended by agricultural extension agent. Do not apply a neonicotinoid insecticide within 45 days of planting treated seed.
					●		●		●	See label regarding AZ, CA restrictions and addition of non-ionic surfactant for improved control of certain pests. Aphids/Plant Bug/Stink Bug (excluding Brown)/Whitefly: Use lower rate range and add 3-6 fl oz/A Belay. Armyworm/Bollworm/Looper/Budworm: For better control of these pests, use higher rate range and 0.5-0.3 lb/A DiPel DF.
	●			●	●	●	●			
		●	●					●		Max. 15.6 fl oz/A/season. Max. 6 applications. 5-day min. application interval. Min. 5 GPA by ground, 2 GPA by air. May be applied through sprinkler irrigation systems; see label. Armyworm/Loopers: Best control when applied to 1st and 2nd instar. See label for important resistance management information.
	●			●	●	●S	●		●S	
										Target applications at 1/4" larvae. At least 2 applications may be needed to control a generation during extended egg laying period. Do not apply via any irrigation system. Do not make >2 sequential applications without rotating to another product with different MOA. Max. 36 fl oz/A/calendar year. Max. 12 fl oz/A/application. 5-day min. application interval.
	●			●		●S				
			●		●			●		Max. 1 pt/A/application. Max. 2 pt/A/season. Application interval: 14 days if diluted with water, 40 days if diluted with refined vegetable oil. May be applied through sprinkler irrigation systems; see label. Plant Bug: Low rate range for plant bugs; high rate range for lygus bugs. See label for AZ, CA rates and restrictions.
					●					
										See label for use with crop oils. Armyworm: Apply before 1st bloom. Beet armyworm: Low rate range for early season before 1st bloom; mid-range rate for mid-season; high rate for late-season. Boll weevil: High rate for early season before 1st bloom; low rate to reduce weevils emerging subsequent spring if applied when adults enter diapause; see label for additional information.
				●S						
	●			●						See label for lower rate early-, mid- and late-season programs when used in combination with an ovicide (early-season), synthetic pyrethroid (mid-season) or organophosphate (late-season). Armyworm: 1st and 2nd instar. Bollworm/Budworm: Controls light to moderate populations of newly hatched worms.
		●			●		●	●		Max. 3 applications/A/year. Max. 2 sequential applications before rotating to different MOA. Max. 10 synthetic pyrethroid applications/crop/season. Min. 5-day retreatment intereval. See label for timing notes. Coverage is essential for control of cotton aphid and mites. PHI 3 days for succulent, 14 days for dried. Soybean looper: suppression only. Cotton bollworm and tobacco budworm: see label for notes related to timing, rates and Bt transgenic cotton.
	●			●		●			●	
			●	●	●					5-day min. application interval. Insect control can improve with non-ionic surfactant or COC. Min. 10 GPA by ground, 2 GPA by air. Do not apply within 45 days of planting if seeds were treated with neonicotinoid. Do not make >10 applications of synthetic pyrethroids in one growing season. See label for max. application volume/A/growing season. Loopers: Cabbage looper only. Pink bollworm only. Plant Bug, Stinkbug: Low rate range for stink bug species; high rate range for brown, red banded, red shouldered stink bugs.
					●		●		●	

COTTON LABELED INSECTICIDES *continued*

INSECTICIDE	INSECTICIDE CLASS	RE-ENTRY PERIOD (HOURS)	PRE-HARVEST INTERVAL FOR COTTON	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	IN-FURROW OR SEED TREATMENT INSECTS							AFTER PLANTING INSECTS				
						APHID	CUTWORM	FLEAHOPPER	NEMATODE	PLANT BUG	THRIPS	WHITE FLY	APHID	ARMYWORM	BEET ARMYWORM	BOLL WEEVIL	BOLLWORM
ENTRUST SC	SPI	4	28	–	3-6 fl oz												●
					4-6 fl oz									●	●		●
ETHOS ELITE LFR ‡		–	–	–	0.1-0.49 fl oz/1000' row		●										
FASTAC CS ‡	SP	12	14	NO	PP: 1.3-1.9 fl oz		●										
					1.3-1.9 fl oz												
					2.6-3.6 fl oz									●		●	●
					2.8-3.8 fl oz								●		●		
FULFILL	PI	12	21	–	2.75 oz								●				
GRIZZLY TOO ‡	SP	24	21	NO	0.96-1.28 fl oz												
					1.28-1.92 fl oz												●
					1.6-2.56 fl oz								●S	●	●	●	●
HERO ‡	SP	12	14	NO	3.6-10.3 oz												
					5.2-10.3 oz								●	●		●	●
					10.3 oz												●
INTREPID 2F	MAC	4	14	–	4-10 fl oz									●	●		
INTREPID EDGE	MAC	4	28	–	4-8 fl oz									●	●		
					6-8 fl oz									●			●
INTRUDER 70 WSP	NI	12	28	–	0.6-1.1 oz												●
					0.8-1.1 oz								●				
					1.1 oz												
					1.7-2.3 oz												
JAVELIN WG	Bt	4	–	–	0.5-1.5 lb												●
KNACK	GR	12	28	NO	8-10 fl oz												
LAMBDA-CY AG ‡	SP	24	21	NO	1.92-2.56 fl oz												
					2.56-3.84 fl oz												●
					3.2-5.12 fl oz								●S	●	●	●	●

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(continued)*									COMMENTS AND RESTRICTIONS
BUDWORM, TOBACCO**	CUTWORM	FLEAHOPPER	LOOPERS, CABBAGE AND SOYBEAN	PLANT BUG	SPIDER MITE	STINKBUG	THRIPS	WHITEFLY	
●									5-day min. application interval. Max. 29 fl oz/A/growing season for all application methods. Do not make >2 consecutive applications before rotating to another non-Group 5 class of chemical. See label for pest-specific applications timing.
			●				●		
									At-plant: Appy as 5-7" band over open furrow (T-band), or in-furrow with seed. Max. 0.5 lb (0.3 lb California) bifenthrin a.i./A/season, including all application methods. Product also contains fungicide; see label for list of suppressed diseases.
									PP: Apply from 14 days PP up to emergence by ground, air, banded or in-furrow. POST: Min. 5 GPA by ground, 1 GPA by air. See label for CA-specific restrictions. Lepidopteran egg control may be achieved with proper timing. Does not work systemically to protect new growth. Beet Armyworm: Control only in the high plains of TX, AZ and CA. Boll Weevil: 3- to 4-day application interval until pest numbers are acceptable. Loopers: Cabbage only. Plant Bug: Lygus bug 2.8-3.8 fl oz/A; Tarnished and other plant bugs 2.8-3.8 fl oz/A.
	●						●		
●		●	●	●		●			
				●				●S	
								●S	Apply when pests first appear, before populations build to damaging levels. Min. 10 GPA by ground, 2 GPA by air. Max. 2.75 oz/A/application. Max. 5.5 oz/A/crop/season. 7-day min. application interval. Optimum coverage/ penetration achieved with addition of adjuvant; see label.
	●						●		Max. 12.8 fl oz/A/season. Min. 10 GPA by ground, 2 GPA by air. May be applied through sprinkler irrigation systems; see label. Do not make >10 applications of this or other synthetic pyrethroids to a crop in one growing season. Beet Armyworm: 1st and 2nd instar. Boll Weevil: 3- to 5-day application schedule. Bollworm: 1.28-1.92 fl oz/A for Pink bollworm; 1.6-2.56 fl oz/A for Cotton bollworm. Loopers: Cabbage only. See label for important resistance management information.
		●	●	●					
●					●S	●		●S	
							●		Max. 10.3 oz/A/application. Max. 46.35 oz/A/season. See label for ground or air applications in water vs. refined vegetable oil. May be applied through sprinkler irrigation systems; see label. See label for important resistance management information. Bollworm: Pink bollworm 10.3 oz/A; others 5.2-10.3 oz/A. Loopers: Cabbage only. Plant Bug: Lygus spp.
●	●	●	●	●		●			
					●			●	
									Apply at egg hatch or at first signs of feeding. 10- to 14-day application interval under heavy infestations, continuous moth flights and/or egg masses and larvae at all development stages. Max 64 fl oz/A/year. Armyworm: True, Southern and Yellowstriped ; suppression only for Fall armyworm.
●			●				●*		Apply at egg hatch or at first signs of feeding. 10- to 14-day application interval under heavy infestations, continuous moth flights and/or egg masses and larvae at all development stages. 4-day min. application interval. Do not make >6 applications/year. Max 48 fl oz/A/year. Armyworm: True, Southern and Yellowstriped 4-8 fl oz/A; Fall 6-8 fl oz/A. 2ee AL, AR, LA, MS, MO, TN (exp. date not given) for control of thrips, 3-6 fl oz/A.
●		●							Use high end of rate range for heavy pest pressure. 7-day min. application interval. Do not make >4 applications/ season. Max. 9 oz/A/crop. Budworm/Bollworm: For use as ovicide. Whitefly: For use on adults or as ovicide. See label for important resistance management information.
							●		
				●					
								●	
●	●		●						Early and mid-season control (see label for early season Boll Weevil/Budworm control rates in AZ, CA). Repeat as necessary throughout season to control. If egg laying frequency indicates future moderate-heavy populations, time spray to coincide with 2nd instar. Cutworm: Spotted cutworm.
								●S	Whitefly egg control only. Min. 10-50 GPA by ground, 3-10 GPA by air. Do not apply <8 fl oz/A/application; max. 1 application/growing season. See label for important resistance management information.
	●						●		Max. 1.6 pt/A/season. May be applied through sprinkler irrigation systems; see label. Do not make >10 applications of this or other pyrethroid products/crop/season. Beet Armyworm: 1st and 2nd instar. Bollworm: Pink bollworm 2.56-3.84 fl oz/A; Cotton bollworm 3.20-5.12 fl oz/A. Loopers: Cabbage only. See label for important resistance management information.
		●	●	●					
●					●S	●		●S	

COTTON LABELED INSECTICIDES *continued*

INSECTICIDE	INSECTICIDE CLASS	RE-ENTRY PERIOD (HOURS)	PRE-HARVEST INTERVAL FOR COTTON	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	IN-FURROW OR SEED TREATMENT INSECTS							AFTER PLANTING INSECTS				
						APHID	CUTWORM	FLEAHOPPER	NEMATODE	PLANT BUG	THRIPS	WHITE FLY	APHID	ARMYWORM	BEET ARMYWORM	BOLL WEEVIL	BOLLWORM
LANNATE LV ‡ or LANNATE SP ‡	C	72	15	NO	ovicide/larvicide: 0.75 pt or 0.25-0.75 lb								●				
					ovicide/larvicide: 0.4-0.75 pt or 0.125-0.25 lb									●	●		●
					1.5-2.25 pt or 0.5-0.75 lb									●	●		●
LEVERAGE 360 ‡	SP,NI	12	14	NO	2.8-3.2 fl oz								●		●	●	●
					3-3.2 fl oz												
					3.2 fl oz									●			
MALATHION 5	OP	48	7	NO	1-1.5 pt												
					1.5-3 pt									●			
					2-4 pt								●			●	
MALATHION 5 EC	OP	48	7	NO	1-1.5 pt												
					1.5-4 pt								●	●			
					2-4 pt											●	
MALATHION 8 FLOWABLE	OP	48	7	NO	2.7 pt								●	●		●	
MICROTHIOL DISPERSS	S	24	-	-	5-10 lb												
MUSTANG MAXX ‡	SP	12	14	NO	PP: 1.28-1.92 fl oz												
					1.28-1.92 fl oz												
					2.64-3.6 fl oz									●		●	●
					2.8-4 fl oz								●		●		
OBERON 2 SC or OBERON 4 SC	TA	12	30	0	6-16 fl oz or 3- 8 fl oz												
ONAGER	MG	12	35	NO	12-20 oz												
OUTREACH SC	-	-	-	-	6-10 fl oz				●								
PYGANIC EC 1.4$_{II}$	PY	12	0	0	16-64 fl oz								●	●	●	●	●
PYGANIC EC 5.0$_{II}$	PY	12	0	0	4.5-15.61 fl oz								●	●	●	●	●
RADIANT SC	S,N	4	28	–	2.8-8 fl oz										●		●
					4.25-8 fl oz									●			●
REQUIEM EC	BP		4	0	0.5-2 qt												
					2-4 qt												

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(continued)*										COMMENTS AND RESTRICTIONS
	BUDWORM, TOBACCO**	CUTWORM	FLEAHOPPER	LOOPERS, CABBAGE AND SOYBEAN	PLANT BUG	SPIDER MITE	STINKBUG	THRIPS	WHITEFLY	
								●		Ovicide/Larvicide: Anywhere in U.S. See label for TX and West of Rockies rates and application intervals. Max. 6 pt/A/crop or 2 lb/A/crop. Do make >8 applications/crop. East of Rockies: 1.5 pt/A or 0.5 lb/A for early season control; 1.5-2.25 pt/A or 0.5-0.75 lb/A for late season control.
	●		●		●		●			
	●				●					
		●	●	●			●	●		Max. 19.8 fl oz/A/year. Do not make >6 applications of this or other pyrethroid products to crop/season. Apply by ground, air, or may be applied through sprinkler irrigation systems (use the higher labeled rate with chemigation); see label. Bollworm: Pink bollworm 2.8-3.2 fl oz/A; Cotton bollworm 3.2 fl oz/A. Plant Bug: Tarnished 3.2 fl oz/A; Lygus bug 3-3.2 fl oz/A. Thrips: Foliage feeding only. Loopers: Cabbage only.
					●S				●S	
			●							Use higher rate in range for heavy infestations. Rates are for non-ULV applications; see label for ULV rates. 7-day min. application interval. Max. 3 applications/year. Armyworm: Fall armyworms only. Plant Bug: Lygus bugs.
					●	●		●	●	
			●							7-day min. application interval. Max. 4 pt/A. Max. 3 applications/year. Armyworm: Fall armyworms only. Plant Bug: Lygus bugs.
					●	●		●	●	
			●		●	●			●	Max. 2.5 pt/A. Max. 3 applications/year. 7-day min. application interval. May be applied through sprinkler irrigation systems; see label.
						●				Apply throughout season as necessary.
		●								Max. 24 fl oz/A/season. May be applied through sprinkler irrigation systems; see label. Beet Armyworm: Control only in high plains of AZ, TX. Loopers: Cabbage only. Plant Bug: Tarnished 2.64-3.6 fl oz/A; Lygus bugs 2.8-4 fl oz/A.
		●						●		
			●	●	●		●			
					●				●S	
						●			●	Early season 6-16 fl oz/A or 3-8 fl oz/A. Mid-Late season 8-16 fl oz/A or 4-8 fl oz/A. Max. 3 applications/crop season. Early season apply by ground when cotton is <10"; mid-late season by ground or air. Min. 10 GPA by ground, 5 GPA by air. May be applied through sprinkler irrigation systems; see label.
						●				Do not make >1 application/calendar year. Max. 20 ox/A/calendar year. Apply before boll opening, prior to adult buildup. May be applied through sprinkler irrigation systems; see label.
										De lint cotton only, not for use in California. At planting: apply In furrow or chemigation (drip/trickle irrigation systems only) for management of 4 species of nematodes in corn. Contains a live bacteria, apply within 24 hrs of mixing. Water or liquid fertilizer are acceptable carriers. Adequate agitation and resuspension in the spray tank is critical.
	●			●	●	●	●	●	●	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
	●			●	●	●	●	●	●	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
	●									Max. 34 fl oz/A/year. Do not make >6 applications/calendar year. See label for important resistance management information. Armyworm: With the exception of yellowstriped and western yellowstriped. Bollworm: Cotton bollworm only; lower rate range for pre-bloom, higher rate range for post-bloom. Thrips: Control may improve with addition of adjuvant.
				●				●S		
						●				Rate depends on plant size and pest pressure. Ensure thorough coverage. Spider Mite: Two-spotted. Whitefly: Silverleaf.
									●	

INSECTICIDE	INSECTICIDE CLASS	RE-ENTRY PERIOD (HOURS)	PRE-HARVEST INTERVAL FOR COTTON	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	IN-FURROW OR SEED TREATMENT INSECTS							AFTER PLANTING INSECTS				
						APHID	CUTWORM	FLEAHOPPER	NEMATODE	PLANT BUG	THRIPS	WHITE FLY	APHID	ARMYWORM	BEET ARMYWORM	BOLL WEEVIL	BOLLWORM
SEFINA	PO	12	7	NL	3 fl oz								●				
					14 fl oz												
SIVANTO 200 SL OR SIVANTO PRIME	B	4	14	NO	7-10.5 fl oz or 7-14 fl oz								●				
					10.5-14 fl oz or 10.5-14 fl oz or 5.5-7 fl oz												
STEWARD EC	OX	12	14	NO	6.7-9.2 fl oz												
					9.2-11.3 fl oz									●	●		●
					11.3 fl oz												●
TELONE II ‡	-	120	–	–	9-18 gal	●			●*								
THIMET 20-G ‡	OP	48-72	60	NO	early season: 2.5-3 fl oz/1000' row	●											
					early season: 6-9 fl oz/1000' row								●				
TRANSFORM WG	SU	24	14	NO	0.75 to 1.0 oz								●				
					0.75 to 1.5 oz												
					1.5 to 2.25 oz												
					2.0 to 2.25 oz												
TUNDRA EC ‡/BRIGADE 2EC ‡/***BIFEN 2 AG GOLD*** ‡	SP	12	14	NO	1.3-6.4 fl oz												
					2.6-6.4 fl oz								●	●		●	●
					3.8-6.4 fl oz										●		●
VANTACOR	DI	4	21		1.2-2.5 fl oz									●	●		●
					1.7-2.5 fl oz												
VENOM	NI	12	14	–	1-3 oz	●							●				●
VYDATE C-LV ‡	C	48	14	NO	4.25-17 fl oz												
					8.5-17 fl oz	●				●	●	●					
					10-17 fl oz								●				●
					12.7-17 fl oz												
					17 fl oz	●				●	●	●					

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(continued)*										COMMENTS AND RESTRICTIONS
	BUDWORM, TOBACCO**	CUTWORM	FLEAHOPPER	LOOPERS, CABBAGE AND SOYBEAN	PLANT BUG	SPIDER MITE	STINKBUG	THRIPS	WHITEFLY	
										Min. 10 GPA by ground, 2 GPA by air. Do not make >2 consecutive applications before alternating to a different MOA. Max. 28 fl oz/A/year. Aphids: Includes cotton/melon aphid. Whitefly: Active against egg, early instar, and adult life stages.
									●	
			●							10-day min. application interval. Max. 28 fl oz/A/year Sivanto 200 SL/Sivanto prime. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL. May be applied through sprinkler irrigation systems; see label. CA re-entry period is 12 hrs.
									●	
				●						Max. 45 fl oz/A/year. 5-day min. application interval. Do not make >4 applications/crop. Min. 5 GPA by ground, 3 GPA by air. May be applied through sprinkler irrigation systems; see label. Armyworm/Beet Armyworm: 6.7-9.2 fl oz/A in cotton <18". Bollworm/Budworm: For best control apply when majority of population is in blackhead egg to egg hatch; in transgenic Bt cotton use 9.2-11.3 fl oz/A for Bollworm control; see label for AL, GA rates on conventional cotton. Plant Bug: Control of Tarnished; suppression only of Lygus bugs.
			●		●					
	●									
										Mineral soil: 9-12 gal/A; up to 18 gal A for cyst-forming nematodes. Muck or Peat (>20% O.M.) soil: 18 gal/A. 24c AL, AK, FL, GA, LA, MS, MO, NC, SC, TX (exp. date not given) for nematode suppression at-plant at 3 gal/A (28 fl oz/1000' on 38" row spacing).
								●		At-plant 2.5-3 fl oz/1000' row: For areas where limited period of protection from thrips is needed in early season for good growth. At-plant 6-9 fl oz/1000' row for extended period of mite control, as well as early season protection from other pests. Do not apply >1 application/year.
		●						●	●	
										Use higher rate for heavy pest populations. Min. 5-day application interval. Max. 4 applications/A/year. Max. 2 consecutive applications/crop. max. 8.5 oz/A/year. Two applications may be required for optimum tarnished plant bug control under high pest pressure or heavy immigration of plant bugs from other crops.
			●							
					●					
							●S	●S	●S	
								●		May be applied in water (min. 5 GPA by ground or 1 GPA by air) or refined vegetable oil. Max. 0.5 lb a.i./A/season. Do not make >10 synthetic pyrethroid applications/crop/season. Bollworm/Plant bugs: 2.6-6.4 fl oz/A except 3.8-6.4 fl oz/A for Pink bollworm and Lygus spp. Loopers: Cabbage only.
	●	●	●	●	●		●		●	
					●	●				
	●	●								Max. 4 applications/A/year. Max. 5.1 fl oz/A/year. Bollworm/Budworm: In non-transgenic/non-Bt cotton make 1st applications at 1.7-2.3 fl oz/A and subsequent applications at 1.2-2.3 fl oz/A. Loopers: Control of Cabbage looper; suppression of Soybean looper.
				●						
	●		●		●		●			Higher application water volumes improve control. Min. 10-50 GPA by ground, 3-10 GPA by air. Apply higher rate under severe pest pressure.
					●S				●S	See label for AZ, CA rates/restrictions. See label for geographic maximum rates and applications/season. Plant Bug: Tarnished 4.25-17 fl oz/A; 12.7-17 fl oz/A early season Lygus spp., 17 fl oz/A late seaston Lygus spp. Bollworm: Pink bollworm only; see label for early season vs. mid- to late-season application timing and intervals.
	●		●		●		●	●		
					●S				●S	

INSECTICIDE	INSECTICIDE CLASS	RE-ENTRY PERIOD (HOURS)	PRE-HARVEST INTERVAL FOR COTTON	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	IN-FURROW OR SEED TREATMENT INSECTS							AFTER PLANTING INSECTS					
						APHID	CUTWORM	FLEAHOPPER	NEMATODE	PLANT BUG	THRIPS	WHITE FLY	APHID	ARMYWORM	BEET ARMYWORM	BOLL WEEVIL	BOLLWORM
WARRIOR II ‡	SP	24	21	NO	0.96-1.28 fl oz												
					1.28-1.92 fl oz												●
					1.6-2.56 fl oz								●S	●	●	●	●
XENTARI	Bt	4	0	0	0.5-2 lb	●	●	●	●S	●	●						
ZEAL SC	D	12	28	NO	1.33-2 fl oz												
ZIRONAR	BP	4	0	0	6-12 fl oz				●								

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions
** No control of pyrethroid resistant budworms
See Insecticide Resistance Management in the Technical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
NOTE: All recommended cotton insecticides are highly toxic to bees.

Bt Cotton Refuge Options:
Widestripe, Bollgard, and Bollgard II options are the same.
- 20% Sprayed - 20% of acres with non-Bollgard within 1 mile of the refuge.
- 5% Unsprayed - 5 unsprayed non-Bollgard acres for every 95 Bollgard acres. Refuge must be at least 150' wide and within 1/2 mile of all fields.
- 5% Embedded - refuge can be treated with any insecticide at the same time Bollgard acres are treated as long as refuge is embedded in the field or field unit. For smaller fields, these can be grouped into "field units"

Community Refuge Plan - Growers who farm in a contiguous area may implement a single insect resistance management (IRM) plan.

SCOUTING AND MANAGEMENT DECISIONS

Frequent scouting or field checking is a vital part of any management program. It is the only reliable way to determine if and when a particular pest should be controlled. Pest populations fluctuate in response to weather conditions, plant development and natural enemies. Control measures are needed when a pest population reaches a level where further increases would result in excessive damage and economic loss. Economic loss is any loss that exceeds the cost of control. The cotton plant is vulnerable to insect pests throughout its growth and development. Certain pests occur at specific times during the growing season, either in response to a particular stage of the plant or because of other factors, such as weather or maturation of other hosts.

NOTE: All recommended cotton insecticides are highly toxic to bees.

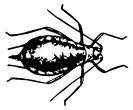
AFTER PLANTING INSECTS *(continued)*										COMMENTS AND RESTRICTIONS
	BUDWORM, TOBACCO**	CUTWORM	FLEAHOPPER	LOOPERS, CABBAGE AND SOYBEAN	PLANT BUG	SPIDER MITE	STINKBUG	THRIPS	WHITEFLY	
		●						●		Apply by ground, air or sprinkler irrigation. Max. 12.8 fl oz/A/season. Do not make >10 applications of this or other pyrethroid products in one growing season. Beet Armyworm: 1st and 2nd instar. Boll Weevil: Apply on 3- to 5-day schedule. Bollworm/Budworm: Also provides ovicidal control. Loopers: Cabbage only.
			●	●	●					
	●					●S	●		●S	
										Apply in min. 10 GPA by ground, 2 GPA (5-10 GPA in arid areas) by air. May be applied sprinkler irrigation.
						●				Min. 10-50 GPA by ground, 3-10 GPA by air. Applications below 0.66 oz/A or 1.33 fl oz/A or 7.66 fl oz/A may result in poor control and contribute to resistance. Max. 1 application/season.
										Apply in minimum 3 GPA by ground. Early season protection of seedling injury. Also a fungicide (see Cotton Diseases section).

Insecticide Class

A – Avermectin
B – Butenoilides
BP – Biopesticide
Bt – Microbacterial
C – Carbamate
CD – Cyclodiene
CH – Chlorinated Hydrocarbon
D – Diphenyl Oxazoline
DI – Diamides
GR – Growth regulator
MAC – Diacylhydrazine
MG – Mite Growth Inhibitor
N – Naturalyte/Spinosad
NI – Nicotinyl/nicotinoid
OP – Organophosphate
OX – Oxadiazine
PI – Pyridinecarboxamide
PO – Pyropene
SP – Synthetic Pyrethroid
SU – Sulfoximines
S – Sulfur
TA– Tectronic Acid

BEE ALERT

See Insecticide Classification in the Technical Section for information on insecticide toxicity to bees.



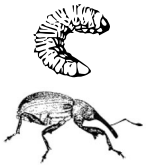
APHIDS: Aphids are usually found on the underside of leaves, on stems and in terminals. They may cause young leaves to curl and older leaves to yellow. Insecticide treatment may be necessary when infestations are reaching heavy levels in large areas of the field and natural control has not been sufficient to limit aphid buildup. Aphids may be resistant to OPs or Pyrethroids. Pyrethroids are not recommended until after July 10. Aphid fungus in July may reduce populations. **ET:** prebloom >50/leaf, blooming >100/leaf, open bolls 15/leaf.



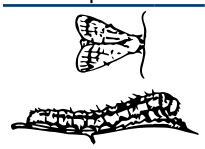
ARMYWORM: **ET:** treat for 10-20 fall armyworms/100 plants. Best control when applications are timed to coincide with egg hatch or small larvae. Do not treat for presence of eggs alone in dual-protein Bt cotton such as Bollgard II.



BEET ARMYWORM: Early-season infestations feed on leaves and terminal areas. Occasionally they destroy the terminal, causing extensive lateral branch development and delayed maturity. Early-season insecticide applications may be warranted when plants with undamaged terminals approach the lower optimal plant stand limits of two plants/row foot for dryland production and four plants per foot of row in irrigated production. Larvae skeletonize leaves rather than chewing large holes in them. Damaging infestations sometimes develop late in the season when beet armyworms also feed on terminals, squares, blooms and bolls. When beet armyworms begin to damage the fruit, control may be justified. Infestations usually are spotty within a field, and careful scouting is necessary to determine the need for control. Beet armyworms longer than 1/2 inch may be difficult to control. **ET:** small worm counts average one/row foot and at least 10 percent of the plants examined are infested, control may be warranted. Insecticides may only provide suppression. Crop oils may improve control.



BOLL WEEVIL: EARLY SEASON CONTROL: Overwintered boll weevil control is designed to destroy adult weevils in the field before they deposit eggs in squares. It is also designed to keep the first in season weevil generation below the treatment level, thereby avoiding the treatments at a time when bollworm outbreaks are more likely to occur (late July to early August). If field or trap inspections indicate that weevils are still entering the field following the first insecticide application, an additional one or two applications may be needed. The first application should be made just before the earliest squares are 1/3-grown with additional applications following at 5-day should be terminated as soon as possible after the first 1/3-grown square stage to allow beneficial insects and spiders time to reestablish. There is always a risk of increased bollworm activity where these treatments are made within 10 days of bloom. MID AND LATE SEASON CONTROL: (1/3-grown squares through remainder of production season.) Emerged adults feed on squares or bolls for four to eight days before mating and egg laying. Adult weevils puncture squares or bolls for feeding and egg laying. Punctured squares flare open and usually fall to the ground within a week. Small bolls that are punctured may also fall to the ground, but larger bolls remain on the plant. Boll weevil damage reaches its highest level late in the growing season. As cotton plants mature and the number of squares is reduced, the percentage of boll weevil-damaged squares becomes an unrealistic indicator of damage because of boll weevils competing for squares. As square numbers decrease, boll weevils may cause more damage to small bolls. Boll protection should be the primary concern as long as there is a significant number of immature bolls which can be expected to mature before the average frost date or before the crop is terminated by a desiccant or defoliant. Where economic weevil infestations are encountered, protect bolls until the last bolls expected to be harvested are 12 to 15 days old. One or more insecticide applications made at weekly intervals may be required to control moderate weevil infestation. For heavy infestations, it may be necessary to make several applications at 3- to 5-day intervals. Do not make more than 10 synthetic pyrethroid applications (of one or combination of products) to a cotton crop in one growing season. Synthetic pyrethroid insecticides include Asana, Baythroid XL, Danitol 2.4 EC Spray Insecticide/Miticide, Grizzly Too, Hero, Warrior II, Lambda-Cy AG, Mustang Max and Tundra EC/Brigade 2EC/Bifen 2 AG Gold. **ET:** monitor cotton until the last bolls expected to be harvested are at least 12 to 15 days old. Examine 100 squares, at least 1/3-grown, taking 25 squares from each of four representative locations in the field and from various positions on the plants. When 30 percent of the squares are weevil damaged and adult weevils are readily found, control measures are suggested. As cotton plants mature and the number of squares is reduced, base treatment decisions on the amount of small boll damage.



BOLLWORM AND TOBACCO BUDWORM: PYRETHROID RESISTANCE MANAGEMENT: To reduce the chance of increasing budworm resistance to pyrethroids, all early-season applications for worm control before July 10 should be either a Carbamate (C) or Organophosphate (OP). If control difficulties occur following a pyrethroid (SP) application, a Carbamate or Organophosphate should be selected instead of a pyrethroid. Also, after Sept 15, Cs or OPs should be used instead of SPs. OVICIDES: These insecticides effectively reduce numbers of bollworm and tobacco budworm eggs. Because large numbers of eggs often fail to produce economically damaging worm infestations, insecticidal control of eggs alone is not recommended. However, if larval infestations exceed suggested treatment levels and large numbers of eggs are present, the addition of an ovicide to the larvicide may be justified to enhance overall control. MICROBIAL INSECTICIDES: Microbial products which are natural pathogens of the bollworm and tobacco budworm are commercially available as preparations of Bacillus thuringiensis (Bt). Field studies indicate that microbials are best suited for square protection. They are slow acting and should be used against infestations of worms during the squaring period through the first 10 days of blooming. They are not suggested for use after this point. Treat fields in which most of the larvae are not more than 1/4-inch long. Infestations with larger worms should not be treated with microbials. Scouting should be done twice/week while squares are developing. MANAGEMENT AND DECISION MAKING: Scout carefully every three to five days during periods of predicted moth egg-laying. Eggs and newly hatched worms are usually found in the plant terminals and indicate possible outbreaks. Once worms have grown to larger than 1/2 inch long, natural and insecticidal control are less effective. BEFORE BLOOM: The decision to apply conventional insecticides (as opposed to microbial insecticides, ovicides or no treatment) for bollworm and budworm control during this period should be made very carefully. Conventional insecticides often kill beneficial insects and spiders, thus allowing a rapid increase in bollworm numbers. Under most conditions, do not use conventional insecticides before blooms are observed in the field. ET: treatment is warranted where 15 to 25 percent of the green squares examined are worm damaged and small worms are present. Consider using microbial insecticide to preserve beneficial insects and spiders. AFTER BOLLS ARE PRESENT: Divide cotton field into four sections and make whole plant inspections of five randomly chosen sets of three adjacent cotton plants in each section. Count the number of eggs, worms and key predators encountered and estimate the number of eggs, worms or key predators per acre. ET: average 5,000 or more small worms per acre. However, if two or more key predators are found for each small worm, control measures may not be needed or a microbial insecticide may be used. The synthetic pyrethroid insecticides recommended for control of bollworms and tobacco budworms also will provide boll weevil control. However, application intervals similar to those recommended for the traditional OP insecticides (three to five days under heavy pressure) are necessary to provide adequate control. When treatments are made for a bollworm or budworm-boll weevil complex, a suggested treatment regime is to use a pyrethroid followed three to five days later by an OP insecticide. Do not make more than 10 synthetic pyrethroid applications (of one or combination of products) to a cotton crop in one growing season. Synthetic pyrethroid products include Asana, Baythroid XL, Danitol 2.4 EC Spray Insecticide/Miticide, Delta Gold, Warrior II, Lambda-Cy AG, Mustang Maxx and Tundra EC/Brigade 2EC/Bifen 2 AG Gold. Bt Cotton: genetically engineered cotton. Bt cotton produces a crop that is resistant to cotton bollworm, pink bollworm and tobacco budworm. Under heavy bollworm pressure supplemental insecticides may be required. Resistance management strategies must be planned and other contractual provisions must be taken care of. See end of section for refuge options.



COTTON FLEAHOPPER: **ET:** the decision to apply insecticide should be based on the number of fleahoppers present, the squaring rate and the percent square set. During the first three weeks of squaring, the **ET:** 25 to 30/100 terminals combined with less than 75 percent square set. In cotton planted after May 15, treatment decisions should be made during the first week of squaring, if possible, to avoid a potential bollworm outbreak resulting from the destruction of beneficial insects and spiders. As plants increase in size and fruit load, larger fleahopper populations can be tolerated without yield reduction. In most years treatment is rarely justified after first bloom.



CUTWORM: Cutworms may damage cotton during the seedling stage, and control will be necessary where stands are threatened.



LOOPERS, CABBAGE AND SOYBEAN: Economic damage seldom occurs. Treat if >25% defoliation occurs while bolls are still developing.



NEMATODE: Suppression of rootknot and reniform nematodes. See seed treatments such as Avicta Duo Cotton.



PLANT BUG: Adults are about 1/4-inch long, winged, greenish to brown bugs. **ET:** Varies with state university. Treatment is based on number of bugs present and the level of damage, primarily in the first 3 weeks of squaring. During the first week of squaring, treat if there are 8-12 bugs per 50 sweeps. Post-bloom; use a black drop cloth to see nymphs.



SPIDER MITE: Treat when mites begin to cause noticeable leaf damage. Two applications at 5-day intervals may be necessary.



STINK BUG: Generally stink bugs reach damaging levels in cotton that does not receive more than 1-2 insecticide applications for bollworm or budworms. Brown stink bugs are less susceptible than green species to SP insecticides. Chemsurf/90, Preference, Silkin, Masterlock and InterLock enhance insecticide coverage. **ET:** one stink bug/25 sweeps or >one/ six ft of row with a beat cloth or 15-20% of soft, quarter sized bolls have internal signs of feeding (damaged seed, stained lint, pierced areas or warts on internal boll wall) and stink bugs present.



THRIPS: In areas with a history of frequent, heavy thrips infestations, the use of systemic insecticides at planting should be seriously considered. Research has shown that the application of foliar sprays after significant thrips damage has occurred generally does not result in increased yields. Where postemergence sprays are to be used, fields should be scouted as often as twice a week as cotton emerges. Thrips can migrate in heavy numbers from adjacent weeds or crops, especially small grains, and cause significant damage within a few days and prior to the appearance of true leaves. Significant damage to plants rarely occurs after the 4- to 6-true-leaf stage. See Seed Treatment section for additional thrip control options. Pyrethroids or acephate can flare spider mites and aphids. **ET:** 1-5 thrips/plant.



WHITE FLY: Immature, wingless white flies are found on the underside of leaves. Low levels of white flies cause little crop damage. **ET:** Treat when 50% of the plant terminals are heavily infested. Two or more applications may be required.

COTTON LABELED FUNGICIDES

FUNGICIDE	DISEASE*											
	ALTERNARIA LEAF SPOT	DAMPING OFF	FUSARIUM SEEDLING DISEASE	FUSARIUM WILT	PYTHIUM ROOT ROT	PYTHIUM SEEDLING BLIGHT	PYTHIUM SEEDLING DISEASE	RHIZOCTONIA SEEDLING BLIGHT	RHIZOCTONIA SEEDLING DISEASE	RUST	SEED AND SEEDLING ROTS	SOUTHERN BLIGHT
ACTINOVATE AG			●	●	●	●	●	●	●			
AMISTAR TOP	●											
BIO-TAM 2.0		●So	●So	●So	●So	●So	●So		●So		●So	
BLOCKER 10G		●										
DELARO 325 SC										●S		
ELATUS		●								●		
ETHOS ELITE LFR ‡		●	●	●	●	●	●	●	●			
EVERLON/PRIAXOR	●	●S								●	●	
HEADLINE SC	●								●So	●		
ONSET 3.6L										●[2]		
PENNCOZEB 75DF	●									●		
PROLINE 480 SC		●		●						●		
REVYLOK	●									●		
RIDOMIL GOLD GR					●So	●So	●So				●So[1]	
RIDOMIL GOLD SL					●So	●So					●So	
ROVRAL 4F		●So										
TETRABAN						●So		●So		●		
TOPGUARD	●									●		
TOPGUARD EQ	●									●		
ULTRA FLOURISH						●So					●So	
UNIFORM		●So			●So	●So	●So	●So	●So		●So	
XYWAY LFR					●							
ZIRONAR			●	●				●	●			

* Many other diseases may be controlled, see label.
● - control; ●S - suppression; ●So - soil application
See Fungicide Resistance Management in the Technical Information section.

[1] Seed rots only.
[2] Southwest only.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
		SOIL APPLIED		
ACTINOVATE AG	1-3 oz	0	0	See label for soil-borne diseases controlled/suppressed. At plant, in-furrow in 10-200 GPA. May be applied by drip, overhead or other irrigation systems; see label. May also be used as seed treatment; see label.
BIO-TAM 2.0	2.5-5 lb	–	–	Can be applied in-furrow (1.5-3 oz/1000 row') and banded (2.5-3 lb). Broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. Note 2.
BLOCKER 10G	1.5-4 pt or 0.75-1.5 lb/1000' row	–	NO	In furrow application. Blocker 4F: 2-4 pt/A in AZ,CA, 1.5-3 pt/A all other states. See labels for row spacing.
ETHOS ELITE LFR ‡	0.1-0.49 fl oz/1000' row	–	–	At-plant: Appy as 5-7" band over open furrow (T-band), or in-furrow with seed. Max. 0.5 lb (0.3 lb California) bifenthrin a.i./A/season, including all application methods. Product also contains insecticide; see Cotton Insects.
EVERLON/PRIAXOR	0.1-0.6 fl oz/1000' row	–	NR	See label for rate and row width details. Use higher rate when seed and seedling disease pressure is expected to be severe or with field history of disease. No more than 8.1 fl oz/A as in-furrow or banded treatment. Combination of in-furrow or banded applications and subsequent foliar applications must not exceed labeled maximum use rate per season.
HEADLINE SC	0.1-0.8 fl oz/1000' row	30	NO	For severe infections of soilborne Rhizoctonia may use equivalent of 9-12 fl oz/A.
PROLINE 480 SC	5.7-7.1 fl oz	30	NL	For in Furrow and Banded control of Damping Off and Fusarium Wilt. Do not make >2 applications/year on a 14-day interval. Maximum of 17.1 fl oz (0.534 lb a.i.)/A/year.
RIDOMIL GOLD GR	1.5-3 oz/1000' row	–	–	In-furrow at planting. Mount tubes so granules are mixed with the soil covering the seeds.
RIDOMIL GOLD SL	0.075-0.15 fl oz/1000' row	–	NO	In-furrow spray at planting. Direct spray into furrow over seed just before seeds are covered.
ROVRAL 4F	0.25-0.5 fl oz/1000' row	–	NO	Apply in-furrow. Use ≥2.5 GPA water.
TETRABAN	0.4-0.8 fl oz/1000' row	–	–	See label for application instructions and in-furrow rates.
TOPGUARD	4-8 fl oz	30	NO	See label for row spacing and rate. Apply as T-Band (in a concentrated 3-4 inch wide band at planting perpendicular to row direction after furrow opening and seed placement but prior to furrow closure with press wheel) or Modified In-Furrow (using a Y splitter that directs product to sides of seed furrow). Max of 8 fl oz/A per application, one soil application per season.
ULTRA FLOURISH	0.15-0.30 fl oz/1000' row	–	–	Apply in-furrow in 5-15 GPA water or liquid fertilizer at planting, with spray directed into furrow over seed before seeds are covered.
UNIFORM	0.32-0.48 fl oz/1000' row	–	–	Apply in-furrow in 5-15 GPA.
XYWAY LFR	0.5-0.90 fl oz/1000' row 8.7-17.3 fl oz	NR	NL	Apply by T-Band, modified in-furrow, drip irrigation, PP injections, PRE band, POST band or POST directed. See label for additional information, including application methods by Field Irrigation Type. Heavy rainfall or irrigation within 3 days after planting may delay emergence. Max. 0.488 lb a.i./A/year including at-plant plus foliar applications. See label for important resitance management information.

See notes and footnotes at end of table

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
FOLIAR				
ACTINOVATE AG	3-12 oz	0	0	See label for foliar diseases controlled/suppressed. Apply in 10-150 GPA. Reapply every 7-14 days depending on disease pressure and environmental conditions. Best to use spreader-sticker (adjuvant). May be applied by air; see label.
AMISTAR TOP	8-11 fl oz	45	NL	Apply prior to or early in disease development. Not more than 2 sequential applications before switching to different mode of action. May use adjuvant. Minimum 10 GPA by ground, 5 GPA by air, and in 0.1-0.25"/A by sprinkler irrigation.
DELARO 325 SC	8-12 fl oz	30	NL	Apply when disease first appears and continue on 14-day interval if disease conditions persist. Do not apply >24 fl oz/A/year including all soil and foliar applications. Use of adjuvant may enhance performance. Limit disease resistance by not making >2 sequential applications of this or any other Group 11 fungicide before rotating with fungicide from a different group. Notes 1, 2.
ELATUS	5-7.3 oz	45	NL	Product used for cottonseed production. Aerial application prohibited. Apply in 3-7 inch band over top of plant for POST protection of Rhizoctonia damping off. For foliar diseases, apply when conditions are conducive to or at onset of disease. Apply no closer than 14-day interval. Resistance management: No more than 2 applications per year. See label for recommended use of adjuvants/surfactants. Do not apply more than 14.6 oz/A/year, or more than 0.136 lb ai/A/year of benzovindiflupyr-containing products, or 2.0 lb ai/A/year of azoxystrobin-containing products. Notes 1,2.
EVERLON/PRIAXOR	4-8 fl oz	30	NR	Begin applications prior to disease development. 7 day interval. Maximum 3 applications per season, 2 if applications are aerial and near aquatic areas. No more than 24 fl oz/A, including in-furrow or banded treatment uses. Note 1.
HEADLINE SC	6-12 fl oz	30	NO	Begin prior to disease development. Maximum of 2 sequential applications. 2ee AL, AR, FL, GA, LA, MS, MO, NC, SC, TN (exp. date not given) for leaf spot control at 6-12 fl oz/A. Notes 1, 2.
ONSET 3.6L	6-8 fl oz	30	–	Apply as a protective spray or when weather is favorable for rust development. Repeat at 7-14 day intervals. Maximum of 24 fl oz/A/crop.
PENNCOZEB 75DF	1.5-2 lb	45	NO	Start applications at disease onset. Do not apply after boll opening.
PROLINE 480 SC	5-5.7 fl oz	30	NL	For Foliar control of Target Spot and Rust. Do not make >3 applications/ year including the in-furrow, banded and foliar applications. Maximum of 17.1 fl oz (0.534 lb a.i.)/A/year.
REVYLOK	4.5-6.5 fl oz	30	NR	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/ year. 7-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
TETRABAN	6-9 fl oz	45	–	Foliar applications by ground, air or irrigation should begin prior to disease development. See label for soybean rust remarks. First application at pinhead square to first bloom, repeat on 14- to 21-day schedule.
TOPGUARD	7-14 fl oz	30	NO	Apply preventatively or when conditions are favorable for disease development. Repeat as necessary. Maximum 14 fl oz/A per application not to exceed 2 applications per season.
TOPGUARD EQ	5 - 7 fl oz	45	NO	First application at pinhead square, 14 – 21 day interval; Do not exceed 3 applications/season. See resistance management guidelines.
ZIRONAR	6-12 fl oz	NR	NR	Apply in minimum 3 GPA by ground. Early season protection of seedling injury. Also a nematicide (see Cotton Insects section).

PHI – preharvest interval days.
G/F – grazing and feeding interval days.
NR - no restrictions.
NO - do not graze.
NL - no grazing information on label.

NOTE 1: May be applied by air.
NOTE 2: May be applied by chemigation.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer one requirements,application setback requirements, and/or other restrictions. See the label and the RUP page in theTechnical Information section for more information on use restrictions.

FALLOW IN SMALL GRAIN STUBBLE

Fallow is a system based on quality winter wheat stubble and timely weed control. Good quality stubble is the result of growing adapted winter wheat varieties competitive with weeds along with good disease and insect resistance. Proper planting date, fertilization according to needs, weed control in the growing wheat, harvest with minimum grain loss and good chaff and long straw distribution all contribute to the success of this program. Herbicides should be applied within 30 days after wheat harvest for wheat grown with a 10-14 month fallow period. If winter wheat is planted after soybean, corn, or grain sorghum, herbicides should be applied within 15-20 days after wheat harvest. Weather and weed conditions need to be correct for good results. Gramoxone SL 3.0 plus atrazine, Cornerstone, glyphosates or Roundup will control established broadleaf and grass weeds, and volunteer wheat depending on herbicide rate, plant height, density and species. If rain is expected within 6 hours, Gramoxone SL 3.0 plus atrazine is a good choice. The rainfast period required for glyphosate products can be shortened by increasing the rate and not adding atrazine to the tank mix.

Maximum benefits from ecofarming, which include moisture conservation and prevention of weed seed production, usually occur when treatments are timely. This is on the condition the weeds are not under drought stress, the straw has settled, dust is not present on the plants, and good coverage of the plants is possible with the spray solution. Small weeds are easier to control with the nonselective translocating herbicides containing glyphosate. Gramoxone SL 3.0 plus atrazine is usually more effective in controlling larger weeds as they approach maturity.

If weeds recover from initial after-harvest herbicide applications, use glyphosate where Gramoxone SL 3.0 was used and use glyphosate or atrazine + Gramoxone SL 3.0 plus atrazine where glyphosate was used. More effort is needed to prevent weeds from producing seed in the wheat stubble.

Volunteer winter wheat and/or downy brome or jointed goatgrass are not always controlled with July and early August atrazine treatments. A split after harvest treatment with the early application of glyphosate products such as Roundup or Cornerstone followed by one lb/acre or more of atrazine plus Gramoxone SL 3.0, if needed, applied in September can be an effective control measure. If maximum rates of atrazine are applied in the fall, do not add additional atrazine in the spring. Lower rates of atrazine (or none at all) need to be used on eroded areas, on soils with less than 1.2% organic matter, on soils with a pH of 7.0 or greater, some terraces, Canyon and Rosebud soils and caliche outcroppings. High atrazine rates may carry over and destroy wheat on these areas. Total atrazine applied between wheat harvest and planting corn or sorghum should not exceed 3.25 lb/A Atrazine 90DF or 3 qt/A Atrazine 4L.

In the spring, kill volunteer wheat and annual bromes in March to prevent soil moisture loss. If grasses are less than 1 tall, atrazine will provide acceptable control. Control is improved when COC or UAN is added. When planting corn, 2,4-D ester may also be added for improved weed control. Gramoxone SL 3.0 should be included with a nonionic surfactant to grasses less than 4 tall. If grasses are taller than 4 and are growing vigorously, apply glyphosate products such as Roundup. Mixing atrazine with glyphosate can create antagonism and decrease performance. Consider banding over the row in weedy fields at planting to compensate for disturbing the soil with the planter and removing some of the preplant herbicide.

Fields not treated after harvest with herbicides are not ecofallow. Therefore, herbicides might not be as effective and grain yields may be poorer than fields treated in late summer and fall. If moisture was present after harvest and weeds produced seed, weed density may be great enough that weed control with herbicides at rates that do not cause crop injury may be difficult. Also, the soil moisture lost after harvest may be critical if winter and spring moisture is limiting. If one wishes to try the spring-only treatment, the following is suggested. An early spring treatment of glyphosate with atrazine as soon as good growing conditions exist in the spring is an effective treatment for volunteer wheat and downy brome. Add or increase the Atrazine to the lower of the maximum labeled rate or the amount the crop can tolerate and still not cause damage to the succeeding crop. Be sure to add a grass herbicide. Add Gramoxone SL 3.0 or 4 lb AI glyphosate at 1.5 to 2.0 pt/acre after April 15 depending upon size of weeds. Rates suggested depend on soil type, pH, organic matter, time of application and weed size. For corn or sorghum use 1-2 qt/acre atrazine. Dual Magnum or Bicep Magnum or FulTime NXT should be applied 20 to 30 days before corn or sorghum planting. Balance Flexx should not be applied > 7 days before corn planting unless a planned sequential application of a post herbicide is used. For sorghum, use the appropriate seed treatment for Charger MAX, Dual II Magnum, or Bicep II Magnum.

PLANTING ROW CROPS NO-TILL INTO LAST YEAR'S SPRING SMALL GRAIN STUBBLE

(Oat, Spring Wheat and Spring Barley)

Spring small grains are not as competitive with weeds as winter wheat. This is because the winter wheat is established in the fall and starts growth early in the spring before most weeds germinate. With good stands of winter wheat, most weeds, except for winter annual weeds, are not a problem.

The quality and quantity of winter wheat stubble and straw are also superior and longer lasting than that of the spring grain crops. The winter wheat stubble and straw are more effective in suppressing weeds. Therefore, planting crops no-till into last year's small grain, while it can be successful, can also be a disaster if the herbicide treatments are not timely, properly selected, applied properly, and results are not evaluated to determine if retreatment or other weed control measures are necessary.

The key to this program is weed control after spring small grain harvest. Keeping the weeds from producing seed and using stored soil moisture is done with a timely herbicide treatment after harvest. The herbicide treatments listed for winter wheat after harvest can be used in small grain stubble in most situations (check the label for the recropping intervals for the crops in your rotation). The higher labeled rates of herbicides are usually required. Roundup is usually the choice nonselective herbicides for control of emerged summer annual grass weeds that are growing rapidly. As weeds approach maturity, Gramoxone SL 3.0 plus atrazine may be used. If atrazine is used in the fall treatment, the next crop must be tolerant to it at the rate used (check label).

The spring herbicide treatment is necessary. Again, check the rates, etc., for the crop in the ecofarming section. Check labels and be sure to control volunteer crops. Also, do not disturb the herbicide treatment with tillage if a residual herbicide was applied last fall. Read all the general remarks under ecofarming and see footnotes.

CONTINUOUS WINTER WHEAT AND WINTER WHEAT FOLLOWING SOYBEAN

CONTINUOUS WINTER WHEAT. Select winter wheat fields that are free of cheat, downy brome, hairy chess, Japanese brome, and jointed goatgrass. Apply Roundup within 30 days after winter wheat harvest but before summer annual weeds head. Apply glyphosate about 10 days before winter wheat planting.

NO-TILL WHEAT FOLLOWING SOYBEAN HARVEST. Select early maturing soybean cultivars so that winter wheat can be planted in the optimum window. Plant wheat at 90 lb/A dryland and 120 lb/A irrigated with a no-till drill equipped to apply starter fertilizer. Weeds such as kochia are a problem in late planted winter wheat. Therefore, a herbicide treatment is usually needed in the spring. Use Ally XP, Amber or Patriot plus 2, 4-D or Sterling Blue/Clarifier/Clarity/Dicamba Max 4 as 2,4-D is ineffective on kochia.

Adapted from the University of Nebraska Guide for Weed Management.

WEED RESPONSE TO HERBICIDES APPLIED AFTER WINTER WHEAT HARVEST

KEY
- **E** = EXCELLENT (≥ 91%)
- **G** = GOOD (81-90%)
- F = FAIR (65-80%)
- P = POOR (<65%)
- N = NONE
- U = UNKNOWN

HERBICIDES[A]	GRASSES												BROADLEAVES											
	Barnyardgrass	Crabgrass	Cupgrass, prairie	Downy brome	Foxtail, green	Foxtail, yellow	Jointed goatgrass	Sandbur	Shattercane	Stinkgrass	Volunteer wheat	Witchgrass	Buckwheat,wild	Buffalobur	Horseweed	Knotweed, tall	Kochia	Lambsquarters	Lettuce, prickly	Pigweed[F]	Smartweed,annual	Spurge, toothed	Sunflower	Thistle, Russian
	4 INCHES TALL												6 INCHES TALL OR LESS											
AFFINITY BROADSPEC	N	N	N	N	N	N	N	N	N	N	N	N	G	U	G	U	G	E	G	E	P	U	U	E
AFFINITY TANKMIX	N	N	N	N	N	N	N	N	N	N	N	N	G	U	G	U	G	E	G	E	P	U	U	E
AGILITY SG	N	N	N	N	N	N	N	N	N	N	N	N	E	U	U	U	E	E	U	E	P	U	U	E
BASIS BLEND	G/E	F*	N	N	E	F/G	N	N	N	N	E	N	F	U	P	U	E	E	U	E	E	U	U	P
CORNERSTONE 5 PLUS[D]	E	E	E	E	E	E	E	E	E	E	E	E	F	E	G	G	G	E	F	E	E	P	E	G
CORNERSTONE 5 PLUS + ATRAZINE[C] ‡	E	E	G	E	E	E	E	E	E	E	E	E	E	E	E	E	F/G	E	E	E	E	E	E	E
EXPRESS	N	N	N	N	N	N	N	N	N	N	N	N	G	U	P	U	G	E	E	E	U	U	U	E
GRAMOXONE SL 3.0 ‡	P	P	P	E	F	P	E	F	F	G	E	G	E	E	E	E	E	E	E	E	F	E	E	E
GRAMOXONE SL 3.0 ‡ + ATRAZINE[C] ‡	E	F	F	E	E	E	E	G	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
SCOPARIA ‡	G	F/G	U	U	G/E	F	U	F	P	U	P	U	P	E	U	U	G/E	G/E	U	G/E	G	U	F	G
SHARPEN[E]	P	P	P	P	P	P	P	P	P	P	P	P	G	G	G	P	G	G	G	G	G	P	G	G
RESOLVE Q	E	F*	N	N	E	E	N	N	E	G	E	N	P	U	U	U	E	E	U	E	U	U	U	P
	TILLERED TO BOOT												12 INCHES TALL											
CORNERSTONE 5 PLUS ‡	G	G	P	E	E	G	E	G	E	E	E	G	P	G/E	F	G	F	G	F	G	E	P	E	F
CORNERSTONE 5 PLUS + ATRAZINE[C] ‡ + ***2,4-D***[B]	F	F	P	E	E	G	E	G	E	E	E	G	E	E	E	E	G	E	G	E	E	G	E	E
GRAMOXONE SL 3.0 ‡	P	P	P	F	F	F	F	P	P	P	F	P	G	F	F	F	F	F	F	F	P	F	F	F
GRAMOXONE SL 3.0 ‡ + ATRAZINE[C] ‡ + ***2,4-D***[B]	P	P	P	G/E	P	P	G/E	P	P	G	G/E	G	G/E	E	E	E	E	E	E	E	G	E	E	E
	HEADED												24 INCHES TALL											
CORNERSTONE 5 PLUS[D]	G	G/E	P	E	E	G	E	E	E	E	E	G	P	F	F	F	P	P	P	F	F	P	F	F
CORNERSTONE 5 PLUS[D] + ATRAZINE[C] ‡ + ***2,4-D***[B]	F	G	P	E	E	G	E	G/E	E	E	E	G	E	E	G	G	F	E	E	E	G/E	F	E	G
GRAMOXONE SL 3.0 ‡	P	P	P	G	F	G	G	F	P	G	G	G	G/E	F	F	F	F	F	F	F	P	F	F	F
GRAMOXONE SL 3.0 ‡ + ATRAZINE[C] ‡ + ***2,4-D***[B]	G	G/E	F	E	E	E	E	E	F	E	E	E	E	E	E	G	E	E	E	E	F	G/E	E	E
VALOR SX/VALOR EZ/PANTHER SC/TUSCANY SC/CHATEAU EZ + ROUNDUP + ***2,4-D***	G	G	P	E	E	E	E	E	E	E	E	E	E	E	G	G	G	E	E	E	G	F	P	G

[A] Consult label to improve weed control with some herbicides. Prairie cupgrass is tolerant to glyphosate.
[B] Add 2,4-D ester at 1.5 pt/A.
[C] Atrazine is less effective applied immediately after harvest than when applied after Sept 1st.
[D] May use other glyphosate products; see individual labels for use on Fallow land.
[E] 2 oz/A + COC.
[F] See label of pigweed species controlled.
* Large crabgrass only.

ROUNDUP USE TIPS: Controls grass from tiller to boot stage. Apply in 5-10 gallons of clean water/acre. Use flat nozzles on 20-30 centers. Avoid excessive speeds which create turbulence and dust. Add 17 lbs ammonium sulfate or 2.5-5 gal liquid AMS/100 gal.

GRAMOXONE USE TIPS: Requires thorough coverage of weeds. Use flat fan nozzles spaced on 20-30 centers at 35-40 psi. Use a minimum of 10 GPA 15 GPA. f clean water but higher volumes preferred. Avoid speeds over 10 mph which create turbulence and dust. Weed control is enhanced by tank mixing with a triazine herbicide. Most effective on small weeds or on weeds that are approaching maturity (less control from tiller to boot stage).

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

FALLOW HERBICIDE APPLICATION RATES

PREEMERGENCE OR POSTEMERGENCE			
Herbicide	**Labeled Crops[1]**	**Rate/Acre[2]**	**Comments/Restrictions**
AFFINITY BROADSPEC	F,PH	0.4-1 oz	Do not exceed 1 oz/A/crop season. Apply with other fallow herbicides for improved control or if 0.4-0.6 oz rate used. Post-harvest, apply 0.4-1 oz/A. Apply to emerged actively growing weeds. Include NIS, COC, or MSO plus UAN/AMS.* PHI 7 days grazing. Note 4.
AFFINITY TANKMIX	F,PH	0.6-1 oz	Do not exceed 1.8 oz/A/crop season. Apply with other fallow herbicides. Apply to emerged actively growing weeds. Include NIS, COC, or MSO plus UAN/AMS.* PHI is 7 days grazing. Note 4.
AGILITY SG	CS,F,PH	1.6-3.2 oz	Apply post-harvest in fall, spring or summer during fallow period. Include NIS, COC, or MSO plus UAN/AMS.* PHI 7 days grazing, 30 days hay. Note 4.
AIM EC/SHARK EW	F	Up to 2 fl oz	Apply to actively growing weeds up to 4" high or 3" across. Include NIS, COC, or MSO plus UAN/AMS.* Notes 1, 4.
ANTHEM FLEX	F	2.5-7.28 fl oz	Broadcast any time of year. 30-day min. retreatment interval. Max. 9.1 fl oz/A/year. See label for tank mix notes.
ALLY EXTRA SG	F	0.3-0.5 oz	Apply with other fallow herbicides in spring, summer or fall to actively growing weeds. PHI 7 days grazing, 30 days hay. Note 4.
ALLY XP/PATRIOT	F	0.1 fl oz 0.1-0.2 fl oz in CO,KS,NM,OK,TX	Apply in the spring or fall when majority of weeds have emerged and are actively growing. No grazing restrictions; see label for rotational intervals on wheat that will be grazed out.
AMBER	F,PH	0.28-0.56 oz	Apply as a tank mix or follow with a herbicide having a different mode of action within 12 months. Use only in CO, ID, KS, MN, MT, ND, NE, OK, OR, SD, TX, UT, WA and WY. Use tillage or a herbicide with a diffferent mode of action to control any weeds before they flower in areas treated with Amber. Do not use Amber or other herbicides with the same mode of action within 12 months after application. Add 1-2 pt NIS/100 gal.
ATRAZINE 4L ‡	F,PH	see label	Use for chemical fallow, wheat-sorghum-fallow, wheat-corn-fallow in CO, KS, ND, NE, SD, WY and for wheat-fallow-wheat in CO, KS, ND, NE, SD and WY. See the label for use rates, soil texture and pH restrictions, and maximum rates. Notes 2, 4.
AUDIT 1:1	CS,F	0.4-1 oz	Do not exceed 1 oz/A/crop season.
AUDIT 4:1	CS,F	0.6-1 oz	Do not exceed 1.8 oz/A/crop season.
AUTUMN SUPER 51	PH	0.5 oz + 0.5 gal HSOC-COC or HSOC-MSO/100 gal* + 1.5-2 qt UAN or 1.5-3 lb AMS	Apply after harvest and at least 30 days prior to field corn or 60 days prior to sweet corn, popcorn, seed corn or soybeans. 2ee various states (exp. date not given) for suppression of certain grasses up to 0.5 oz/A. 2ee most states (exp. date not given) for application at 0.3-0.5 oz/A on soils with pH 7-8 including restrictions on plant back intervals. 2ee various states (exp. date not given) for fall application rates north/south of I-70.
BASIS BLEND	F	0.825-2.5 oz + 0.5 gal HSOC-COC/100 gal* + 2 qt UAN or 2 lb AMS	Apply in spring or fall when a majority of weeds have emerged and are actively growing. May use MSO* or NIS. For best control, apply to <3" weeds. Do not apply to coarse soils with <1% O.M.
CHARGER MAX ATZ ‡/ BICEP II MAGNUM ‡	EF	see label	Apply in fall following wheat harvest and before soil freeze-up to untilled stubble in eco-fallow (no-till) areas of NE and KS where corn will be planted in spring. Soil must remain untilled through establishment of corn crop. PHI 60 days all corn, except 45 days sweet corn. Note 4.
CHEETAH		SEE LIBERTY 280 SL	
CLARIFIER/CLARITY		SEE STERLING BLUE	
CLEANSE	F	6-16 fl oz	Apply to actively growing emerged grasses. Include COC.* Do not plant any other crop for 30 days unless it is labeled for that crop. Notes 1, 4.
CLEANSWEEP D	F	1-2.5 pt	Apply to grasses from 3-leaf stage, or when broadleaf weeds are up to 8-leaf stage, 4" in height or 2" in diameter, whichever comes first; see label. Max. 2 applications/year. Min. 21-day application interval. Max. 2.5 pt/A/growing season. May plant labeled crops between 90-120 days after application; all others after 120 days.
CLEANSWEEP M		SEE CARNIVORE	
CORNERSTONE 5 PLUS	F	see label	See label for annual and perennial weed rates. Apply to actively growing weeds. Fallow rates may vary by crop- see the label. Apply at least 30 days before planting to to any crop not on the label. PHI 56 days grazing. Include AMS. Note 4.
CREDIT XTREME		SEE ROUNDUP	

See notes and footnotes at end of table.

PREEMERGENCE OR POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre[2]**	**Comments/Restrictions**
CURTAIL	F,PH	2-4 pt	Apply post-harvest to spring or summer fallow or set-aside to actively growing weeds. Limit to 2 pt/A if Curtail was or will be applied to small grain crop in a 12 month period. PHI 7 days hay. No other grazing restrictions. Notes 3, 4.
CURTAIL M	F,PH	up to 5 pt	Apply to actively growing weeds. NIS may be added. PHI 7 days hay. No other grazing restrictions. Notes 3, 4.
DICAMBA MAX 4	CS,F,PH	8-64 fl oz	Apply post-harvest in fall, spring or summer to emerged and actively growing weeds during fallow period or to crop stubble. NIS, COC, or MSO may be added.* Notes 1, 4.
DIMETRIC CHARGED	CS,F,PH	**Fall:** 12-24 fl oz **Spring:** 12-18 fl oz	Residual control for labeled weeds in Fallow Land and PP Burndown. Max. 24 fl oz/A/ application or growing season. Max. 2 applications/year. Do not apply to frozen or snow covered soil. Do not till after application. PHI 40 days for treated soybean vines or hay. See label for use (including lower rates and seeding restrictions when used in combination with burndown herbicides) in following programs: Fall and Spring PP Burndown and Fallow Seedbed Programs in Soybean (Preplant to Crop); Fall and Spring Burndown Programs in Winter Wheat (Preplant to Crop), including fall fallow and spring fallow use in ID, OR, UT, WA in wheat-fallow-wheat rotation and fall fallow and spring fallow use in CO, KS, MT, NE, WY in fallow rotation with wheat.
DIMETRIC EXT	F,PH	**Spring:** 0.5-0.67 lb **Fall: ID, OR, UT, WA** 0.67-0.83 lb **Fall: CO, KS, MT, NE, WY** 0.83-1 lb	Apply in fall or spring before weeds emerge. For wheat-fallow-wheat rotation in ID, OR, UT, and WA. For fallow-barley or wheat in CO, KS, MT, NE, and WY. Do not apply in spring if applied in fall. Notes 2, 4.
DISTINCT	F	4-6 oz	Do not apply to desirable grass species. Maximum of 10 oz/A/season. Include 0.25% v/v NIS + 5 qt UAN or 5 lb AMS per 100 gallons.*
ENVOKE	F	5.5-44 fl oz"	Do not apply >12.8 fl oz/A or 44 fl oz/A per single application, or >2 lb dicamba a.e./A from all product sources/cropping season. Check with state regulatory authorities for current registration status, updated labels and product-specific timing and training requirements.
EPTAM 7E	F	3.5-7 pt	Apply and incorporate immediately 2-4". Irrigating at least 30 days prior to planting is recommended. Notes 1, 4.
EXPRESS	F,PH	0.25-0.5 oz	Apply to crop stubble after harvest or to fallow to actively growing weeds. Maximum of 0.5 oz/A and 2 applications per crop season. PHI 7 days grazing, 30 days hay. Note 4.
FACET L + ***2,4-D AMINE 4*** or ***CORNERSTONE 5 PLUS*** or CLARITY	F	22 fl oz + 1-4 pt or 9-12 fl oz or 4-16 fl oz	Apply to fallow/PP grain sorghum/PP wheat. Add 1 pt/A HSOC-COC or 0.5-1 pt/A HSOC-MSO; WC+NIS or a UAN can be added for better efficacy.* Add InterLock at 4-6 oz/A. In ID, MT, NV, OR, UT, WA, WY wheat may be planted 6 months after application. Note 5.
FIERCE EZ or FIERCE MTZ	F	6-9 fl oz or 1-1.5 pt	PRE. May be applied in combination with labeled burndown herbicides for residual weed control. Apply with NIS at 0.25 qt/100 gal or 0.5 qt/A HSOC-COC.*
FINESSE CEREAL AND FALLOW	F	0.2-0.4 oz + 1-2 qt NIS/100 gal	Apply in spring through fall to emerged actively growing weeds. Apply 0.2-0.5 oz/A for control of broadleaf weeds in field borders and fence lines. Notes 1, 4.
FIRSTSHOT SG	F	0.5-0.8 oz	Apply to emerged actively growing weeds prior to planting. Do not exceed 1 oz/A/ preplant crop season. Allow at least 30 days between applications. Include NIS, COC, MSO plus UAN/AMS.* Notes 2, 4.
FUSILADE DX	F	16-24 fl oz	Apply to actively growing annual grasses 2-8" or perennial grasses. See the label for perennial grass growth stages. Maximum of 72 fl oz/A/year. Include COC or NIS.* Notes 1, 4.
GOAL 2XL	FB	1-2 pt	Provides PRE and POST control of winter annual broadleaves <4" tall. Thoroughly till prior to planting, to a depth of at least 2.5". Allowed on fallow beds planted to corn in AR, LA, MS. 2ee several states (exp. date not given) for weed control in fallow beds to be planted to soybeans, corn or cotton. 2ee TX (exp. date not given) for ground or aerial application on fallow beds to be planted to cotton or soybeans. Notes 2, 4.
GOALTENDER	FB	0.5-1 pt	Provides PRE and POST control of winter annual broadleaves <4" tall. Thoroughly till prior to planting, to a depth of at least 2.5". Allowed on fallow beds planted to corn in AR, LA, MS. 2ee several states (exp. date not given) for weed control in fallow best to be planted to soybeans, corn or cotton. Notes 2, 4.

See notes and footnotes at end of table.

PREEMERGENCE OR POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre[2]**	**Comments/Restrictions**
GRAMOXONE SL 3.0 ‡	F	1.3-2.7 pt + 2 pt NIS/100 gal	Apply from immediately after harvest up to emergence of newly seeded crop. Do not apply to emerged crops. See label for rates for certain weed heights. Include COC, MSO, or NIS.* Use 2 pt/A NIS by air. Notes 1, 4.
HARMONY EXTRA SG	F	0.45-0.9 oz	Apply with other fallow herbicides in spring or fall when most weeds are emerged and actively growing. Maximum of 2 applications and 1.5 oz/A/season. Include NIS, COC, MSO plus UAN/AMS.* PHI 7 days grazing or forage, 30 days hay. Note 4.
HERBIVORE/PERMIT	F	0.67-1.33 oz + 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal*	May be applied by air. Maximum 2 applications/season.
HONCHO K6		SEE ROUNDUP.	
HUSKIE or HUSKIE FX	F	11-15 fl oz or 16-18 fl oz	For broadleaf weed control. Apply to young weeds in good growing conditions. Include NIS plus UAN/AMS.* Tank mix with glyphosate or glufosinate for improved control. Note 4.
KOCHIAVORE	F	1.25-2.5 pt	Apply to broadleaf weeds are up to 8-leaf stage, 4" high or 2" in diameter; to grasses from 3-leaf stage. Use COC or MSO.* Control kochia <4" (including ALS resistant types) with 1.25 pt/A, unless conditions for control are less favorable, then use 1.5 pt/A for seedlings 1-4" tall. For consistent control, apply when plants are at least 1" tall.
KYBER PRO	F	1-1.5 pt	PRE. May be applied in combination with labeled burndown herbicides for residual weed control. Ensure thorough coverage, use a minimum of 10 gallons of spray solution per acre. Apply with NIS at 0.25 qt/100 gal or 0.5 qt/A HSOC-COC.*
LIBERTY 280 SL/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/ CHEETAH	F	22-29 fl oz	Tank mixes with 2,4-D, atrazine, or glyphosate are recommended. Include AMS or WC+NIS.* Notes 1, 4.
MAESTRO ADVANCED	F	0.67-1.6 fl oz	Rate dependent on weed susceptibility. Apply to grasses from 3-lf stage. Apply to broadleaf weeds up to 8-lf stage, 4" in height, or 2" in diameter, whichever comes first. See label for kochia rates. And rates and timing. Max. 2 applications/year. Min. 21-day treatment interval. Do not allow grazing or feeding treated material to livestock.
MCPA AMINE	CS,F	3.25 pt	Apply to young weeds and continue for 2-3 years. Labeled for Canada thistle, hoary cress, field bindweed and Texas blueweed. Notes 1, 4.
PANTHER SC		SEE VALOR SX	
PEAK	PH	0.38-0.5 oz	Small grains: wheat, barley, rye, oat, triticale. Do not use more than 1 oz per cropping season. Use tillage or a herbicide with a different mode of action to control any weeds before they flower in areas treated with Peak. Include NIS or COC plus UAN/AMS.* PHI 30 days grazing. Note 4.
POAST	F	Up to 2.5 pt	Apply to actively growing grasses. Include COC or MSO plus UAN/AMS.* Notes 2, 4.
RAVE	F	2-4 oz	Apply to actively growing weeds. 5 oz/A may be used for improved residual. Apply before weeds are exposed to extended freezing temperatures. Do not exceed 5 oz/A/year. Include NIS. PHI 7 days lactating dairy. Remove at least 30 days before slaughter. No other grazing restrictions. Note 4.
RESOLVE Q	F	1.25 oz	Apply in spring or fall when most weeds are emerged and actively growing. Maximum of 2.5 oz/A/season. Do not apply to coarse soils with <1% O.M. Include NIS, COC, MSO plus UAN/AMS.* PHI 30 days grazing. Note 4.
RHOMENE MCPA	F	3.2 pt	Apply in water to give sufficient coverage. Do not plant any crop for 3 months after application or until no residues remain. Max. 3.2 pt/A/year.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	F,PH	See label for precise rates associated with weed species and annual per acre maximums.	May apply by air. See labels for perennial weed rates. Apply to actively growing weeds. Fallow rates may vary by crop; check labels. Apply at least 30 days before planting to any crop not on the label. PHI 56 days grazing. Include AMS. Note 4.
RT 3	F,PH,FB	see label	Apply up to 44 fl oz by air. See label for annual and perennial weed rates. Apply to actively growing weeds. Fallow rates may vary by crop- see the label. Apply at least 30 days before planting to any crop not on the label. See label for instructions for preplant fallow beds. Note 4.
RUGGED	F,PH	1-4 pt	Apply 1-2 pt/A for annual broadleaves and 2-4 pt/A for biennial and perennials. Note 1.
SADDLE-UP or SPITFIRE	CS,F,PH	1.2-5.33 pt or 1-5.2 pt	Up to 2 applications/year. Maximum of 5.33 pt/A/application; minimum 30 days between applications. See label for crop-specific fallow rates and for restrictions relative to harvested/grazed/foraged uses vs. non-food/feed uses.

See notes and footnotes at end of table.

PREEMERGENCE OR POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre[2]**	**Comments/Restrictions**
SCORCH	CS,F,PH	0.5-2.6 pt	Apply as broadcast or spot treatment to emerged and actively growing weeds after harvest and before killing frost, or in fallow cropland or crop stubble the following spring/summer. Max. 2.6 pt/A. Avoid disturbing treated areas after application. Plant only labeled crops within 29 days of application; do not plant other crops within 120 days of application; see label. Grazing or haying of CRP acres is prohibited. 24c's in TX, CO, KS and MT for Scorch EXT in fallow for kochia control.
SECTION THREE	F	4-10.67 fl oz	Do not plant any crop for 30 days after application, unless Section Three is labeled for that crop. Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS or 8.5-17 lb/100 gallons of AMS.*
SHARPEN	F,PH	1-2 fl oz + 0.75 pt HSOC-MSO*	Apply to actively growing small broadleaf weeds after harvest and prior to planting the next crop. Do not exceed 6 fl oz/crop season. Use 2-4 fl oz for residual. Tank-mix for broad spectrum control. Note 4.
SHREDDER E-99	CS,F,PH	0.67-2.67 pt	Apply to actively growing weeds. Use 0.67-1.33 pt for annual broadleaves and 1.33-2.67 pt for biennial or perennial broadleaves. Maximum 2.67 pt/A/season. Minimum 30 days between applications. Maximum 2.67 pt/A in grazed areas. PHI 7 days forage or hay. If grazed within 30 days of application, withdraw meat animals at least 3 days before slaughter. No other grazing restrictions. Note 4.
SPARTAN CHARGE	F	3.75-10.2 fl oz	Soil texture, organic matter, and pH influence rate. Maximum of 10.2 fl oz/A/12 months. Thorough coverage is needed for POST weed control. Moisture is required for activation. Include MSO or COC.* Note 4.
SPITFIRE		SEE SADDLE-UP	
STERLING BLUE*/*CLARIFIER/CLARITY	CS,F,PH	4-64 fl oz	Apply to actively growing weeds and before a killing frost. Notes 1, 4.
STINGER/STINGER HL	F,PH	0.25-0.67 pt 0.15 - 0.4 pt	Apply after or preceding dryland small grains (wheat, barley, oats). Apply to young actively growing broadleaf weeds. Use a higher rate in the rate range on perennial weeds or when the condition of weeds at treatment may prevent optimum control. No other grazing restrictions. Notes 3, 4.
SURTAIN	CS, F, PH	9.2 to 17.0 fl oz	Provides residual preemergence control of annual grass weeds, sedges, and annual broadleaf weeds. No control of emerged weeds, consider tank mixes for emerged weeds. Specific rotational crop intervals must be observed between an application of Surtain and planting of the following crop. Maximum of 3 applications per season. DO NOT apply more than 17 fl oz/a in a single application and 27.0 fl ozs/A of Surtain as a maximum cumulative amount from sequential applications in fallow and post harvest croplands per year.
TORDON 22K ‡	F,PH	0.25-1 pt	Use 0.25-0.5 pt for annuals and 0.5-1 pt for perennials. Tank mix with 1 lb ae 2,4-D or other herbicides. Maximum of 1 pt per annual growing season. Do not apply to land rotated to broadleaf crops. PHI 14 days for lactating dairy or meat animals prior to slaughter; no restrictions for others. Note 4.
TOTAL/TOTAL 2.3/TOTAL SL		SEE LIBERTY 280 SL	
TRUST/TREFLAN HFP or TREFLAN TR-10	F	1.5-2 pt/7.5-10 lb	Use 1.5 pt/7.5 lb for coarse or medium and 2 pt/10 lb for fine soils. Incorporate 1-2" within 24 hr. For WA, ID, OR up to 4 months prior to planting winter wheat. Treflan TR-10 may also be applied at 5-10 lb/A to summer fallow followed by spring seeded wheat, durum or barley. Rate depends on rainfall and application date. Notes 1, 4.
TUSCANY SC		SEE VALOR SX	
VALOR SX or VALOR EZ/PANTHER SC/ TUSCANY SC/CHATEAU EZ	F,EF,CS	2-4 oz or 2-4 fl oz	Apply Oct 15 or later in Region 2 and Nov 15 or later in Region 1 or when soil temperature falls below 50 °F at 2". See label for states within the regions. Use 1-2 oz/A in spring with burndown herbicides. Add a burndown herbicide if weeds have emerged. Include NIS, COC, or MSO plus UAN/AMS* for emerged weeds. Notes 1, 4.
VERDICT	F	5-10 fl oz + 0.75 pt HSOC-MSO* + 8.5-17 lb AMS/100 gal	Apply after harvest and before the next crop is planted. May be applied up to 25 fl oz for residual control. Notes 1, 4.
VIDA	CS,EF,FB	0.5-2 fl oz	Apply to actively growing weeds up to 4" high or 3" across. Include NIS, COC, or MSO plus UAN/AMS.* Notes 1, 4.
WEEDAR 64 or WEEDONE 638	CS,F	1.0-4.0 pt or 1.33-5.33 pt	Max. 8 pt/A/year or 10.66 pt/A/year. See labels for rate ranges specific to annual, biennial and perennial broadleaf weeds, and for wild garlic and onion in CS of soybean, corn, small grain ro sorghum.

See notes and footnotes at end of table.

PREEMERGENCE OR POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre[2]**	**Comments/Restrictions**
WEEDAR XHL	CS, F	10.6 - 43 fl oz	Apply to actively growing weeds. Use 10.6-21 fl oz for annual broadleaves; 21 - 43 fl oz for biennial or perennial broadleaves. Minimum of 30 days between applications. Forage PHI is 7 days. Plant only labeled crops within 29 days following application. Max. 2 applications/year. Max. 85 fl oz/A/yr. This product contains 6.0 lb 2,4-D ae per gallon. When tank mixing with products that contain 2,4-D, do not exceed a combined total of 4.0 lb 2,4-D ae per acre per year. Crop rotation to any labeled crops is 29 days following the last application. Rotational interval for non-labeled crops is 30 days. Note 1.
WEEDMASTER or WEEDMASTER XHL	CS,F,PH	0.5-6 pt or 0.8-4.2 pt	Apply to emerged and actively growing weeds. Do not exceed 8 pt/A/growing season for WeedMaster and 8.4 pt/A/year for WeedMaster XHL. NIS or COC and 1 qt/A UAN may be added.* Notes 2, 4. Plant only labeled crops within 29 days following application. Max. 2 applications/year. Retreatment Interval: 30 days.
ZIDUA SC	F	1.75-6.5 fl oz	Best performance when weeds are not emerged before application. Allow a minimum of 30 days between sequential applications. Maximum of 8.25 fl oz (0.269 lb a.i.)/A/year.
2,4-D AMINE 4; LV4; LV6	CS,F,PH	**Coarse soil:** 1-4 pt **Medium soil:** 1-4.2 pt **Fine soil:** 0.67-2.67 pt	Apply to actively growing weeds. Use 1-2 pt/A Amine 4 or LV 4 or 0.67-1.67 pt LV 6 for annual broadleaves and 2-4 pt/A Amine 4 or 2-4.2 pt/A LV 4 or 1.67-2.67 pt/A LV 6 for biennial or perennial broadleaves. Maximum 2 applications. Minimum 30 days between applications. Notes 1, 4.

[1] CS – crop stubble, EF – eco-fallow, F – fallow, FB – fallow beds, PH – post-harvest.
[2] For rates with soil texture limitations: Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.
O.M. – Soils with low organic matter - use lower rate, with high organic matter – use higher rate within the range.
***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

NOTE 1: No restrictions for grazing.
NOTE 2: Do not graze.
NOTE 3: Do not transfer livestock to sensitive broadleaf crops without 7 days of grazing an untreated pasture or feeded untreated hay.
NOTE 4: See the label and rotational restriction tables for replant or follow crop restrictions.
NOTE 5: Do not cut treated area within 7 days after treatment.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

FLAX HERBICIDE APPLICATION RATES

PREPLANT OR PREEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC/SHARK EW	**All soil textures:** Up to 2 fl oz + 0.5 gal HSOC-MSO or HSOC* or 2 pt NIS/100 gal			PP or PRE. Apply no later than 1 day after planting. Burndown. Add Aim EC to tank before other herbicides. See label for additional adjuvant and fertilizer recommendations.
CALLISTO/ ***INCINERATE***	**All soil textures:** Up to 6 fl oz			PRE prior to crop emergence. Do not make >1 application/year. Use 1% v/v COC + 2.5% v/v UAN or 8.5 lb AMS/100 gal if weeds are emerged.*
CREDIT XTREME	SEE ROUNDUP.			
HONCHO K6	SEE ROUNDUP.			
INCINERATE	SEE CALLISTO			
PANTHER SC	SEE VALOR SX			
ROUNDUP POWERMAX 3; WEATHERMAX/HONCHO K6	**All soil textures:** 11-32 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*			PP, PRE, at-planting or post-harvest. See label for use rates on specific weeds and perennials.
RT 3	**All soil textures:** Up to 44 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*			PP or PRE prior to crop emergence. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA,WY, and in specific counties in KS, MN, NE, NM, OK.
SPARTAN 4F	**All soil textures:** 3-8 fl oz			PP or PRE prior to crop emergence. Rates depend on soil texture, O.M., and pH; see label for details. On coarse soils, wait at least 7-14 days before planting. Do not use on sand with <1% O.M. Do not incorporate >2".
SPARTAN CHARGE	*<1.5% O.M.*			Use lower rates within the range on soils with pH>7.0. Apply in FALL, spring or PRE up to 3 days after planting. Burndown activity on small susceptible broadleaf weeds as well as PRE control of kochia. Can be mixed with glyphosate.
TRUST/TREFLAN HFP or TREFLAN TR-10	**All soil textures:** 1-2 pt or 5-7.5 lb			PPI fall application Sept. 1 to Dec. 31. First incorporation within 24 hours of application. Second incorporation in spring prior to seeding. Seed no more than 1.5" deep. Do not seed until seedbed has warmed up.
VIDA	**All soil textures:** 0.5-2 fl oz			PP burndown 1 day before planting.

POSTEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
ASSURE II	**All soil textures:** 8-10 fl oz			PHI 70 days. Maximum of 24 fl oz/A/season. Apply at > 7 day intervals.
BISON/MAESTRO MA or MAESTRO ADVANCED	**All soil textures:** 0.9 pt or 0.7 pt			Apply to 2-8" flax. Do not apply during or after the bud stage. Apply to most susceptible weeds that do not exceed the 4-leaf stage, 2" in height or 1" in diameter. Do not treat in humid weather or when temperatures are over 85 °F for 3 days after treatment. Max. 1 pt/A for Bison/Maestro MA. Max. 0.8 pt/A for Maestro Advanced.
CLEANSE	**All soil textures:** 4-8 fl oz + 0.5 gal HSOC-COC/100 gal*			Apply prior to bloom. PHI 60 days. Can be tank mixed with Bison, Maestro 2EC, and MCPA/Rhomene MCPA.
CURTAIL M	**All soil textures:** 0.85 pt			Apply post to flax when 2-6" tall. PHI 72 days.
MAESTRO 2EC	**All soil textures:** 1 pt			Apply when flax is 2-11" tall but before buds form. Weeds should not be past 3-4 leaf stage or 1.5" across. Do not treat flax in humid weather or when temperatures are over 85 °F for 3 days after treatment.
POAST	**All soil textures:** 8-24 fl oz + 1 pt/A HSOC-COC*			Use 8 oz/A for foxtails before they have tillered. Use 16 oz/A for foxtails, barnyardgrass, wild oat, fall panicum or woolly cupgrass up to 4" tall and volunteer corn and shattercane from 2-8" tall. Use 24 oz/A for foxtails and wild oats up to 8" tall and for volunteer barley, oats, rye or wheat prior to tillering up to 6" tall and prior to overwintering. PHI 75 days harvest, feed forage, or flax straw.
RHOMENE MCPA	**All soil textures:** 0.33-0.5 pt			MCPA amine. Post to 2-8" tall flax. Do not spray when flax has reached bud stage. PHI 7 days.
SECTION THREE	**All soil textures:** 4-5.33 fl oz + 0.5 qt HSOC-COC or HSOC-MSO*			PHI 60 days. Can add WC+NIS2 or 8.5-17 lb/100 gal AMS.
SELECT MAX	**All soil textures:** 9-16 fl oz + 1 qt NIS/100 gal			Apply prior to bloom. PHI 60 days. Can tank mix with Bison, Curtail M, Maestro 2EC, and MCPA/Rhomene MCPA.
TARGA	**All soil textures:** 4-12 fl oz			PHI 70 days. Maximum of 24 fl oz/A/season. Apply at >7 day intervals.

See notes and footnotes at the end of table.

FLAX HERBICIDE APPLICATION RATES *continued*

PREHARVEST	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC/SHARK EW	**All soil textures:** 1-6.1 fl oz			For optimal peformance use 15-30 GPA with MSO type adjuvant.*
VALOR SX or VALOR EZ/PANTHER SC	1.5-3 oz or 1.5-3 fl oz + 1 pt HSOC-MSO*/100 gal + 2-2.5 lb AMS or 1-2 qt UAN/100 gal			Apply to mature flax when 75% of bolls are brown. PHI 5 days. Add Cornerstone 5 Plus for additional weed control.

[1] For rates with soil texture limitations: Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.
O.M. – Soils with low organic matter - use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

INSECTICIDE	PRE-HARVEST INTERVAL FOR FLAX	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT: ARMYWORM	INSECT: GRASSHOPPER	COMMENTS AND RESTRICTIONS
MALATHION 8 FLOWABLE	52	–	0.5 pt		●	Max. 0.5 pt/A. Max. 3 applications/year. 7-day min. application interval.
MUSTANG MAXX ‡	7	–	4 fl oz	●	●	Max. 24 fl oz/A/season. 7-day min. application interval. Min. 10 GPA by ground, 3 GPA by air.
VANTACOR	1		0.7-1.7 fl oz		●	Max. 5.1 fl oz/A/season. Max. 4 applications/A/calendar year. Min. 5-day application interval.

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

BEE ALERT

See Insecticide Classification in the Technical Section for information on insecticide toxicity to bees.

FLAX INSECT TREATMENT GUIDELINES



ARMYWORM: Bertha armyworm rarely causes problems in weed-free flax. When abundant, larva can cause serious damage by chewing through stems below the bolls. Army cutworm ET: 9/square yard.

FLAX FUNGICIDES

Certain fungicides such as Dithane F-45 Rainshield, Manzate Max/Manzate Pro-Stick, and Penncozeb 75DF may be used as seed treatments for seed decay, seedling blights, and damping-off. Altipro, Headline SC, Delaro 325 SC and Priaxor are labeled for pasmo control. Altipro may be used at 12 fl oz/A, Contans WG at 1-4 lb/A or Aproach at 8-12 fl oz/A for or Delaro 325 SC at 12 fl oz/A to control of white mold (Sclerotinia stem). See the Altipro, Tetraban, Aproach and Revylok labels for additional flax disease control.

PREPLANT, PREEMERGENCE, OR POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
AIM EC/SHARK EW	Up to 2 fl oz	POST. Min. 7-day application interval. Max. 5.9 fl oz/A/season. Max. 3 applications/season. Include NIS, MSO, or COC and UAN or AMS.* Notes 3, 4.
ASSURE II	10 fl oz	Quizalofop-tolerant perennial ryegrass only: Apply at boot stage in spring of second year to suppress quackgrass growth and prevent quackgrass seed contamination during ryegrass harvest. See label for additional timing recommendations.
BISON/MAESTRO MA or MAESTRO ADVANCED	1-2 pt or 0.6-1.6 pt	POST. Apply before boot stage to new and established grasses. Max. 2 applications/year. Max. 2 pt/A/year or 1.6 pt/A/year. Chemigation onlyl: 2 pt/A or 1.6 pt/A. Notes 3, 5.
BRASH	Up to 4 pt	POST. Do not apply after jointing stage. PHI 7 days grazing for lactating dairy, 37 days for hay or silage. Note 3.
CALLISTO/ ***INCINERATE***	3-6 fl oz	PRE or POST. PRE at 6 fl oz/A to newly seeded crop prior to crop or weed emergence. POST at 3-6 fl oz/A. Include NIS or HSOC-COC plus UAN/AMS.* Do not make >2 applications/year, and do not make second application within 14 days of first. Do not harvest seed for 60 days. PHI grazing or feeding is 14 days after harvest and 74 days after application. 2ee Callisto: ID, OR, WA (exp. date not given) for control/suppression of specific weeds in bluegrass, perennial ryegrass and tall fescue grown for seed.
CHARGER BASIC/ DUAL MAGNUM	1-1.33 pt	PRE. ID, OR, and WA only. Apply to established stands just before, during, or immediately following first fall rains or just before or during a late summer or early fall irrigation, but before target grasses emerge. Use 1 pt/A for fine fescue and perennial ryegrass and 1-1.33 pt/A for orchardgrass, bentgrass, tall fescue, and Kentucky bluegrass. PHI 60 or 150 days for grazing, anytime between seed harvest and before next application for hay.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	See label + 8.5-17 lb AMS/100 gal or WC+NIS* as needed	PP or PRE to emerged weeds prior to crop emergence. Rate depends on weed species. PHI grazing or feed 8 weeks.
CREDIT XTREME	SEE ROUNDUP	
CURTAIL	2-4 pt	Post. Established grass only. Apply to established grass before boot stage. PHI 14 days grazing for dairy, 7 days for hay or forage. Note 3.
CURTAIL M	1.75-3.5 pt	Post. Apply to established grass before boot stage. Potential for grass injury. PHI 7 days for grazing.
DICAMBA MAX 4	0.5-4 pt	POST. Apply 0.5-1 pt/A to seedling grass after 3-5-lf and up to 2 pt/A to established grass. Do not apply after it begins to joint. PHI lactating dairy: up to 1 pt/A- 7 days grazing, 37 days hay; up to 2 pt/A- 21 days grazing, 51 days hay. PHI 0 days non-lactating animals. Note 3.
DIMETRIC EXT or ***DIMETRIC LIQUID***	0.2-0.75 lb or 0.4-1 pt	POST. For WA, WY, MT and parts of OR. Apply to established grasses at least one year old and harvested for seed once. Volunteer grasses should be 1-2 leaf following rainfall or irrigation and before active spring growth. PHI 120 days for seed and 28 days for feed. Use rates depend on grass species and state.
DIREX 4L or KARMEX DF	1.6 qt or 2 lb	PRE. Apply in fall to established tall fescue on soils with ≥1% O.M. Do not apply the same fall fescue was planted. For best results, 0.5-1" rain is needed within 2 weeks of application.
DUAL II MAGNUM/ EVERPREX	1-1.33 pt	PRE. ID, OR, and WA only. Apply to established stands for preemergent control of weeds. Use 1 pt/A on fine fescues and perennial ryegrass. Apply once per crop year. See label for forage and grazing restrictions.
ELEVORE	1 fl oz	PP burndown to actively growing weeds up to 14 days before planting rye grasses. Use with MSO.*
EXPRESS	0.25-0.5 oz	POST. In ID, OR, or WA, and UT, use 0.25 oz/A for annual ryegrass, orchardgrass, tall fescue and fine fescue after the 4-lf stage. For bentgrass, use 0.25 oz/A after 3-5" stolons. For bluegrass, use 0.25-0.5 oz/A after the 4-lf stage. In MN, use 0.25 oz/A after 4-5-lf timothy (include 0.5 lb 2,4-D), and 0.15-0.375 oz/A after 4-lf bluegrass. For perennial ryegrass, use 0.25 oz/A (0.15 oz/A in MN) after 5-6 lf stage. Use 0.25-0.5 oz/A (0.15-0.375 oz/A in MN) for established stands prior to jointing. Include 2,4-D, dicamba or liquid nitrogen. Supplemental label (exp. date not given) for ID, OR, WA, and UT. Notes 3,4.
FACET L	22-32 fl oz	Post-harvest. Apply after grass seed harvest and hay removal; before first killing frost. Add 1 pt HSOC-COC or 0.5-1 pt HSOC-MSO/A; WC+NIS or a UAN can be added for better efficacy.* In ID, MT, NV, OR, UT, WA, WY wheat may be planted 6 months after application.
FIERCE EZ	3-6 fl oz	For use in ID, OR, WA only. Fall, PRE, spring planted (at least 8 tillers) and established stands. See label for list of weeds controlled or suppressed. Apply 3 fl oz/A to new plantings; 3-6 fl oz to spring planted crops and established stands. Max. 6 fl oz/A/application and 6 fl oz/A/year. Max. 1 application/year. PHI 60 d. Do not graze or feel treated hay sooner than 60 d after application.
FUSILADE DX	8-16 fl oz	POST. For fine fescues grown for seed use only in ID,OR,WA. See label for rates and weeds. Apply before seedhead develops in the boot.
GOAL 2XL	8-24 fl oz + 0.5-2 qt NIS/100 gal	POST. ID, OR, WA only. For established Kentucky bluegrass, tall fescue, orchardgrass, bentgrass, and perennial ryegrass. Do not graze.

See notes and footnotes at end of table.

PREPLANT, PRE OR POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
GRAMOXONE SL 3.0 ‡	1.3-2.7 pt + 2 pt NIS/100 gal	PP and PRE. Prepare the seedbed and allow weeds to germinate. Apply to 3-5 leaf weeds. Max. 2.7 pt/A/application. Max. 3 applications/year. 5.4 pt/A/year. Supplemental label weed, grass and harvest dissicant/defoliant for Kentucky Bluegrass grown for seed only, 1-1.5 pt/A Gramoxone SL 3.0 (exp. date not given). Note 5.
HI-DEP	1-4 pt	POST. Do not apply from early boot to milk stage. Seedlings after 5-lf stage with 0.75-1 pt/A. PHI 7 days dairy grazing, 30 days for hay. Note 3.
HONCHO K6	SEE ROUNDUP.	
HUSKIE or HUSKIE FX	13.5-15 fl oz or 16-18 fl oz	Two applications/year. Min. 30-day application interval. Do not apply during boot, flowering or seed development stage of growth when harvesting for seed. Max. Huskie 30 fl oz/A/year. Max. Huskie FX 36 fl oz/A/year.
INCINERATE	SEE CALLISTO	
MCPA AMINE or PHENOXY	1-2 pt	POST. Apply to established grass before the head comes into boot and to seedlings after tillering (after 5-lf for Phenoxy). Note 3.
NORTRON SC	1.5-3.0 pt	For use in ryegrass, tall fescue, bentgrass, and Kentucky bluegrass grown for seed. See label for select states. For effective control, annual bluegrass must be treated before the 4-leaf stage; rattail fescue, wild oats, and volunteer wheat must be treated before the 2-leaf stage. Use the lower rate for control of annual bluegrass and common chickweed; use the higher rate for control of rattail fescue, wild oats, and other weeds listed on the label. See the label for additional grass species specific, applicaion directions. Pre harvest interval (PHI) is 36 days, no additional restrictions for grazing and forage.
OUTLOOK	14-21 fl oz	PRE. Established stands of perennial grasses one year old or harvested at least once for seed. Apply in the fall post-harvest prior to the emergence of weeds in warm and cool-season grasses, during winter dormancy in warm season grasses, or in spring to cool-season grasses. Note 5.
PALISADE EC	*Single application:* 12-64 fl oz *Split application:* 6-32 fl oz	POST. Plant growth regulator. Apply before or during stem elongation (Feekes 5-8/Zadoks 30-37). For split application, apply 7-10 days after first application. PHI 35 days. Do not graze or feed for 49 days after application. May be applied through irrigation systems.
PALISADE MAXX	*Single application:* 12-66 fl oz *Split application:* 5.3-31.7 fl oz	POST. Plant growth regulator. Apply before or during stem elongation (Feekes 5-8/Zadoks 30-37). For split application, apply 7-10 days after first application. PHI 35 days. Do not graze or feed for 49 days after application. May be applied through irrigation systems.
PASTUREGARD HL	Up to 2 qt	POST. Do not apply until seedlings are well established (tillering- usually 4 true leaves, and development of secondary root system). Do not use from early boot to milk stage. Do not graze lactating dairy. PHI 14 days hay. Note 3.
PROWL H2O	4.2-6.3 pt	PRE. For established Kentucky bluegrass, tall fescue, orchardgrass, perennial ryegrass, bentrgrass, fine fescue, or basin wild rye. Apply to grass crop with 6 or more tillers per plant at the beginning of significant fall rain and prior to weed germination. PHI 1 year grazing or hay.
RHOMENE MCPA	2-3.2 pt	POST. Apply in 2-120 GPA water by ari or ground. to established grass before the head comes into boot and to seedlings after tillering. Max. 6.4 pt/A/year. Max. 2 applications/year. Min. 21 day application interval. Note 3.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	See label + 8.5-17 lb AMS/100 gal, include WC+NIS* as needed	PP or PRE to emerged weeds prior to crop emergence. Rate depends on weed species. PHI grazing or feed 8 weeks. POST for emerged broadleaf weeds. Apply until 1 week before the boot stage.
SHARPEN	1-2 fl oz + 0.75 pt HSOC-MSO*	POST for emerged broadleaf weeds. Apply until 1 week before the boot stage.
SHREDDER E-99	SEE 2,4-D	
SINBAR WDG	0.5-1 lb	POST. Grass must be established for at least one growing season. 1-1.9% OM apply 0.5 lb/A in tall fescue. 1.5-1.9% OM apply 0.5-0.75 a.i. lb/A to Kentucky bluegrass. Use lower end of rate range on coarse soils.
STARANE NXT	14-27.4 fl oz	POST. Apply to seedling grasses from the 2-leaf crop growth stage up to early boot stage for control of labeled broadleaf weeds. Seedling grasses tolerant include Kentucky bluegrass, fescue, orchardgrass and perennial rye grass. Starane NXT may also be applied to established grasses prior to the early boot stage. Established grasses tolerant include bluegrass, fescue, ryegrass and bermudagrass. Note 5.
STARANE ULTRA/ STAREDOWN	0.3-0.4 pt	POST. Apply to established grasses in the spring when weeds are actively growing and before weeds are 8" tall. New plantings of grass crops may be treated from the 2 true leaf stage of growth prior to early boot stage. Do not apply during boot, flowering, or seed development stage of growth if grass crop is to be harvested for seed. PHI 7 days hay or silage. Note 5.
STERLING BLUE/ ***CLARIFIER***/CLARITY	0.5-2 pt	POST. Apply 0.5-1 pt/A to seedling grass after 3-5-lf and up to 2 pt/A to established grass. Do not apply after it begins to joint. Same PHIs as Banvel/Dicamba Max 4. Note 3.
STINGER/STINGER HL	0.25-0.67 pt 0.15 - 0.4 pt	POST. Established grass only. Apply to established grasses before the boot stage. Notes 3,4.

See notes and footnotes at end of table.

PREPLANT, PRE OR POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
SURMOUNT	Up to 3 qt	POST. Do not apply untill seedlings are well established (tillering- usually 4 true leaves, and development of secondary root system). Do not use from early boot to milk stage. Dairy: do not graze lactating dairy, PHI 14 days forage. PHI 7 days hay. Note 3.
TARGA	10 fl oz	Quizalofop-tolerant perennial ryegrass only: Apply at boot stage in spring of second year to suppress quackgrass growth and prevent quackgrass seed contamination during ryegrass harvest. See label for additional timing recommendations.
WEEDAR 64 or WEEDONE 638 or WEEDAR XHL	2.0-4.0 pt or 2.5-4.5 pt or 21-43 fl oz	Max. 2 applications/year. Max. 8 pt/A/year or 8.5 pt/A/year or 85 fl oz/A/year. See labels for rate ranges for annual, biennial, perennial broadleaf weeds and specific grass growth stages.
WIDEMATCH	1-1.33 pt	POST. Apply to new grass from 2 true leaf to just before early boot stage and to established grass in the spring from tiller to prior to early boot stage. PHI 7 days for hay or silage, 0 days for grazing. Note 3.
2,4-D AMINE 4 or ***2,4-D LV4*** or ***2,4-D LV6*** or ***SHREDDER E-99***	1-4 pt or 1-3 pt or 0.67-2 pt or 0.5-2.67 pt	POST. Use 1-1.5 pt/A Amine 4 or LV 4, 0.67-1 pt/A LV 6 or 0.5-0.67 pt/A E-99 on seedling grass. LV 4, LV 6, Amine 4: apply to established grass before the head comes into boot. LV 4, LV 6: apply to seedlings in the spring after tillering (at least 5-lf stage) but before boot stage. Amine 4: apply to seedlings in the spring after at least 5-lf stage but before boot stage. E-99: apply to seedling grass at 5-lf or later, do not apply in the early boot to milk stage. Note 2.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
NOTE 2: Not labeled in CA.
NOTE 3: No PHI restrictions.
NOTE 4: No grazing or forage restrictions.
NOTE 5: Grazing or foraging is not allowed.
Also, see Pasture section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

GRASS SEED LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR SEED	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT											
				APHID	ARMYWORM	ARMY CUTWORM	BILLBUGS	CRANEFLY	CUTWORMS	GARDEN SYMPHYLAN	GRASSHOPPER	MEADOW PLANT BUG	SOD WEBWORM	THRIPS	WINTER GRAIN MITE
BAYTHROID XL ‡	0	0	1.6-1.9 fl oz		●	●			●						
			2.6-2.8 fl oz		●						●		●	●	
BESIEGE ‡	–	7	5-8 fl oz			●									
			6-10 fl oz	●	●		●S	●	●		●		●	●	●S
BLACKHAWK	3	0	1.1-2.2 oz		●	●							●		
BRIGADE 2EC ‡	30	30	6.4 fl oz	●	●		●		●		●	●	●		
DIMATE 4E	14	NO	0.5-0.66 pt	●								●		●	●
ENTRUST SC	3	3,0	2-4 fl oz		●										
GRIZZLY TOO ‡/WARRIOR II ‡	7	7,0	0.96-1.6 fl oz			●									
			1.28-1.92 fl oz	●	●		●S	●			●		●	●	●
LAMBDA-CY AG ‡	7	7,0	1.92-3.2 fl oz			●			●						
			2.56-3.84 fl oz	●	●		●S	●			●		●	●	●
MUSTANG MAXX ‡	7	7,0	2.24-4 fl oz	●	●		●S	●			●		●	●	●
			2.8-4 fl oz		●						●				
PYGANIC EC 1.4$_{II}$	0	0	16-64 fl oz	●	●		●	●	●	●	●	●	●	●	●
PYGANIC EC 5.0$_{II}$	0	0	4.5-15.61 fl oz	●	●		●	●	●	●	●	●	●	●	●

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

COMMENTS AND RESTRICTIONS
Max. 2.8 fl oz/5-day interval. Max. 11.3 fl oz/A/crop season. Armyworm: Use higher rate range for Fall, Beet, Southern, Western Yellowstriped and Yellowstriped (1st and 2nd instar).
Max. 27 fl oz/A/year. Max. 9 fl oz/A/cutting. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. Max. 4 applications/year. Aphid: Best control before leaf rolling. See label for important resistance management information.
Do not apply >3 times in any 21-day period. If applied 3 times in succession, wait 21 days before reapplication, or rotate to another insecticide class. Max. 8.3 oz/A/season. Max. 6 applications/season.
Limited to use in ID, OR, WA. Max. 12.8 fl oz/A/season. 14-day min. application interval.
Limited to use in ID, OR, WA. Max. 0.66 pt/A/application. Max. 2 pt/A/year. 90-day min. application interval. Min. 2 GPA by ground or air.
Max. 12 fl oz/A/season for all application methods. Max. 6 applications/season. Do not apply >3 times in any 21-day period. If applied 3 times in succession, wait 21 days before reapplication, or rotate to another insecticide class. PHI 3 days for straw/hay from last application, 0 days for regrowth.
Max. 5.76 fl oz/A/season. Min. 7 GPA by ground, 2 GPA by air. Aphid: Best control before leaf rolling. Billbugs: Larvae suppression only. PHI 7 days for straw/hay from last application, 0 days for regrowth.
Max. 3.84 fl oz/A/cutting. 30-day min. application interval for pastures/rangeland receiving 3.84 fl oz/A and which have not been cut between applications. Max. 11.52 fl oz/A/season. Apply by ground or air; see label. PHI 7 days for straw/hay from last application, 0 days for forage and hay.
Max. 4 fl oz/A/cutting. Max. 20 fl oz/A season. 17-day min. application interval. PHI 7 days for straw/hay from last application, 0 days for forage and hay.
OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.

BEE ALERT

See Insecticide Classification in the Technical Section for information on insecticide toxicity to bees.

GRASS SEED INSECT MANAGEMENT GUIDELINES



APHID: Seedling plants are most susceptible to damage. All aphid species can vector barley yellow dwarf virus (BYDV). **ET:** Treat when heads begin to form during boot stage and aphid populations are 10-20 per stem. ET Bird-cherry oat aphid: Treat when there are more than 10 aphids per 2- to 6-leaf seedling and population is increasing. Best control is obtained before insects roll leaves.



ARMYWORM: Most armyworm damage occurs in late summer to early fall and are cyclical. Outbreaks can occur very rapidly and create extensive damage. Scout in late July to early August every 5 to 7 days. Treat when 5 to 10 armyworm larvae per square foot are observed and populations are increasing. Control is most effective on small larvae (<1/4").



ARMY CUTWORM: Scout for larvae in fall or winter if defoliation is observed.



BILLBUGS: Scout for billbugs from late March to early April and again from mid-October to early November by inspecting crowns or using pitfall traps. No economic threshold has been established, but it is recommended to treat when adult feeding damage is present in 5-10% of crowns.



CRANEFLY: Crane fly larvae damage grass roots and crowns after emerging in the fall and again in spring. Damage can result in stand loss. Incidence of crane fly larvae increase with heavy rainfall and wet conditions. Research has suggested that control is best when larvae are targeted with insecticide treatments when 5-10 larvae are present per square foot.



CUTWORMS: Damage occurs from spring through fall and may occur in the same parts of the field each year. Larvae mainly feed on leaves and crowns and damage appears as circular patches of dead grass. Treat when cutworms first appear.



GRASSHOPPER: Young and adults feed on leaves, stems, and seed heads, preventing seed from reaching maturity. Grasshoppers are easier to control when they are small.



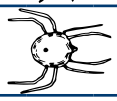
MEADOW PLANT BUG: Produces silver top effect and a rank odor.



SOD WEBWORM: Larvae feed from late June through October on crowns and roots, damaging established stands. Scout for larvae in the early fall when 2-6 per crown are observed.



THRIPS: Thrips damage causes grass foliage to turn white or rusty colored and causes silver top effect. Susceptibility varies by variety. Scout seed heads when plants approach boot stage. Treatment is justified when 25 or more thrips are present per head.



WINTER GRAIN MITE: Fields take on a gray to silver cast from October to May when infested. Extreme infestations can lead to plant death. Scout fields in October and November and again in late winter at dawn or dusk on cool and overcast days. Treat when visible leaf symptoms and several mites per plant are present.

MILLET HERBICIDE APPLICATION RATES

PREPLANT, PREEMERGENCE, OR POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
AIM EC/SHARK EW	Up to 2 fl oz	POST. Min. 7-day application interval. Max. 5.9 fl oz/A/season. Max. 3 applications/season. Include NIS, MSO, or COC and UAN or AMS.* Notes 3, 4.
CALLISTO/ ***INCINERATE***	Up to 6 fl oz	PRE. Apply to pearl millet only prior to crop emergence. Do not make >1 application/year. Use 1% v/v COC + 25% v/v UAN or 8.5 lb AMS/100 gal if weeds emerged.*
ELEVORE	1 fl oz	PP burndown to actively growing weeds up to 14 days before planting rye grasses. Use with MSO.*
GLYPHOSATE	See Label	PP, PRE, and at-planting for proso and pearl millet. May use Roundup brands/Cornerstone brands/Credit Xtreme/Honcho K6 or others that are labeled.
INCINERATE	SEE CALLISTO	
PEAK	0.38-0.5 oz + 1-2 pt HSOC-COC/100 gal*	POST. Apply to proso millet from 3 leaf stage to before 2nd node is detectable (Feekes 7). Applying earlier increases likelihood of crop injury. HSOC-COC is preferred over NIS in dry climates. Observe crop rotation restrictions. On 3-5 leaf millet, can add 0.5-0.75 pt/A 2,4-D Amine 4 + 1-2 qt NIS/100 gal.* Some crop injury possible from 2,4-D + surfactant. Weeds should not exceed 3" for best control. Do not use on pearl or forage millet since injury may occur.
RT 3	Up to 22 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*	PP, PRE, and at-planting for proso and pearl millet. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY, and in specific counties in KS,MN,NE,NM,OK.
RUGGED	0.67-2.5 pt	POST. Use 0.67-1.33 pt/A fo annual/biennial weeds when grain is in full tiller stage (4-8" high) but before boot stage (Zadoks 2.5 to 4.0). Up to 1.33 pt/A may be used for difficult weeds, if some crop damage is acceptable. Use 2-2.5 pt/A for perennial broadleaf weeds in the spring when crop is fully tillered, but before grain is in boot stage (before Zadoks 4.0).
SHARPEN	1-2 fl oz + 0.75 pt HSOC-MSO*	PP, PRE. Burndown and limited residual control of broadleaves. Pearl and proso millet only. Certain varieties may be sensitive. Do not apply to soils with pH ≥7.8.
SCORCH	1 pt	POST in CO, NE, ND, SD and WY only. Broadcast or spot treatment to emerged and actively growing weeds (but before 4 inches tall or vining) when proso millet is in the 2- to 5-leaf stage. PHI 40 days. Max. 1 POST application/crop cycle. Max. 1 pt/A/application. By ground in 10-15 GPA; by air in ≥2 GPA. Do not mix with oil for crop uses. Plant only labeled crops within 120 days of application; see label. Min. 7-day PHI for grazing; min. 37-day PHI for hay harvest.
STARANE ULTRA/ STAREDOWN	0.3-0.4 pt	POST. Apply to millet grown for grain, forage or hay in the spring when weeds are actively growing and before weeds are 8" tall. Apply from the 2 true leaf stage to prior to early boot stage millet. PHI 14 days for hay and 40 days for grain or straw.
STERLING BLUE/CLARITY + ***2,4-D***	4 fl oz + 0.375 lb a.i.	POST. Apply to 2-5 leaf stage proso millet. Crop tolerance is marginal. Not labeled on hay millets. PHI for lactating dairy animals is 7 days grazing. No grazing restrictions for other animals. Allow 37 days before hay harvest. For use in CO, NE, ND, SD and WY. 2,4-D Amine 4 is labeled on millet.
VIDA	0.5-2 fl oz	PP Labeled for proso and pearl millet. Apply 1 day before planting.
WEEDAR 64 or WEEDAR XHL	0.25-2.0 pt; 2.6 pt or 4.3-21 fl oz; 10.6 fl oz	Max. 3.6 pt/A or 37 fl oz/A/crop cycle, incl. PH applications. Do not apply before tillering or from early boot through milk stage. Not underseeded w/ legumes: 0.5-2.00 pt/A or 4.3 - 21 fl oz/A. for annual & biennial broadleaf weeds; 1.0-2.0 pt/A or 10.6 - 21 fl oz/A perennial broadleaf weeds. Underseeded w/ legumes: 0.25-0.5 pt/A or 2.6-4.3 fl oz/A. Pre Harvest: 1 pt/A or 10.6 fl oz/A.
YUKON	3-5 oz	Apply from 3-5 leaf proso millet. PHI 50. Do not make more than one application per year.
2,4-D AMINE 4/ SHREDDER E-99	0.67-1.33 pt	POST. Apply to proso millet from 3-5-leaf (fully tillered) to prior to boot stage. Some risk of crop injury with high rate. Hay-type millets are less tolerant than proso types. Do not graze dairy or animals for slaughter within 2 weeks of application. Many 2,4-D Amine brands, and Shredder E-99 are labeled for millet. Check 2,4-D labels to ensure labeling for millet. Proso millet may also be known as hog, hershey or yellow millet. Hay-type (foxtail, Siberian or German) pearl millets are less tolerant to 2,4-D. Hay-type millets often do not require spraying if hayed or grazed.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

MILLET LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR MILLET GRAIN & STOVER	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT							COMMENTS AND RESTRICTIONS
				ARMYWORM	CEREAL LEAF BEETLE	CORN EARWORM	FLEA BEETLE	GRASSHOPPER	SOUTHWESTERN CORN BORER	WEBWORMS	
BLACKHAWK	21	3	1.1-3.3 oz	●	●						Labeled for pearl and proso millet. Max. 12.4 oz/A/year. Max. 4 applications/year. 4-day min. application interval. Max. 2 consecutive applications of Group 5 insecticides before rotating to another class for at least 1 application. Do not allow cattle to graze until spray has dried. Armyworm: 1.1-1.3 oz/A for True, 1.7-3.3 oz/A for all others.
			1.7-3.3 oz	●		●		●S	●	●	
CORAGEN	1	0	2-5 fl oz					●			Foliar or overhead chemigation. Max. 4 applications/A/year. Max. 15.4 fl oz/A/year. Min. 7-day application interval. Grasshopper: Apply foliarly when populations reach established thresholds; see label for additional timing recommendations.
			3.5-7.5 fl oz	●		●			●	●	
ENTRUST SC	21	3	2-6 fl oz		●						Labeled for pearl and proso millet. Max. 19 fl oz/A/year for all application methods. 4-day min. application interval. Max. 3 applications/year. Max. 2 consecutive applications of Group 5 insecticides before rotating to another class for at least 1 application. Do not allow cattle to graze until spray has dried.
			3-6 fl oz	●		●		●	●		
FASTAC CS ‡	14	45	1.8-3.8 fl oz	●		●	●		●	●	Labeled for millet. Max. 11.4 fl oz/A/season. 10-day min. application interval. Armyworm: 3.2-3.9 fl oz/A or 3.2-3.8 fl oz/A for beet armyworm, 1.8-3.8 fl oz/A for both products for others. Southwestern Corn Borer: For control before larvae bore into plant stalk. See label for important resistance management information.
			3.2-3.9 fl oz or 3.2-3.8 fl oz	●				●			
MUSTANG MAXX ‡	14	45	1.76-4 fl oz	●		●	●		●	●	Labeled for millet. Armyworm: Beet armyworm use 3.2-4.0 fl oz/A, others use 1.76-4 fl oz/A. May be applied by sprinkler irrigation. For control before larvae bore into plant stalk. See label for important resistance management information.
			3.2-4 fl oz	●				●			
PYGANIC EC 1.4II	0	0	16-64 fl oz	●		●	●	●		●	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0II	0	0	4.5-15.61 fl oz	●		●	●	●		●	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.

See notes and footnotes at end of table.

INSECTICIDE	PRE-HARVEST INTERVAL FOR MILLET GRAIN & STOVER	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT							COMMENTS AND RESTRICTIONS
				ARMYWORM	CEREAL LEAF BEETLE	CORN EARWORM	FLEA BEETLE	GRASSHOPPER	SOUTHWESTERN CORN BORER	WEBWORMS	
VANATACOR	1	0	0.7-1.7 fl oz					●			Foliar or overhead chemigation. Max. 4 applications/A/year. Max. 5.1 fl oz/A/year. Min. 7-day application interval. Grasshopper: Apply foliarly when populations reach established thresholds; see label for additional timing recommendations.
			1.2-2.5 fl oz	●		●			●	●	

Products may control/suppress many other insects; see label
● - control; ●S - suppression

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.

MINT HERBICIDE APPLICATION RATES

PREEMERGENCE OR POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
	NEW AND ESTABLISHED PLANTINGS	
ASSURE II	6-10 fl oz + 0.5 gal HSOC-COC*/100 gal	POST. Apply at recommended rates and timings for control of annual and perennial grasses. PHI 30 days.
CLEANSE	6-16 fl oz + 1 qt HSOC-COC*/100 gal	POST. For control of actively growing annual and perennial grasses. Use a minimum of 10 fl oz/A for control of volunteer wheat in western production areas. PHI 21 days.
COMMAND 3ME	1.3 pt	PRE. Apply to soil surface prior to initiation of new mint growth. See vegetable disclaimer on label. PHI 84 days.
SECTION THREE	4-10.67 fl oz	POST. PHI is 21 days. Maintain 14 day interval for repeat applications. Use 1 pt/A of HSOC-COC or HSOC-MS01, WC+NIS or 8.5-17 lb/100 gallons of AMS.*
SELECT MAX	9-32 fl oz + 1 qt NIS/100 gal	POST. For established mint, use at least 20 fl oz/A. PHI 21 days.
SINBAR WDG	1-2 lb	PRE. Apply a single application before mint emerges. Timing: Midwest - In spring just after last cultivation. PNW (west of Cascade Mountains) - Apply in spring or fall after last cultivation. PNW (east of Cascade Mountains) - Apply any time after the first settling rain in the fall, but not when ground is frozen. Moisture is required for activation. See label restrictions - particularly on soil preparation requirements.
SINBAR WDG	1-1.5 lb + 0.5-1 pt NIS/25 gal	POST. Apply before weeds are 2 inches tall or across and grasses are 1 inch tall. If a pre-treatment has not been applied, a second postemergence application may be applied but do not exceed 2 lb/A/season. PHI 60 days.
SPARTAN 4F	4.5-10 oz: coarse 6-12 oz: medium 8-12 oz: fine	PRE. Apply to dormant established mint on PRE to new plantings.
STINGER	0.5-1 pt	POST applications for broadleaf weed control. Treated mint may only be used for oil extraction. 45 day PHI. See label for precautions.
TARGA	4-12 fl oz + 0.5 gal HSOC-COC*/100 gal	POST. Apply at recommended rates and timings for control of annual and perennial grasses. PHI 30 days.
THISTROL	1-2 pt	POST broadleaf control (see label): Do not harvest with 40 days of application. May injure mint plants. May tank mix with Basagran for control of additional weed species; see label.
	ESTABLISHED PLANTINGS	
AIM EC/SHARK EW	0.5-1.92 fl oz	Broadcast application; do not apply to actively growing crop. Single application at max. 1.92 fl oz/A. See label for adjuvant and fertilizer recommendations. PHI 5 days.
ASSURE II	6-10 fl oz + 0.5 gal HSOC-COC*/100 gal	POST. Apply at recommended rates and timings for control of annual and perennial grasses. PHI 30 days.
BASAGRAN/ BASAGRAN 5L	1-2 pt/0.8-1.6 pt + 1 pt HSOC-COC*	POST. Apply by ground to actively growing weeds. Rate and timing is species specific. See label. Thorough coverage is required for good control. Use a minimum of 20 gal/A and a minimum 40 psi. Some leaf burn may occur but is required for good control. Use a minimum of 20 gal/A and a minimum 40 psi. Some leaf burn may occur but plants generally outgrow in 10 days.
CHATEAU EZ	4 fl oz	Apply only to dormant, established stands of meadow mint (peppermint or spearmint) for preemergent control of weeds listed on label, or postemergent control. Max. 2 applications/A/year. Max. 8 oz/A/year; Do not make sequential application within 60 days of first application. Application to stands established >3 years may result in crop injury. PHI 80 days. See label for geographic precautions in OR. May be used for postemergent weed control with paraquat to assist in burndown of weeds in dormant mint; see label.
DEVRINOL DF-XT	8 lb	Apply to weed free soil surface. May be applied to newly planted crops immediately after planting, and to established (>1 growing season) crops.
GOAL 2XL	See label for rates for specific areas + 1 qt NIS/100 gal	POST. Apply only to established dormant mint before weeds exceed 2-4" in diameter or height. West of the Cascade Mountains, treatments in Dec. through Feb. generally provide best results. In other areas, apply from Dec. through Mar. Serious injury can occur if spring growth has begun before application. Crop injury may occur on non-rotovated mint. Goal 2XL should only be applied to strong, healthy mint. Will control annual bluegrass.
GOALTENDER	2-3 pt	PRE or POST. Apply in OR, WA (East of Cascades), CA, MT, ID, NV, SD, and UT from December through March when mint is dormant. Apply to muck soils in IN, MI, MT, ND, SD, and WI prior to emergence of new spring growth. Use 1-1.5 pt/A PRE for western Oregon Willamette Valley from November through February to dormant peppermint. Include NIS for emerged weeds.

See notes and footnotes at end of table

PREEMERGENCE OR POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
ESTABLISHED PLANTINGS *(continued)*		
GRAMOXONE SL 3.0 ‡	1.3-2 pt + 2 pt NIS/100 gal	POST. Apply to dormant mint from Nov. through mid-Feb. Max. of 2 pt/A/season. Can tank mix with Sinbar WDG.
KARMEX DF	3 lb	PRE. Peppermint only. Apply before peppermint has appeared, after the ground is worked in the early spring. Postemergence applications often cause injury. Use lower rates on sandy loam soils and higher rates on heavier textured soils. Do not use if soil organic matter is less than 2%. See label for other restrictions.
MAESTRO 2EC	1-1.5 pt	POST. Apply lower rates to established mint (harvested at least once) in the early spring. During the fall there is more crop safety and applications can be made to spring-planted or established mint. Applications to mint that have been previously treated with Sinbar WDG may result in unacceptable crop injury. Applications when temperatures are expected to exceed 70° F during the 5 days following treatment may result in unacceptable crop injury. Treat before broadleaf weeds exceed the 4-leaf stage, 2 inches in height or 1 inch in diameter, whichever occurs first. PHI 70 days.
POAST	1-1.5 pt + 1 pt HSOC-COC*	POST. Apply to actively growing annual and perennial grasses as labeled. PHI 20 days.
ROUNDUP POWERMAX 3; ROUNDUP WEATHERMAX	Check individual product label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*	This product could cause crop injury when applied prior to transplanting or direct-seeding crops into plastic mulch. Application made at crop emergence will result in injury or death of emerged seedlings. This product may be applied as a spot treatment in peppermint and spearmint or over the top of peppermint and spearmint using a wiper applicator to control tall weeds. Allow a minimum of 7 days between application and harvest. See additional instructions on rates timing and application instruction on the product label.
TARGA	4-12 fl oz + 0.5 gal HSOC-COC*/100 gal	POST. Apply at recommended rates and timings for control of annual and perennial grasses. PHI 30 days.
TUSCANY SC	Up to 4 fl oz	Apply only to dormant mint. Max. 4 fl oz/A/application. Max. 8 fl oz/A/year. Max. 4 applications/year. Do not make sequential application within 60 days of first application. See label for use adjuvant and possible injury when targeting emerged weeds. Do not apply to stands >3-yrs old. Use only on estaglished meadow mint. PHI 80 days. See label for geographic restrictions, burndown vs. PRE applications, and adjuvant/additive recommendations.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

MINT LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR MINT	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT														
				ALFALFA LOOPER	APHID	ARMYWORM	CUTWORM	FLEA BEETLE	GARDEN SYMPHYLAN	HORNWORM	LOOPER	MINT ROOT BORER	MITE	NEMATODE-MINT	NEMATODE-ROOT KNOT	NEMATODE-ROOT LESION	TWO-SPOTTED SPIDER MITE	VARIEGATED CUTWORM
ABAMEX ‡ or ABBA ULTRA ‡	28	NO	8-12 fl oz or 4-6 fl oz														●	
ACTARA	7	–	1.5-3 oz		●			●										
AGRI-MEK SC ‡	28	NO	1.75-2.5 fl oz														●	
AVAUNT EVO	7	NL	3.5 oz				●				●							
BRACKET 97/ ORTHENE 97	14	NO	1 lb	●	●		●				●							
COMITE ‡	14	NO	32-40 fl oz														●	
CONFIRM 2F	14	–	6-16 fl oz	●		●												
CORAGEN	3	–	3.5-7.5 fl oz			●	●				●	●						
ENTRUST SC	7	–	4-10 fl oz			●	●				●							
INTREPID 2F	14	–	10-16 fl oz			●	●				●							
LANNATE SP ‡ or LANNATE LV ‡	14	–	0.75-1 lb or 2.25-3 pt					●										
			1 lb or 3 pt	●							●							●
MALATHION 5/ MALATHION 5EC	7	–	1.5 pt		●			●					●				●	
MALATHION 8 FLOWABLE	7	–	0.94 pt					●										
MOCAP EC ‡ or MOCAP 15G ‡	225		2 qt or 20 lb						●			●						
			4 qt or 40 lb											●	●	●		
OBERON 4 SC	7	–	4-8 fl oz														●*	
OMITE-6E ‡	14	NO	32-44 fl oz														●	
ONAGER	30	NO	12-20 oz														●*	
PYGANIC EC 1.4$_{II}$	0	0	16-64 fl oz	●	●	●		●	●	●	●		●				●	
PYGANIC EC 5.0$_{II}$	0	0	4.5-15.61 fl oz	●	●	●		●	●	●	●		●				●	
RADIANT SC	7	–	4-12 fl oz	●		●	●				●							
TELONE II ‡	–	–	9-18 gal						●					●	●	●		
VANTACOR	3	-	1.2-2.5 fl oz			●	●			●	●							
VELUM PRIME/ VELUM ONE	28	-	6.0-6.84 fl oz											●S				
VOLIAM FLEXI	7	–	2-4 oz		●			●										
			4-5 oz	●			●				●	●						

See notes and footnotes at end of table.

COMMENTS AND RESTRICTIONS
May be applied by ground or air; best control with ground applications. Control improved when mixed with non-ionic adjuvant; see label. Min. 20 GPA by ground, 5 GPA by air. Max. 12 fl oz/A or 6 fl oz/A per application, max. 36 fl oz/A or 18 fl oz/A per year. 7-day min. application interval. Do not make >2 sequential applications of this or any other abamectin-containing product.
Max. 12 oz/A/growing season. 14-day min. application interval. Min. 10 GPA by ground, 5 GPA by air.
May be applied by ground or air; best control with ground applications. Must be mixed with non-ionic adjuvant; see label. Max. 2.5 fl oz/A/application. Max. 7.75 fl oz/A/crop/year. Max. 2 sequential applications, and 3 total applications of this product or other abamectin product. 7-day min. application interval. Min. 20 GPA by ground, 5 GPA by air.
Max 14 oz/A/year. Max. 4 applications/A/crop. 3-day min. application interval. Min. 20 GPA by ground. May apply by sprinkler irrigation; see label.
Max. 2.1 lb/A/season. 7-day min. application interval. Min. 20-100 GPA by ground, 5-10 GPA by air.
Max. 80 fl oz/A/year. Max. 2 applications/season. 14-day min. application interval. Min. 20 GPA by ground, 10 GPA by air.
6-8 fl oz/A for early season; 8-16 fl oz/A for mid to late season. 1 pt spreader-binder/100 gal recommended; see label. Max. 16 fl oz/A/application. Max. 64 fl oz/A/calendar year. 10-day min. application interval. Apply by ground in min. 8 GPA to young crop, 10 GPA to dense foliage.
Max. 15.4 fl oz/A/calendar year. Max. 4 applications/calendar year. 14-day min. application interval. May be applied by sprinkler irrigation; see label.
Max. 29 fl oz/A/crop for all methods of application. Max. 4 applications/calendar year. Max. 3 applications/crop. 4-day min. application interval. See label for important resistance management information.
Max. 16 fl oz/A/application. Max. 64 fl oz/A/year. 14- to 21-day application interval. Min. 10 GPA to young crop, 5 GPA by air.
Max. 2 lb/A/crop or 6 pt/A/crop. Max. 4 applications/crop or 3 applications/crop.
Max. 1.5 pt/A/application. 7-day min. application interval. Max. 3 applications/year.
Max. 0.94/A/application. 7-day min. application interval. Max. 3 applications/year.
New mint: Garden Symphylan only. Mint after last harvest: Garden Symphylan and Mint Root Borer. See label for incorporation or irrigation instructions. Make only 1 application of either product/growing season.
24c WA (exp. 12/2027): Foliar application at onset of infestation; 4.0 - 8.0 fl oz.; max. 11.2 fl oz/A/crop season; max. 2 applications/crop season; 10 GPA by ground, 5 GPA by air; 7-day min. application interval. 7 day PHI.
Max. 88 fl oz/A/year. Max. 2 applications/year. 14-day min. application interval. REI 22 days; no exception for hand weeding/thinning.
Peppermint and Spearmint: 24c CA, MT (exp. date not given) to control egg and immature forms; apply in min. 20-25 GPA by ground, 5-10 GPA by air; Max. 1 application/year.
OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
Max. 39 fl oz/A/year. Max. 4 applications/year. 4-day min. application interval. See label for important resistance management information and insecticide class application rotations.
Nematodes: Mineral soil: 9-12 gal/A; up to 18 gal A; Muck or Peat (>20% O.M.) soil: 18 gal/A. Garden Symphylan: Broadcast in 35 GPA in areas where pest has been a problem; applications in late summer or early fall when soil is warm is recommended.
Foliar or overhead chemigation. Max. 5.1 fl oz/A/calendar year. Max. 4 applications/calendar year. 14-day min. application interval.
Specific nematode species suppressed are not listed. Apply overhead chemigation or as a foliar broadcast ground application in a minimum of 20 GPA . Incorporate ground applications with 0.5- .75"/acre water < 1hr of application. Max 2 applications per season. Max annual use rate: 13.7 fl oz/A. Velum One is labeled for use in AZ, CA, HI. Velum Prime is labeled for use in all states except AZ, CA, HI.
Max. 15 oz/A/year. 14-day min. application interval. Min. 10 GPA by ground, 5 GPA by air. Do not use adjuvant.

INSECTICIDE	PRE-HARVEST INTERVAL FOR MINT	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT															
				ALFALFA LOOPER	APHID	ARMYWORM	CUTWORM	FLEA BEETLE	GARDEN SYMPHYLAN	HORNWORM	LOOPER	MINT ROOT BORER	MITE	NEMATODE-MINT	NEMATODE-ROOT KNOT	NEMATODE-ROOT LESION	TWO-SPOTTED SPIDER MITE	VARIEGATED CUTWORM	
VYDATE L ‡	21	–	0.5-1 gal											●		●			
XENTARI/DIPEL DF	0	–	0.5-1.5 lb	●							●								
			0.5-2			●													

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

COMMENTS AND RESTRICTIONS
0.5-1 gal/A by ground or sprinkler irrigation; 0.5 gal/A by air. Max. 2 gal/A/season. Max. 2 applications/season. Incorporate ground and air applications with 0.5-1' moisture.
Bt insecticide. Treat early instars. 3-14 day typical reapplication interval. May be applied by sprinkler irrigation; see label.

BEE ALERT

See Insecticide Classification in the Technical Section for information on insecticide toxicity to bees.

MINT LABELED FUNGICIDES

FUNGICIDE	DISEASE*			
	POWDERY MILDEW	RUST	SEPTORIA LEAF SPOT	VERTICILLIUM WILT
ACTINOVATE AG	●			●
BIO-TAM 2.0				●
BRAVO ULTREX/WEATHER STIK/***PRAIZ***		●	●	
HEADLINE SC	●	●	●	
MICROTHIOL DISPERSS	●			
QUILT XCEL/AFRAME PLUS	●	●		
RALLY 40WSP	●	●		
SERENADE ASO		●		
SONATA	●	●		
TELONE II ‡				●S
TETRABAN	●	●		
TOPAZ/TILT		●		

* Many other diseases may be controlled, see label.
● - control; ●S - suppression
See Fungicide Resistance Management in the Technical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

Fungicide	Rate/Acre	PHI	G/F	Comments /Restrictions
ACTINOVATE AG	1-12 oz	0	0	See label for soil-borne and foliar diseases controlled/suppressed. Soil-applied: At plant, in-furrow in 10-200 GPA; may be applied by drip, overhead or other irrigation systems, and may also be used as seed treatment; see label. Foliar: Apply in 10-150 GPA; reapply every 7-14 days depending on disease pressure and environmental conditions; best to use spreader-sticker (adjuvant); may be applied by air (see label).
BIO-TAM 2.0	2.5-5 lb	–	–	Can be applied in-furrow (1.5-3 oz/1000' row) and banded (2.5-3 lb/A). Broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. Note 2.
BRAVO WEATHER STIK/***PRAIZ*** or BRAVO ULTREX	1.37 pt or 1.2 lb	80	NO	Use on mint in IN, MI and WI only. Use in sufficient water to get adequate coverage; normally 20 to 150 gal/A. Begin application when emerging plants are 4-8" high. Repeat applications at 7 to 10 day intervals or as necessary. See label for restrictions. Note 1.
HEADLINE SC	9-12 fl oz	14	–	Begin applications prior to disease development and continue on 7- to 14-day schedule. Do not make more than 2 sequential or 4 total applications. May include adjuvants. Notes 1, 2.
MICROTHIOL DISPERSS	4-6 lb	30	–	Apply when mint is 5-6" tall or when disease appears. Repeat twice at 30 day intervals. Notes 1, 2.
QUILT XCEL/AFRAME PLUS	10.5-14 fl oz	7	–	Begin applications when plants are 2-4" and when conditions are favorable for disease development. Note 1.
RALLY 40WSP	4-5 oz	30	–	Use in ID, MT, NV, OR, UT, WA, or WY. Begin application in early spring when plant breaks dormancy.
SERENADE ASO	2-6 qt	–	–	Bacillus subtilis is a biological fungicide. Begin application soon after emegence and when environmental conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed. Use higher rates and shorter application intervals under heavy disease pressure.
SONATA	2-4 qt	–	–	Begin soon after emergence and when conditions are conducive for disease development. Repeat 7-14 day intervals.
TETRABAN	6-15.5 fl oz	0,7	–	PHI 0 days for fresh mint, 7 days for processed mint. See label application rates, methods and timing for soilborne vs. foliar diseases.
TOPAZ/TILT	4 fl oz	7, 30	–	Begin where plants are 2-4" or when conditions are favorable for disease development. Continue applications at 14 day intervals as conditions warrant. Aerial application allowed. Do not apply more than 12 fl/oz/A/season (Tilt) or 8 fl oz/A/season for Topaz. PHI 7 days for Tilt and 30 days for Topaz.

PHI – preharvest interval days. G/F – grazing and feeding interval days. NO – not permitted.
NOTE 1: May be applied by air.
NOTE 2: May be applied by chemigation.

PASTURE HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

Life Cycle
A = ANNUAL
B = BIENNIAL
P = PERENNIAL

HERBICIDE	SITE OF ACTION[A]	WEEDS																						
		Alyssum, hoary[1]	Aster spp.	Brackenfern[1]	Broomweed	Buffalobur	Burdock, common	Bursage, woolly leaf/Bur ragweed	Buttercup spp.[1]	Coreopsis, plains	Daisy, oxeye	Dandelion	Dock, curly	Downy brome	Fleabane, daisy	Goldenrod	Halogeton[1]	Hawkweed[1]	Hemlock, poison[1]	Hemlock, water[1]	Hemlock, spotted water	Hemp[1]	Hoarycress (white top)	Horseweed (marestail)
Life Cycle		P	P	P	A	A	B	P	P	A	P	P	P	A	B	P	A	P	B	P	P	A	P	A
2,4-D *(2,4-D)*	4	F/G	F/G	P	G	F	E	F/G	G	G	F/G	E	F	N	F/G	G	F/G	F	G	G	G	G	F	F
AIM EC/SHARK EW *(carfentrazone)*	14	F/G	P	P	F/G	G/E	N	U	F	F/G	F/G	F/G	F	N	F/G	P	G	N	F	P/F	P/F	G	G	P
AMBER *(triasulfuron)*	2	U	U	U	G	G/E	E	U	G/E	E	U	U	F	F	G	F	U	U	U	U	U	U	P	G
BRASH/WEEDMASTER/ WEEDMASTER XHL/***SADDLE-UP*** *(2,4-D + dicamba)*	4,4	F/G	E	F	G/E	F/G	E	G	G	G	G	G/E	G/E	N	G/E	G/E	F	F	G/E	G/E	G	G/E	F/G	G/E
CHAPARRAL *(aminopyralid + metsulfuron)*	4,2	G	G	G	E	E	E	G	E	G	E	E	E	N	E	E	G	E	E	P/F	U	G	G	E
CIMARRON MAX *(metsulfuron + dicamba + 2,4-D)*	2,4	U	G	U	E	E	E	U	E	E	G	E	E	P	U	G	G	U	G	U	F	U	U	E
CIMARRON PLUS *(metsulfuron + chlorsulfuron)*	2,2	G/E	G/E	U	G	U	U	G	E	E	U	U	E	U	U	G	G	U	F/G	U	U	U	F/G	E
CIMARRON X-TRA *(metsulfuron + chlorsulfuron)*	2,2	U	G/E	U	G/E	U	U	U	G/E	G/E	U	G/E	G/E	U	U	G/E	G/E	U	G/E	U	U	U	G/E	E
CORNERSTONE BRANDS/ GLYPHOSATE[3] *(glyphosate)*	9	E	G/E	F	F	E	G	F	G	G	G/E	F/G	G/E	E	E	E	U	G	G	G	G	F/G	F/G	E
CROSSBOW *(triclopyr + 2,4-D)*	2,2	F/G	F/G	P	F	F	E	P	E	G	E	E	E	P	E	F/G	P	F	G/E	E	G	G	P	E
DURACOR *(aminopyralid + florpyrauxifen)*	4,4	U	E	U	G	E	E	F/G	E	U	E	E	E	P	E	P	U	E	E	U	U	U	P	E
ESCORT XP/PATRIOT *(metsulfuron methyl)*	2	U	F	G	E	P/F	G/E	U	E	E	U	G	G	N	U	G	G	U	G	P	U	N	G	E
GRAZON P+D ‡ *(picloram + 2,4-D)*	4,4	G	G/E	U	E	E	E	G/E	G/E	G/E	G/E	E	G/E	N	E	G/E	P	G	G/E	G	U	G	P	G/E
GRAZONNEXT HL *(aminopyralid + 2,4-D)*	4,4	N	G	U	E	E	E	E	E	E	E	G	E	N	E	G	N	E	F/G	F/G	F/G	G	N	E
MCPA/RHOMENE MCPA *(MCPA)*	4	F	F	P	U	P	G/E	F	G	G	F	G	F	N	U	F	F	P	G	U	G	G	N	F
MILESTONE *(aminopyralid)*	4	N	G	U	G	E	E	G	E	G	E	P	E	N	P	P	N	E	F	U	G	U	N	E
NOVAGRAZ *(2,4-D + florpyrauxifen)*	4,4																							
OVERDRIVE *(difufenzopyr + dicamba)*	19,4	F/G	E	F/G	E	G	E	E	E	E	E	G/E	E	P	E	E	F	F	E	E	E	E	F/G	E
PASTORA *(nicosulfuron + metsulfuron)*	2,2	U	G	U	F	U	U	U	E	E	U	E	G	F	G	G	U	U	U	U	U	U	U	E
PASTUREGARD HL *(triclopyr + fluroxypyr)*	4,4	G	G	P	G	G	G	F	G	G	G	G	E	N	G	F	N	F	F	E	U	F	N	E
RAVE *(dicamba + triasulfuron)*	4,2	U	G/E	U	G/E	G/E	N	U	G	G/E	E	G	G	P	G	G	U	F	G/E	E	U	U	G	G

Also, see Brush Control in the NON-CROP section.
[A] Site of action, described in the Technical Information section.
[1] May be poisonous to livestock or affect animal health.
[2] Or Clarifier, Clarity, Dicamba Max 4.
[3] May use other glyphosate products: Roundup brands/Honcho K6/Credit Xtreme; check individual product labels for reference to Roundup Ready pasture.
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WEEDS																															
Ironweed	Knapweed, Russian	Knapweed, spotted	Kochia	Leafy spurge	Lespedeza, sericea	Locoweed	Loosestrife, purple	Milkweed, common[1]	Mullein, common	Multiflora rose	Nettle, stinging	Pennycress, field	Plantain spp.	Prickly pear (cactus)	Ragweed, common	Ragweed, giant	Ragweed, lanceleaf	Skeletonweed, rush	Snakeroot, white[1]	Sneezeweed, bitter	Sorrel, red	Sowthistle	Tansy[1]	Thistle, bull	Thistle, Canada	Thistle, musk	Thistle, plumeless	Toadflax, yellow	Wormwood, absinth	Yarrow, common or western	Yucca (soapweed)
P	P	B	A	P	P	P	P	P	B	P	P	A	P	P	A	A	A	P	P	A	A	P	P	B	P	B	B	P	B	P	P
F/G	P	F/G	F/G	P/F	P	F/G	F/G	P	P	F	F/G	E	E	F	E	E	G/E	F	F/G	E	P	F	F	E	G	G	G	N	G	P/F	P
F/G	P	F/G	E	P	N	U	P	N	F/G	G	F	E	E	U	P/F	P	P	F/G	F	G/E	G/E	F	F	G/E	P/F	F/G	F/G	G/E	U	U	U
U	U	U	G	P	F	P	U	P	P	U	U	E	U	P	E	G/E	G/E	U	U	U	U	U	G	U	P	P	U	U	U	P	F
G	F	G	G	P/F	P/F	G	F	F	P	F/G	G	G/E	G/E	F	E	E	G/E	F	G	E	G	F/G	F/G	G/E	F/G	G/E	G/E	P	G	F	P
E	E	E	G	P	G	E	G	F	G	E	G	G	E	G	E	E	E	G	F	E	G	E	E	E	E	E	E	P	E	E	F
F/G	F	G	E	U	E	E	G	G	E	E	F	E	E	P	E	E	E	G	F	E	G	G	E	G	F	E	G	U	U	F	U
P	U	G	E	U	G/E	G/E	F/G	U	G	G/E	N	E	G	U	F	G	U	F/G	N	E	G	G/E	F/G	F/G	E	E	G/E	U	U	E	G
U	U	G/E	G/E	U	G/E	G	G/E	E	E	G/E	N	G/E	G/E	U	E	E	U	F	U	G/E	U	G/E	G/E	G/E	F	G/E	G/E	U	U	E	G/E
G	G	G	E	F	F	G	G	F	G	G	G/E	E	G/E	P	E	E	G/E	P	G	U	G	G/E	G/E	E	G	E	G/E	G	E	G	P
G/E	P	G	E	F	G	P	G	F	P	E	G/E	G	E	F	E	E	U	U	G/E	U	E	E	F	E	G/E	G/E	G	N	F	F	P
E	E	E	P	P	P	F/G	G	P	E	F	G/E	U	E	N	E	E	G/E	G/E	U	E	U	E	U	E	E	E	E	P	G/E	F/G	N
P	U	F	F	P	G	G	G	P	G	G	F	G	E	P	F	F/G	P	P/F	U	G	E	G	G	G	F	G/E	F/G	F	U	F	F
E	G	E	F/G	F	P	E	U	G	G	G	E	E	E	G/E	E	E	E	G	G	E	G/E	G	F	E	G/E	E	E	F	G/E	G	P
E	E	E	P	P	P	E	E	P	E	F	G	E	G	G	E	E	E	G	P	E	G	E	F	E	E	E	E	N	E	E	P
P	P	F	F	N	P	F	F	N	P	F	F	G	G	U	G	G	G	P	F	U	P	F	N	G	F	F	F	N	P	P	P
E	E	E	N	P	P	E	E	P	G	F	G	G	N	G	E	E	E	E	F	E	G	G/E	P	E	E	E	E	N	E	G	P
F	P/F	G	E	P/F	G/E	F	U	G	F	G	G/E	E	E	P	E	E	E	F	E	E	E	G	E	E	E	E	G	P/F	G	F/G	P
U	U	F	F	U	G	G	U	F	U	F	U	E	G	F	F	F	U	U	U	E	U	G	F	U	F	U	F	F	U	E	U
E	P	F	E	F	E	U	G	E	F	E	G/E	G	G	G	E	G	G	U	F	G	E	G	F	G	F	G	G	N	U	F	P
G	U	U	E	U	F	G	U	U	F	U	U	E	G	U	E	E	G	U	U	U	G/E	G/E	U	G	G/E	G/E	U	U	U	U	P

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For more information:
https://extension.sdstate.edu/sites/default/files/2024-02/P-00119-2024.pdf

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
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N = NONE
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Life Cycle
A = ANNUAL
B = BIENNIAL
P = PERENNIAL

	SITE OF ACTION[A]	WEEDS																							
		Alyssum, hoary[1]	Aster spp.	Brackenfern[1]	Broomweed	Buffalobur	Burdock, common	Bursage, woolly leaf/Bur ragweed	Buttercup spp.[1]	Coreopsis, plains	Daisy, oxeye	Dandelion	Dock, curly	Downy brome	Fleabane, daisy	Goldenrod	Halogeton[1]	Hawkweed[1]	Hemlock, poison[1]	Hemlock, water[1]	Hemlock, spotted water	Hemp[1]	Hoarycress (white top)	Horseweed (marestail)
REMEDY ULTRA *(triclopyr)*	2	**G**	**G**	P	F	F	**G**	U	F	U	**G**	**G**	**E**	N	U	F	N	F	F	**E**	U	F	N	**E**
SPIKE *(tebuthiuron)*	5	U	P	P	P	**E**	U	P	U	U	U	U	**E**	**G**	U	U	P	U	P	U	U	N	P	**G**
STERLING BLUE[2] *(dicamba)*	4	F/**G**	**E**	F/**G**	**G**	F/**G**	**G**	**G**	F	**G**	**E**	**G**	**E**	N	**E**	**G/E**	P	F	**E**	**E**	**G**	**G**	**G**	**E**
STINGER/STINGER HL *(clopyralid)*	4	U	**E**	N	P	P	**G**	U	F	U	**G**	**G**	F/**G**	N	U	P	U	**G**	P	P	U	P	P	**G**
SURMOUNT ‡ *(picloram + fluroxypyr)*	4,4	**G**	**G/E**	U	**E**	**E**	**E**	**G**	**G**	**G**	**G**	**E**	**G**	N	**E**	**G**	P	**G**	**G**	**G**	U	**G**	P	U
TELAR XP *(chlorsulfuron)*	2	U	U	U	U	U	U	U	U	U	U	F	**G/E**	U	U	**G/E**	**G/E**	U	U	U	U	U	U	U
TORDON 22K ‡ *(picloram)*	4	**G**	**E**	F	**G/E**	**G**	**E**	**E**	**G/E**	**G**	**G/E**	**E**	**E**	N	**G/E**	**E**	P	**G**	**E**	**E**	U	**G/E**	P	**G/E**

Also, see Brush Control in the NON-CROP section.
[A] Site of action, described in the Technical Information section.
[1] May be poisonous to livestock or affect animal health.
[2] Or Clarifier, Clarity, Dicamba Max 4.
[3] May use other glyphosate products: Roundup brands/Honcho K6/Credit Xtreme; check individual product labels for reference to Roundup Ready pasture.
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WEEDS																															
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G/E	P	F	F	F	**G/E**	U	**G**	F	U	**E**	**G/E**	**G**	**E**	F	**E**	F	F	U	F	U	**E**	**E**	U	**G**	F	F	F	N	U	U	P
U	P	P	P	P	P	P	U	P	**G**	**E**	U	U	U	P	**G**	**G**	U	U	U	U	U	**G**	U	**G**	F	**G**	U	U	U	P	P
G/E	**G**	**G**	**G**	P/F	F	**G**	U	F	F	**G**	**G**	**G**	**G**	P/F	**E**	**E**	**G/E**	F	**G/E**	**E**	**E**	**G/E**	**G**	**E**	**G**	**G/E**	**G**	P/F	**G**	F	P
P	F/**G**	F/**G**	P	P	P	F/**G**	P	F	P	P	P	P	P	P	**G**	**G/E**	U	U	P	U	F/**G**	F	**E**	**G**	**G/E**	**G**	**G**	U	U	P	P
E	**G**	**G**	**E**	**G**	**E**	**E**	N	**E**	**G**	**E**	**G**	**E**	F	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**G**	**G**	U	**E**	**G/E**	**E**	**E**	**G**	**G/E**	**G**	P
U	U	U	U	U	U	U	U	U	U	U	U	**G/E**	U	U	U	U	U	U	U	U	U	**G/E**	U	U	**G/E**	**G/E**	U	U	U	U	U
E	**G**	**G**	U	**G/E**	P	**G/E**	U	**G**	**E**	**G/E**	**G**	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**G**	**E**	**E**	**G**	**G/E**	**E**	**E**	**E**	**G/E**	**G**	**G/E**	**G**	P

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PASTURE LABELED HERBICIDES

KEY
CL = CROP LABELED
L = SPECIFIED GRASS LABELED
☐ = NOT LISTED ON LABEL **
NL = NOT LABELED

	WARM AND COOL SEASON GRASSES																		
	Pasture	CRP/buffer strip	Grasses Grown for Seed[11]	Bermudagrass	Bluegrass	Bluestem, big	Bigstems, old world or blue	Bromegrass, smooth	Buffalograss	Fescue, tall	Gamagrass, eastern	Grama	Indiangrass	Orchardgrass	Reed canarygrass	Ryegrass	Switchgrass	Timothy	Wheatgrass	Minimum growth stage or preferred application timing for pasture or CRP/buffer strips
BEFORE PLANTING																				
AATREX 4L ‡ or ***ATRAZINE 90DF*** ‡[3,4]	NL	CL	NL			L					L						L			
AIM EC/SHARK EW [2]	CL	CL	CL	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
BRASH/WEEDMASTER/WEEDMASTER XHL/***SADDLE-UP***	CL	CL	NL																	Delay planting 7-10 days/pint.
CALLISTO/***INCINERATE***	NL	NL	CL		L					L						L				
CORNERSTONE PLUS/CORNERSTONE 5 PLUS[1,2,16]	CL	CL	CL*																	
ESCORT XP	CL	NL	NL			L			L					L			L		L	
FRAMEWORK 3.3 EC[5]	NL	CL[5]	NL																	
GRAMOXONE SL 3.0 ‡	CL	CL	CL	L																
PLATEAU[8]	CL	CL	NL									L								
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6[1,2]	CL	CL	CL	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
RT 3	CL	CL	CL	L	L			L		L				L		L		L	L	
SENDERO	CL	CL	NL																	
TRUST/TREFLAN HFP[5]	NL	CL[5]	NL																	
2,4-D	NL	CL	NL																	>30 days before seeding
AFTER PLANTING																				
AIM EC/SHARK EW [2]	CL	CL	CL	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
AMBER[3,17]	CL	CL	NL	L		L			L			L		L[6]		L[6]		L	L	
ARSENAL POWERLINE	CL	NL	NL																	Spot treatment
BISON	NL	CL	CL	L	L					L				L		L				3 lf grass.
BRASH/WEEDMASTER/WEEDMASTER XHL/***SADDLE-UP***	CL	CL	CL	L																
CALLISTO/***INCINERATE***	NL	NL	CL		L					L						L				
CAPSTONE[3,24]	CL	CL	CL																	
CARNIVORE	NL	CL	NL																	
CHAPARRAL	CL	CL	NL															NL		
CHARGER BASIC/DUAL MAGNUM[3,7]	NL	NL	CL		L					L				L		L				
CIMARRON MAX[13]	CL	CL	NL	L	L	L	L	L	L*	L		L	L	L		NL	L	L*	L	
CIMARRON PLUS[13]	CL	CL	NL	L	L	L		L	L	L			L	L		L*	L	NL	L	
CIMARRON X-TRA[13]	CL	CL	NL	L	L	L		L	L[7]	L*		L	L	L		NL	L	NL	L	
CROSSBOW[2]	CL	CL	NL																	Do not use on new seedings.
CURTAIL[7]	CL	CL	CL[7]																	
DIMETRIC EXT[3,7]	NL	NL	CL		L					L				L		L			L	
DIREX/KARMEX 4L[3,7]	NL	NL	CL							L										
DURACOR[3]	L	L	NL																	PRE: 15-45 days. POST: >secondary root system.
DISTINCT	CL	NL	NL							*	*									Established stands only.
ESCORT XP/PATRIOT[19]	CL	NL	NL	L	L	L		L	L	L*		L		L				L	L	
EXPRESS SG	NL	NL	CL		L					L				L		L				After 4 lf grass, bentgrass 3-5"
FACET L[14]	CL[24]	CL[24]	CL	L	L	L		L	L	L	L	L	L	L		L	L		L	

See notes and footnotes at end of table.

KEY
CL = CROP LABELED
L = SPECIFIED GRASS LABELED
☐ = NOT LISTED ON LABEL **
NL = NOT LABELED

	WARM AND COOL SEASON GRASSES																		
	Pasture	CRP/buffer strip	Grasses Grown for Seed[11]	Bermudagrass	Bluegrass	Bluestem, big	Bigstems, old world or blue	Bromegrass, smooth	Buffalograss	Fescue, tall	Gamagrass, eastern	Grama	Indiangrass	Orchardgrass	Reed canarygrass	Ryegrass	Switchgrass	Timothy	Wheatgrass	Minimum growth stage or preferred application timing for pasture or CRP/buffer strips
AFTER PLANTING *(continued)*																			
FUSILADE DX[20]	NL	NL	CL																
GRAZONNEXT HL	CL	CL	NL																
HI-DEP	CL	NL	CL																
MCPA AMINE/RHOMENE MCPA	CL	CL	CL																2 or more true leaves
MILESTONE	CL	CL	NL																
NOVAGRAZ[28]	CL	CL	CL																POST > 5 Leaf (seedling) or 5 Tillers (Established)
OPENSIGHT[3,24]	CL	CL	CL																
OUTRIDER	CL	NL	NL	L															Well established pasture
OVERDRIVE*	CL	NL	NL							L*									Not for newly seeded grasses
PASTORA[25]	CL[25]	NL	NL	L[25]													L[25]		
PASTUREGARD HL	CL	CL	CL																
PLATEAU[8]	CL	CL	NL	L[22]	L*	L*	L	L*	L*	NL		L*	L*				L*	NL	L	
POAST[5]	NL	CL[5]	NL																At least 4 lf grass.
PROWL H2O[3,7]	NL	NL	CL		L					L				L		L			
PURSUIT	NL	CL	NL			L											L		≥ 4 lf grass or ≥ 3 trifoliate
RAVE[3,14]	CL	CL	NL	L		L		L	L			L						L	L	
REMEDY ULTRA[16]	CL	CL	NL	L		L	L				L		L				L			
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6[1,2]	CL*	CL*	NL	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	L*	Before grass emergence or growth
SECTION THREE/CLEANSE	NL	NL	CL																	Only cool season grasses grown for seed.
SENDERO	CL	CL	NL																	
SPIKE	CL	NL	NL	L		L	L			L*	L		L				L		L*	3 lf to pre-joint
STARANE NXT	NL	NL	CL	L[7]	L					L				L		L				2 lf to early boot
STARANE ULTRA/STAREDOWN	CL	CL	CL	L	L			L		L				L		L		L		2 lf to prior to early boot
STERLING BLUE	CL	CL	CL	L				*	*											After perennial grasses established (tillering)
STINGER/STINGER HL[1]	CL	CL	CL[7]																	
SURMOUNT ‡	CL	CL	CL																	Well established. Note 24
TELAR XP[14]	CL	CL	NL	L	L	L		L	L	L*			L	L			L		L	
TORDON 22K ‡[2,16]	CL	CL	NL																	
VELPAR L	CL	NL	NL	L*																Established grasses
WIDEMATCH	NL	CL	NL																	After 5 lf grass

See notes and footnotes at end of table.

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	WARM AND COOL SEASON GRASSES																		
	Pasture	CRP/buffer strip	Grasses Grown for Seed[11]	Bermudagrass	Bluegrass	Bluestem, big	Bigstems, old world or blue	Bromegrass, smooth	Buffalograss	Fescue, tall	Gamagrass, eastern	Grama	Indiangrass	Orchardgrass	Reed canarygrass	Ryegrass	Switchgrass	Timothy	Wheatgrass	Minimum growth stage or preferred application timing for pasture or CRP/buffer strips
AFTER PLANTING *(continued)*																			
YUKON	CL	CL	NL	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
2,4-D[12]	CL	CL	CL	L	L	L	L	L		L	L		L	L	L	L	L	L	L	

* Grass injury or suppression may occur.
** Not specifically listed on the label, but not prohibited. Many labels for pasture and CRP do not indicate all grasses included.
[1] May be applied by ropewick.
[2] May be applied as a spot treatment.
[3] State or regional restrictions.
[4] WinField United atrazine 4L and 90DF are also labeled. Limited to NE, OK, OR and TX. Aatrex or atrazine is labeled for CRP after planting for certain grasses in some states.
[5] Labeled on forage legumes only.
[6] Established stands only.
[7] Established grasses grown for seed only.
[8] For use only by government agencies.
[10] Do not use on grass grown for seed.
[11] See label for grasses included, application timing, and restrictions. See Grasses Grown for Seed section.
[12] Includes 2,4-D Amine 4, LV 4, LV 6, Shredder E-99, Weedar 64, Weedar HXL, Weedone 638.
[13] 2-24 month after seeding in pasture and to established CRP grasses planted the previous season and are fully tillered.
[14] After perennial grasses established with a good secondary root system.
[16] For broadcast treatments, apply in early spring or late fall when desirable perennial grasses are dormant.
[17] ≥60 days after grass emergence, ≥ 30 days after bermudagrass sprigging.
[19] See label for minimum planting interval.
[20] Fall or spring to fine fescue before seed head develops in boot.
[22] Apply after full green-up.
[24] Includes a 24c, 2ee or Supplemental label.
[25] Only for established bermudagrass pasture and hay meadow, unimproved bermudagrass turf and Tennessee switchgrass pasture.
[27] PRE spring or summer, grass can be planted after 4 months; fall PRE-wait until spring to plant. POST during establishment season - see footnote 15.
[28] See label for specific rates on seedling grass applications and established grass applications.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Section for more information on use restrictions.

HERBICIDE	RATES/ACRE	LACTATING DAIRY ANIMALS		BEEF & NON-LACTATING DAIRY ANIMALS		REMOVAL
		Before Grazing	Before Hay Harvest	Before Grazing	Before Hay Harvest	Before Slaughter
AMBER	0.28-0.56 oz	0 days	30 days	0 days	30 days	0 days
AIM EC/SHARK EW	Up to 2 fl oz	0 days	0 days	0 days	0 days	0 days
ARSENAL POWERLINE	2-48 fl oz	0 days	7 days	0 days	7 days	0 days
BRASH/WEEDMASTER	1-4 pt	7 days	37 days	0 days	37 days	30 days
CAPSTONE	Up to 9 pt	0 days	14 days	0 days	14 days	0 days
CHAPARRAL	1-3.3 oz	0 days^^	0 days	0 days ^^	0 days	0 days
CIMARRON MAX	5-20 A/unit	7 days	37 days	0 days	37 days	30 days
CIMARRON PLUS	0.125-0.25 oz	0 days	0 days	0 days	0 days	0 days
CIMARRON X-TRA	0.5-2 oz	0 days	0 days	0 days	0 days	0 days
CORNERSTONE BRANDS						
SPOT or WIPER	Any labeled rate	14 days	14 days	14 days	14 days	0 days
BROADCAST	Any labeled rate	8 weeks	8 weeks	8 weeks	8 weeks	0 days
CROSSBOW	1-4 qt	next season	14 days	0 days	14 days	3 days
CURTAIL^^	2-4 qt	14 days	7 days	0 days	7 days	7 days *(unless >2 wks since application)*
DISTINCT	4-8 oz	0 days	0 days	0 days	0 days	0 days
DURACOR	12-20 fl oz	0 days	0 days	0 days	0 days	0 days
ESCORT XP/PATRIOT	0.33 to 2 oz	0-3 days#	0-3 days#	0-3 days#	0-3 days#	0-3 days#
FACET L	12-64 fl oz	0 days	7 days	0 days	7 days	0 days
GRASLAN L/GRAZONPD3	1.25-10 pt	7 days	30 days	0 days	30 days	3 days
GRAMOXONE SL 3.0 ‡	1.7-2.7 pt	—	40 days*	—	40 days*	0 days
GRAZONNEXT HL	1.2-2.1 pt	0 days^^	0 days^^	0 days^^	0 days^^	0 days^^
GRAZON P+D ‡	1-8 pt	7 days	30 days	0 days	30 days	3 days
HI-DEP	1-4 qt	7 days	30 days	0 days	30 days	3 days
MILESTONE	3-7 fl oz	0 days^^	0 days	0 days^^	0 days	0 days
NOVAGRAZ	24-48 fl oz	3 days	3 days	§	§	3 days
OPENSIGHT	Up to 3.3 oz	0 days	14 days	0 days	14 days	0 days
OUTRIDER	Up to 2 oz	0 days	14 days	0 days	14 days	0 days
OVERDRIVE	4-8 oz	0 days	0 days	0 days	14 days	0 days
PASTORA	1-1.5 oz	0 days	0 days	0 days	0 days	0 days
PASTUREGARD HL	0.75-1.5 pt	0 days	14 days	0 days	14 days	3 days
PLATEAU	2-12 oz	0 days	7 days	0 days	7 days	0 days
RAVE	2-5 oz	7 days	0 days	0 days	0 days	30 days
REMEDY ULTRA/GARLON	1-4 pt	0 days	14 days	0 days	14 days	3 days
ROUNDUP BRANDS/CREDIT XTREME/ HONCHO K6						
SPOT or WIPER *(not >1/10th of any given acre at one time)*	Any labeled rate	7 days	7 days	7 days	7 days	0 days
BROADCAST	Any labeled rate	13 days§	13 days§	13 days§	13 days§	0 days
RT 3	Up to 3.3 pt	13 days§	13 days##	13 days§	13 days§	13 days§
RUGGED	1-2 qt	0 days	7 days	0 days	7 days	0 days
SADDLE-UP	0.5-5.33 pt	7 days	7 days	0 days	7 days	30 days
SENDERO	0.75-1.75 pt	0 days	14 days	0 days	14 days	0 days
SPIKE 20 P	0.5 oz/45 sq ft 3.75-20 lb/A	0 days## 0 days##	1 year## 1 year##	0 days## 0 days##	1 year## 1 year##	0 days## 0 days##
STARANE ULTRA/STAREDOWN	0.3-0.4 pt	0 days	7 days	0 days	7 days	2 days

See notes and footnotes at end of table.

HERBICIDE	RATES/ACRE	LACTATING DAIRY ANIMALS		BEEF & NON-LACTATING DAIRY ANIMALS		REMOVAL
		Before Grazing	Before Hay Harvest	Before Grazing	Before Hay Harvest	Before Slaughter
STERLING BLUE*/*CLARIFIER/CLARITY/ ***DICAMBA MAX 4***	Up to 1 pt Up to 2 pt Up to 4 pt	7 days 21 days 40 days^	37 days 51 days 70 days^	0 days 0 days 0 days	0 days^ 0 days 0 days	0 days 0 days 0 days
STINGER/TRANSLINE/STINGER HL	0.66-1.33 pt 0.4-.8 pt	0 days	0 days	0 days	0 days	9 days
SURMOUNT^^ ‡	1.5-6 pt	14 days	7 days	0 days	7 days	3 days
TELAR XP	0.25-1.33 oz	0 days	0 days	0 days	0 days	0 days
TORDON 22K** ‡	0.5-2 pt 1-2 qt	14 days 14 days	14 days 14 days	0 days 0 days	0 days 14 days	3 days** 3 days**
VASTLAN	1-4 pt	0 days	14 days	0 days	14 days	3 days
VELPAR L	2.75-4.5 pt	0 days	38 days (30 days for alfalfa)	0 days	38 days (30 days for alfalfa)	
WEEDMASTER XHL	2.2-4.2 pt	7 days	7 days	0 days	7 days	30 days
YUKON	4-8 oz	0 days	37 days	0 days	37 days	
2,4-D LV4; LV6; AMINE 4/SHREDDER E-99/ WEEDAR 64/WEEDAR XHL/WEEDONE 638	***	***	***	***	***	***

* Including 40 days for bermudagrass.

** Remove livestock to untreated grass pasture for 7 days before transferring livestock to broadleaf crop or pasture areas. Removal before slaughter statement only applies to animals grazing treated forage for a period of up to 2 weeks after application.

*** Various brands. Be sure to check individual product labels for restrictions and use rates due to the large number of formulations available.

No restrictions at ≤1.67 oz/A. 3 days for higher rates.

If no more than 20 lb/A used, in areas receiving greater than 20" rain/year — areas less than 20" rain/year if no more than 10 lb/A used.

^ Does not include Dicamba Max 4 for lactating. 7 days for grass hay for Dicamba Max 4.

^^ Remove livestock to untreated grass pasture for number of days specified on label before transferring livestock to broadleaf crop or pasture areas.

§ 0 days for 2 qt/A or less, 8 weeks for greater than 2 qt/A.

§§ Graze for 3 days in untreated pasture before moving to sensitive crop.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PREEMERGENCE OR POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
AIM EC/SHARK EW	Up to 2 fl oz	Carfentrazone. PP or PRE up to 1 day after planting. Min. 7-day application interval. Max. 5.9 fl oz/A/season. Max. 3 applications/season. Include NIS, MSO, or COC and UAN or AMS.* May be mixed with glyphosate for burndown prior to planting. See label for tank mix information. Add Aim EC to tank before other herbicides.
AMBER	0.26-0.56 oz + 1-2 qt NIS/100 gal	Triasulfuron. POST. Do not apply to new seedings until at least 60 days after grass emergence. Should be tank mixed with 2,4-D, Dicamba Max 4, Crossbow or Curtail. Not recommended on orchardgrass, ryegrass, or legumes. For use in CO, ID, KS, MT, MN, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA and WY.
ARSENAL POWERLINE	2-48 fl oz	Imazapyr. Spot treatment POST not to exceed 1/10 of area grazed or cut for hay. Include NIS or HSOC-MSO.*
BRASH/WEEDMASTER	0.5-4 pt + 1-2 qt NIS/100 gal Spot trtmnt: 3 fl oz/3 gal water	Dicamba + 2,4-D amine. POST for broadleaves and brush. May be applied as foliar, dormant basal, or cut surface. Rates above 4/A pt for spot treatment only.
CAPSTONE	Up to 9 pt	Aminopyralid + triclopyr. Do not use for grass for seed if Capstone was applied within the preceeding 18 months. Do not rotate to cropland within 1 year of application.
CHAPARRAL	1-3.3 oz	Aminopyralid+ metsulfuron. POST for annual and perennial broadleaves with residual control of seedlings. Excellent control of certain woody species such as buckbrush, multiflora rose, and blackberry. Fescue and ryegrass are sensitive to metsulfuron. See label for tolerance of forage grass and other use restrictions. Add NIS at 1-2 qt/100 gal.
CIMARRON MAX	5, 10 or 20 acres/unit (5 oz A: 2.5 gal B) + 1-2 pt NIS/100 gal	Metsulfuron-methyl + dicamba + 2,4-D. POST. Wait 2-24 months after pasture grass establishment before application. Fescue and ryegrass are sensitive to metsulfuron. See label for tolerance of forage grass and other use restrictions. See label for specific restrictions.
CIMARRON PLUS	0.125-1.25 oz + 0.5 gal HSOC-COC or 1 qt NIS/100 gal*	Chlorsulfuron + metsulfuron-methyl. POST. Apply to most weeds when <4" tall or in diameter. Provides residual control. Fescue and ryegrass are sensitive to metsulfuron. See label for tolerance of forage grass and other use restrictions. See label for specific weeds.
CIMARRON X-TRA	0.5-2 oz	Metsulfuron-methyl + chlorsulfuron. Fescue and ryegrass are sensitive to metsulfuron. See label for tolerance of forage grass and other use restrictions. See label for grass and use restrictions.
CLARIFIER/CLARITY	SEE STERLING BLUE.	
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	Up to 4 qt or Up to 3 qt + 8.5-17 lb AMS/100 gal, WC+NIS as needed* Spot trtmnt: 2% v/v Ropewick: 33% v/v or 25% v/v	Glyphosate. POST broadcast to kill emerged broadleaves and grasses prior to planting grasses or forage legumes. PHI 8 weeks. SPOT TREATMENT. Treat no more than 0.1 acre at any one time.
CREDIT XTREME	SEE ROUNDUP.	
CROSSBOW	1-4 qt Spot trtmnt: 4-6 fl oz/3 gal water	Triclopyr + 2,4-D. POST for broadleaf weeds and woody plants. Broadcast in 10-30 GPA to actively growing weeds in rosette stage. Maximum use in rangeland and pasture is 4 qt/A as broadcast spray. SPOT TREATMENT: Thoroughly wet foliage.
CURTAIL	2-4 qt	Clopyralid + 2,4-D. Apply POST to young actively growing weeds. Legumes will be injured.
DICAMBA MAX 4	SEE STERLING BLUE.	
DISTINCT	4-8 oz + 1 qt NIS/100 gal or 0.75-1 pt HSOC-MSO*	Diflufenzopyr + dicamba. POST. Do not apply to newly seeded grasses. Controls many annual and biennial weeds and controls or suppresses many perennial weeds in pasture and rangeland. Maximum 8 oz/A per season.
DURACOR	12-20 fl oz	See label for broadleaf weed-specific rates. Difficult-to-control weeds and brush may require tank-mixing. Not for use in CT, ME, MA, NH, NY, RI, VT. If pasture or rangeland was treated with DuraCor in the preceding 18 months: Do not export outside the U.S.; do not distrubute harvested hay off the farm or ranch where treated; do not use for silage, haylage, baylage, green chop; do not move hay and silage made from treated grass off farm; do not use hay from treated areas or manure from animals feeding on treated hay in compost; do not use treated grasses for seed prodcution. See label for complete restrictions.
ESCORT XP/PATRIOT	0.33-4 oz: PP or PRE 0.1 oz: POST new seeding ≤1 oz: POST established	Metsulfuron-methyl. PP or PRE for native grass seedlings. POST to actively growing weeds like musk thistle, Canada thistle, buckbrush and other broadleaf weeds. Addition of NIS is recommended for some weeds. Up to 0.1 oz/A POST plus a NIS. Apply to grasses at 3-4 leaf stage in new seedings or 1-5 leaf in grass planted the previous season. Established grass must be fully tillered. See label for grass species and precautions.
FACET L	12-64 fl oz + 1 pt HSOC-COC or HSOC-MSO*	Quinclorac. PHI 7 days hay. See label for specific weed rates. WC+NIS or a UAN can be added for better efficacy.* Add InterLock at 4-6 oz/A.

See notes and footnotes at end of table.

PRE OR POST *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
GRAMOXONE SL 3.0 ‡	0.7-1.3 + 2 pt NIS/100 gal	Paraquat. POST for suppression of existing sod and emerged weeds and grasses prior to, or at planting of grasses or forage legumes. Apply only to grazed or mowed pastures not more than 3" in height at time of treatment.
GRASLAN/GRAZONPD3	0.66-2.66 pt: Broadleafs 1.25-10 pt: Trees and Brush	A higher load formulation of Grazon P+D that allows lower use rates with equal weed and brush control efficacy. No grazing restrictions for any livestock. Can be used broadcast by ground or applied aerially.
GRAZON P+D ‡	1-4 pt: broadleaf weeds 2 gal/100 gal: cactus 1-2 gal/100 gal: brush + 1-2 qt NIS/100 gal	Picloram + 2,4-D. POST for annual and perennial broadleaves with season long residual. Broadcast in 10-25 GPA water or with liquid fertilizer carrier. Can also be applied as oil-water emulsion. Maximum use rate is 1 gal/A/year.
HI-DEP	1-2 qt	Methyl- and ethyl-amine formulation of 2,4-D. POST apply in 1-10 GPA alone or 10-25 GPA water in tank mixes. Follow remarks for 2,4-D below.
HONCHO K6	SEE ROUNDUP.	
MCPA AMINE	0.5 pt: new seeding 1-4 pt: established	MCPA. POST apply to new seedings of clover or grass after they have 2 or more true leaves.
MILESTONE	3-5 fl oz: annuals, biennials 5-7 fl oz: perennials 14 fl oz: spot treatment	Aminopyralid. POST to actively growing weeds in spring or fall. Soil residual for season-long control of newly germinating seeds. Can be used on non-irrigation ditch banks and seasonally dry wetlands. Do not use hay from treated area for composting or mulch on broadleaf crops. NIS may be added.
NOVAGRAZ	24 fl oz, seedling grass > 5 leaf. 24-48 fl oz, established grass > 5 tillers	2,4-D + florpyrauxifen. Do not cut forage for hay within 14 days of application. Use MSO (Optify HSMSO) at 1% V/V. Refer to RinskorTankMix.com for prohibited tank mix products. Max rate of 48 fl oz/A/year. 60 day minimum retreatment interval. When grass is well established, higher rates up to 48 fl oz per acre may be applied for hard to kill weed species. Some temporary grass injury can occur with rates above 24 fl oz per acre. Refer to the product label for additional information on rotational restrictions and manure management/application to sensitive broadleaf crops.
OPENSIGHT	Up to 3.3 oz	Aminopyralid. Do not use for grass for seed if Opensight was applied within the preceeding 18 months. Do not rotate to cropland within 1 year of application.
OUTRIDER	Up to 2 oz + 1 qt NIS/100 gal	Sulfosulfuron. POST for johnsongrass, purple and yellow nutsedge and green kyllinga in bermudagrass or bahiagrass pastures. Apply early spring through fall to well established pastures.
OVERDRIVE	4-8 oz + 1 qt NIS/100 gal or 0.75-1 pt HSOC-MSO*	Diflufenzopyr + dicamba. POST. Do not apply to newly seeded grasses. Controls many annual and biennial weeds and controls or suppresses many perennial weeds in non-crop, pasture, hay, and rangeland. Maximum 8 oz per season.
PASTORA	1-1.5 oz	Nicosulfuron + metsulfuron. POST broadleaf and grass control in established bermudagrass pastures, hay meadows, unimproved bermudagrass turf and TN switchgrass pastures. Include NIS or COC1 + UAN/AMS.* Maximum 2.5 oz/A total per year.
PASTUREGARD HL	1-2 pt: Broadleaf weeds 1-4 pt: Trees and Brush	Industry standard for control of sericea lespedeza, applied at 12-16 fl oz/A. Can be used alone for general weed and brush control on susceptible species (see label), or in combination with Graslan L, GrazonPD3, Grazon P+D, or Chaparral for broad spectrum control. No restrictions on any class of livestock including lactating dairy.
PLATEAU	2-12 fl oz + 1 pt HSOC-MSO*	Imazapic. Many grasses are sensitive. Available only for government uses.
RAVE	2-5 oz + 1-2 pt NIS or 1 pt HSOC-COC/100 gal*	Dicamba + triasulfuron. POST. Do not apply until at least 60 days after emergence of desired grasses. Can tank mix with most products and OP insecticides; but not malathion. Some crop response. Registered in certain states. See label.
REMEDY ULTRA	1-2 pt: Broadleaf weeds 1.5-4 pt: Trees and Brush	Can be used alone for general weed and brush control on susceptible species (see label), or in combination with Graslan L, GrazonPD3, Grazon P+D, or Chaparral for broad spectrum control. No restrictions on any class of livestock including lactating dairy.
REMEDY ULTRA + GRAZON P+D ‡	1 pt + 1-2 qt	Triclopyr + picloram + 2,4-D. POST for hard-to-kill broadleaves. Applied as a foliar treatments with surfactant.
RHOMENE MCPA	1.25 qt	Whitebrush control: Apply in sufficient water to make 8 gallons solution/A. Add 1 gallon diesel oil to mixure for increased effectiveness. Max. 6.4 pt/A/year. Max. 2 applications/year. Min. 21-day treatement interval.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, include WC+NIS as needed*	Glyphosate. Rope or spot treatments. Also POST broadcast to kill emerged broadleaves and grasses prior to planting grasses or forage legumes. See labels for rate-dependent grazing PHIs. SPOT TREATMENT. Treat no more than 0.1 acre at any one time.

See notes and footnotes at end of table.

PRE OR POST *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
RT 3	11-44 fl oz/11-32 fl oz: annuals Up to 3.3 qt: perennials + 8.5-17 lb AMS/100 gal, include WC+NIS* as needed	Glyphosate. PP, PRE, renovation, and spot treatment for emerged weeds in pastures and 8-11 fl oz/A for control or suppression in rangelands. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY, and specific counties in KS, MN, NE, NM, OK.
RUGGED	1-2 qt	2,4-D Acid. POST for broadleaves. Apply 1 qt/A for annuals and 1-2 qt/A for biennals and perennials.
SADDLE-UP/SPITFIRE	0.5-4 pt + 1-2 qt NIS/100 gal Spot trtmnt: 1-5 fl oz/1-4 gal water+B48:C48	Dicamba + 2,4-D amine. POST for broadleaves and brush. May be applied as foliar, dormant basal, or cut surface. Rates above 4 pt/A for spot treatment only.
SENDERO	0.75-1.75 pt	Aminopyralid + clopyralid. PRE or POST. See label for use restrictions.
SHREDDER E-99	SEE 2,4-D	
SPIKE 20P	3.25-20 lb or 0.5 oz/2-4" stem diameter	Tebuthiuron. May be broadcast or used as individual plant treatment. Rates are based on species to be controlled. See label for exact rate. Grazing is allowed in areas treated with 20 lb/A or less with >20 in rainfall. With less rain, the rate limit to avoid grass injury is 10 lb/A. Caution must be taken near desirable trees or shrubs as small amounts of Spike may cause serious injury.
SPITFIRE	SEE SADDLE-UP	
STARANE ULTRA/ STAREDOWN	0.3-0.4 pt	Fluroxypyr. See label for grass species. POST to new seedings from 2-leaf to prior to early boot stage on to established stands with <8" weeds.
STERLING BLUE/ CLARIFIER/CLARITY/ ***DICAMBA MAX 4***	0.5-1.5 pt: annuals 0.5-3 pt: biennials 2-4 pt: perennials 2-4 pt: brush	Dicamba. POST for broadleaf weeds and brush. Rates are for high-volume broadcast spray. On new seedings, apply to grass from 3-leaf to pre-joint. 1 qt/A for Canada thistle top growth and 4 qt/A for control. For foliage suppression. Apply 0.25 oz/A for 5 ft canopy diameter, 1 oz/A for 10 ft canopy diameter, 2.25 oz/A for 15 ft canopy diameter for multiflora rose and other brush. Apply spot concentrate directly to soil as close as possible to the root crown at 3-4 locations, around bush. The best time to apply is as a dormant treatment from Jan. to Mar. to bare soil.
STERLING BLUE/ CLARIFIER/CLARITY/ ***DICAMBA MAX 4*** + ***2,4-D LV4*** or ***2,4-D LV6***	1 pt + 1 qt or 0.67 qt LV6	Dicamba + 2,4-D. POST apply to annuals in early spring; biennials at rosette stage in fall or when small in spring prior to bolting; perennials at high rate in bud stage or in fall.
STINGER/TRANSLINE/ STINGER HL	0.66-1.33 pt 0.4-.8 pt	Clopyralid. Apply POST to actively growing broadleaf weeds before boot stage of grass. Applications to new seedings should be made after the grass has become established. Do not apply to pastures containing legumes or other desirable forbs. Do not use hay from treated area for composting or mulch on broadleaf crops.
SURMOUNT ‡	1.5-2 pt: annuals 2-4 pt: biennials 3-6 pt: brush	Picloram + fluroxypyr. POST for broadleaves and brush.
TELAR XP	0.25-1 oz	Chlorsulfuron. POST to well established grasses. Use up to 1.33 oz/A as spot treatment. Rate depends on grass species. See label for sensitive species and precautions. Potenital for crop injury. NIS at 1 qt/100 gal improves control. Inhibits musk thistle seed viability.
TORDON 22K + ***2,4-D LV4*** or ***2,4-D LV6***	2.5 fl oz/2 gal water: spot treatment 8-12 fl oz: biennial thistles 1-2 pt: other annual, perennial broadleaves + 1 qt or 0.67 qt	Picloram. Do not exceed 1 qt/A/season Tordon 22K. Apply POST to rosette stage in fall prior to freeze-up or in spring before weeds begin to bolt. Apply when weeds are actively growing in spring or early fall. Do not apply near desirable trees. Tordon 22K has a longer soil residual than other herbicide choices. Soil residual based on environmental conditions and rates. Average half life in soil is 90 days.
VASTLAN	1-4 pt	Foliar control of broadleaf weeds. Can be tank mixed in combination with Milestone, Opensight, imazapyr or Rodeo, to broaden the spectrum of weed and brush control. Also commonly used for individual plant treatments such as spot spraying, and stump treatment. Essentially non-volatile.

See notes and footnotes at end of table.

PRE OR POST *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
VELPAR L	2.75-4.5 pt	Hexazinone. For established bermudagrass/bahiagrass pastures. Make a single application when weeds are actively growing. Controls certain grasses, broadleaves, and woody plants. See label for geographic and other restrictions.
WEEDMASTER XHL	0.4 - 3.2 pt + 1-2 qt NIS/100 gal. spot trtmnt: 0.8 fl oz/gal water	Dicamba + 2,4-D amine. POST for broadleaves and brush. Refer to the product label Table 1. for specific weed species, timing and rates. Don't make spot treatments in addition to broadcast treatments.
YUKON	4-8 oz	Apply to established grasses that have secondary root system. Dairy animals are permitted to graze fields following application.
2,4-D	1-2 qt 2,4-D Amine 4 or 3-4.2 pt 2,4-D LV4 or 1.5-2.75 pt 2,4-D LV6 or 1.33-2.67 pt Shredder E-99 2-4 pt Weedar 64 or 21-43 fl oz Weedar XHL or 2.5-5 pt Weedone 638	SEEDLING: Apply POST only after grass in 5-leaf stage or beyond but before boot stage. ESTABLISHED: Apply to grasses before boot stage and to annuals in early spring; biennials in rosette stage in fall or to small weeds in spring prior to bolting; to perennials, at high rate in bud stage or in fall. Legumes will be injured or killed. Amines are generally tolerated better than esters. Cool season grasses often are less sensitive to 2,4-D than warm season grasses. For grasses grown for seed, see product-specific label. Drought increases risk of injury.

A COMPLETE PROGRAM IS NECESSARY – An effective weed control program for grass pastures involves grazing management and good fertility as well as the use of herbicides. Overgrazing of pastures favors development of weeds. Inadequate fertility results in thin stands of grass which allows more weed growth. Herbicides are most effective when grass is competing vigorously with weeds.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECTICIDE	PRE-HARVEST INTERVAL FOR PASTURE	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT: ARMYWORM	INSECT: GRASSHOPPER	COMMENTS AND RESTRICTIONS
BAYTHROID XL ‡	0	0	1.6-1.9 fl oz	●		Max. 2.8 fl oz/5-day interval. Max. 11.3 fl oz/A/crop season. Armyworm: Use higher rate range for Fall, Beet, Southern, Western Yellowstriped and Yellowstriped (1st and 2nd instar).
			2.6-2.8 fl oz		●	
BESIEGE ‡	–	7	5-8 fl oz	●		Max. 27 fl oz/A/year. Max. 9 fl oz/A/cutting. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. Max. 4 applications/year.
			6-10 fl oz		●	
BLACKHAWK	3	0	1.1-2.2 oz	●		Do not apply >3 times in any 21-day period. If applied 3 times in succession, wait 21 days before reapplication, or rotate to another insecticide class. Max. 8.3 oz/A/season. Max. 6 applications/season.
CORAGEN	0	0	2-5 fl oz		●	Max. 15.4 fl oz/A/calendar year. Max. 4 applications/calendar year. 7-day min. application interval. Grasshopper: Control improved with MSO; see label for critical application timing information.
			3.5-7.5 fl oz	●		
DIMILIN 2L ‡	1	0	1-2 fl oz		●	Max. 2 fl oz/A/cutting. Max. 6 fl oz/A/calendar year. Armyworm: Apply prior to larvae reaching 4th instars. Grasshopper: See label for application timing, rates and Reduced Area and Agent Treatment recommendations. Min. 2-30 GPA by ground, 2-10 GPA by air; see label. PHI: Allow min. 1 day after treatment before cutting.
			2 fl oz	●		
ENTRUST SC	3	3,0	2-4 fl oz	●		Max. 12 fl oz/A/season for all application methods. Max. 6 applications/season. Do not apply >3 times in any 21-day period. If applied 3 times in succession, wait 21 days before reapplication, or rotate to another insecticide class. PHI 3 days for straw/hay from last application, 0 days for regrowth.
GRIZZLY TOO ‡	7	7,0	0.96-1.6 fl oz	●		Max. 5.76 fl oz/A/season. Min. 7 GPA by ground, 2 GPA by air. PHI 7 days for straw/hay from last application, 0 days for regrowth.
			1.28-1.92 fl oz		●	
INTREPID 2F	7	NO	4-8 fl oz	●		Max. 32 fl oz/A/year. Max. 1 application/cutting. Apply at first signs of feeding or when threshold levels occur. Min. 10 GPA by ground, 5 GPA by air.
LAMBDA-CY AG ‡	7	0	2.56-3.84 fl oz	●	●	Max. 3.84 fl oz/A/cutting. 30-day min. application interval for pastures/rangeland receiving 3.84 fl oz/A and which have not been cut between applications. Max. 11.52 fl oz/A/season. Apply by ground or air; see label.
MALATHION 5	0	–	23.5 fl oz	●	●	ULV application only. Use closed mixing and loading system. Max. 1 application/cutting. 7-day min. application interval.
MALATHION 5EC			1.5-2 pt		●	Max. 2 pt/A. Max. 2 applications/cutting. 14-day min. application interval.
			2 pt	●		
MUSTANG MAXX ‡	7	7,0	2.24-4 fl oz	●		Max. 4 fl oz/A/cutting. Max. 20 fl oz/A season. 17-day min. application interval. PHI 7 days for straw/hay from last application, 0 days for forage and hay.
			2.8-4 fl oz		●	
VANTACOR	0	0	0.7-1.7 fl oz		●	Foliar or overhead chemigation. Max. 5.1 fl oz/A/calendar year. Max. 4 applications/calendar year. 7-day min. application interval. Grasshopper: Control improved with MSO; see label for critical application timing information.
			1.2-2.5 fl oz	●		
WARRIOR II ‡	7	7,0	0.96-1.6 fl oz	●		Max. 5.76 fl oz/A/season. Min. 7 GPA by ground, 2 GPA by air. PHI 7 days for straw/hay from last application, 0 days for regrowth.
			1.28-1.92 fl oz		●	
XENTARI	0	-	0.5-2 lb	●		Bt insecticide. 1st and 2nd instars. Repeat treatment as necessary.

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.See Insecticide Resistance Management in the Technical Information section.



ARMYWORM **ET:** treat when an average of 4 or more non-parasitized, half grown or larger worms per square foot are found.



GRASSHOPPER 7-10 adults per square foot will generally cause economic damage. Spray when small.

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.

PEA HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES												
			Barnyardgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Quackgrass	Sandbur, field	Shattercane/Sorghum	Volunteer barley	Volunteer wheat	Wild oat	Wild proso millet	Yellow nutsedge
PREPLANT OR PREEMERGENCE															
AIM EC/SHARK EW *(carfentrazone)*[1]	E	14	N	N	N	N	N	N	N	N	N	N	N	N	N
AUTHORITY SUPREME *(pyroxasulfone + sulfentrazone)*	E	15,14	**E**	**E**	**E**	**E**	**E**	N	**G**	F	N	N	**G**	F	**G**
BROADAXE XC/AUTHORITY ELITE *(sulfentrazone + s-metolachlor)*	E	14, 3	**G**	**G**	**G**	**G/E**	**G/E**	U	P	F	U	**E**	U	U	U
BUCKLE *(triallate + trifluralin)*[1]	G	15,3	**G**	**G**	**G**	**G**	**G**	P	**G**	F/**G**	P	P	**G/E**	F	P
CHARGER MAX/DUAL II MAGNUM/EVERPREX *(s-metolachlor)*	G	15	**E**	**E**	**E**	**E**	**E**	P	P/F	P	P	P	P	F	F
CORNERSTONE 5 PLUS[2] *(glyphosate)*	G/E	9	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**
DIMETRIC EXT/DIMETRIC LIQUID *(metribuzin)*	G	5	F	F	F	F	F	P	P	P	P	P	P	P	P
FAR-GO *(triallate)*	F/G	15	P	P	P	P	P	N	N	N	N	N	**E**	P	N
FRAMEWORK 3.3 EC/PROWL H2O *(pendimethalin)*	E	3	**E**	**E**	**E**	**E**	**E**	P	**G**	**G**	P/F	P/F	F	F	P
GRAMOXONE SL 3.0[1] ‡ *(paraquat)*	E	22	F	**G**	F	F	F	P	F	F	P	P	**G**	F	P
PURSUIT *(imazethapyr)*	G	2	P/F	P	P	F	F	P	P	**E**	P	P	P	P	P
SEQUENCE [burndown and residual control] *(s-metolachlor + glyphosate)*	G	15,9	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	F/**G**
SHARPEN [burndown rates] *(saflufenacil)*	E	14	N	N	N	N	N	N	N	N	N	N	N	N	N
SONALAN *(ethalfluralin)*	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	F	F	F	F	P
SPARTAN 4F *(sulfentrazone)*	E	14	P/F	P/F	**G**	P/F	P/F	P	P	P/F	P	P	P	P	**G**
SPARTAN CHARGE *(sulfentrazone + carfentrazone)*	E	14,14	P	F	F	P/F	P/F	N	N	N	P	P	P	P	**G**
TRUST/TREFLAN HFP *(trifluralin)*	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	P/F	P/F	F	F	P
VIDA *(pyraflufen)*	E	14	N	N	N	N	N	N	N	N	N	N	N	N	N
POSTEMERGENCE															
ASSURE II/TARGA *(quizalofop)*	E	1	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	P
BASAGRAN/BASAGRAN 5L *(bentazon)*	E	6	P	P	P	P	P	P	P	P	P	P	P	P	**G**
BEYOND XTRA *(imazamox)*	G	2	**F/G**	**G**	**E**	**E**	**G**	**F**	**F**	**G**	**G**	F/**G**	**F/G**	**G**	F
KERB SC *(pronamide)*	G	3	**G**	**G**	F	F	P	**G**	**G**	U	U	U	**G**	U	P
MCPA/RHOMENE MCPA *(MCPA)*	G	4	N	N	N	N	N	N	N	N	N	N	N	N	N
POAST *(sethoxydim)*	E	1	**E**	**E**	**E**	**E**	**E**	F	**E**	**E**	**G**	**G**	**E**	**E**	P
PURSUIT *(imazethapyr)*	G	2	F	F	F	F/**G**	F/**G**	P	P	**E**	P	F	F	F	P/F
SECTION THREE *(clethodim)*	E	1	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	P
HARVEST AID															
GRAMOXONE SL 3.0[1] ‡ *(paraquat)*	N	22	**G**	**G**	**G**	**G**	**G**	P	**G**	**G**	**G**	**G**	**G**	**G**	F
VALOR SX/VALOR EZ/PANTHER SC *(flumoxazin)*	N	14	P	P	P	P	P	P	P	P	P	P	P	F	P

[A] Site of Action described in Technical Information section.
[1] See label of pigweed species controlled.
[2] May use other glyphosate products at greater or lesser volumes; see individual labels for Roundup brands/Honcho K6/Credit Xtreme/Cornerstone Plus.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																				
Bindweed, field	Buffalobur	Canada thistle	Cocklebur	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard, wild	Nightshade, black	Nightshade, hairy	Pigweed[1]	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Sunflower	Velvetleaf	Wild buckwheat	
PREPLANT OR PREEMERGENCE																				
U	U	P	PF	F	F/G	G/E	G/E	F/G	P	G/E	G/E	G/E	P/F	P	F	F	P	P/F	E	P	AIM EC/SHARK EW
N	P	P	P	G	U	E	E	G	F/G	E	U	E	U	G	P	E	G	P	G/E	F	AUTHORITY SUPREME
U	U	U	P	G	U	G	G	G	U	U	G	E	U	G	E	G	P	G	P	P	BROADAXE XC/AUTHORITY ELITE
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	BUCKLE
P	F	P	P	P	F	P	F	P	P	G	F	G	F	P	P	P	P	P	P	F	***CHARGER MAX***/DUAL II MAGNUM/EVERPREX
F/G	G	G	E	E	E	E	E	F	E	G	G	E	E	G/E	G/E	F/G	F	G/E	G	F	***CORNERSTONE 5 PLUS***[2]
P	F	P	F/G	G	P	G	E	P	G/E	P/F	P	E	P	E	P/F	G	G	F	G	F	***DIMETRIC EXT/DIMETRIC LIQUID***
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	FAR-GO
P	P	P	P	P	G	G	E	P	P	P	P	G	P	P	P	F/G	P	P	P	P	***FRAMEWORK 3.3 EC***/PROWL H2O
N	P	P	F	F	E	G	G	F	E	F	F	G	U	G	F	P	P	E	G	P	GRAMOXONE SL 3.0[1] ‡
P	U	P	P	G	U	G	P	P	E	G	P/F	G	U	P	P	P	P	P	P/F	P	PURSUIT
F/G	G	G	E	E	E	E	E	F	E	G	G	E	E	G/E	G/E	F/G	F	G/E	G	F	SEQUENCE
P/F	E	P/F	E	G	G	E	E	F	E	E	U	E	G	E	E	E	E	E	E	E	SHARPEN
P	P	P	P	P	G	G/E	E	P	P	F	F	E	E	P	P	F/G	P	P	P	F/G	SONALAN
F	P	P	P	G	U	G	G	G	P/F	G/E	P	F	U	P	P	G	G	P	G	F	SPARTAN 4F
F	U	N	F	G/E	P/F	G	E	E	U	E	U	E	F/G	F	P	G/E	G	P/F	E	F/G	SPARTAN CHARGE
P	P	P	P	P	G	G	G	P	P	P	P	G	E	P	P	F/G	P	P	P	P	***TRUST***/TREFLAN HFP
U	U	P	P/F	F	F/G	G/E	G/E	F/G	P	G/E	G/E	G/E	P/F	P	F	F	P	P/F	E	P	VIDA
POSTEMERGENCE																				
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	ASSURE II/TARGA
P/F	N	G	E	E	N	F	F	F	E	P	G	P	F	F/G	P/F	P	E	G/E	G/E	F/G	***BASAGRAN***/BASAGRAN 5L
P	F	P	E	E	F	G	F/G	G	E	E	G	E	G	F/G	F/G	G	E	E	E	F/G	BEYOND XTRA
P	U	P	P	U	U	P	P	U	P	F	F	U	G	P	U	G	P	U	P	P	KERB SC
P	P	F	G	F	P	F	E	G	E	F	F	G	F	G	G	F	P	F	F/G	P	MCPA/RHOMENE MCPA
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	POAST
P	F	P	G	G	F	G	P/F	F	E	E	F	E	N	P/F	P	P	F/G	F/G	G	P/F	PURSUIT
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	***SECTION THREE***
HARVEST AID																				
P	U	P	F	P	U	F/G	G	G	E	F	F	F/G	U	G	G	E	G	F	G	F	GRAMOXONE SL 3.0 ‡
F	P	P	F	F	F	F	F	G	G	G	G	F	G	F/G	F	G	G	F	E	E	VALOR SX/VALOR EZ/PANTHER SC

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

PEA HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
AIM EC/SHARK EW	PP,PRE	Up to 1 day after planting.	10	3		NR	NR	0
ANTHEM FLEX	PP,PRE	PP up to 30 days before planting. PRE prior to cracking or emergence; Plant min. 1" deep and close furrow.	10	3	0	NR	NR	NR
ASSURE II	POST	Apply up to 60 days before harvest of dry peas, or 30 days for succulent peas. 5 GPA arid areas.	10	3,5	1	NO	NO	30,60
AUTHORITY SUPREME	PP,PRE	Before planting and <3 days after planting. Do not apply if sprouts are close to surface or after crop emergence.	10	5		NR	NR	0
	PPI	Incorporate 1-2" (but not >2") before planting.						
BASAGRAN/BASAGRAN 5L	POST	Apply after 3 pair of leaves or 4 nodes. PHI 30 days dry, 10 days succulent.	10-20	5	4	NR	NR	10,30
BEYOND XTRA	POST	Apply to dry pea with at least 3 pairs of leaves or English pea 3" but prior to 5 node.	10	5	1	NR	NR	NR
BROADAXE XC/ AUTHORITY ELITE	PP,PRE, PPI	FALL after harvest or fallow. Apply when <55 °F and falling. PP,PRE,PPI: Apply up to 3 days after planting. PPI <2".	10	5		60,120	60,120	NR
BUCKLE	PP	PPI spring only.	NA	NL		NR	NO	NR
CHARGER MAX/ DUAL II MAGNUM/ EVERPREX/ ***CHARGER BASIC***/ DUAL MAGNUM	PP	PP fall or PPI spring up to 14 days prior to planting.	5	2	-	60,120	NR	NR
	PRE	Before crop or weeds emerge. PHI for hay is 120 days.						
CLEANSE	POST	Apply before bloom. PHI 21 days succulent, 30 days for dry.	5-40	3-10	1	NR	NR	21,30
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP	Apply to emerged weeds.	3-40	3-15	S	56	56	NR
	PRE	Apply to emerged weeds prior to crop emergence.						
DIMETRIC EXT/ ***DIMETRIC LIQUID***	PP	Rain or mechanical incorporation is needed.	10	5	6-8	40	40	50
	PRE	Rain or mechanical incorporation is needed.						
	POST	Weeds <2" and crop <6" tall.	20	5				
FAR-GO	PPI	PPI spring only.	10	NL	-	NR	NL	NL
FRAMEWORK 3.3 EC/ PROWL H2O	PP	FALL PP or PPI. PPI up to 60 days prior to planting.	10	5	-	NO	NO	NR
GRAMOXONE SL 3.0 ‡	PP	Before planting to emerged weeds.	10	5	0.5	NR	NR	NR
	PRE	Apply to emerged weeds prior to crop emergence.						
	PH	Apply when crop is mature.	20	5				7
KERB SC	POST	Apply mid-fall to early winter (Nov- Jan) early POST to 2nd node peas in ID, OR, and WA.	20-50	5-10		NO	NO	NR
MCPA	POST	For PNW only. Apply after 3rd node and before first flowering or 4-6" peas.	15-30	5	1-4	NO	NO	NR
PANTHER SC		See Valor SX						
POAST	POST	PHI 15 days succulent, 30 days dry.	5-20	5-10	1	NR	NR	15,30
PROWL H2O		SEE FRAMEWORK 3.3 EC.						
PURSUIT	PP	PPI up to 1 week before planting and 3 days after planting.	10	5	1	NO	NO	30,60
	PRE	Up to 3 days before planting or before crop emergence, depending on area.						
	POST	PHI 30 days English and southern, 60 days others.						
RHOMENE MCPA	POST	For PNW only. Apply after 3 node before first flowering to 4-6" peas.	5-30	2-10	4	NO	NO	NR
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	PP	Apply to emerged weeds.	3-40	3-15	S	NR	NR	NR
	PRE	Apply to emerged weeds prior to crop emergence.						
	PH	Apply to dry peas at the hard dough stage, 30% moisture or less.	3-20			NO	NO	7
RT 3	PH	Apply to dry peas at the hard dough stage, 30% moisture or less.	3-40	3-15	S	NO	NO	7
SECTION THREE	POST	Apply before bloom. PHI 21 days succulent, 30 days for dry shelled.	5-40	3-10	1	NR	NR	21,30
SELECT MAX	POST	Apply before bloom. PHI 21 days succulent, 30 days shelled.	5-40	3-10	1	NR	NR	21,30
SEQUENCE	PP	Up to 30 days before planting. PHI 120 days for hay.	10-40	3-15	S	NR,120	NR	NR
	PRE	Apply prior to crop emergence.						

See notes and footnotes at end of table.

PEA HERBICIDE APPLICATION TIMING AND RESTRICTIONS *continued*

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
SHARPEN	PP	Apply as burndown or PPI for dry field pea only, PPI for English or sugar snap.	5	3	1	65	65	NR
	PRE	Before crop emergence or cracking stage.						
	PH	PH when crop is mature and > 80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green. Add Cornerstone 5 Plus for additional weed control.	10	5	1	NR	NR	3
SONALAN 10G	PP	PPI fall or spring before planting.	NA	NL	-	NO	NO	NL
SONALAN HFP	PPI	PPI fall or spring before planting.	5	NL	-	NO	NO	NL
SPARTAN 4F	PP	Early PP and fall in certain states. PPI prior to planting.	10	5	6	NR	NR	NR
	PRE	Up to 3 days after planting, but not after crop emerges, or if seedling is close to surface.						
SPARTAN CHARGE	PP	Fall in certain states or spring.	10	5	1	NR	NR	NR
	PRE	Up to 3 days after planting.						
TARGA	POST	Apply up to 60 days before harvest of dry peas, or 30 days for succulent peas. 5 GPA arid areas.	10	3,5	1	NO	NO	30,60
THISTROL	POST	Apply from shoot emergence until about 3 leaf nodes before flowering.	20-40	5-10		NO	NO	NR
TREFLAN TR-10	PP	PPI in spring before planting. Fall applied in ID, OR, WA.			–	NR	NR	NR
TRUST/TREFLAN HFP	PP	PPI in spring before planting. Fall applied in ID, OR, WA.	5-40	5-10	–	NR	NR	NR
VALOR SX/VALOR EZ/ PANTHER SC	PH	PH when crop is mature and > 80% of pods are yellowing and mostly ripe with no more than 30-40% of leaves still green. Add Cornerstone 5 Plus for additional weed control.	15-30	7-10	1	NO	NO	5
VARISTO	POST	After at least 3 pairs of leaves but before bloom stage to actively growing weeds. Use may lead to crop injury, loss, or damage: Test product to determine its suitability. Do not apply when T >90 °F		5	4	NL	NL	30
VIDA	PP	Apply up to 1 day before planting.	10	5	1	NL	NL	NI

[1] Application Timing and Intervals
[2] Includes minimum or range.
PP- Preplant surface, unless otherwise specified
PPI- Preplant incorporated
PRE- Preemergence
POST- Postemergence
PGR - Plant growth regulator
PH- Preharvest
NR- No restrictions
NO- Not permitted
NL- No related information on label
S - Heavy rainfall soon after application may require retreatment.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PEA HERBICIDE APPLICATION RATES

PREPLANT OR PREEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC/SHARK EW	**All soil textures:** Up to 2 fl oz			PP or PRE up to 1 day after planting. Max. 6.1 fl oz/A/season.
ANTHEM FLEX	*<3% O.M.*			For early PP and reduced tillage systems, use higher rate in range. Max. 5 fl oz/A/application. Max. 3 applications/year. 14-day min. application interval. See label notes on dry weather.
	Do not use	2.75-3.25 fl oz	3.5-4.5 fl oz	
	>3% O.M.			
	Do not use	3-4.5 fl oz	4-5 fl oz	
AUTHORITY ELITE	SEE BROADAXE XC			
AUTHORITY SUPREME	*<1.5% O.M.*			PP, PRE or PPI. Higher rates for soils with pH <7.2. Do not apply >15.4 fl oz/A/year. Rainfall and/or irrigation of ≥0.5" prior to weed emergence may be needed for activation - see label. Verify sensitivity of crop variety with local Extension. FALL: Authority Supreme may be broadcast after crop harvest when soil temperatures at the 4" depth are sustained at <55 °F and before the ground freezes to control weeds in minimum or no tillage fields planted the following spring. Do not apply to frozen soils.
	4.3-5.8 fl oz	5.8-8.7 fl oz	5.8-8.7 fl oz	
	1.5-3% O.M.			
	5.8-8.7 fl oz	7.2-11.5 fl oz	8.7-13 fl oz	
	>3% O.M.			
	7.2-11.5 fl oz	8.7-13 fl oz	10-15.4 fl oz	
BROADAXE XC/ AUTHORITY ELITE	*<1.5% O.M.*			PP, PRE, or PPI. Fall after harvest or fallow fields when soil temperature is 55° F and falling. See label for timing and geographic restrictions. Apply up to 3 days before planting. PPI 2". Maximum 38.7 fl oz/A/crop year. For soils with pH >7.2, use lowest rate for OM and texture. Do not use on soils with <1% OM.
	Do not use	19-26 fl oz	19-26 fl oz	
	1.5-3% O.M.			
	19-26 fl oz	21-32 fl oz	26-32 fl oz	
	>3% O.M.			
	21-26 fl oz	26-32 fl oz	32-38.7 fl oz	
BUCKLE	10-12.5 lb	10-12.5 lb	10-12.5 lb	PP. For spring application only. Apply higher label rates on heavy weed infestations. Do not use on pea-oat mixtures.
CHARGER MAX/ DUAL II MAGNUM/ EVERPREX/ ***CHARGER BASIC***/ DUAL MAGNUM	*<3% O.M.*			PP, PPI, or PRE. For use only on English or southern peas such as blackeye, pinkeye, crowder, etc. May not be used preplant incorporated on English peas. Do not use on English peas in northeastern U.S. Apply preplant incorporated up to 14 days prior to planting. Do not cut for hay within 120 days of application, or illegal residues may result. May be fall applied in certain states as labeled. May not be used preplant incorporated on English peas. Do not use on English peas in northeastern U.S. Apply preplant incorporated up to 14 days prior to planting. Do not cut for hay within 120 days of application, or illegal residues may result. May be fall applied in certain states as labeled.
	1-1.33 pt	1.33-1.67 pt	1.33-1.67 pt	
	≥3% O.M.			
	1.33 pt	1.33-1.67 pt	1.67-2 pt	
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal, inclue WC+NIS as needed*			PP or PRE. Apply to emerged grasses and broadleaf weeds any time prior to crop emergence. See label for perennial rates.
CREDIT XTREME	SEE ROUNDUP			
DIMETRIC EXT or ***DIMETRIC LIQUID***	**All soil textures:** 0.25-0.5 lb or 0.5-1 pt			PP, PPI, or PRE. Dimetric EXT: ID, OR, and WA only; Dimetric Liquid: No geographic restrictions. Apply before or after planting. A thorough incorporation by rainfall or mechanical means into the top 1-2 inches of soil is essential for adequate weed control. Do not apply to seedings less than 2" deep. Do not use on coarse-textured soils, sands or soils with less than 1.5% organic matter. Do not use on clay knobs or poorly covered subsoils. Crop injury may result if crop is under stress from cold weather, low fertility, disease or insect damage. Crop injury may result if heavy rains follow application. Do not apply more than 0.67 lb per acre per year. See label for further information and precautions.
FAR-GO	**All soil textures:** 1.25 qt			PPI. For use only in: CO, ID, KS, MN, MT, NE, NV, ND, OR, SD, UT, WA, WY. For spring application only. Do not use on pea-oat mixtures. Apply just before or immediately after seeding and before wild oats germinate. Incorporate within 48 hours. Apply lower rates on light soils and higher rates on heavier soils.
FRAMEWORK 3.3 EC or PROWL H2O	*FALL PP / Fall PPI*			FALL PP or PPI in ID, MN, MT, ND, OR, SD, WA, and WY. Do not apply to peas, pea forage, pea silage, pea hay or pea straw grown for livestock feed. Do not apply PRE in peas. For use in English, dry garden, dwarf, green, pigeon, edible pod, peas and lentils. Can be applied PPI up to 60 days prior to planting. Do not use on peat or muck soils. See label. Prowl H2O may be applied up to 30 days before planting at 1-3 pt/A depending on soil texture in ID, MT, ND, OR, and WA in no- or minimum-tillage systems.
	1.2-1.8 pt or 1.5 pt	1.8-2.4 pt or 2 pt	2.4-3.6 pt or 3 pt	
	PPI			
	1.8 pt or 1.5 pt	2.4 pt or 2 pt	3.6 pt or 3 pt	

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	**Rate/Acre**			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
GRAMOXONE SL 3.0 ‡	**All soil textures:** 1.3-2.7 pt + 2 pt NIS/100 gal			PP or PRE. Apply to emerged grasses and broadleaf weeds any time prior to crop emergence. Thorough coverage is essential. Max. 4 pt/A/application or 2.7 pt/A/application. Max. 3 applications/A/year. Max. 12 pt/A/year or 8 pt/A/year.
HONCHO K6	SEE ROUNDUP.			
PANTHER SC	SEE VALOR SX			
PROWL H2O	SEE FRAMEWORK 3.3 EC			
PURSUIT	**All soil textures:** Dry edible, succulent, and English peas - 3 fl oz Southern peas - 4 fl oz			Use in all states except NV, UT, ID, OR, WA, MT, CA, AZ, VT, MA, RI, ME, NH, and CT. Apply PPI up to 1 week before planting and 3 days after planting. In MI, DE, MD, and VA (Delmarva) peninsula, DO NOT apply more than 2 fl oz/A of Pursuit to sands or loamy sand soils. In North Dakota or north of Highway 210 in Minnesota, DO NOT apply more than 2 fl oz of Pursuit. For ID, MT, NV, OR, UT, and WA, may apply 3 oz/A PP up to 30 days, PPI within 1 week of planting, or PRE prior to crop emergence.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, include WC+NIS as needed*			PP or PRE. Apply to emerged grasses and broadleaf weeds any time prior to crop emergence. See label for perennial rates. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
SEQUENCE	**All soil textures:** 2.5-4 pt			PP or PRE. Prior to crop emergence. See label for restrictions on pea type, use rate and other information. AMS improves control of emerged weeds.
SHARPEN	**All soil textures:** 0.75-1 fl oz + 0.75 pt HSOC-MSO* + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal			PP or PRE. 0.75 fl oz/A maximum on succulent peas. Apply as a burndown, or before crop emergence or cracking stage. Do not apply with or within 30 days of (Group 14 herbicides) flumioxazin or sulfentrazone. PPI and PRE up to 3 days after planting but before cracking stage or emergence to edible peas.
SONALAN 10G	5.5-7.5 lb	5.5-7.5 lb	7.5 lb	PPI. Dry peas. Two incorporation passes are necessary. First application should occur as soon as possible (<48 hours). For best results, the second application should be delayed 3-5 days. Use equipment capable of thoroughly and uniformly mixing Sonalan 10G into the top 2-3" of the seedbed.
SONALAN HFP	1.5-2 pt	1.5-2 pt	2 pt	PPI. Dry peas. Incorporate within two days of application with equipment that uniformly mixes into the top 2-3" of soil. See label for rotation to sugarbeets. Provides control of kochia, Russian thistle, pigweed and lambsquarter in addition to foxtail species.
SPARTAN 4F	2.25-4 oz	2.25-6 oz	2.25-8 oz	PP, PPI, or PRE. Dry field pea. Apply in fall in ND, SD, MT, MN, WY, CO, NE, KS, WI, MI, OR, ID, WA, or MT. Apply PRE up to 3 days after planting. Rates vary by O.M. and pH. Use lower rates within the range on pH over 7. Read the vegetable disclaimer on the back of the label for dry field pea.
SPARTAN CHARGE	*<1.5% O.M.*			PP or PRE. Certain states only for dry field pea. Rates vary by O.M., pH, and soil type. Use lower rates within the range of pH over 7.0. Apply in FALL, spring, or PRE up to 3 days after planting but before crop seedlings break the soil surface. Requires WC-NIS.* PRE - see label for rates and information.
	3-3.75 fl oz	3.75-5.75 fl oz	3.75-5.75 fl oz	
	1.5-3% O.M.			
	3.75-5.75 fl oz	5-7.75 fl oz	5.75-7.75 fl oz	
	>3% O.M.			
	5-7.75 fl oz	5.75-8.5 fl oz	6.5-10.2 fl oz	
TRUST/TREFLAN HFP or TREFLAN TR-10	**All soil textures:** *Dry peas and English peas - Spring*			PPI. Apply in spring before planting and incorporate within 24 hours. May be applied in the fall to dry and English peas in ID, OR, or WA. See label for rates with various O.M., application and incorporation instructions and precautions.
	1 pt or 5 lb	1-1.5 pt or 5-7.5 lb	1.5 pt or 7.5 lb	
	Dry peas and English peas - FALL			
	1 pt or 5 lb	1.25-1.5 pt or 6.25-7.5 lb	1.5 pt or 7.5 lb	
	Southern peas			
	1 pt or 5 lb	1.25-1.5 pt or 6.25-7.5 lb	1.5-2 pt or 7.5-10 lb	

See notes and footnotes at end of table.

PEA HERBICIDE APPLICATION RATES *continued*

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
VALOR SX or VALOR EZ/PANTHER SC	**All soil textures:** 2 oz or 2 fl oz			For use in ID,MT,OR,WA only. PP or PRE within 2 days of planting field peas.
VIDA	**All soil textures:** 0.5-2 fl oz + 0.5 gal HSOC-COC/100 gal*			PP up to 1 day before planting to emerged weeds.

POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
ASSURE II	8-10 fl oz + 0.5 gal HSOC-COC/100 gal*	For use on dry and succulent peas only in ID, MT, OR, and WA. Apply when grass weeds are 2-4" tall and up to where pea plants set pods. Do not apply within 60 days of harvest for dry peas and 30 days for other peas. The maximum use rate is 14 oz/A per acre per season. Do not graze treated fields or harvest for forage or hay. See label for application information and precautions.
BASAGRAN/BASAGRAN 5L	1.5-2 pt/0.8-1.6 pt + 1 qt NIS or 2 qt HSOC-MSO or 2 qt HSOC-COC/100 gal*	Apply when weeds are small and peas have at least 3 pair of leaves or 4 nodes. Do not add oil or surfactants to tank mixes. Do not harvest within 30 days of application. Livestock grazing or feeding is allowed. See label for application information precautions. Do not apply alone in GA or SC.
BEYOND XTRA	4 fl oz + 1 qt NIS/100 gal	POST. Apply when dry peas have at least 3 pairs of leaves, and English peas at least 3 inches but prior to 5 nodes. English peas only in DE, IN, IL, IA, MD, MN, NY and WI. COC* and AMS can be used with Beyond Xtra for enhanced weed control when 6-16 oz/A Basagran is used as a safener.
CLEANSE	6-8 fl oz	Do not apply >8 fl oz/A or more than one application/year. Before bloom but <30 days (dry) or <21 days (succulent) before harvest.
CORNERSTONE 5 PLUS	1 qt	Spot treatment only. Apply in 10-20 gallons of water using ground application equipment or use a 2% solution in a hand-held sprayer.
DIMETRIC EXT or ***DIMETRIC LIQUID***	*Spring peas* 0.17-0.33 lb or 0.33-0.66 pt *Winter peas* 0.25-0.33 lb or 0.5-0.66 pt	For use only on peas in ID, OR, and WA. Apply when weeds are less than 2" tall or in diameter and before the crop is 6" tall. Do not apply within 24 hours of any other pesticide application. Do not use on coarse-textured soils, sands or soils with less than 1.5% organic matter. Do not use on clay knobs or poorly covered subsoils. Crop injury may result if crop is under stress from cold weather, low fertility, disease or insect damage. Crop injury may result if heavy rains follow application. Do not apply within 50 days of harvest. Do not graze or feed treated vines to livestock until 40 days after application. See label for further information and precautions.
KERB SC	2-3.5 pt	Apply from mid-fall to early winter (November to January) as an early POST. Peas should be 2nd node. Labeled only in ID, OR, WA.
MCPA AMINE	0.5-0.75 pt	For PNW only. Apply after the 3rd node and before first flowering or 4-6" peas. Do not spray stressed peas or when temperatures exceed 90 °F. Do not graze or feed vines. Do not treat bean-type peas.
POAST	0.5-1.5 pt + 1 pt HSOC-COC*	See label for rate according to weed size. PHI 30 days dry or 15 days succulent. See label for additional application information and restrictions.
PURSUIT	*Dry, edible, succulent and English peas* 3 fl oz + 1 qt NIS/100 gal *Southern peas* 4 fl oz + 1 qt NIS/100 gal	Use in all states except NV, UT, ID, OR, WA, MT, CA, AZ, VT, MA, RI, ME, NH, and CT. Apply to dry edible peas, English peas, and southern peas at least 3" in height but prior to 5 nodes and before flowering. Trifluralin prior to Pursuit application may increase the likelihood and severity of crop injury. NIS must be added to the spray solution. In MI, DE, MD, and VI (Delmarva) peninsula, DO NOT apply more than 2 fl oz/A of Pursuit to sands or loamy sand soils. In North Dakota or north of Highway 210 in Minnesota, DO NOT apply more than 2 fl oz/A of Pursuit. In ID, MT, NV, OR, UT, and WA apply 2 fl oz/A POST to dry edible peas only.
RHOMENE MCPA	0.25-0.75 pt	For PNW only (including canning peas). Apply after the 3rd node and before first flowering or 4-6" peas. Do not spray blooming crops, stressed peas or when temperatures exceed 90 °F. Do not graze or feed.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, include WC+NIS as needed*	See individual labels for spot-treatment of weeds in dry peas. PHI 7 days.
SECTION THREE	4-5.33 fl oz	30 day PHI for dry shelled pea and 21 day PHI for succulent shelled pea. Apply before bloom. Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS or 8.5-17 lb/100 gallons of AMS.*
SELECT MAX	9-16 fl oz + 1 qt NIS/100 gal	Includes shelled and succulent shelled. Maximum of 1 application. Apply before bloom. PHI 30 days shelled, 21 days succulent.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
TARGA	8-10 fl oz + 0.5 gal HSOC-COC/100 gal*	Do not apply within 60 days of harvest. Do not apply to succulent peas within 30 days of harvest. Maximum use rate is 14 fl oz/A/season.
THISTROL	2-6 pt	Apply from pea shoot emergence until about 3 nodes before flowering. Typically pea plants have developed 6-12 nodes at the normal time of Canada thistle treatment. Do not apply Thistrol later than 3 nodes before flowering or after pea flower buds appear, as yield may be adversely affected. Thistrol rate depends on weed species and weed stage. Most pea varieties can be sprayed safely with Thistrol, however, temporary twisting of some pea varieties may follow application. Do not spray when peas are under moisture stress or when temperatures exceed 90° F. Do not feed treated peas or peas vines to livestock. May be tank mixed with Basagran.
VARISTO	16-21 fl oz	After 3 pairs of leaves but before bloom stage to actively growing weeds at heights specified on label. Adjuvant and nitrogen fertilizer must be used. In MN, MO, ND, SD and WY use 11 fl oz/A mixed with 16 fl oz/A Basagran 5L and a graminicide to control volunteer canola and mustard species weeds.
	PREHARVEST	
AIM EC/SHARK EW	1.0-6.1 fl oz	For optimal peformance use 15-30 GPA with MSO type adjuvant.*
THISTROL + ***BASAGRAN***	2-3 pt + 1-1.5 pt	See Thistrol and Basagran labels and sections above for application information and precautions.
GRAMOXONE SL 3.0 ‡	0.8-1.3 pt + 2 pt NIS/100 gal	Dry pea only; harvest aid. PHI 7 days. Apply when the crop is mature. Max. 2 pt/A/application or 1.3 pt/A/application. Max. 2 pt/A/year or 1.3 pt/A/year as harvest aid. Max. 3 PP/PRE applications/year and 2 harvest aid applications/year.
ROUNDUP POWERMAX; POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, include WC+NIS as needed*	Apply at hard dough, 30% moisture or less. PHI 7 days.
RT 3	Up to 64 fl oz + 8.5-17 lb AMS/100 gal, include WC+NIS as needed*	Apply at hard dough, 30% moisture or less. PHI 7 days.
SHARPEN	1-2 fl oz	Spray over top by ground or air. Allow up to 10 days for optimum desiccation effect. Max. 2 fl oz/A for desiccation uses, which do not count toward annual per acre maximums for other uses. Do not use on barley grown for malting purposes.
VALOR SX or VALOR EZ/ PANTHER SC	1.5-3 oz or 1.5-3 fl oz	Apply when the crop is mature and a minimum of 80% of pods are yellow to tan and 20% are yellow. Apply in ≥15 GPA. Include 0.5 qt/A HSOC-MSO or 1 qt/A other MSO.* 1-2 qt UAN/A or 2-2.5 lb AMS/A may improve desiccation. PHI 5 days. Add Cornerstone 5 plus for additional weed control.

[1] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay. O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner..

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PEA LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR PEA	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT											
				ALFALFA CATERPILLAR	APHID	ARMYWORM	CUTWORM	GRASSHOPPER	LEAFHOPPER	LOOPER	MITE	PEA WEEVIL	STINK BUG	WIREWORM
ADMIRE PRO	21	-	7-10.5 fl oz		●				●					
ADVISE FOUR/ NUPRID 4F MAX	21	-	8-12 fl oz		●				●					
ASANA XL ‡ FOR DRY PEAS	21	NO	2.9-5.8 fl oz		●									
			4.8.9.6 fl oz									●		
			5.8-9.6 fl oz			●	●	●	●	●				
ASANA XL ‡ FOR GREEN PEAS	3	NO	2.9-5.8 fl oz						●					
			4.8.9.6 fl oz									●		
			5.8-9.6 fl oz	●		●	●	●	●	●				
ASSAIL 30 SG	7	-	2.5-5.3 oz		●				●					
BAYTHROID XL ‡	7	NO	0.8-1.6 fl oz				●		●					
			1.6-2.4 fl oz										●	
			2.4-3.2 fl oz			●		●		●		●		
			3.2 fl oz		●S									
BESIEGE ‡	7,21	NO	5-8 fl oz				●		●					
			6-10 fl oz	●	●	●		●				●	●	
			10 fl oz			●S				●S	●S			
BLACKHAWK	3,28	NO	2.2-3.3 oz			●								
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	14	-	At-plant: 6.8-8.5 fl oz PRE/PPI: 6.8-8.5 fl oz (Capture LFR only)			●	●							●
			Foliar: 2.1-8.5 fl oz (Capture LFR only)					●	●					
			Foliar: 2.8-8.5 fl oz (Capture LFR only)	●	●	●	●			●		●	●	
			Foliar: 6.8-8.5 fl oz (Capture LFR only)								●			
CAPTURE 3RIVE 3D ‡	0	-	3.2-8 fl oz; 0.19-0.46 fl oz/1000' row			●	●							●
CORAGEN	1	-	In-furrow: 5-7.5 fl oz			●								
			Foliar: 3.5-7.5 fl oz			●	●			●				
			Foliar: 2-5 fl oz					●						
DIMATE 4E	0	21	0.33 pt		●									
DIPEL ES			1-2 pt							●				
			2-4 pt			●								
ELEVEST ‡	3,14	-	4.8-9.6 fl oz				●	●	●					
			5.6-9.6 fl oz	●	●	●				●		●	●	
			7.7-9.6 fl oz								●			
ENTRUST SC	3	28	4-6 fl oz			●				●				
ETHOS ELITE LFR ‡	–	–	At-plant: 3.4-6.8 fl oz			●	●							●

See notes and footnotes at end of table.

COMMENTS AND RESTRICTIONS
Soil application via chemigation, in-furrow, surface band over seed, narrow band under seed, post-seeding drench. Max. 10.5 fl oz/A. Also suppresses certain diseases; see label.
Soil application via chemigation, in-furrow, surface band over seed, narrow band under seed, post-seeding drench. Max. 12 fl oz/A. Also suppresses certain diseases; see label.
Max. 0.2 lb a.i./A/season. Grasshopper: 3.9-5.8 fl oz/A for 1st and 2nd instars, higher rate for >2nd instar. Pea Weevil: ID, OR, WA only. May be applied by sprinkler irrigation; see label.
Max. 0.1 lb a.i./A/season. Pea Weevil: ID, OR, WA only. May be applied by sprinkler irrigation; see label.
Max. 16 oz/A/calendar year. Max. 3 applications/calendar year. 7-day min. application interval. Min. 20 GPA by ground, 5 GPA by air.
For dry pea. Max. 3.2 fl oz/A/14-day interval. Max. 6.4 fl oz/A/crop season. May be applied by sprinkler irrigation; see label.
Max. 31 fl oz/A year. 5-day min. application interval. Max. 4 applications/year. PHI 7 days for edible and succulent pod, 21 days for dried. Armyworm: 10 fl oz/A for Beet, 5-8 fl oz/A (use 8 fl oz/A for large larvae) for all others.
5-day min. application interval. Do not make >2 consecutive applications of Group 5 insecticides before rotating to another class for at least 1 application. May be applied by sprinkler irrigation; see label. Succulent: Max. 20 oz/A/season; PHI 3 days. Dried: Max. 8.3 oz/A/season, PHI 28 days; feeding restriction is for forage or hay to meat or dairy animals with applications to dry pea crop.
See individual labels for specific target insects and rates. Dried peas only. Max. 0.2 lb a.i./A/season including all application methods and bifenthrin products. At-plant: Wireworm control apply as 5-7" band over row, as T-band over furrow, or in-furrow; Armyworm control apply as broadcast. PRE/PPI: Apply with PRE/PPI herbicides in min. 10 GPA; PPI incorporate ≤3" and close to seed depth. Foliar: Min. 10 GPA by ground, 2 GPA by air; may be applied by sprinkler irrigation; see label.
For use in a 3RIVE 3D system only. Must be applied in-furrow with seed. Maximum 0.1 lb a.i./A/season at-plant, 0.2 lb a.i./A/season all application methods.
All application methods: Max. 4 applications/A/calendar year. 3-day min. application interval. Max. 15.4 fl oz/A/crop or 46.2 fl oz/A/calendar year. In-furrow: Apply as narrow band at seedling depth. Foliar applications include overhead chemigation. Grasshopper: Do not make >2 sequential applications before rotating to a different MOA; improved performance with MSO; see label.
Not for use on Field Peas. Max. 1 application/season. Max. 0.33 pt/A/year.
Bt insecticide. Min. 5 GPA by ground, 2 GPA by air (5-10 GPA in Western U.S.) See label for ULV spray volume recommendations. Armyworm: 1st and 2nd instar.
Max. 19.2 fl oz/A/year. Max. 2 applications/A/year. Max. 2 sequential applications before rotating to different MOA. Min. 3-day retreatment interval. See label for timing notes. Min. 5 GPA by air (see label re. adjuvant options). Grasshopper control improves with addition of MSO at 1% v/v. Coverage is essential for control of mites. PHI 3 days for succulent, 14 days for dried.
Max 6 applications/crop. 5-day min. application interval. Do not make >2 applications of Group 5 insecticides before rotating to another class for at least 1 application. Succulent: Max. 29 fl oz/A/season; PHI 3 days. Dried: Max. 12 fl oz/A/season, PHI 28 days; feeding restriction is for forage or hay to meat or dairy animals with applications to dry pea crop.
At-plant: Apply as 5-7" T-band over open furrow, or in-furrow with seed. Max. bifenthrin 0.2 lb/A/season dry and succulent peas, including all application methods. Product also contains fungicide; see Pea Diseases.

PEA LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR PEA	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT										
				ALFALFA CATERPILLAR	APHID	ARMYWORM	CUTWORM	GRASSHOPPER	LEAFHOPPER	LOOPER	MITE	PEA WEEVIL	STINK BUG	WIREWORM
ETHOS XB ‡	14,3	–	At-plant: 3.4-8.5 fl oz PPI & PRE: 6.8-8.5 fl oz			●				●				●
			Foliar: 2.1-8.5 fl oz						●					
			Foliar: 2.8-8.5 fl oz	●	●	●	●	●		●		●	●	
			Foliar: 6.8-8.5 fl oz								●			
ETHOS 3D ‡	-	-	At-plant: 0.21-0.52 fl oz/1000' row											
FASTAC CS ‡	1,21		1.3-3.8 fl oz or				●							
			2.7-3.8 fl oz	●		●			●			●		
GRIZZLY TOO ‡	7,21	NO	0.96-1.6 fl oz				●							
			1.28-1.92 fl oz	●	●	●		●	●	●		●	●	
			1.92 fl oz			●S				●S	●S			
HERO ‡	3,21		4-10.3 oz	●	●	●	●	●	●	●		●	●	
			10.3 oz								●			
INTREPID 2F	7	-	4-16 fl oz			●				●				
LAMBDA-CY AG ‡	7,21	NO	1.92-3.2 fl oz				●							
			2.56-3.84 fl oz	●	●	●		●	●	●		●	●	
			3.84 fl oz			●S				●S	●S			
LANNATE LV ‡ or LANNATE SP ‡	1	5,14	1.5-3 pt or 0.5-1 lb		●	●	●			●				
			0.75-3 pt or 0.25-1 lb	●		●								
LEVERAGE 360 ‡	7	NO	2.4-2.8 fl oz		●	●	●	●	●	●		●		
			2.8 fl oz										●S	
MALATHION 5	3	NO	1.6 pt									●		
MALATHION 5EC	3	NO	1.25-1.6 pt						●					
			1.6 pt		●			●				●		
MALATHION 8 FLOWABLE	3	NO	1 pt		●							●		
MOVENTO or MOVENTO HL	1,7	-	4-5 fl oz or 2-2.5 fl oz		●						●S			
MUSTANG MAXX ‡	1,21	-	At-plant: 4 fl oz				●		●					
			1.28-4 fl oz				●							
			2.72-4 fl oz	●		●			●			●		
			3.2-4 fl oz		●	●		●		●			●	
PYGANIC EC 1.4$_{II}$	0	0	16-64 fl oz	●	●	●		●	●	●	●	●	●	
PYGANIC EC 5.0$_{II}$	0	0	4.5-15.61 fl oz	●	●	●		●	●	●	●	●	●	
RADIANT SC	3,28	-	3-8 fl oz			●				●				
SENSTAR	7	NO	8-10 fl oz		●									
SIVANTO 200 SL or SIVANTO PRIME	7	7	7-10.5 fl oz or 7-14 fl oz		●				●					

See notes and footnotes at end of table.

COMMENTS AND RESTRICTIONS
Max. 0.2 lb bifenthrin a.i./A/season, including all application methods. Wireworm: PPI only. Product also contains fungicide; see Pea Diseases. At-plant: Apply as 5-7" band over row on soil surface, 5-7"T-band over open furrow, or in-furrow with seed; apply broadcast to control Army Cutworm, Cutworm spp., True Armyworm or Armyworm spp. PRE: Apply in min. 10 GPA. PPI: Can be tank-mixed/applied with PPI herbicides; incorporation should not be deeper than 3" in min. 10 GPA. Foliar: Min. application interval 7 days dry peas, 3 days succculent peas. PHI 14 days for dry peas, 3 days for succulent peas.
For use in a 3RIVE 3D system only. Apply in-furrow with seed. Max. 0.1 lb bifenthrin a.i./A/season as at-plant application. Max. 0.2 lb bifenthrin a.i./A/season including all application methods. Product also contains fungicide; see Pea Diseases.
Max. 11.4 fl oz/A/season. 5-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. PHI 1 days for edible and succulent pod, 21 days for dried. Armyworm: 3.2-3.8 fl oz/A for Beet and Fall, 2.7-3.8 fl oz/A all others.
Max. 7.68 fl oz/A/season. PHI 7 days for edible and succulent pod, 21 days for dried. Apply by ground, or in min. 2 GPA by air. Armyworm: 1.92 fl oz/A for Beet (suppression only); 1.28-1.92 fl oz/A all others. Looper: 1.92 fl oz/A for Soybean (suppression only); 1.28-1.92 fl oz/A all others.
Max. 10.3 oz/A/application. Max. 27.39 fl oz/A/season. 7-day min application interval. PHI 3 days for edible and succulent pod, 21 days for dried. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. Armyworm: Fall, Southern, True, Yellowstriped.
4-8 fl oz/A for early season; 8-16 fl oz/A for mid to late season. 7-day min. application interval. Max. 4 applications/year. Do not use adjuvant when applying to dry peas. Max. 16 fl oz/A/application. Max. 64 fl oz/A/year. 10-day min. application interval. Apply by ground in min. 10 GPA to young crop, 20 GPA to dense foliage, 10 GPA by air. Do not apply to dry peas by aerial ULV.
Max. 0.96 pt/A/season. PHI 7 days for edible and succulent pod, 21 days for dried. Apply by ground, or in min. 2 GPA by air. Armyworm: 1.92 fl oz/A for Beet (suppression only); 1.28-1.92 fl oz/A all others. Looper: 3.84 fl oz/A for Soybean, 2.56-3.84 fl oz/A for others.
For use on succulent peas. Max. 9 pt/A/crop or 3 lb/A/crop. Max. 6 applications/crop. 3-day min. application interval. Lannate LV may be applied by sprinkler irrigation; see label. PHI 5 days forage, 14 days hay. Armyworm: 1.5-3 pt/A or 0.5-1 lb/A for Beet, 0.75-3 pt/A or 0.25-1 lb/A for other. Looper: Do not use for Cabbage in AL, GA.
For use on dried shelled peas. Max. 6.4 fl oz/A/season. 14-day min. application interval. May be applied by sprinkler irrigation; see label.
Max. 2 applications/year. 7-day min. application interval. Min. 30 GPA by ground, 5 GPA by air.
Max. 1.6 pt/A. Max. 2 applications/year. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air.
Max. 1 pt/A. Max. 2 applications/year. 7-day min. application interval. Dried peas: Ground and foliar applications only. Succulent peas: Ground, foliar and aerial applications.
Max. 10 fl oz/A/season or 5 fl oz/A/season. 7-day min. application interval. PHI 1 day edible podded and succulent. PHI 7 days dry peas.
At-plant: Apply to soil surface in 5-7" band in min. 2-7 GPA or broadcast in min. 10 GPA; max. 4 fl oz/A; max. 24 fl oz/A/season. Foliar: 5-day reapplication interval; max. 24 fl oz/A/season; min. 10 GPA by ground, 2 GPA by air; may be applied by sprinkler irrigation (see label). PHI 1 day for edible or succulent. PHI 21 days for dried. Armyworm: 3.2-4 fl oz/A for Beet and Fall, 2.72-4 fl oz/A for others.
OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
Max. 6 applications/year. 4-day application interval. Max. 28 fl oz/A/year for succulent peas. Max. 12 fl oz/A/year for dry peas. PHI 3 days succulent peas, PHI 28 days dry peas. Armyworm: Not for Yellowstriped or Western Yellowstriped.
Ground application in 10-50 GPA water. Only whole fields should be treated. Max. 10 fl oz/A/application. Max. 2 applications/season. Max. 20 fl oz/A/crop season. Min. 14-day application interval.
10-day min. application interval. Max. 28 fl oz/A/year Sivanto 200 SL/Sivanto prime. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL.

PEA LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR PEA	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT											
				ALFALFA CATERPILLAR	APHID	ARMYWORM	CUTWORM	GRASSHOPPER	LEAFHOPPER	LOOPER	MITE	PEA WEEVIL	STINK BUG	WIREWORM
TUNDRA EC ‡/ BRIGADE 2EC ‡/ ***BIFEN 2 AG GOLD*** ‡	3,14	-	1.6-6.4 fl oz					●	●					
			2.1-6.4 fl oz	●	●	●	●			●		●	●	
			5.12-6.4 fl oz								●			
VANTACOR	1	-	In-furrow: 1.7-2.5 fl oz			●								
			Foliar: 1.2-2.5 fl oz			●	●				●			
			Foliar: 0.7-1.7 fl oz				●							
WARRIOR II ‡	7,21	NO	0.96-1.6 fl oz				●							
			1.28-1.92 fl oz	●	●	●		●	●	●		●	●	
			1.92 fl oz			●S				●S	●S			
XPEDIENT PLUS V ‡	0	-	2.56-5.12 fl oz			●	●							●
XENTARI	0	0	0.5-1.5 lb							●				
			0.5-2 lb			●								

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

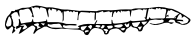
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

BEE ALERT

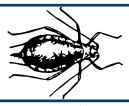
See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.

COMMENTS AND RESTRICTIONS
Max. 12.8 fl oz/A/season. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. 7-day min. application interval for dried peas. PHI 3 days succulent peas. PHI 14 days dried peas.
All application methods: Max. 4 applications/A/crop or 12 applications/calendar year. 3-day min. application interval. Max. 5.1 fl oz/A/crop or 15..4 fl oz/A/calendar year. In-furrow: Apply as narrow band at seedling depth. Foliar applications include overhead chemigation. Grasshopper: Do not make >2 sequential applications before rotating to a different MOA; improved performance with MSO; see label.
Max. 7.68 fl oz/A/season. PHI 7 days for edible and succulent pod, 21 days for dried. Apply by ground, or in min. 2 GPA by air. Armyworm: 1.92 fl oz/A for Beet (suppression only); 1.28-1.92 fl oz/A all others. Looper: 1.92 fl oz/A for Soybean (suppression only); 1.28-1.92 fl oz/A all others.
At plant: Apply as 5-7" band over row, 5-7" T-band over open furrow, or in furrow with seed. Cutworm, Armyworms: Apply as broadcast to soil surface. Max. 0.1 lb a.i./A/season/at plant application.
Bt insecticide. Looper: 0.5-2 lb for Soybean, 0.5-1.5 for others.

PEA INSECT TREATMENT GUIDELINES



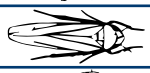
ALFALFA CATERPILLAR ET: apply when 25-30% of the foliage is destroyed or if significant injury to pods is evident or if 1 larva/25 sweeps.



APHID See Seed Treatment section for additional control options. ET: treatment is suggested if there is more than 1 aphid/pod or 25-30/sweep and >15 days before harvest.



ARMYWORM ET: treatment is suggested if there is more than 1 armyworm/25 sweeps. Armyworms will frequent grassy areas of the field.



LEAFHOPPER See Seed Treatment section for additional control options. ET: treatment is suggested if there is more than 1 aphid/pod or 25-30/sweep and >15 days before harvest.



LOOPER ET: treat if one or more larva/25 sweeps.



PEA WEEVIL ET: treat if 1 larva/pod or 35/sweep.



STINK BUG ET: treat if 1 or more/100 sweeps.

PEA LABELED FUNGICIDES

FUNGICIDE	DISEASE*															
	ALTERNARIA BLIGHT	ALTERNARIA LEAF SPOT	ANTHRACNOSE	ASCOCHYTA BLIGHT	ASCOCHYTA LEAF AND POD SPOT	CERSCOSPORA LEAF SPOT	DOWNY MILDEW	MYCOSPHAERELLA BLIGHT	POWDERY MILDEW	RHIZOCTONIA ROOT ROT	ROOT ROT (PYTHIUM)	RUST	SEPTORIA LEAF SPOT	SOUTHERN BLIGHT	WEB BLIGHT	WHITE MOLD
ACTINOVATE AG	●	●					●		●	●	●					●
APROACH	●	●	●	●	●	●	●	●	●			●	●			●
APROVIA TOP	●		●	●		●		●	●			●				
BADGE SC/BADGE X2									●							
BIO-TAM 2.0										●So	●So					●So
BRAVO ULTREX/***PRAIZ***			●	●		●	●					●				
CHAMP DRY PRILL/CHAMP FORMULA 2 FLOWABLE/CHAMP WG								●								
CONTANS WG																●
CUPROFIX ULTRA 40 DISPERSS									●							
DELARO 325 SC				●				●								
ETHOS ELITE LFR ‡										●S	●S					
ETHOS XB ‡										●S	●S					
ETHOS 3D ‡									●S	●S	●S	●S				●S
EVERLON/PRIAXOR		●	●	●		●	●	●	●			●				●S
FONTELIS	●	●	●	●		●			●			●				●
HEADLINE SC		●	●	●		●	●	●	●			●				
KOCIDE 3000									●							
MINUET									● So	● So						
MIRAVIS TOP	●	●	●S	●		●			●			●				●S
OMEGA 500F			●[1]	●[1]				●[1]								●[1]
PHOSTROL							●									
PREVISTO									●							
PROLINE 480 SC				●								●				●
PROPULSE				●				●								●
PROVYSOL		●		●		●		●	●			●				
QUADRIS TOP	●	●	●	●	●	●										
REVYLOK		●		●		●		●	●			●				
SERENADE ASO										●	●	●S				●
STRATEGO YLD/***PROTEGAM YLD***				●				●								
TETRABAN	●	●	●	●	●						●So	●		●	●	
ULTRA FLOURISH							●									
UNIFORM										●So						
VELTYMA		●	●	●		●	●S	●	●			●				

* Many other diseases may be controlled, see label.
● - control; ● S - suppression; ● So - soil application
See Fungicide Resistance Management in the Technical Information section.
[1] - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
ACTINOVATE AG	1-12 oz	0	0	See label for soil-borne and foliar diseases controlled/suppressed. Soil-applied: At plant, in-furrow in 10-200 GPA; may be applied by drip, overhead or other irrigation systems, and may also be used as seed treatment; see label. Foliar: Apply in 10-150 GPA; reapply every 7-14 days depending on disease pressure and environmental conditions; best to use spreader-sticker (adjuvant); may be applied by air (see label).
APROACH	6-12 fl oz	14,0	–	PHI 14 days for seed, 0 days for vine and hay. Apply prior to disease development, continue on 7-14 day interval. 8-12 fl oz for white mold. Notes 1,2.
APROVIA TOP	10.5-11 fl oz	14	–	For control of diseases in dried shelled peas only. No more than 2 applications on a 7-day interval. All other applications must be applied no closer than a 14-day interval. No more than 22 fl oz/A/year. See label for annual a.i. restrictions.
BADGE SC or BADGE X2	0.5-2.5 pt or 0.5-2.5 lb	0	NR	Begin applications when disease symptoms first appear and repeat at weekly intervals. Use higher rates when conditions favor disease development. Badge X2 is OMRI listed.
BIO-TAM 2.0	2.5-5 lb	–	–	Can be applied in-furrow (1.5-3 oz/1000 row') and banded (2.5-3 lb). Broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. Note 2.
BRAVO ULTREX or ***PRAIZ***	1.25-1.8 lb or 1.375-2 pt	14	–	Begin applications at early bloom and continue on 7-10 day interval. Maximum 4 applications/year. Notes 1, 2.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG	1.0-2.0 or 1.0-2.0 pt. or 1.5 pt.	–	–	Begin when disease symptoms first appear. Min. 7-day application intervals. Max. 2.0 lb or 2.0 pt or 1.5 lb/A/application. Max. 10.5 lb or 10.8 pt or 7.9 lb/A/year.
CONTANS WG	1-4 lb	0	NR	Apply prior to planting, at planting, or after crop emergence. Incorporate into soil to 2". Make 2 applications, but no more than 8, for maximum efficacy. Note 2.
CUPROFIX ULTRA 40 DISPERSS	1-2 lb	–	–	Begin applications when disease symptoms first appear and repeat at weekly intervals as needed. Notes 1, 2.
DELARO 325 SC	12 fl oz	30	7	Begin applications preventively and continue on a 10- to 14-day schedule. No more than 2 applications/year.
ETHOS XB ‡	At-plant: 0.2-0.49 fl oz/1000' row	–	–	At-plant: Apply as 5-7" T-band over open furrow, or in-furrow with seed. Max. bifenthrin 0.2 lb/A/season dry and succulent peas, including all application methods. Suppression of "damping off," seedling blights, and root or crown diseases caused by Pythium, Rhizoctonia, Fusarium, or Phytophthora. Product also contains insecticide; see Pea Insects.
ETHOS XB ‡	At-plant: 3.4-6.8 fl oz PPI & PRE: 6.8-8.5 fl oz Foliar: 2.1-8.5 fl oz	14,3	–	Max. 0.2 lb bifenthrin a.i./A/season, including all application methods. At-plant/PRE/PPI: Suppression of "damping off," seedling blights, and root or crown diseases caused by Pythium, Rhizoctonia, Fusarium, or Phytophthora. Foliar: Suppression of white mold, gray mold, powdery mildew, rusts. At-plant: Apply as 5-7" band over row on soil surface, 5-7" T-band over open furrow, or in-furrow with seed; apply broadcast to control Army Cutworm, Cutworm spp., True Armyworm or Armyworm spp. PRE: Apply in min. 10 GPA. PPI: Can be tank-mixed/applied with PPI herbicides; incorporation should not be deeper than 3" in min. 10 GPA. Foliar: Min. application interval 7 days dry peas, 3 days succculent peas. PHI 14 days for dry peas, 3 days for succulent peas. Product also contains insecticide; see Pea Insects.
ETHOS 3D ‡	At-plant: 0.21-0.52 fl oz/1000' row	-	–	For use in a 3RIVE 3D system only. Suppression of "damping off," seedling blights, and root or crown diseases caused by Pythium, Rhizoctonia, Fusarium, or Phytophthora. Apply in-furrow with seed. Max. 0.2 lb bifenthrin a.i./A/season, including all application methods. Product also contains insecticide; see Pea Insects.
EVERLON/PRIAXOR	4-8 fl oz	7,21	14	Apply prior to when conditions favor disease development and continue on 7-14 day schedule. PHI 21 days for dry peas, 7 days for succulent peas. Do not use with EC or solvent-based formulations, COC, MSO, OS, MSO/OS, or NIS.* Maximum 16 fl oz/A/season. Maximum 2 applications before rotating to another mode of action.
FONTELIS	14-30 fl oz	0	–	Begin applications prior to disease development and continue on a 7-14 day schedule. Maximum 2 sequential applications before switching to a different mode of action. Maximum 72 fl oz/A/year. For control of white mold, make a preventative application at beginning bloom and follow with a 2nd application 7-10 days later.
HEADLINE SC	6-9 fl oz	21	14	Apply at the onset of disease development. NIS at 0.25% v/v may improve performance. Notes 1, 2.
KOCIDE 3000	0.5-1.25 lb	–	–	Apply after disease appears and repeat every 7 days as necessary. Notes 1, 2.

See notes and footnotes at end of table.

PEA DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
MINUET	12-24 fl oz	0	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS TOP	9-14 fl oz	14	see comment	Max. 56 fl oz/A/year. Max. 4 applications at max. rate/year (for pea vines and hay, max. 2 applications at max. rate/year). 14-day min. application interval. An adjuvant may be used. For white mold suppression at 14 fl oz/A, first application should be at R1 to R2; if second application needed, apply 14 days later at R3. Apply by ground (min. 15 GPA), air (min. 10 GPA), or sprinkler irrigation. Do not make >2 applications of this or other Group 3, 7 fungicides before rotating to a different MOA.
PHOSTROL	2-4 pt	0	–	Apply diluted solution to thoroughly wet foliage using normal irrigation schedule; apply at 2- to 3-week intervals.
PREVISTO	0.75-2 qt	0	NR	Begin applications when disease symptoms first appear and repeat at weekly intervals. Use higher rates when conditions favor disease development.
PROLINE 480 SC	5.7 fl oz	7	7	Max 17 fl oz/A/year. Max. 3 applications/year. Min. 5- to 14-day application interval. Apply by ground (min. 20 GPA), air or sprinkler irrigation. Apply prior to disease on-set. Use the higher use rate when conditions are favorable for severe disease pressure and/or when growing less disease resistant varieties.
PROPULSE	8-13.6 fl oz	14	NO	Begin applications preventatively and continue as needed on a 10- to 14-day interval. Apply 13.6 fl oz/A for white mold. Apply in a minimum of 10 GPA. No more than 2 applications per year. Note 2.
PROVYSOL	2.5-5 fl oz	21	21	Max. 5 fl oz/A/application. Max. 3 applications/year at 5 fl oz/A, or max. 6 applications/year at 2.5 fl oz/A. Max. 15 fl oz/A/year. 7- to 14-day min. application interval.
QUADRIS TOP	12-14 fl oz	14	NR	For dried seed only. Apply when conditions are conducive for disease and repeat on 14-day interval. Maximum 2 sequential applications before alternating to fungicide with different mode of action. Do not apply >56 fl oz/A/crop/year.
REVYLOK	4.5-6.5 fl oz	21	21	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. 7- to 14-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
SERENADE ASO	2-6 qt	–	–	Bacillus subtilis is a biological fungicide. Begin application soon after emegence or when plant stage and environmental conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed.
STRATEGO YLD/ ***PROTEGAM YLD***	4-4.8 fl oz	30	7	Max. 2 applications/year at 10- to 14-day interval. Max. 2 sequential applications before switching to different MOA. Apply by ground, sprinkler irrigation or aerial spray.
TETRABAN	6-15.5 fl oz	0,14	–	PHI 14 days for dry pea seeds, 0 days for succulent peas. See label for application instructions and in-furrow or banded rates.
ULTRA FLOURISH	0.25-0.4 pt	3	–	Foliar application by ground or air at 14-day intervals. Max. 1.6 pt/A/crop.
UNIFORM	0.34 fl oz/1000′ row			Apply in-furrow in a 7″ band.
VELTYMA	7-10 fl oz	21	21	Max. 10 fl oz/A/application. Max 2 applications/A/year. Max. 20 fl oz/A/year. 7- to 14-day min. application interval. 8-10 fl oz/A for downy mildew suppression.

PHI – preharvest interval days.
G/F – grazing and feeding interval days.
NO – do not graze or feed.
NOTE 1: May be applied by air.
NOTE 2: May be applied by chemigation.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	Site of Action[A]	GRASSES								BROADLEAVES																
		Broadleaf Signalgrass	Crabgrass	Crowfootgrass	Fall Panicum	Goosegrass	Nutsedge, Purple	Nutsedge, Yellow	Texas Panicum	Bristly Starbur	Bur Gherkin	Cocklebur	Crotalaria	Eclipta	Florida Beggarweed	Florida Pulsey	Jimsonweed	Lampsquarter	Morningglory	Palmer Amaranth	Pigweed[1]	Ragweed, Common	Sida, Prickly	Sicklepod	Tropic Croton	Wild Poinsettia
PREPLANT OR PREEMERGENCE																										
CHARGER MAX/DUAL II MAGNUM/ EVERPREX *(s-metolachlor)*	15	**G**	**E**	**E**	**G**	**E**	P	F	P	P	P	P	P	P	P	**G**	P	P	P	**G**	**G**	P	P	P	P	P
CRUSHER/LEADOFF *(rimsulfuron + thifensulfuron)*	2,2	U	F/**G**	U	U	U	U	F	U	N	N	N	N	N	N	N	N	**E**	N	**E**	**E**	N	N	N	N	N
FRAMEWORK 3.3 EC/PROWL H2O - PPI *(pendimethalin)*	3	**G/E**	**E**	**E**	**G**	**E**	P	P	**G**	P	P	P	P	P	P	**E**	P	**G**	P	F/**G**	**G**	P	P	P	P	P
OUTLOOK *(dimethenamid-p)*	15	**G**	**E**	**E**	**G/E**	**E**	P	F	P	P	P	P	P	P	P	**G**	P	F	P	**G**	**G**	P	P	P	P	P
PURSUIT *(imazethapyr)*	2	P	P	P	P	P	F	F	P	P	**G**	F	P	P	P	P	**G**	P	F	**G**	**G**	P	**G**	P	P	**E**
SEQUENCE *(glyphosate + s-metolachlor)*	9,15	**G/E**	**E**	**E**	**E**	**E**	P	F	**E**	**G**	**E**	**G/E**	**G/E**	U	**G**	U	**G/E**	**G**	F	**G/E**	**G/E**	**G/E**	F	**G**	**G**	P
SONALAN - PPI *(ethalfluralin)*	3	**G/E**	**E**	**G**	F	**E**	P	P	F	P	P	P	P	P	P	**E**	P	**G**	P	**G**	**G**	P	P	P	P	P
SPARTAN CHARGE *(sulfentrazone + carfentrazone)*	14,14	P	P	P	P	P	F	F	P	F	F	P	U	**G**	**G**	**G**	**G**	**E**	**E**	**E**	**E**	**G**	**G**	N	**G**	**G**
STRONGARM *(diclosulam)*	2	P	P	P	P	P	P	F	P	**E**	F	**E**	U	**E**	**G**	P	**G**	**G**	**E**	**G**	**E**	**E**	**E**	P	**G**	**G/E**
VALOR SX/VALOR EZ/PANTHER SC *(flumioxazin)*	14	P	P	P	P	U	P	P	P	F	**G**	P	U	**G/E**	**G/E**	**E**	**G**	**E**	F/**G**	**G**	**G/E**	**G/E**	**G**	P	**G**	**G/E**
POSTEMERGENCE																										
AVALANCHE ULTRA *(acifluorfen)*	14	P	P	P	P	P	P	P	P	P	F	**G**	**E**	F	P	**E**	**E**	P/F	**G**	F	**E**	**G**	P	P	**G/E**	**G**
BASAGRAN *(bentazon)*	6	N	N	N	N	N	N	F	N	P	P	**G/E**	P	P	P	P	**E**	P	P	P/F	P	P	**G**	P	F	P
BUTYRAC 175/***2,4-DB 175***/BUTYRAC 200/***2,4-DB 200*** *(2,4-DB)*	4	N	N	N	N	N	N	N	N	P	P/F	**G**	P	P	P	P	P	P	F	P	P	F	P	F	P	P
COBRA *(lactofen)*	14	P	P	P	P	P	P	P	P	P	F	**G**	**G**	**G**	**G**	F	**G**	P/F	**G**	F	**E**	**E**	**G**	P	**E**	**G**
CADRE *(imazapic)*	2	F	**G**	F	F	P	F	**G**	F	F	**G**	**E**	U	P/F	F	F/**G**	**E**	F/**G**	**G**	**E**	**E**	P	F/**G**	**G**	P	**G**
CLASSIC *(chlorimuron)*	2	P	P	P	P	P	P	P	P	P	P	**E**	U	P	**G**	P	U	P	P	P	P	F	P	F	P	P
GRAMOXONE SL 3.0 ‡ *(paraquat)*	22	**G**	P/F	**G**	**G**	**G**	P	P	**G**	P	F	**G**	**G**	P	F	P	**E**	P/F	F	P	P	**G**	P	**G**	P	**G**
POAST *(sethoxydim)*	1	**G**	**G**	**G**	**G**	**G**	P	P	**G**	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PURSUIT *(imazethapyr)*	2	P	P	P	P	P	F/**G**	F	P	P	**G**	**G**	P	P	P	**G**	**G**	P	F	**G**	**G**	P	F/**G**	P	P	**E**
SECTION THREE/CLEANSE *(clethodim)*	1	**E**	**E**	**E**	**G**	**G**	P	P	**E**	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

[A] Site of action, described in Technical Information section.
[1] See label of pigweed species controlled.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

PEANUT HERBICIDE APPL. TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
AIM EC/SHARK EW	PP/ PRE	Burndown up to 1 day after planting	10	3,5		NO	NO	7
	POST	Directed or hooded spray or as harvest aid (5 GPA aerial as harvest aid).						
ANTHEM FLEX	POST	Directed or hooded spray or as harvest aid (5 GPA aerial as harvest aid)..	10	3	0	NR	NR	NR
AVALANCHE ULTRA	PRE	Apply PRE, at-crack.	10-50	5	4	NO	NO	75
	POST	POST when broadleaf weeds are small at labeled size.						
BASAGRAN/BASAGRAN 5L	POST	Apply from cracking through pegging.	10-20	5	4	NR	50	NR
BUTYRAC 175/***2,4-DB 175***/BUTYRAC 200/***2,4-DB 200***	POST	Apply 2-12 weeks after planting. PHI 30 days but not later than 100 days after planting in OK, TX or NM; 45 days in NC, SC, and VA.	10	5	6	NO	NO	30,45
CADRE	POST	See label for weed sizes.	10	NL	3	NO	NO	90
CHARGER BASIC/DUAL MAGNUM	PP	PPI 2" up to 14 days before planting.	10	5		30	30	90
	PRE	PRE up to ground cracking.						
	POST	POST after last cultivation.						
CHARGER MAX/DUAL II MAGNUM/ EVERPREX	PP	PPI 2" up to 14 days before planting.	10	2		30	30	90
	PRE	PRE up to ground cracking.						
CLASSIC	POST	Apply from 60 days after crop emergence to 45 days before harvest.	10-25	3-5	1	NO	NO	45
CLEANSE		SEE SECTION THREE						
COBRA	POST	Apply to peanuts with at least 6 true leaves.	10-30	NL	0.5	NO	NO	45
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP	Prior to planting.	3-40	3-15	S	56	56	56
	PRE	Before crop emergence.						
CREDIT XTREME		SEE ROUNDUP						
CRUSHER	PP	After fall harvest through early sping.	15	5	–	30	30	NL
DUAL MAGNUM		SEE CHARGER BASIC						
DUAL II MAGNUM		SEE CHARGER MAX						
ENVERSA	PP/ PRE	Pre plant and Pre to crop and prior to weed emergence. Aerial application allowed in selected states only, refer to the product label for listed states.	10	3-15	–	90	90	NR
	POST	POST to crop and prior to weed emergence.						
EVERPREX		SEE CHARGER MAX						
FRAMEWORK 3.3 EC/PROWL H20	PP	PPI up to 60 days before planting.	10	5		NO	NO	NR
	PRE	PRE up to 2 days after planting and before crop emerges, with irrigation.						
FUSILADE DX	POST	Apply up to 40 day PHI.	5-40	5	1	NO	NO	NO
GRAMOXONE SL 3.0 ‡	PP	Supplemental Label FL, GA (exp. date not given)	10	NO	0.5	NL	NO	NR
	POST	At ground crack. A second application if needed up to 28 days after crack.				NR	NR	NR
HONCHO K6		SEE ROUNDUP						
LEADOFF	PP	After fall harvest through early sping.	15	5	–	30	30	NL
	PRE	45 days or more prior to planting.						
OUTLOOK	PP	PP up to 45 days before planting. PPI 1-2" up to 14 days before planting.	5	2		80	80	80
	PRE	PRE before crop emergence.						
	POST	POST prior to weed emergence, up to 80 days PHI.						
PANTHER SC		SEE VALOR SX						
PROWL H20		SEE FRAMEWORK 3.3 EC						
POAST	POST	Apply to actively growing grasses.	5-20	5	1	NO	NO	40

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
PURSUIT	PP	PPI 1-2″ up to 45 days before planting.	10	5	1	NO	NO	85
	PRE	PRE before crop emergence. At crack.						
	POST	POST before weeds exceed 3″ in height.						
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6	PP	Before planting or prior to crop emergence to emerged weeds.	3-40	3-15	S	56	56	56
	PRE	Before crop emergence.						
SECTION THREE*/*CLEANSE	POST	Apply to actively growing grasses.	10	3	1	NR	NR	40
SELECT MAX	POST	Apply to actively growing grasses.	10-40	3	1	NR	NR	40
SEQUENCE	PP	Apply up to 30 days before planting.	10-40	3-15	S	30	30	90
	PRE	PRE before ground cracking.						
SONALAN HFP/SONALAN 10G	PP	Apply prior to planting. Incorporate within 2 days.	5	NL		NO	NO	NR
SPARTAN CHARGE	PRE	Do not apply at cracking or after emergence. Do not use on soils classified as sand with less than 1% OM.	10	5	1	NO	NO	NR
STORM	PRE	At cracking but before peanut emergence.						
	POST	Up to 75 days PHI.	10-50	5-10	4	NO	NO	75
STRONGARM	PP	PP up to 4 weeks before planting. May PPI 1-3″.	≥ 10	NL		NO	NO	30
	PRE	PRE through cracking.						
***TRUST*/TREFLAN HFP/TREFLAN TR-10**	PP	Use in TX, OK, NM only. Apply and incorporate before or immediately after planting.	5-40	5-10		NR	NR	NR
VALOR SX/VALOR EZ/PANTHER SC	PP	PP fall, see label.	15	5-10	1	NO	NO	NR
	PRE	PRE within 3 days after planting and before crop emergence.						
WARRANT	PP	Apply broadcast to the soil surface.	10	3-15		60	60	NR
	PRE	Apply broadcast to the soil surface.						
	POST	Apply after crop emergence but before flowering. 5 GPA aerial as harvest aid.						

[1] Application Timing and Interval
[2] Includes labeled minimum or range.
PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
POST - Postemergence
NR - No restrictions
NO - Not permitted
NL - No related information on label
S - Heavy rainfall soon after application may require retreatment.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PEANUT HERBICIDE APPLICATION RATES

PREPLANT OR PREEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
AIM EC/SHARK EW	Up to 2 fl oz	Burndown up to 1 day after planting: Max. 6.1 fl oz/A/season, including POST applications. Do not feed immature peanut plant or peanut hay to livestock. Include NIS, COC, MSO or UAN/AMS.* Add Aim EC to tank before other herbicides.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal, include WC+NIS as needed*	PP or PRE prior to crop emergence. See label for perennial rates. Include NIS or WC+NIS2 as needed.
CHARGER MAX/ DUAL II MAGNUM or ***CHARGER BASIC***/ DUAL MAGNUM	1-1.33 pt	PPI , PRE, post plant incorporated, or at layby (Charger Basic/Dual Magnum only) immediately after last cultivation. Use at 0.8-1.33 pt/A in TX,OK, or NM only. See label for band application rates. PHI 90 days. Note 3.
CREDIT XTREME	SEE ROUNDUP	
CRUSHER	1 oz	Apply PP 45 days prior to planting. Apply with HSOC-MSO, HSOC-COC at 0.5 gal/100 gal or NIS at 1 qt/100 gal.* In addition to an adjuvant can apply 2 qt/A UAN or 2 lb/A AMS. See label for tank mixes.
ENVERSA	**Soil Texture:** / <1.5% OM (qts.) / >1.5% OM (qts.) **Coarse:** 1.25 to 1.6 / 1.25 to 1.7 **Medium:** 1.25 to 1.7 / 1.25 to 1.9 **Fine:** 1.25 to 1.9 / 1.25 to 2.0	Use the higher rate where heavy weed infestations exist. Refer to the label for specific environmental conditions that can affect the risk of crop injury. Application made before weeds emerge or after clean cultivation is necessary as this product will not control emerged weeds. If weeds are emerged at time of application apply a labeled postemergence herbicide with this product to control the emerged weeds. Refer to the label for specific tank mix crop injury precautions. Do not exceed a maximum of 2 quarts per acre (1.5 lb ai/acre) of this product as a single application and 4 quarts (3 lb ai/acre) per acre per year when making a second application.
FRAMEWORK 3.3 EC or PROWL H2O	TX, OK, NM: 1.2-2.4 pt or 1-2 pt Other states: 2.4 pt or 2 pt	Up to 3.2 pt H2O or 3.6 pt Framework 3.3 EC may be used in AL, GA, or FL. Apply up to 60 days prior to planting and incorporate within 7 days. PRE up to 2 days after planting and before crop emerges. Incorporate with 0.75" rain or irrigation. Dual II Magnum or Pursuit may be added. Note 2.
GRAMOXONE SL 3.0	1.25 - 2.5 pt	Supplemental Label FL and GA (exp. date not given). Apply to burndown weeds as ground broadcast in min. 10 GPA; use higher rate on dense poplulation and/or larger/hard to control weeds; apply when weeds are actively growing and between 1" to 6" (taller vegetation may not be controlled); max. 5 pt/A/year; do not make >2 PRE applications /year; always add NIS or COC; Do not apply by air. See label*
HONCHO K6	SEE ROUNDUP	
LEADOFF	1.5 oz	Apply PP 45 days prior to planting. Apply with HSOC-MSO, HSOC-COC at 0.5 gal/100 gal or NIS at 1 qt/100 gal.* In addition to an adjuvant can apply 2 qt/A UAN or 2 lb/A AMS. See label for tank mixes.
OUTLOOK	**Coarse soil:** 12-18 fl oz **Medium, fine soil:** 4-21 fl oz	PP, PPI or PRE. Rates vary by O.M. Do not use in CA.
PANTHER SC	SEE VALOR SX	
PROWL H20	SEE FRAMEWORK 3.3 EC	
PURSUIT	4 fl oz	PPI, PRE, or sequential application of 2 fl oz/A PPI or PRE, followed by 2 oz/A at cracking or early POST. PHI 85 days.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*	PP or PRE prior to crop emergence. See label for perennial rates. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
SEQUENCE	2.5-3.5 pt + 8.5-17 lb AMS/100 gal	PP or PRE. Apply up to 30 days before planting and before crop emergence. Soil restrictions apply. See label. Note 3.
SONALAN HFP or SONALAN 10G	1.5-3 pt or 5.5-11.5 lb	PPI prior to planting and incorporate within 2 days. May be incorporated with irrigation or rainfall. May be mixed with Charger Max, Dual II Magnum, EverpreX, Pursuit, or Strongarm. Note 2.

See notes and footnotes at end of table.

PREPLANT OR PREEMERGENCE *(continued)*				
Herbicide	**Rate/Acre**			**Comments/Restrictions**
SPARTAN CHARGE	**Coarse** fl oz	**Medium** fl oz	**Fine** fl oz	For use only in states of AL, AR, GA, LA, MS, NC, SC, TN & VA. Apply within 3 days after planting. Do not apply at cracking or after emergence. Do not use on soils classified as sand with less than 1% OM. Note 2.
	O.M. <1.5%			
	3-3.75	3.75-5.75	3.75 - 5.75	
	O.M. 1.5-3%			
	3.75-5.75	5-7.75	5.75-7.75	
	O.M. >3%			
	5-7.75	5.75-7.75	6.5-10.2	
STRONGARM	0.45 oz			PPI 1-3″ up to 4 weeks before planting, PRE, up to cracking. May apply PRE before weed and crop emergence for broad spectrum broadleaf control. Use on soils with >5% O.M. may result in reduced control. Not for use in TX, NM, and OK. See label for iron chlorosis symptoms. PHI 30 days.
TRUST/TREFLAN HFP or TREFLAN TR-10	**Coarse soil:** 1 pt or 5 lb **Medium soil:** 1.5 pt or 7.5 lb			Use in TX, OK, NM only. Apply and incorporate before planting, at, or immediately after planting. Cool, wet weather may result in crop injury.
VALOR SX or VALOR EZ/PANTHER SC	2-3 oz or 2-3 fl oz			PRE. Apply within 3 days after planting and before crop emergence. Plant ≥1.5″ deep Do not use more than 3 oz/A per season. Do not use on peanuts grown for seed. Do not irrigate when peanuts are cracking. Can tank mix with alachlor, metolachlor, pendimethalin, or Sonalan.
WARRANT	**Coarse** qt	**Medium** qt	**Fine** qt	Apply broadcast to the soil surface. Emerged weeds will not be controlled.
	O.M. <1.5%			
	1.25-1.6	1.25-1.7	1.25-1.9	
	O.M. ≥1.5%			
	1.25-1.7	1.25-1.9	1.25-2	

NOTE 2: Do not feed treated vines or hay to livestock.
NOTE 3: Do not graze or feed treated vegetation for 30 days.
***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POSTEMERGENCE

Herbicide	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	Up to 2 fl oz	Apply as directed or hooded spray or as harvest aid up to 7 days of harvest. Max. 6.1 fl oz/A/season. Max. 2.0 fl oz/A/season as harvest aid. Max. one harvest aid application. Do not feed immature peanut plant or peanut hay to livestock. Include NIS, COC, MSO or UAN/AMS.* Add to tank before other herbicides.
ANTHEM FLEX	2.7-4 fl oz	Rates vary by soil type. Broadcast over the top or directed to soil surface. Max. 4 fl oz/A/application. Max. 3 applications/year. 14-day min. application interval. Max 9.12 fl oz/A/year. See label notes on dry weather. NIS adjuvant at 0.25% v/v recommended.
AVALANCHE ULTRA	1-1.5 pt +1 pt NIS/100 gal	Apply when broadleaf weeds are small and do not exceed size on the label. Apply only once per season. Basagran, Butyrac 200 or Poast may be added. PHI 75 days. Notes 2,3.
BASAGRAN	1-2 pt + 1 pt HSOC-COC*	Apply when broadleaf weeds are small and do not exceed size on label (generally at bunching to pegging stage of peanuts). Avalanche Ultra, Butyrac 200 or Gramoxone SL 3.0 may be added. Notes 1,3.
BASAGRAN 5L	0.8-1.6 pt	Apply from cracking through pegging.
BUTYRAC 200/ ***2,4-DB 200*** or BUTYRAC 175/***2,4-DB 175***	0.8-1.6 pt or 0.9-1.8 pt	Apply 2-12 weeks after planting when broadleaf weeds are 1-2" in size. A second application, if needed, may be made 2-3 weeks after the first. PHI 30 days. Notes 2,3.
CADRE	4 fl oz + 1 qt NIS/100 gal or 1 pt HSOC-COC*	Controls most annual broadleaf and grass weeds and nutsedge spp. in peanuts. 90 day PHI. Note 2.
CHARGER BASIC/ DUAL MAGNUM	0.8-1.33 pt	Apply after last cultivation. Use 0.8-1.33 pt/A in NM, OK, and TX. PHI forage or grazing 30 days. See label for tank mixes.
CLASSIC	0.5 oz + 1 qt NIS/100 gal	A single application controls actively growing Florida beggarweed and suppresses Bristly starbur. Apply from 60 days after crop emergence to 45 days before harvest. Do not use COC. Note 2.
CLEANSE	6-10 fl oz + 1 pt HSOC-COC*	Apply to actively growing grasses. See label for rates for specific grass heights. COC adjuvant must be no less than 1 pt/A. AMS and UAN adjuvant may be added. PHI 40 days.
COBRA	12.5 fl oz + 1 qt NIS/100 gal or 1 pt HSOC-COC*	Apply to weeds that are actively growing and within labeled height. Apply after peanuts have 6 true leaves. Do not apply by air. PHI 45 days.
ENVERSA	**Soil Texture:** / **Coarse:** / **Medium:** / **Fine:** — <1.5% OM (qts.): 1.25 to 1.6 / 1.25 to 1.7 / 1.25 to 1.9; >1.5% OM (qts.): 1.25 to 1.7 / 1.25 to 1.9 / 1.25 to 2.0	This product may be applied postemergence to peanut at 1.25 to 2 quarts per acre after crop emergence up through the R1 growth stage (beginning bloom). R1 ends as 50% of the plants in an area have a visible peg (R2). Apply broadcast over the top of the crop or directed to the soil surface according to the rate table listed to the left. Do not exceed 2 quarts (1.5 lb ai/acre) per acre as a single application. Allow at least 7 days between sequential applications. Refer to the label for specific tank mix crop injury precautions. Do not exceed a maximum of 2 quarts per acre (1.5 lb ai/acre) of this product as a single application and 4 quarts (3 lb ai/acre) per acre per year when making a second application.
FUSILADE DX	Up to 24 fl oz + 1-2 qt HSOC-COC or NIS/100 gal*	Maximum of 48 fl oz/A/year. Minimum 14 days between applications. PHI 40 days.
GRAMOXONE SL 3.0 ‡	5.4-10.8 fl oz + 2 pt NIS/100 gal	For seedling weeds, make 1st application at ground crack to control small (1-6") weeds, and a 2nd application, if needed, up to 28 days after cracking. Addition of Basagran may reduce peanut burn. Use ≥10 GPA. Supplemental Label (expiration date not given) for Gramoxone SL 3.0 applications in Georgia and Florida only for burndown of emerged weeds prior to planting. Application rate of 1.2 pt to 2.5 pt/acre. The supplemental label must be in the possesssition of application at the time of application.
OUTLOOK	12-21 fl oz	Apply up to 80 days before harvest. Soil texture and O.M. influence rate.
POAST	1-1.5 pt + 1 pt HSOC-COC*	Apply to actively growing grasses at the sizes indicated on label. Addition of UAN or AMS will aid in control of some weeds; see label. PHI 40 days. Notes 2, 3.
PURSUIT	4 fl oz + 1 pt HSOC-COC*	Apply at cracking or early post before weeds exceed 3" high. PHI 85 days. Note 2.
SECTION THREE	4-10.67 fl oz	40 day PHI. Maintain 14 day interval for repeat applications. Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS or 8.5-17 lb/100 gallons of AMS.*
SELECT MAX	9-32 fl oz + 1 qt NIS/100 gal	AMS should be added. PHI 40 days.
STORM	1.5 pt	POST up to 75 days PHI. Also, PRE at-cracking prior to peanut emergence. Include NIS or COC plus UAN/AMS.* 2ee all states except CA, NY, TX (exp. date not given) for control of glyphosate, triazine, and/or ALS-resistant pigweed biotypes PRE or POST.

NOTE 1: Winter wheat or barley may be planted 120 days after application; other crops the next spring.
NOTE 2: Do not feed treated vines or hay to livestock.
NOTE 3: Do not apply if rain is expected within 4 hours (Poast — 1 hour). Do not apply if crop is under drought stress.
***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PEANUT LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR PEANUT	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT										
				ARMYWORM, FALL	ARMYWORM, YELLOW STRIPED	CORN EARWORM (PODWORM)	CUTWORM	GRANULATE CUTWORM	LEAFHOPPER, POTATO	LESSER CORNSTALK BORER	LOOPER	NEMATODE	REDNECKED PEANUT WORM	
ADMIRE PRO	14	–	soil: 7-10.5 fl oz foliar: 1.2 fl oz						●					
ADVISE FOUR/NUPRID 4F MAX	14	NR	soil: 8-12 fl oz foliar: 1.2 fl oz						●					
ASANA XL ‡	21	NO	2.9-5.8 fl oz			●			●				●	
			5.8-9.6 fl oz				●	●						
			9.6 fl oz	●S						●S				
BAYTHROID XL ‡	14	–	1-1.8 fl oz				●		●				●	
			1.8-2.4 fl oz	●		●								
			2.8 fl oz								●			
BESIEGE ‡	14	–	5-8 fl oz				●	●	●				●	
			6-10 fl oz	●		●								
			10 fl oz							●S	●			
BIFEN 2 AG GOLD ‡	14	NO	2.1-6.4 fl oz	●	●	●	●		●	●	●		●	
			3.8-6.4 fl oz											
BLACKHAWK	3	14	1.7-3.3 oz	●	●	●					●		●	
BRACKET 97/ORTHENE 97	14	NO	0.375-0.75 lb											
			0.75-1 lb	●		●			●		●			
CORAGEN	1	-	3.5-7.5 fl oz	●		●								
			5-7.5 fl oz								●			
COMITE ‡ or COMITE II ‡	14	NO	32 fl oz or 36 fl oz											
DANITOL 2.4 EC ‡	14	14	6-10.33 fl oz						●					
			10.33-16 fl oz	●		●								
			6-16 fl oz								●			
DIPEL ES	–	–	1-2 pt								●			
			1-4 pt			●								
			2-4 pt	●	●									
ELEVEST ‡	14	NO	4.8-9.6 fl oz				●		●				●	
			5.6-9.6 fl oz	●	●	●					●			
			7.7-9.6 fl oz											
ENTRUST SC	3	14	3-6 fl oz	●	●	●					●		●	
ETHOS ELITE LFR ‡	–	–	0.39-0.49 fl oz/1000' row						●					
GRIZZLY TOO ‡	14	–	0.96-1.6 fl oz				●		●				●	
			1.28-1.92 fl oz	●		●								
			1.92 fl oz							●S	●S			
HERO ‡	14	NO	4-10.3 oz	●	●	●	●	●	●		●		●	
			10.3 oz							●S				

See notes and footnotes at end of table.

INSECT *(continued)*						COMMENTS AND RESTRICTIONS
	SOUTHERN CORN ROOTWORM	SPIDER MITE	THREE CORNERED ALFALFA HOPPER	THRIPS	VELVETBEAN CATERPILLAR	
				●S		Soil: Apply in-furrow direct on or below seed; max. 10.5 fl oz/A/year. May be applied by sprinkler irrigation. Foliar: Apply by ground or air; max. 3.7 fl oz/A/year; 5-day min. application interval. Note: Increases in TSWV incidence have been observed with use of this product; see label.
				●S		Soil: Apply as chemigation into root zone via low-pressure equipment or as in-furrow spray directed on or below seed; max. 12 fl oz/A/year. Foliar: Broadcast or directed spray via ground, aerial or sprinkler irrigation; max 4.2 fl oz/A/year; min. 5-day application interval.
					●	Max. 0.15 lb a.i./A/season.
					●	Max. 2.8 fl oz/A/10-day interval. Max. 8.4 fl oz/A/crop season. Armyworm: 1st and 2nd instar. Looper: Soybean looper only.
			●			
				●S		
			●		●	Max. 31 fl oz/A/year. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. Max. 4 applications/A/crop. Looper: Soybean looper only.
	●			●		
		●S				
	●		●		●	Max. 32 fl oz/A/season. 14-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation.
		●		●		
					●	Do not make >2 consecutive applications of Group 5 insecticides before rotating to another class of insecticides for at least 1 application. Max. 12.4 oz/A/crop. 7-day min. application interval.
				●		Min. 10-15 GPA by ground, 5-10 GPA by air. Max. 4.125 lb/A/season. See label for herbicide tank mix instructions. 24c NC Orthene 97 (exp. date not given) for in-furrow control of thrips.
					●	
					●	All application methods: Max. 4 applications/A/calendar year. 5-day min. application interval. Max. 15.4 fl oz/A/calendar year. Foliar applications include overhead chemigation. Grasshopper: Do not make >2 sequential applications before rotating to a different MOA; improved performance with MSO; see label.
		●				Spider Mite: Two-spotted. Min. 20 GPA by ground, 5 GPA by air. Do not make >2 applications/season. 14-day min. application interval. See Comite II label for application temperature/humidity concerns.
						Max. 2.33 pt/A/season. Armyworm/Corn Earworm/Leafhopper: Min. 10 GPA by ground, 5 GPA by air. Looper/Velvetbean Caterpillar: 20 GPA by ground, 3 GPA by air. Spider Mite: Two-spotted; apply foliar with ground equipment only; 7-day min. application interval.
		●				
					●	
					●	Armyworm/Corn Earworm: Control when populations are light to moderate. Apply to coincide with egg lay and early instar larvae.
	●		●		●	Max. 3 applications/A/year. Max. 2 sequential applications before rotating to different MOA. Min. 14-day retreatment interval. See label for timing notes. Grasshopper control improves with addition of MSO at 1% v/v. Coverage is essential for control of mites.
		●		●		
					●	7-day min. application interval. Max. 29 fl oz/A/crop. Max. 3 applications/year. Do not make >2 consecutive applications of Group 5 insecticides before rotating to another class of insecticides for at least 1 application. Looper: Soybean looper only.
				●		At-plant: Appy as 5-7" band over open furrow (T-band), or in-furrow with seed. Max. 0.5 lb, including all application methods. Product also contains fungicide; see Peanut Diseases.
	●		●		●	By ground in sufficient water to obtain coverage; min. 2 GPA by air. Max. 0.48 pt/A/season. Looper: Soybean looper only. Thrips: Tobacco thrip.
				●		
		●S				
	●		●		●	14-day min. application interval. Max. 10.3 oz/A/application. Min. 10 GPA by ground, 2 GPA by air. Thrips: Adult control.
		●		●		

PEANUT LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR PEANUT	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT										
				ARMYWORM, FALL	ARMYWORM, YELLOW STRIPED	CORN EARWORM (PODWORM)	CUTWORM	GRANULATE CUTWORM	LEAFHOPPER, POTATO	LESSER CORNSTALK BORER	LOOPER	NEMATODE	REDNECKED PEANUT WORM	
INTREPID 2F	7	–	6-10 fl oz	●							●			
INTREPID EDGE	7	NO	4-8 fl oz	●	●	●					●		●	
LAMBDA-CY AG ‡	14	–	1.92-3.2 fl oz				●	●	●				●	
			2.56-3.84 fl oz	●		●								
			3.84 fl oz							●S	●S			
LANNATE LV ‡ or LANNATE SP ‡	21	NO	0.75-3 pt or 0.75-1 lb	●		●			●					
			1.5-3 pt or 0.5-1 lb					●			●			
LEVERAGE 360 ‡	14	–	2.8 fl oz	●	●	●	●		●				●	
MICROTHIOL DISPERSS	–	–	5-8 lb											
MUSTANG MAXX ‡	7	NO	1.28-4 fl oz				●	●					●	
			1.76-4 fl oz						●					
			3.2-4 fl oz	●S		●				●S	●S			
OUTREACH SC	-	-	6-10 fl oz									●		
PROPULSE	14	NO	13.6 fl oz									●		
PYGANIC EC 1.4$_{II}$	0	0	16-64 fl oz	●	●	●			●		●			
PYGANIC EC 5.0$_{II}$	0	0	4.5-15.61 fl oz	●	●	●			●		●			
RADIANT SC	3	NO	3-8 fl oz	●		●					●		●	
SIVANTO 200 SL or SIVANTO PRIME	7	NL	7-10.5 fl oz or 7-14 fl oz					●						
			10.5-14 fl oz or 5.5-7 fl oz						●					
STEWARD EC	14	-	6.7-11.3 fl oz			●								
			9.2-11.3 fl oz	●				●					●	
THIMET 20-G ‡	90	NO	5.5 oz/1000' row						●					
TUNDRA EC ‡/BRIGADE 2EC ‡	14	NO	2.1-6.4 fl oz	●	●	●	●		●	●	●		●	
			5.12-6.4 fl oz											
VANTACOR	1	–	1.2-2.5 fl oz	●		●								
			1.7-2.5 fl oz								●			
VYDATE C-LV ‡	–	–	soil: 34-68 fl oz foliar: 17 fl oz									●		

See notes and footnotes at end of table.

INSECT *(continued)*						COMMENTS AND RESTRICTIONS
	SOUTHERN CORN ROOTWORM	SPIDER MITE	THREE CORNERED ALFALFA HOPPER	THRIPS	VELVETBEAN CATERPILLAR	
					●	Max. 64 fl oz/A/year. Do not make >3 applications/A/year. 7-day min. application interval.
					●	Max. 24 fl oz/A/year. 7-day min. application interval. Do not make >3 applications/year. Looper: Soybean looper only.
			●		●	Max. 0.96 pt/A/season. By ground in sufficient water to obtain coverage; min. 2 GPA by air. Looper: Soybean looper only. Southern Corn Rootworm: Adult control. Thrips: Tobacco thrip. See label for important resistance management information.
	●			●		
		●S				
					●	Max. 12 pt/A/crop or 4 lb/A/crop. Do not make >8 applications/crop. Corn Earworm: Ovicidal and larvicidal control. Looper: Soybean looper is difficult to control; see label.
				●		
			●		●	Max. 8.3 fl oz/A/year. 10-day min. application interval. See label for max. a.i. limits/A/year from all sources. Armyworm: 1st and 2nd instar.
		●				Apply at early leaf stage and repeat as necessary.
					●	Max. 24 fl oz/A/season. Looper: Soybean looper only. Southern Corn Rootworm: Adult control. Thrips: Tobacco thrip.
	●					
				●S		
						Not for use in California. At planting: apply In furrow or chemigation (drip/trickle irrigation systems only) for management of 3 species of nematodes in corn. Contains a live bacteria, apply within 24 hrs of mixing. Water or liquid fertilizer are acceptable carriers. Adequate agitation and resuspension in the spray tank is critical.
						Apply at 14-day intervals beginning 30-40 days after planting. Use chemigation or overhead irrigation to move applications into soil. Max. 2 applications/A/year. Max. 34.2 fl oz/A/year.
		●	●	●	●	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
		●	●	●	●	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
				●S*	●	2ee several states (exp. date not given) 1.5-3 fl oz/A for early season suppression of thrips.
						10-day min. application interval. Max. 28 fl oz/A/year Sivanto 200 SL/Sivanto prime. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL.
						Max. 45 fl oz/A/year. Max. 4 applications/A/crop. 5-day min. application interval. May be applied by sprinkler irrigation.
				●		Max. 7.5 lb/A. Distribute granules evenly in furrow at planting. Max. 1 application/crop/season.
	●		●		●	Max. 32 fl oz/A/season. 14-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation.
		●		●		
					●	All application methods: Max. 4 applications/A/calendar year. 5-day min. application interval. Max. 5.1 fl oz/A/calendar year. Foliar applications include overhead chemigation. Grasshopper: Do not make >2 sequential applications before rotating to a different MOA; improved performance with MSO; see label.
				●		Soil: Apply in 7" band behind planter in min. 10 GPA water; incorporate at least 2" either by placing in-furrow or mechanically. Foliar: Only after fumigation or following PP or at-plant soil application of this or other contact nematicide. Make 2nd application 14 days later; make an additional 2 applications on 14-day schedule, if needed. Max. 136 fl oz/A/season. Max. 5 applications/season.

PEANUT LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR PEANUT	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT										
				ARMYWORM, FALL	ARMYWORM, YELLOW STRIPED	CORN EARWORM (PODWORM)	CUTWORM	GRANULATE CUTWORM	LEAFHOPPER, POTATO	LESSER CORNSTALK BORER	LOOPER	NEMATODE	REDNECKED PEANUT WORM	
WARRIOR II ‡	14	–	0.96-1.6 fl oz				●	●	●				●	
			1.28-1.92 fl oz	●		●								
			1.92 fl oz							●S	●S			
XENTARI	–	–	0.5-1.5 lb			●					●			
			0.5-2 lb	●	●									

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

INSECT *(continued)*						COMMENTS AND RESTRICTIONS
	SOUTHERN CORN ROOTWORM	SPIDER MITE	THREE CORNERED ALFALFA HOPPER	THRIPS	VELVETBEAN CATERPILLAR	
			●		●	Max. 7.68 fl oz/A/season. By ground in sufficient water to obtain coverage; min. 2 GPA by air. Looper: Soybean looper only. Southern Corn Rootworm: Adult control. Thrips: Tobacco thrip. See label for important resistance management information.
	●			●		
		●S				
					●	Min. 10 GPA by ground, 2 GPA by air (5-10 GPA by air in arid areas). May be applied by sprinkler irrigation. Armyworm/Corn Earworm: 1st and 2nd instar.

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.

PEANUT INSECT MANAGEMENT GUIDELINES



ARMYWORM The 60-90 day stage of growth is when foliage loss is most serious. ET: treat if populations exceed 3-5 larvae per row foot in dry land: 6-8 per row foot in irrigated peanuts.



BEET ARMYWORM Early-season infestations feed on leaves and terminal areas. Occasionally they destroy the terminal, causing extensive lateral branch development and delayed maturity. Early-season insecticide applications may be warranted when plants with undamaged terminals approach the lower optimal plant stand limits of two plants/row foot for dryland production and four plants per foot of row in irrigated production. Larvae skeletonize leaves rather than chewing large holes in them. Damaging infestations sometimes develop late in the season when beet armyworms also feed on terminals, squares, blooms and bolls. When beet armyworms begin to damage the fruit, control may be justified. Infestations usually are spotty within a field, and careful scouting is necessary to determine the need for control. Beet armyworms longer than 1/2 inch may be difficult to control. ET: small worm counts average one/row foot and at least 10 percent of the plants examined are infested, control may be warranted. Insecticides may only provide suppression. Crop oils may improve control.



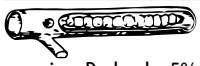
CORN EARWORM (PODWORM) The 60-90 day stage of growth is when foliage loss is most serious. ET: treat if populations exceed 3-5 larvae per row foot in dry land: 6-8 per row foot in irrigated peanuts.



GRANULATE CUTWORM Larvae found at soil surface beneath peanut foliage. Mottled gray and tan with many dark granules over surface of body. If feeding on foliage, use same guidelines provided above for foliage feeders; however, if cutworms are feeding on pegs or pods. ET: treatment should begin if larval numbers exceed 2-3 per row ft. in dryland peanuts. If irrigated, treat if 6-8 larva/row feet.



LEAFHOPPER, POTATO Apply when hopper burn is found on 30% or more of plants and leafhoppers are in the field.



LESSER CORNSTALK BORER This active, bluish-green worm feeds underground on pegs, pods, stems and roots. It is most serious in dryland crops and in dry years. ET: treat when the percentage of plants is infested by live larvae: Irrigated - 10% prior to pegging, 15% after pegging; Dryland - 5% prior to pegging, 10% after pegging.



LOOPERS The 60-90 day stage of growth is when foliage loss is most serious. ET: treat if populations exceed 3-5 larvae per row foot in dry land: 6-8 per row foot in irrigated peanuts.



NEMATODE Not insects, but microscopic, slender, worm-like organisms living in the soil. May stunt plants and cause severe yield reductions. Examination of peanut roots during the season and pods at harvest for signs of damage, or sending of root and soil samples to a nematode detection laboratory is advised if nematodes are suspected. Rates for application to a 6-12" band, 36" row spacing. Apply over row prior to planting and incorporate to a depth of 3-4 inches.

REDNECKED PEANUT WORM The 60-90 day stage of growth is when foliage loss is most serious. ET: treat if populations exceed 3-5 larvae per row foot in dry land: 6-8 per row foot in irrigated peanuts.



SOUTHERN CORN ROOTWORM Yellowish-white larvae have brown heads and somewhat wrinkled bodies, reaching 0.5-0.75" long. Occur more often on heavier soils. Damage to shell may appear as a small brown spot on nut. If spots are noted, open nuts and check for larvae.



SPIDER MITE Dry weather damage by these tiny bugs is indicated by reddish brown discoloration of leaves. Mites can be wind or machinery transported to fields. Frequently develop in early summer in weeds, fence/turn rows, and move to peanuts when dry weather hits.



THRIPS Tiny, slender yellowish insects rasp leaves and cause blotching and deformed terminals. Yield increase as a result of spraying is questionable.

VELVETBEAN CATERPILLARS Apply to small-medium larvae.

FUNGICIDE	DISEASE*																				
	ALFATOXIN - PRODUCING FUNGI	CERCOSPORA LEAF SPOT	DAMPING OFF (PYTHIUM)	DAMPING OFF (PYTHIUM or RHIZOCTONIA)	EARLY LEAF SPOT[2]	LATE LEAF SPOT[2]	LIMB ROT	PEG ROT	PEPPER SPOT	POD ROT	POWDERY MILDEW	PYTHIUM	RHIZOCTONIA	RUST	SCLEROTINIA BLIGHT	SEEDLING ROT (PYTHIUM or RHIZOCTONIA)	SEEDLING ROT (PYTHIUM)	SOUTHERN BLIGHT[3]	SOUTHERN STEM ROT[3]	WEB BLOTCH	WHITE MOLD
ABOUND			●So		●	●	●	●		●[3]			●	●						●	●[1]
ABSOLUTE 500 SC/ ABSOLUTE MAXX					●	●	●							●						●	
AFLA-GUARD GR	●																				
ALTIPRO					●	●							●	●	●			●	●	●	●
ALTO 100 SL					●	●	●							●				●		●	
APROACH					●	●								●							
APROACH PRIMA					●	●								●						●	
BADGE SC/BADGE X2					●	●								●							
BIO-TAM			●	●											●	●	●	●			
BLOCKER 10G													●					●			
BRAVO ULTREX/WEATHER STIK/PRAIZ					●	●			●					●						●	
CHAMP DRY PRILL/CHAMP FORMULA 2 FLOWABLE/ CHAMP WG		●																			
CHAMPION++		●																			
CUPROFIX ULTRA 40 DISPERSS		●																			
DITHANE F-45		●												●							
ELATUS		●				●	●		●				●	●				●	●	●	●[4]
EMINENT VP					●	●								●						●	
ENDURA					●	●									●				●S	●	
ETHOS ELITE LFR ‡			●	●								●	●			●	●				
EVITO 480 SC					●	●	●							●				●			●
EVITO T					●	●	●							●				●	●		●
EXCALIA					●S	●S							●		●			●	●		●
FONTELIS					●	●			●				●	●	●			●	●	●	●
HEADLINE SC					●	●	●	●	●	●			●	●	●S			●	●	●	●
KOCIDE 3000		●																			
LUCENTO					●	●			●				●	●				●	●	●	●
MANZATE MAX		●												●						●	
MIRAVIS					●	●			●							●S				●	
OMEGA 500F															●						
ONSET 3.6L					●	●	●		●	●			●	●				●	●	●	●
PENNCOZEB 75DF		●												●							
PREVISTO		●																			
PRIAXOR	●				●	●		●	●	●			●	●	●S			●		●	●
PROLINE 480SC																					
PROPULSE		●			●	●	●	●[4]		●[4]			●	●	●				●		●
PROVOST SILVER					●	●	●	●	●	●				●		●		●	●	●	●
PROVYSOL					●	●		●S		●S			●S					●S	●S		●S
QUASH					●	●								●	●			●[3]	●[3]		
REVYTEK					●	●		●	●	●			●	●	●S			●	●	●	
RIDOMIL GOLD GR			●S							●So		●So				●So	●So				
RIDOMIL GOLD SL										●		●So									
ROVRAL 4F															●						
SERENADE ASO					●	●															●

See notes and footnotes at end of table.

PEANUT LABELED FUNGICIDES *continued*

FUNGICIDE	DISEASE*																			
	ALFATOXIN - PRODUCING FUNGI	CERCOSPORA LEAF SPOT	DAMPING OFF (PYTHIUM)	DAMPING OFF (PYTHIUM or RHIZOCTONIA)	EARLY LEAF SPOT[2]	LATE LEAF SPOT[2]	LIMB ROT	PEG ROT	PEPPER SPOT	POD ROT	POWDERY MILDEW	PYTHIUM	RHIZOCTONIA	RUST	SCLEROTINIA BLIGHT	SEEDLING ROT (PYTHIUM or RHIZOCTONIA)	SEEDLING ROT (PYTHIUM)	SOUTHERN BLIGHT[3]	SOUTHERN STEM ROT[3]	WEB BLOTCH	WHITE MOLD
TETRABAN				●So	●	●		●[1]		●			●	●						●	
TOPAZ/TILT					●	●								●					●	●	●S
TOPGUARD					●	●			●					●				●S	●S	●	
TOPGUARD EQ		●			●	●		●		●			●	●				●	●	●	●
TOPSIN 4.5FL/TOPSIN M WSB/T-METHYL 70 WSB					●	●	●							●							●
ULTRA FLOURISH										●		●So									
UNIFORM												●So	●So								
VELTYMA					●	●		●	●	●			●	●	●S			●S	●S	●	

* Many other diseases may be controlled, see label.
● - control; ●S - suppression; ●So - soil application
See Fungicide Resistance Management in the Technical Information section.

[1] Suppression as soil application.
[2] May include Cercospora leaf spot.
[3] Same organism; common names vary depending on area and label.
[4] Disease caused by Rhizoctonia

PEANUT DISEASE MANAGEMENT GUIDELINES

EARLY LEAFSPOT, LATE LEAFSPOT, WEB BLOTCH:	These diseases can cause defoliation and serious yield loss if left uncontrolled. Favorable conditions for leafspot disease are temperatures that range from 66-68° F and prolonged periods of high relative humidity (95% or higher) and/or leaf wetness. The rate of foliar disease development is dependent upon weather conditions. If temperatures are too cold or if there is inadequate moisture, disease increases slowly or not at all. If it is wet and the temperature is warm, disease increases rapidly. The first application may be made before the appearance of leafspot (30-50 days after planting) or delayed until leafspot symptoms appear. Start applications early in high risk areas such as river bottoms where humidity is high and irrigated fields where peanuts have been planted more frequently than once every three years. Once the first application is made, a 10-14 day schedule should be maintained until 2 weeks before harvest.
POD ROT (PYTHIUM and RHIZOCTONIA):	This disease is a complex disorder of peanuts caused by one or more of several soil pathogens. The disease is also influenced by various environmental factors, certain pests, and chemical practices making it very difficult to study and control. The cause(s) of pod rot may differ between fields. Because pod rot disease is not fully understood, the control practices suggested only reduce disease incidence and do not fully control the problem. It has been determined that Virginia types are the most susceptible to pod rot, runner types are intermediate, and Spanish types are generally most tolerant. In fields with a history of pod rot, a broad-spectrum fungicide program will aid in red POD ROT (Pythium and Rhizoctonia): This disease is a complex disorder of peanuts caused by one or more of several soil pathogens. The disease is also influenced by various environmental factors, certain pests, and chemical practices making it very difficult to study and control. The cause(s) of pod rot may differ between fields. Because pod rot disease is not fully understood, the control practices suggested only reduce disease incidence and do not fully control the problem. It has been determined that Virginia types are the most susceptible to pod rot, runner types are intermediate, and Spanish types are generally most tolerant. In fields with a history of pod rot, a broad-spectrum fungicide program will aid in reducing severity. For the greatest reduction of pod rot, apply the fungicide preventively before symptoms appear rather than a salvage treatment. Present research indicates that fungicide applications are needed at planting, at early pegging (60-75 days after planting), and a third application 30-45 days later. ucing severity. For the greatest reduction of pod rot, apply the fungicide preventively before symptoms appear rather than a salvage treatment. Present research indicates that fungicide applications are needed at planting, at early pegging (60-75 days after planting), and a third application 30-45 days later.
SOUTHERN BLIGHT:	Widespread disease which usually appears during mid- to late-season in Oklahoma. The pathogen is soilborne and plant infection usually occurs near the base of the plant. Soil fungicides applied as preventative applications should be considered for fields with short rotations or those continuously planted to peanut with a history of southern blight incidence greater than 5%. Optimal results are achieved when a fungicide is placed at the crown of the plant where the southern blight fungus infects plants. Granules should not be mechanically incorporated but left on the soil surface where they inhibit southern blight.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				SOIL APPLIED
ABOUND	0.4-0.8 fl oz/1000' row	14	–	Apply in-furrow at planting.
ALTIPRO	15.4 fl oz, 1.06 fl. oz. per 1,000 row feet	14	NO	In-furrow: Direct the spray into the furrow at planting just before the seeds are covered. Apply in 2.5 to 20 gallons of water at planting. Banded: Apply in a 4- to 6- inch band over the row at or near emergence. Direct the spray to the soil, using single or multiple nozzles which can be adjusted to provide uniform coverage of the lower stems and the soil surfaces surrounding the plants. A minimum application volume of 20 GPA is advised. Do not exceed 5 foliar applications of this product per year at the high rate (12.0 fl. oz.).; and to limit the potential for development of disease resistance to this fungicide,
BIO-TAM 2.0	1.5-3 oz: in-furrow 2.5-3 lb/A: banded	–	–	OMRI listed.
BLOCKER 10G	0.75-1.14 lb/1000' row	–	NO	For root/stem rot: Apply 0.75-1 lb/1000' row in 12-15 " band in furrow at planting. Do not exceed 10 lb a.i./A per season. For southern blight: Apply 1.14 lb/1000' row for each of two applications (at pegging and approximately 30 days later). Lightly incorporate. Do not apply more than 28 lb/12,400' row per year (10 lb a.i./A per season).
ELATUS	0.5-0.65 oz/1000' row	30	NR	Apply by ground, air (except in NY) or chemigation. Early banded application or broadcast for suppression of early season soil-borne diseases. No more than 3 applications/year. See label for annual a.i. maximums.
PROLINE 480SC	5.7 fl oz; 0.4 fl oz/1000' row	14	NO	Suppression of Cylindrocladium Black rot. Apply up to 4 soil-applied sprays at 14 day intervals. Rotate with different modes of action. 2ee several states (exp. date not given) at 0.4 fl oz/1000' row applied in a 4-6" band over the row at 100% emergence for suppression of Rhizoctonia limb rot, early leaf spot, late leaf spot, stem rot, white mold, southern blight, and southern Sclerotium rot suppression. Note 1.
PROPULSE	13.6 fl oz	14	NR	Soil applied for nematode control; apply in-furrow directed on or below seed. Note 2.
RIDOMIL GOLD GR	6.5-13 oz/1000' row	–	–	Apply 6.5 oz/1000' row in-furrow for seedling diseases, or in 7" band at time of planting. Apply 13 oz/1000' row in 8-12" band over rows at early pegging for pod rot.
RIDOMIL GOLD SL	0.25- 1 pt/A	–	–	Soil applied for seedling diseases: 0.25 pt/A applied as in-furrow spray for seedling disease control sot that fungicide is mixed with soil covering seed; or soil spray (banded) in 7" band over row. Foliar applied for pod rot: 0.5-1 pt/A applied at early pod set as soil spray or at pegging as foliar spray (overhead irrigation).
TETRABAN	0.4-0.8 fl oz/1000' row	14	–	See label for application instructions and in-furrow or banded rates.
UNIFORM	0.34 fl oz/1000' row	–	–	Apply in-furrow in ≥ 5 gal water.
				FOLIAR
ABOUND	12-24.5 fl oz	14	NO	Make a foliar application 60 and 90 days after planting. Two applications provide season-long protection against labeled soilborne disease and leafspot protection for 10-14 days after each application. Apply 18.3-24.6 oz/A under heavy disease pressure or with high rainfall or irrigation. For foliar diseases only, use 9.2-18.3 fl oz/A. Maximum: 2 sprays. Notes 1, 2.
ABSOLUTE 500 SC/ ABSOLUTE MAXX	3.5-7 fl oz	14	NO	Use 7 fl oz/A for limb rot and 3.5 fl oz/A for other labeled diseases. See label for timing of applications on limb rot. Begin applications when conditions are favorable for disease but before infection. Continue on a 10-14 day schedule. Do not exceed more than 4 total applications per season. May be applied by ground, aerial, or chemigation.
AFLA-GUARD GR	20 lb	–	–	Apply by ground in a band over rows at full canopy closure (40-80 days after planting). By air, apply as soon as possible after canopy closure, within 90 days after planting.
ALTIPRO	8 -12 FL oz	14	NO	Apply Altipro when disease first appears and continue on a 10 to 14-day interval if favorable conditions for disease development persist. Ground: Apply in a minimum application volume of 10 gallons/Acre. Aerial: Apply in a minimum application volume of 5 gallons/Acre. Maximum Annual Applications: DO NOT exceed 5 foliar applications of this product per year at the high rate (12.0 fl. oz.); and to limit the potential for development of disease resistance to this fungicide, DO NOT make more than 2 sequential applications of Altipro or any Group 11 containing fungicide before rotating with a fungicide from a different Group.
ALTO 100SL	5.5 fl oz	30	30	Apply up to two times. Minimum treatment interval is 28 days. Notes 1,2.
APROACH	6-12 fl oz	7	7	Apply at early vegetative growth and prior to disease development. 14-day min. application interval. Do not make >2 sequential applications before switching to a different mode of action. Max. 36 fl oz/A, max. 3 applications/year.
APROACH PRIMA	5-6.8 fl oz	30	30	Apply at early vegetative growth and prior to disease development. 28-day min. application interval. Max. 13.6 fl oz/A/year, max. 2 applications/year.
BADGE SC or BADGE X2	1-2.5 pt or 1-2.5 lb	0	NR	Spray 35-40 days after planting or when disease symptoms appear. Repeat at 10-14 day intervals. Use higher rates when conditions favor disease development. Badge X2 is OMRI listed.

See notes and footnotes at end of table

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				FOLIAR *(continued)*
BIO-TAM 2.0	2.5-5 lb/A: broadcast	–	–	For broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. May be applied by chemigation. OMRI listed. Note 2.
BRAVO WEATHER STIK/ ***PRAIZ*** or BRAVO ULTREX	1-1.5 pt or 0.9-1.36 lb	14	NO	Use 1.5 pt/1.36 lb for rust, web blotch, and early and late leaf spot. Use high rate on Spanish cultivars. Notes 1, 2.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG	1.0-2.0 lb or 1.0-2.0 pt or 1.5 lb	–	–	Begin 35-40 days after planting or when disease symptoms appear. Min. 7- to 14-day appliction intervals. May add 1-2 qt of 6.0 lb/gal flowable sulfur. Max. 2.0 lb or 2.0 pt or 1.5 lb/A/application. Max. 12.6 lb or 13.0 pt or 9.48 lb/A/year.
CHAMPION++	0.75-1.25 lb	0	NR	Begin spraying at 35 to 40 days after planting or when disease symptoms first appear and repeat at 7-14 day interval. May add flowable sulfure. Max. 15.8 lb/A/year.
CUPROFIX ULTRA 40 DISPERSS	1-2 lb	–	–	Begin spraying at 35 to 40 days after planting or when disease symptoms first appear and repeat at 10-14 day intervals as needed. Use high rates and reduce spray intervals to 7-days when conditions favor disease development.
DITHANE F-45 RAINSHIELD	0.8-1.6 qt	14	NO	Start when disease first appears or is reported in area. Repeat sprays at 7 to 14 day intervals. Notes 1, 2.
ELATUS	7.3-9.5 oz	30	NR	Apply by ground, air or chemigation. For foliar diseases, begin applications 30-40 days after planting or at first appearance of disease. See label for rate and application intervals. No more than 3 applications before alternating to a non-Group 7 fungicide. See label for annual a.i. maximums.
EMINENT VP	6-13 oz	14	NO	Spray 30-40 days after planting, prior to onset of disease when conditions are favorable for disease development. 14-day application interval. May be used in Extension disease forcasting programs. Do not apply >52 fl oz (0.8120 lb ai)/season of tetraconazole-containing products for all diseases.
ENDURA	6.5-10 oz	14	NO	Maximum of 3 applications per season. 8-10 oz/A for web blotch and sclerotinia blight. Notes 2, 3.
ETHOS ELITE LFR ‡	0.39-0.49 fl oz/1000' row	–	–	At-plant: Appy as 5-7" band over open furrow (T-band), or in-furrow with seed. Max. 0.5 lb, including all application methods. Product also contains insecticide; see Peanut Insects .
EVITO 480 SC	5.7 fl oz	14	–	Apply as a preventative on a 14 day interval. Alternate with a fungicide with different mode of action. Maximum of 22.8 fl oz/A/season. Note 3.
EVITO T	6-11.2 fl oz	14	NO	Use 6-9 fl oz/A for early and late leaf spot and leaf rust and 9-11.2 fl oz/A for stem rot, white mold, southern blight, and rhizoctonia limb rot. Notes 1, 2.
EXCALIA	2-4 fl oz	40	NR	Do not apply <30 days after planting. Do not apply within 50 ft of any lake, pond, river, stream or wetland; see label. Ground application in min. 10 GPA. Max. 4 applications/year provided max. of 8 fl oz/A/year is not exceeded. 14- to 28-day retreatment interval. Leaf spot control requires tank mix; see label. Do not apply by air.
FONTELIS	16-24 fl oz	14	–	Begin applications prior to disease development and continue on 14-21 day schedule. Maximum 3 sequential applications before switching to a different mode of action. Maximum 72 fl oz/A/year. Not for use in CA.
HEADLINE SC	6-15 fl oz	14	NO	Use 9-15 fl oz/A for rots, blights, and white mold. Begin application prior to disease development and continue on a 14-21 day interval. Use a 14-28 day interval for rhizoctonia and sclerotium. Notes 1, 2, 3.
KOCIDE 3000	0.7-1.5 lb	–	–	Apply at 10-14 day intervals in enough water for good coverage. Reduce spray intervals to 7 days during humid weather use higher rates when conditions favor disease. Notes 1, 2.
LUCENTO	3-5.5 fl oz	14	NO	Apply by ground, air or sprinkler irrigation. Max. 2 applications at highest rate (total of 11 fl oz/A/year) or 3 applications at lowest rate (total 9 fl oz/A/year). Max. 11 fl oz/A/year. 14-day min. application interval. Do not make >2 sequential applications before alternating to a fungicide different from FRAC group 7 and 3.
MANZATE MAX	0.8-1.6 qt	14	NO	Apply on 7-14 day intervals. Notes 1, 2.
MIRAVIS	3.4 fl oz	14	NR	Begin applications prior to disease development and continue on 21- to 28-day schedule. Max. 3 sequential applications before switching to a different mode of action, and ≤4 applications at max. rate per year. Max. 13.6 fl oz/A/year.
MONCUT 70DF	0.36-2.86 lb	40	NO	See label for rate and 1, 2, or 3 application programs. Notes 1, 2.
OMEGA 500F	1-1.5 pt	30	NO	Make up to 3 applications per season beginning at 1st occurrence or advisory. Maximum of 4 pt/A/ season. Note 2.
ONSET 3.6L	7.2 fl oz	14	NO	Apply as a preventative spray at 14 day intervals. Add 12 oz/A of chlorothalonil (Bravo) for leaf spot resistance management. NIS should be added for foliar diseases. Note 1.
PENNCOZEB 75DF	1-2 lb	14	NO	Apply 1.5 lb/A with 0.35 lb a.i./A Topsin M WSB for web blotch rust, leaf spot, and limb rot. Notes 1, 2.
PREVISTO	0.75-2 qt	0	NR	Spray 35-40 days after planting or when disease symptoms appear. Repeat at 10-14 day intervals. Use higher rates when conditions favor disease development.
PRAIZ	SEE BRAVO			

See notes and footnotes at end of table

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				FOLIAR *(continued)*
PRIAXOR	4-8 fl oz	14	NO	Use 8 fl oz/A for Rhizoctonia, peg rot, pod rot, southern stem rot, southern blight, white mold, sclerotinia blight. For control of early and late leaf spot, pepper spot, rust, and web blotch, apply prior to disease development and continue on 14- to 21-day interval. For control of Rhizoctonia and Sclerotium, apply prior to disease development and continue on 14-28 day interval. Use higher rate or shorter spray interval when disease pressure is high. Mixing with oil, MSO, COC, or OS may cause crop injury. May feed peanut meal.
PROPULSE	13.6 fl oz	14	NO	Apply at 14-day intervals beginning 30-40 days after planting. Apply fungicides with different modes of action prior to or following applications of Propulse. Use chemigation or overhead irrigation to move applications into soil. Max. 2 applications/A/year. Max. 34.2 fl oz/A/year. Also provides control of nematodes. If applying for nematode control in addition to disease control, apply as foliar 45-60 days after planting and then water in with a minimum of 0.10" of irrigation or rainfall.
PROVOST SILVER	11-13 fl oz	14	NO	Apply in preventive spary schedule using a 14-day interval. Max. 52 fl oz/A/season foliar and soil applications combined. See label for important resistance management information and for application restrictions in the vicinity of aquatic areas. May be applied by ground, air or sprinkler irrigation.
PROVYSOL	2.5-7 fl oz	14	14	Max. 7 fl oz/A/application. Max. 3 applications/year at 7 fl oz/A, or max. 8 applications/year at 2.5 fl oz/A. Max. 21 fl oz/A/year. Early/Late leaf spot: 14- to 21-day min. application interval. Rhizoctonia/ Sclerotium rot: 14- to 28 day min. application interval.
QUASH	1.75-4 oz	14	NO	Use 1.75-2.5 oz for leaf spot and rust, and 2.5-4 oz for sclerotinia blight and stem rot. Maximum of 4 applications. Rotate with non-group 3 fungicide. Notes 1, 2.
REVYTEK	8-15 fl oz	14	NO	Max. 15 fl oz/A/application. Max. 3 applications/year. Max. 45 fl oz/A/year. Early/Late leaf spot: 14- to 21-day min. application interval. Rhizoctonia/Sclerotium rot: 14- to 28 day min. application interval. Do not graze or harvest for forage use.
ROVRAL 4F	2 pt	10	NO	Apply when conditions become favorable for disease development. Minimum 40 GPA. Up to 2 applications at 14-21 day intervals. Note 2.
SERENADE ASO	2-6 qt	–	–	Bacillus subtilis is a biological fungicide. Begin application when environmental conditions are conducive to disease development. Repeat on 14-day interval or as needed. For improved Leaf Spot diseases control, tank-mix with appropriately-registered copper-based fungicides.
TETRABAN	6-24.5 fl oz	14	–	Foliar applications by ground, air or irrigation 60 and 90 days after planting for control during 10- to 14-day period after application. See label for foliar application rates to control soilborne vs. foliar diseases.
TOPAZ/TILT	2.5-4 fl oz	14	–	Late leaf spot: 4 fl oz/A at 10-14 day intervals. Early leaf spot: 2.5-4 fl oz/A at 10-14 day intervals. Rust: 4 fl oz/A at 10-14 day intervals. Southern stem rot: 4 fl oz/A 45 days after planting and repeat on 14 day interval or 8 fl oz/A with 2 applications, the first at pegging (app. 60 days after planting) or at the first appearance of disease and the second application 3-4 weeks later. Maximum of 16 fl oz/year. Do not feed hay to livestock if high rate (8 fl oz/A) used. Notes 1, 2.
TOPGUARD	7-14 fl oz	7	–	Apply on a preventative spray schedule. For soil diseases rainfall or irrigation will optimize activity.
TOPGUARD EQ	5-8 fl oz	14	–	Apply on preventative schedule. Higher rates followed by irrigation will optimize control of soil-borne diseases.
TOPSIN 4.5FL/T-METHYL 4.5 F or TOPSIN M WSB/T-METHYL 70 WSB	10 fl oz or 0.5 lb	14	–	Use only in combination with other fungicides such as Penncozeb 75DF. Begin application when disease first appears and repeat at 7- to 14-day intervals, using shorter intervals under severe disease pressure. Notes 1, 2.
ULTRA FLOURISH	0.5-2 pt	–	–	For pythium root rot seedling disease: 0.5 pt/A/ in-furrow in 7"" band over row at planting so that spray mixes with soil covering the seed. For pod rot: 1-2 pt/A at early pod set as a soil spray or at pegging through sprinkler irrigation; see label.
VELTYMA	7-13.5 fl oz	14	NO	Max. 13.5 fl oz/A/application. Max. 3 applications/year at 1.35 fl oz/A, or 5 applications/year at 7 fl oz/A. Max. 40.5 fl oz/A/year. Early/Late leaf spot: 14- to 21-day min. application interval. Rhizoctonia/ Sclerotium rot: 14- to 28 day min. application interval. Do not graze or harvest for forage use. See label for additive and adjuvant recommendations.

PHI – preharvest interval days.
G/F – grazing and feeding interval days
NO – do not graze or feed.

NOTE 1: May be applied by air.
NOTE 2: May be applied by chemigation.
NOTE 3: NIS at 0.25% v/v may improve performance.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer one requirements,application setback requirements, and/or other restrictions. See the label and the RUP page in theTechnical Information section for more information on use restrictions.

POTATO HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION [A]	GRASSES												
			Barnyardgrass	Crabgrass	Fall Panicum	Foxtail, gi/gr	Foxtail, yellow	Quackgrass	Sandbur	Shattercane/Sorghum	Volunteer Barley	Volunteer Wheat	Wild Oat	Witchgrass	Yellow Nutsedge
PREPLANT															
AIM EC /SHARK EW *(carfentrazone)*	F/E	14	P	P	P	N	N	U	U	U	U	U	U	U	P
CHARGER MAX/DUAL II MAGNUM *(s-metolachlor)*	E	15	**E**	**E**	**E**	**E**	**E**	P	P/F	P	P	P	P	**E**	**G**
EPTAM 7E/EPTAM 20-G *(EPTC)*	G	15	**E**	**E**	**E**	**E**	**E**	**E**	F	**G**	**G**	**G**	**G**	**E**	**G**
EPTAM 7E + ***TRUST***/TREFLAN HFP or PROWL H2O *(EPTC + trifluralin* or *pendimethalin)*	G	15,3	**E**	**E**	**E**	**E**	**E**	**E**	F	**E**	**G**	**G**	**G**	**E**	**G**
VIDA *(pyraflufen)*	F/E	14	P	P	P	N	N	U	U	U	U	U	U	U	P
PREEMERGENCE															
ANTHEM FLEX *(Pyroxasulfone + Carfentrazone-Ethyl)*	F/**E**	14,15	**G/E**	**G/E**	**G/E**	**E**	**G/E**	P	F/	P/F	P	P	F/**E**	N	P/F
BOUNDARY 6.5EC/***PRESIDUAL*** *(s-metolachlor + metribuzin)*	G	15,5	**G/E**	**E**	**E**	**E**	**E**	P	F	P/F	P	P	P	**E**	F
CHARGER BASIC/DUAL MAGNUM/***CHARGER MAX***/DUAL II MAGNUM/ EVERPREX *(s-metolachlor)*	G	15	**E**	**E**	**E**	**E**	**E**	P	P/F	P	P	P	P	**E**	F/**G**
CHATEAU SW + ***DIMETRIC EXT*** *(flumioxazin + metribuzin)*	G	14,5	**E**	P/F	**E**	**G**	**G**	P	P/F	P	P	P	F	**G**	P
DIMETRIC EXT/***DIMETRIC LIQUID*** *(metribuzin)*	G	5	**E**	**E**	**E**	**E**	**E**	P	F	P	P	P	F	**E**	P
FRAMEWORK 3.3 EC/PROWL H2O *(pendimethalin)*	E	3	**E**	**E**	**E**	**E**	**E**	**E**	P	**E**	P/F	P/F	F	**E**	P
LOROX DF/LINEX 4L *(linuron)*	G	5	F	F	F	F	F	P	P	P	P	P	P	F	P
MATRIX SG *(rimsulfuron)*	E	2	**G**	**G***	F/**G**	**G**	F/**G**	P	P	**G**	F	F	F	F/**G**	F
OUTLOOK *(dimethenamid-p)*	G	15	**E**	**E**	**E**	**E**	**E**	P	P/F	P	P	P	P	**E**	**G**
REFLEX/***AGENT 1.88*** *(fomesafen)*	G	14	P/F	F	P/F	P	P	N	N	N	N	N	N	P	P
TRUST/TREFLAN HFP *(trifluralin)*	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	P/F	P/F	F	**E**	P
POSTEMERGENCE															
CHARGER BASIC/DUAL MAGNUM *(s-metolachlor)*	G	15	**G**	**G**	**G**	**G**	**G**	P	P	P	P	P	P	**G**	**E**
DIMETRIC EXT *(metribuzin)*	E	5	P/F	P/F	P	P/F	P/F	P	P/F	P	P	P	P	P	P
EPTAM 7E/EPTAM 20-G *(EPTC)*	E	15	**G**	**G**	**G**	**G**	**G**	P	F	**G**	F	F	F	**G**	**G**
MATRIX SG *(rimsulfuron)*	E	2	**E**	**G**	F/**G**	**E**	**G/E**	F	F/**G**	**G/E**	**G**	**G**	**G**	F/**G**	P
POAST *(sethoxydim)*	G	1	**E**	**E**	**E**	**E**	**E**	F/**G**	**E**	**E**	**E**	**E**	**G/E**	**E**	P
SECTION THREE/***CLEANSE*** **(***clethodim)*	E	1	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	N
VIDA *(pyraflufen)*	F/E	14	P	P	P	N	N	U	U	U	U	U	U	U	P
HARVEST AID															
AIM EC/SHARK EW *(carfentrazone)*	F/E	14	P	P	P	N	N	U	U	U	U	U	U	U	P
REGLONE *(sodium chorate* or *diquat)*	P	22	**G**	**G**	**G**	**G**	**G**	P	**G**	U	**G**	**G**	**G**	**G**	N
RELY 280/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH *(glufosinate)*	P	10	F	**G**	**G**	**E**	**G**	F	F	**G**	**G**	**G**	**G**	**G**	P
VIDA *(pyraflufen)*	F/G	14	P	P	P	N	N	U	U	U	U	U	U	U	P

[1] See label of pigweed species controlled.
[A] Site of Action described in Technical Information section.
* On large crabgrass, P - On smooth crabgrass.

BROADLEAVES																		
Bindweed, field	Canada Thistle	Cocklebur	Jimsonweed	Kochia, trizaine rest	Kochia	Lambsquarters, common	Morningglory, annual	Mustard, wild	Nightshade, black	Nightshade, hairy	Pigweed1	Purslane	Ragweed, common	Russian Thistle	Smartweed	Sunflower	Velvetleaf	Wild Buckwheat	
PREPLANT																			
U	U	**G**	**G/E**	**E**	**E**	**E**	**G**	**F/G**	**G**	P/F	**G/E**	**G/E**	F	**E**	**G/E**	**G/E**	**G/E**	U	AIM EC/SHARK EW
P	P	P	P	P	P	F	P	P	**G**	F	**G**	**F/G**	P	P	P	P	P	P	***CHARGER MAX***/DUAL II MAGNUM
P	P	P	P	F	F	F	**F/G**	P	**F/G**	**F/G**	F	**G**	F	P	P	P	P/F	P	EPTAM 7E/EPTAM 20-G
P	P	P	P	**G**	**G**	**G**	**F/G**	P	**F/G**	**F/G**	**G**	**G**	F	**F/G**	P	P	P/F	P	EPTAM 7E + ***TRUST***/TREFLAN HFP or PROWL H2O
U	U	**G**	**G/E**	**E**	**E**	**E**	**G**	**F/G**	**G**	P/F	**G/E**	**G/E**	F	**E**	**G/E**	**G/E**	**G/E**	U	VIDA
PREEMERGENCE																			
N	P	P/F	**P/G**	**F/G**	**F/G**	**G/G**	P/F	P	**F/G**	**F/E**	**G/EN**	P/FP	**F/E**	P	**F/E**	P	**F/G**	**F/E**	ANTHEM FLEX
P	P	F	F	**G**	P	**E**	P	F	**G**	F	**E**	**F/G**	**G**	**F/G**	**G**	F	**F/G**	F	BOUNDARY 6.5EC/***PRESIDUAL***
P	P	P	P	P	P	F	P	P	**G**	F	**G**	**F/G**	P	P	P	P	P	P	***CHARGER BASIC***/DUAL MAGNUM/***CHARGER MAX***/ DUAL II MAGNUM/EVERPREX
F	P	**G**	**G**	**E**	**E**	**E**	F	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G**	**G**	**G**	CHATEAU SW + ***DIMETRIC EXT***
P	P	F	**G**	**G**	P	**E**	P	**G/E**	**G**	F	**G**	**G**	**E**	**G**	**G**	F	**G**	**G**	***DIMETRIC EXT***/***DIMETRIC LIQUID***
P	P	P	P	**G**	**G**	**G**	P	P	P	P	**G**	**F/G**	P	**F/G**	P	P	P	P	***FRAMEWORK 3.3 EC***/PROWL H2O
P	P	P	**G**	F	F	**E**	P	**E**	F	F	**E**	**G**	**E**	F	**G**	P	F	**G**	LOROX DF/LINEX 4L
P	P	F	P	**G**	**G**	**F/G**	P	**G**	P	**F/G**	**E**	**E**	F	P	P	P	F	P	MATRIX SG
P	P	P	P	P	P	**G**	P	P	**G**	**G**	**E**	**G**	P	P	P	P	P	P	OUTLOOK
P	N	P	F	F	P/F	F	F	F	**G**	F	**E**	F	**G**	P	**F/G**	F	P	P	REFLEX/***AGENT 1.88***
P	P	P	P	**G**	**G**	**G**	P	P	P	P	**G**	**G**	P	**F/G**	P	P	P	P	***TRUST***/TREFLAN HFP
POSTEMERGENCE																			
P	P	P	P	P	P	F	P	P	**G**	F	**G**	P/F	P	P	P	P	P	P	***CHARGER BASIC***/DUAL MAGNUM
F	P	**E**	**G**	**G**	P	**G/E**	P	**G/E**	P	P	**E**	P/F	**E**	**E**	**E**	**E**	**G**	**G**	***DIMETRIC EXT***
P	P	P	P	F	F	F	**F/G**	P	F	F	F	U	F	P	P	P	P	P	EPTAM 7E/EPTAM 20-G
F	**F/G**	F	P	**G**	**G**	F	P/F	**E**	P	**F/G**	**E**	**G**	**F/G**	P	**F/G**	P	**G**	P/F	MATRIX SG
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	POAST
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	***SECTION THREE***/***CLEANSE***
U	U	**G**	**G/E**	**E**	**E**	**E**	**G**	**F/G**	**G**	P/F	**G/E**	**G/E**	F	**E**	**G/E**	**G/E**	**G/E**	U	VIDA
HARVEST AID																			
U	U	**G**	**G/E**	**E**	**E**	**E**	**G**	**F/G**	**G**	P/F	**G/E**	**G/E**	F	**E**	**G/E**	**G/E**	**G/E**	U	AIM EC/SHARK EW
P	P	F	U	**F/G**	**F/G**	**G**	U	**E**	F	F	**F/G**	U	**G**	**G**	**F/G**	F	**G**	F	REGLONE
F	F	**E**	**E**	**G**	**G**	**G/E**	**G/E**	**E**	**E**	**E**	**E**	U	**E**	**G**	**E**	**E**	**G**	**E**	RELY 280/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH
U	U	**G**	**G/E**	U	U	**E**	**G**	U	U	U	**G/E**	**G/E**	F	U	**G/E**	U	**G/E**	U	VIDA

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

POTATO HERBICIDE APPL. TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Potato Harvest
AIM EC/SHARK EW	PP,PRE,PH	PRE before crop emergence and up to <4" weeds.	20	5-10	6-8	NR	NR	7
ANTHEM FLEX	PRE	PRE after planting through after drag-off or hilling	10 - 40	3		NL	NL	NR
BOUNDARY 6.5EC/ ***PRESIDUAL***	PRE POST	PRE to weeds, before or after potato emergence Center pivot application, after drag-off.	10	2		NR	NR	60
CHARGER BASIC/DUAL MAGNUM	PP PRE POST	May incorporate 3". PRE after planting through after drag-off or hilling. POST after hilling/lay-by. PHI 60 days PRE, 40 days POST.	10	2		NR	NR	40,60
CHARGER MAX/DUAL II MAGNUM/EVERPREX	PP PRE	May incorporate 3". PRE after planting through after drag-off or hilling.	10	2		NR	NR	60
CHEETAH		SEE RELY 280						
CLEANSE		SEE SECTION THREE						
CORNERSTONE PLUS/ ***CORNERSTONE 5 PLUS***	PP,PRE	Apply PP or PRE prior to crop emergence to emerged weeds.	3-40	3-15	S	56	56	56
CREDIT EDGE		SEE ROUNDUP						
DIMETRIC EXT/ ***DIMETRIC LIQUID***	PRE POST	 Early POST before weeds are 1".	20	5	6-8	NR	NR	60
EPTAM 7E	PP,PRE,POST	Apply and and incorporate just before planting, after drag-off or lay-by.	10-50	NL		NR	NR	45
EPTAM 20-G	PP,PRE,POST	Apply and and incorporate just before planting, after drag-off or lay-by.	NA	NL		NR	NR	45
EVERPREX		SEE CHARGER MAX						
FRAMEWORK 3.3 EC/ PROWL H20	PRE	PRE before weed and crop emergence or after drag-off. May incorporate after planting or before, at, or after drag-off. POST from crop emergence to 6" tall.	10	5		NR	NR	NR
GRAMOXONE SL 3.0 ‡	PP,PRE	Apply to emerged weeds up to ground cracking before potatoes emerge.	10	5	0.5	NR	NR	NR
HONCHO K6		SEE ROUNDUP						
LOROX DF/LINEX 4L	PRE	Apply after planting and before potatoes emerge. East of Rocky Mountains.	15	NL		NR	NR	NR
MATRIX SG	PRE POST	Apply after hilling, drag-off, or reservoir tillage but before potatoes and weeds emerge. POST to small actively growing weeds. Aerial GPA higher in some states.	10	5	4	NR	NR	30
OUTLOOK	PRE	Apply after planting or drag-off.	5	2		NR	NR	40
PRESIDUAL		SEE BOUNDARY 6.5EC						
PROWL H20		SEE FRAMEWORK 3.3 EC						
POAST	POST	Apply to actively growing grasses.	5-20	5	1	NO	NO	30
REFLEX/***AGENT 1.88***	PRE	Apply after planting and prior to crop emergence.	10	5-10	1	NR	NR	70
REGLONE/DIQUAT 2L	PH	Preharvest desiccation.	20	5	0.5	NO	NO	7
RELY 280/***TOTAL***/ ***TOTAL 2.3***/***TOTAL SL***/ CHEETAH	PH	Preharvest desiccation.	20-100	10	4	NL	NL	9
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	PP,PRE	Apply PP or PRE prior to crop emergence to emerged weeds.	3-40	3-15	S	56	56	56
SECTION THREE/ ***CLEANSE***	POST	Apply to actively growing grasses.	10	3	1	NR	NR	30
SELECT MAX	POST	Apply to actively growing grasses.	10-40	3	1	NR	NR	30
SEQUENCE	PRE	Apply before, during or after planting but before crop emergence.	10-40	3-15		NR	NR	60
SONALAN HFP	PRE	Apply after planting, prior to crop emergence. Requires incorporation. Certain western states only.	5	NL		NO	NO	NR
SONIC BOOM	PRE	Apply pre-emergence after planting and drag-off, but before crop emergence.	10	5		NL	NL	NR
TOTAL/***TOTAL 2.3***/ ***TOTAL SL***		SEE RELY 280						
TREFLAN TR-10	PP	Apply and incorporate after planting, before emergence immediately following drag-off, or after potatoes have fully emerged.	5-40	5-10		NR	NR	NR

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Potato Harvest
TRUST/TREFLAN HFP or 10G	PP	Apply and incorporate after planting, before emergence immediately following drag-off, or after potatoes have fully emerged.	5-40	5-10		NR	NR	NR
TUSCANY SC	POST	To soil-covered potatoes after hilling for preemergence suppression of weeds; see label for geographic restrictions.	10	7	1	NR	NR	NR
VIDA	PP,PRE PH	Minimum of 30 days between applications. Foliar spray in early stage of crop senescence.	10-20 20-50	5-10 5	1	NL	NL	7
ZIDUA SC	PRE	Single surface application as broadcast spray to soil surface after planting or drag off but before emergence; if drag off is practiced, do not apply until after complete and min. 2" soil covers vegetative portion of plants, or may be applied after hilling but prior to potato or weed emergence (with 2" soil covering seed piece or sprouted plant).	5	3		0	0	0

[1] Application Timing and Interval
[2] Includes labeled minimum or range.
PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
POST - Postemergence
PH - Preharvest aid, desiccation
NA - Not applicable
NR - No restrictions
NO - Not permitted
NL - No related information on label
S - Heavy rainfall soon after application may require retreatment.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POTATO HERBICIDE APPLICATION RATES

PREPLANT OR PREEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AGENT 1.88	SEE REFLEX			
AIM EC/SHARK EW	**All soil textures:** 0.5-1 fl oz + 0.5 gal HSOC-MSO or HSOC-COC or 2 pt NIS/100 gal*			PP or PRE. Apply before crop emergence and up to <4" weeds. Add Aim EC to tank before other herbicides.
ANTHEM FLEX	Premergence 3.5 fl oz/A	Premergence 3.5 - 5.0 fl oz/A	Premergence 4.5 - 6.0 Fl oz/A	DO NOT apply more than 9.12 fl oz/A of ANTHEM FLEX herbicide (containing 0.266 lb ai/A of pyroxasulfone and 0.019 lb ai/A of carfentrazone-ethyl) per year. DO NOT apply more than three applications of ANTHEM FLEX herbicide to potatoes per year when using at reduced rates. Re-Treatment Interval (RTI): 14 days. DO NOT apply ANTHEM FLEX herbicide prior to planting potatoes. DO NOT apply to soils with less than 1% organic matter.
BOUNDARY 6.5EC/ ***PRESIDUAL***	*0.5-3% O.M.*			Apply to russet and white skinned that are not early maturity. See label for potential injury concerns for PRE applications to Atlantic, Bellchip, Centennial, Chipbelle, Shepody or Superior. Do not apply after June 30 in ID, OR, or WA. Do not apply >1.5 pt on sand. Do not apply as PPI application.
	1.5-2 pt	2.4-2.75 pt	2.4-2.75 pt	
	> 3% O.M.			
	2-2.4 pt	2.75-2.9 pt	2.75-2.9 pt	
CHARGER BASIC/ DUAL MAGNUM	**All soil textures:** 1-2 pt: PRE or PPI 1.67 pt: after hilling (lay-by)			Do not apply more than 3.6 pt/A per crop season. Do not apply as a PPI and PRE application. Up to 2.6 pt/A may be used PRE on soils with 6-20% O.M. PHI 60 days for PPI or PRE and 40 days for POST.
CHARGER MAX/ DUAL II MAGNUM/EVERPREX	**All soil textures:** 1-2 pt			PPI or PRE. Incorporate into top 3" before planting. Use lower rates on light soils (coarse soils low in O.M.). Apply after planting as preemerge, delayed-preemerge, after drag-off or hilling treatments, but before weeds emerge. May be tank mixed with Lorox DF/Linex 4L PRE. Use up to 4 pt/A in soils with >6% O.M. Do not use on muck or peat soils. Cool, wet soil conditions may delay maturity and/or reduce yield of Superior and other early maturing varieties. Do not use on sweet potatoes or yams. Do not apply both as a PRE and an incorporated treatment.
CHARGER MAX/DUAL II MAGNUM/EVERPREX/ ***CHARGER BASIC***/ DUAL MAGNUM + ***DIMETRIC EXT***	1-1.33 pt + 0.33-0.66 lb	1.33-2 pt + 0.33-1.33 lb	1.33-2 pt + 0.33-1.33 lb	Apply PRE until after last hilling. Refer to Dimetric EXT label for restrictions and specific rate information.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal, include WC+NIS as needed*			PRE. Apply prior to the emergence of potatoes for control of emerged weeds. See label for rates required for perennial weeds.
CREDIT XTREME	SEE ROUNDUP			
DIMETRIC EXT or ***DIMETRIC LIQUID***	0.33- 0.66 lb or 0.66-1.33 pt	0.33- 1.33 lb or 0.66-2.66 pt	0.33- 1.33 lb or 0.66-2.66 pt	PRE. Apply after planting before crop emergence or drag-off. Do not incorporate into soil. See label for postemergence and split applications. See label for specific rates, precautions, and restrictions including sensitive varieties.
EPTAM 7E or EPTAM 20-G	**All soil textures:** 3.5-9 pt or 15-30 lb			PPI or PRE incorporated. Apply and incorporate just before planting or apply and incorporate with drag after planting. See label for incorporation directions and restrictions. See label for soil type rate recommendations. Fall in MN and ND, see label.
EPTAM 7E + ***DIMETRIC EXT***	3.5 pt + 0.33-0.67 lb	4.5 pt + 0.33-0.67 lb	4.5 pt + 0.33-0.67 lb	PPI in ID only. Incorporate immediately in top 2-3 in. of soil. May be applied through sprinkler system after planting. Observe cautions and limitations on Eptam 7E and Dimetric EXT labels. Superior is sensitive to Eptam. Many thin skinned varieties (Atlantic, Shepody) are sensitive to Dimetric EXT.
FRAMEWORK 3.3 EC or PROWL H2O	*< 3% O.M.*			PRE. Apply after planting up to ground cracking, or after drag-off, but before potatoes and weeds emerge. Incorporate within 7 days if no irrigation or adequate rainfall. Do not use on peat or muck soils. Certain varieties, like White Rose, may be sensitive.
	1.8 pt or 1.5 pt	2.4 pt or 2 pt	3.6 pt or 3 pt	
	>3% O.M.			
	1.8 pt or 1.5 pt	3.6 pt or 3 pt	3.6 pt or 3 pt	
FRAMEWORK 3.3 EC or PROWL H2O + EPTAM 7E	**All soil textures:** 1.8-3.6 pt or 1.5-3 pt + 3.5 pt			PPI. Apply and immediately incorporate after planting or following drag-off, but before potatoes and weeds emerge. Do not use on peat or muck soil.

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
FRAMEWORK 3.3 EC or PROWL H2O + ***DIMETRIC EXT***	**All soil textures:** 1.8-3.6 pt or 1.5-3 pt + 0.33-0.67 lb			PRE. Apply after planting or drag-off before potatoes and weeds emerge. Do not incorporate. Use lower rate on sandy soils. Do not use on peat or muck soils.
FRAMEWORK 3.3 EC or PROWL H2O + MATRIX SG	**All soil textures:** 1.8-3.6 pt or 1.5-3 pt + 1-1.5 oz			PRE. Check label for tank mixes.
GRAMOXONE SL 3.0 ‡	**All soil textures:** 0.7-1.3 pt + 2 pt NIS/100 gal See Comments/Restrictions for PP volunteer barley control			PRE. Apply after weeds have emerged but before crop emerges. Provides no residual weed control. Use a minimum of 10 GPA by ground. PP volunteer barley control in CA, WA, OR, ID only; used alone: 0.5-2 pt/A or 0.3-0.7 pt/A.
HONCHO K6	SEE ROUNDUP			
LOROX DF or LINEX 4L	**All soil textures:** **Light Soil:** 1.5-2.5 lb or 1.5-2.5 pt **Heavy Soil:** 2.5-3 lb or 2.5-3 pt			PRE. Rate depends on texture and organic matter. Make a single application after planting but before crop emerges. Plant seed at least 2″ deep. Do not spray over top of emerged potatoes. Do not use west of Rocky Mountains.
MATRIX SG	**All soil textures:** 1-1.5 oz			PRE. Apply after hilling, drag-off, or reservoir tillage (dam/dike operation) but before potatoes and weeds emerge. Provides soil residual and postemergent weed control. May be tank mixed with Eptam 7E, Prowl H2O, Dual products or Dimetric EXT. Moisture is required to activate Matrix. Use an adjuvant if weeds are present.
MATRIX SG + ***DIMETRIC EXT***	**All soil textures:** 1-1.5 oz + 0.33-1.33 lb			PRE. Apply after planting or after drag-off but before crop and weeds emerge. Provides soil residual and postemergent weed control. Adding Dimetric gives better control of kochia, pigweed, Russian thistle and common lambsquarters. Refer to Dimetric EXT label for restrictions.
METRICLUDE EXT	SEE DIMETRIC EXT			
OUTLOOK	12-18 fl oz	14-21 fl oz	14-21 fl oz	See label for rates with specific O.M. content. Apply PRE following planting or drag-off.
PRESIDUAL	SEE BOUNDARY 6.5EC			
PROWL H2O	SEE FRAMEWORK 3.3 EC			
REFLEX/***AGENT 1.88***	**All soil textures:** 1 pt			PRE. Apply after planting but before crop emergence. Crop tolerance varies by variety. May be tank-mixed with other herbicides used at this time. 24c for Reflex application in potatoes grown under overhead irrigation only: OR in certain counties (exp. 12/2028).
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*			PRE. Apply prior to the emergence of potatoes for control of emerged weeds. See label for rates required for perennial weeds which may be higher. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
SEQUENCE	**All soil textures:** 2.5-4 pt			PRE. Contact with potato foliage will result in crop injury. Weed contol may be improved by adding 2.5-4 lb/A Class Act.
SONALAN HFP	1.33-2 pt	2-2.67 pt	2.67 pt	PRE. Apply after planting and prior to crop emergence. Incorporation required. Only in AZ, CO, NE (west of Rt 281), ID, KS (west of Rt 281), MT, ND (west of Rt 281), NV, NM, OK (west of Rt 281/283), OR, SD (west of Rt 281), TX (west of and northwest of Rt 377), UT, WA, and WY.
SONIC BOOM	*<1% O.M.*			Apply by air or ground as a pre-emergence treatment following planting and after drag-off, before potato emergence. Crop tolerance varies by variety. Within the ranges to the left, use higher rates for soils of pH less than 7.0 and lower rates for pH greater than 7.0. Include a labeled tank mix product for additional control of emerged weeds. Do not use on soils classified as sand, with less than 1% O.M. Do not apply more than 29 fl oz/A./ twelve-month period.
	11-16 fl oz	11-16 fl oz	13-19 fl oz	
	1.5 - 3% O.M.			
	11-16 fl oz	13-22 fl oz	16-22 fl oz	
	>3% O.M.			
	16-22 fl oz	19-24 fl oz	22-29 fl oz	
TRUST/TREFLAN HFP or TREFLAN TR-10	1 pt or 5 lb	1.25-1.5 pt or 6.25-7.5 lb	1.5-2 pt or 7.5-10 lb	PRE. Apply after planting but before emergence, immediately following drag-off, or after full emergence. Incorporate after application taking care not to damage seed pieces or sprouts. Do not use in ME. See rate and O.M. comments on the label.
TRUST/TREFLAN HFP + EPTAM 7E	**All soil textures:** 1 pt + 3.5-4.5 pt			PRE. Rates are for KS, MN, NE, ND, OK, SD, and TX. For ID, OR, and WA, use 0.75 pt/A Trust + 3.5 pt/A Eptam 7E. Must be incorporated immediately. Improved wild oat control than Trust alone. See label for details.
VIDA	**All soil textures:** 0.5-2 fl oz 0.5 gal HSOC-MSO or HSOC-COC or 2 pt NIS/100 gal*			Do not apply >2 fl oz/A/year for all PP or after planting but before crop emergence applications.

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
ZIDUA SC	2.5 fl oz	2.5-3.25 fl oz	2.5-3.25 fl oz	Coarse soils: max. 2.5 fl oz/A/in a single yearly application. All other soils: max. 3.25 fl oz/A in a single yearly application. Do not apply prior to planting seed pieces. Do not apply to emerging/emerged potato.

[1] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay. O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.
***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
BOUNDARY 6.5EC/ ***PRESIDUAL***	**Coarse soils:** 1.5 pt **Medium or Fine soils:** 1.5-2.2 pt	In center pivot irrigation apply to russet and white skinned that are not early maturity. Avoid applications to Atlantic, Bellchip, Centennial, Chipbelle, Shepody or Superior. Do not apply after June 30 in ID, OR, or WA.
CHARGER BASIC/ DUAL MAGNUM	1.67 pt	Apply POST to potatoes through or after hilling. May apply following a previous application. Do not exceed 3.6 pt/A in a single crop season. PHI 40 days.
CLEANSE	6-16 fl oz + 1 pt HSOC-COC*	AMS may be added. PHI 30 days.
DIMETRIC EXT or ***DIMETRIC LIQUID***	0.33-0.67 lb or 0.66-1.33 pt	Do not use POST on early maturing, smooth-skinned white or red-skinned varieties or Atlantic, Shepody, Chip Bell, Bellchip or Centennial varieties. Do not use more than 1.33 lb/A in a single season. Do not plant onions, lettuce, cole crops, or cucurbits the growing season following application of Dimetric EXT. May be applied through sprinkler irrigation systems. In ID, OR and WA only; 2 postemergence applications of Dimetric EXT at 0.33-0.67 lb/A or Dimetric Liquid at 0.66-1.33 pt/A may be made if no PRE was made. See label for soil texture restrictions and more details. PHI 60 days.
EPTAM 7E	3.5-4.5 pt	Use 3.5 pt rate only in PNW. Apply as a directed spray and incorporate to clean cultivated soil after potatoes.
EPTAM 7E + ***DIMETRIC EXT***	3.5-4.5 pt + 0.33-0.67 lb	Pacific Northwest only. Apply through irrigation equipment until potatoes are 4-6 in. tall. See label for details.
FRAMEWORK 3.3 EC or PROWL H2O	1.8-3.6 pt or 1.5-3 pt	See PRE rates. Certain varieties, like White Rose, may be sensitive. Apply when potatoes are less than 6″ tall and weeds are less than 1″ tall. May be tank mixed with Eptam 7E.
MATRIX SG	1-1.5 oz + 1-2 pt NIS/100 gal	Apply to small actively growing weeds after crop emergence. Provides soil residual and postemergent weed control. May be tank mixed with Eptam 7E. Moisture is required for soil activation. See label for precautions on potatoes grown for seed. May be chemigated.
MATRIX SG + ***DIMETRIC EXT***	1-1.5 oz + 0.25-0.67 lb + 1 pt NIS/100 gal	Adding Dimetric EXT provides a broader spectrum of weed control for Russian thistle, common lambsquarters and jimsonweed. Provides soil residual and postemergent weed control. PHI 60 days. Follow Dimetric EXT variety restrictions.
POAST	*Midwest* 16-24 fl oz: annual grasses 8 fl oz: wild proso millet 16-24 fl oz: perennial grasses *Pacific Northwest* 24-32 fl oz: annual grasses 24-40 fl oz: perennial grasses + 1 pt HSOC-COC[1]	Add 1 pt HSOC-COC.* For perennial weeds like quackgrass, see label for split application recommendations. Use 5-20 GPA water with 40-60 psi; 5 GPA (min.) by air. Use flat fan or hollow cone nozzles only. Do not use flood, whirl chamber or controlled drop applicator (CDA) nozzles. Do not apply within 30 days of harvest. May tank mix with Dimetric EXT at 0.25-0.67 lb/A. Midwest only: See label for addition of 28% N for improved control of quackgrass, volunteer cereals, wild oat and other weeds.
PRESIDUAL	SEE BOUNDARY 6.5EC	
SECTION THREE	4-10.67 fl oz	30 day PHI. Maintain a 14 day interval for repeat application. Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS or 8.5-17 lb/100 gallons of AMS.*
SELECT MAX	9-32 fl oz + 1 qt NIS/100 gal	AMS should be added. PHI 30 days. Can be tank mixed with most fungicides, except as indicated on label.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
		PREHARVEST
AIM EC/SHARK EW	3.2-5.8 fl oz + 1 pt HSOC-MSO*	Carfentrazone. Use to desiccate potato plants and as a harvest aid for certain broadleaf weeds. Apply by ground in 20-60 GPA or by air in 5-10 GPA. Where vine growth is dense, a second application may be necessary. 5-7 days recommended between applications. Thorough coverage of the potato plant is essential. PHI7 days. Can be used on all potatoes. Do not exceed 11.6 oz/A/season.
CHEETAH	SEE RELY 280	
REGLONE/DIQUAT 2L	1-2 pt + 1-2 pt NIS/100 gal	Diquat. Use to defoliate plants and facilitate harvest. Apply by ground in 20-100 GPA or 5-10 GPA by air. Where vine growth is dense, a second application may be necessary. Recommend 5 days between applications. Do not apply to drought-stressed potatoes. PHI 7 days.
RELY 280/***TOTAL***/***TOTAL 2.3***/***TOTAL SL***/CHEETAH	21 fl oz	Glufosinate. Use to defoliate plants and facilitate harvest. Thorough coverage is essential. Apply to naturally senescencing potato vines in 10 GPA by air and 20-100 GPA by ground. Do not make more than one application per growing season. Do not apply to potatoes grown for seed stock. PHI 9 days.
TOTAL/TOTAL 2.3/TOTAL SL	SEE RELY 280	
TUSCANY SC	1.5 fl oz	For use only in AZ, CA, CO, DE, FL, HI, ID, MA, MN, MT, NE, NV, NJ, NM, NC, ND, OR, SC, TX, UT, VA, WA, DC, WY. Max. 1.5 fl oz/A/application, max. 4 applications/year. May be applied through chemigation; see label.
VIDA	2-5.5 fl oz + 1 pt HSOC-MSO*	2-5.5 fl oz/A in tank mix with other desiccant; 5.5 fl oz/A alone. Must be tank mixed or applied in sequence with other desiccant products. A repeat application of Vida may be needed under certain climatic conditions for complete desiccation. Can be used on all potatoes. Do not make >2 applications or exceed 11 fl oz/A/year for desiccation alone or desiccation plus PP, PRE uses.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POTATO LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR POTATO	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT																		
			APHID	ARMYWORM	ASTER LEAFHOPPER	BANDED CUCUMBER BEETLE	BEET ARMYWORM	BLISTER BEETLE	BROWN MARMORATED STINK BUG	CABBAGE LOOPER	COLORADO POTATO BEETLE	CUCUMBER BEETLE	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	EUROPEAN CORN BORER	FALL ARMYWORM	FLEA BEETLE	GRASSHOPPER	LEAFHOPPER	LEAFMINER
ABAMEX ‡ or ABBA ULTRA ‡	14	8-12 fl oz or 4-6 fl oz									●										●
ACTARA	14	1.5-3 oz									●							●			
		3 oz	●																		
ADMIRE PRO	7	Soil: 5.7-8.7 fl oz	●		●						●							●		●	
		Seed-piece: 3.5-7 fl oz	●		●						●							●		●	
		Foliar: 1.3 fl oz	●		●						●							●		●	
ADVISE FOUR/ NUPRID 4F MAX	7	Soil: 6.5-10 fl oz Foliar: 1.3 fl oz	●		●						●							●		●	
AGRI-FLEX ‡	14	4.75 fl oz			●						●							●		●	●
AGRI-MEK SC ‡	14	1.75-3.5 fl oz									●										●
AGRI TIN FLOWABLE ‡	21	4-6 fl oz									●										
ARCTIC 3.2 EC ‡	14	4-8 fl oz	●		●		●			●	●		●			●		●		●	
ASANA XL ‡	7	2.9-5.8 fl oz			●															●	
		2.9-9.6 fl oz																			
		5.8-9.6 fl oz	●	●			●S			●	●	●	●			●		●	●		
ASSAIL 30 SG or ASSAIL 70WP	7	1.5-2.5 oz or 0.6-1.1 oz																●			
		1.5-4 oz or 0.6-1.7 oz			●						●	●								●	
		2.5-4 oz or 1-1.7 oz	●													●					
AVAUNT	7	2.5-6 oz								●											
		3-6 oz																			
		3.5-6 oz									●					●					
AVAUNT EVO	7	2.5-6 oz								●											
		3-6 oz									●					●					
		3.5-6 oz									●					●					
BAYTHROID XL ‡	0	0.8-1.6 fl oz											●								
		1.6-2.8 fl oz			●				●*	●	●	●				●		●		●	
		2.8 fl oz	●S																		

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LOOPER	LIRIOZYMA LEAFMINER	NEMATODE	PLANT BUG	POTATO LEAFHOPPER	POTATO TUBERWORM	PSYLLID	SOUTHERN ARMYWORM	SWEET POTATO WHITEFLY	SYMPHYLAN	TARNISHED PLANTBUG	THRIPS	TWO-SPOTTED SPIDER MITE	VEGETABLE WEEVIL	WIREWORM	
		●					●						●			Control may improve with non-ionic adjuvant; see label. Min. 20 GPA by ground, 5 GPA by air. Max. 16 fl oz/A or 8 fl oz/A per application, max. 32 fl oz/A or 16 fl oz/A per year for spider mite or Colorado potato beetle, max. 48 fl oz/A or 24 fl oz/A per year for leafminers. 7-day min. application interval. Do not make >2 sequential applications of this or any other abamectin-containing product.
					●											Max. 6 oz/A/growing season. 7-day min. application interval. Min. 10 GPA by ground, 5 GPA by air. May be applied by sprinkler irrigation; see label,.
					●		●								●S	Soil: Max. 8.7 fl oz/A; in-furrow, subsurface side-dress, narrow band at ground cracking during hilling and covered with ≥3" soil, or narrow band below seed row 7 days or less before planting. Seed-piece: Max. 8.7 fl oz/A; apply with adequate ventilation or with equipment designed to remove spray mist or dust. Foliar: Max. 5.6 fl oz/A. Min. 7-day application interval.
					●		●								●	
					●		●									
					●		●								●S	Soil: Max. 10 fl oz/A/year; in-furrow, subsurface side-dress, narrow band at ground cracking during hilling and covered with ≥3" soil, or narrow band below seed row 7 days before planting. Foliar: Max. 6.4 fl oz/A/year. 7-day min. application interval. Wireworm: Use for suppression in soil applications only.
					●		●					●S	●			Must be mixed with non-ionic adjuvant; see label. Use higher rate in range for severe infestations. Min. 20 GPA by ground, 5 GPA by air. Max. 4.75 fl oz/A/ application. Max. 9.5 fl oz/A/year. 7-day min. application interval. Max. 2 sequential applications of this or other abamectin products.
		●	●S*				●						●			Must be mixed with non-ionic adjuvant; see label. Use higher rate in range for severe infestations. Min. 20 GPA by ground, 5 GPA by air. Max. 3.5 fl oz/A/ application. Max. 10.25 fl oz/A/year. 7-day min. application interval. Max. 2 sequential applications of this or other abamectin products.
																Apply in min. 15 GPA water or by air in 3-10 GPA. Max. 18 fl oz/A/season. Product also controls potato diseases: Early blight, late blight.
				●	●	●	●				●					Max. 8 fl oz/A/application. Max. 32 fl oz/A/season. 10-day min. application interval. Min. 10 GPA by ground, 2 GPA by air.
					●		●				●					Max. 0.35 fl a.i./A/season. Armyworm: Western Yellowstriped. Cucumber Beetle: Adult. Grasshopper/Potato Tuberworm: See label for application timing.
						●										
	●	●		●							●					
																Do not use these foliar applications if preceded by acetamiprid seed treatment. Max. 16 oz/A/calendar year. Max. 4 applications/calendar year. 7-day min. application interval. May be applied by sprinkler irrigation; see label. European Corn Borer: For use as ovicide.
					●											
																Max. 24 oz/A/crop. Max. 96 oz/A/year. Max. 4 applications/A/crop. 5-day min. application interval.
						●										
																Max. 24 oz/A/crop. Max. 72 oz/A/year. Max 4 applications/A/crop. 5-day min. application interval May be applied by sprinkler irrigation; see label. Potato tuberworm: Integrated spray approach is essential; use min. 10 GPA by ground, 5 GPA by air; max. 2 sequential applications before rotating to another insecticide with different MOA.
						●										
					●											Max. 2.8 fl oz/A. 5-day min. application interval. Max 16.8 fl oz/A/season. 2ee several states (exp. date not given) for Brown Marmorated Stink Bug. Vegetable Weevil: Adults.
	●			●		●	●				●			●		

INSECTICIDE	PRE-HARVEST INTERVAL FOR POTATO	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT: APHID	ARMYWORM	ASTER LEAFHOPPER	BANDED CUCUMBER BEETLE	BEET ARMYWORM	BLISTER BEETLE	BROWN MARMORATED STINK BUG	CABBAGE LOOPER	COLORADO POTATO BEETLE	CUCUMBER BEETLE	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	EUROPEAN CORN BORER	FALL ARMYWORM	FLEA BEETLE	GRASSHOPPER	LEAFHOPPER	LEAFMINER
BELAY INSECTICIDE	21	Seed-piece: 0.4-0.6 fl oz/cwt	●		●						●							●		●	
		In-furrow: 9-12 fl oz	●		●						●							●		●	
		In-furrow: 12 fl oz																			
		Foliar: 2-3 fl oz	●								●							●		●	
BELEAF 50 SG	7	2-2.8 oz	●																		
BESIEGE ‡	14	5-8 fl oz			●								●							●	
		6-9 fl oz	●	●		●	●	●	●	●	●	●				●	●	●	●		
		9 fl oz																			●S
BLACKHAWK	7	1.7-3.3 oz									●					●					
		2.25-3.5 oz		●			●			●					●		●				
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	21	Soil: 12.75-25.5 fl oz																●			
		Foliar: 2.8-8.5 fl oz (Capture LFR only)				●						●						●			
CARBINE 50WG	7	2.0-2.8 oz	●																		
CERTADOR	7	Soil: 41-48 fl oz Foliar: 7.5-9.5 fl oz	●S		●						●							●		●	
COMITE ‡	14	32-40 fl oz																			
CORAGEN	14	3.5-7.5 fl oz		●			●			●	●					●					
		2-5 fl oz																	●		
CRUISER 5FS	–	Seed-piece: 0.11-0.16 fl oz/cwt	●		●						●							●		●	●

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LOOPER	LIRIOZYMA LEAFMINER	NEMATODE	PLANT BUG	POTATO LEAFHOPPER	POTATO TUBERWORM	PSYLLID	SOUTHERN ARMYWORM	SWEET POTATO WHITEFLY	SYMPHYLAN	TARNISHED PLANTBUG	THRIPS	TWO-SPOTTED SPIDER MITE	VEGETABLE WEEVIL	WIREWORM	
					●		●S								●	Seed-piece: Based on 2,000 lb/A seeding rate. Soil: Broadcast and incorporate PP or at-plant, or as Directed in-furrow or chemigation application; see label. Foliar: Apply by ground in sufficient water to uniformly cover foliage, or in min. 3 GPA by air. Max. 0.2 lb a.i./A/year. 7-day min. application interval. Wireworm: Seed-piece treatment protects against all; In-furrow use 9-12 fl oz/A for suppression of all except use 12 fl oz/A to control Corn, Southern Potato, Tobacco.
															●	
							●S							●	●	
							●S									
				●			●*				●					Max. 2.8 oz/A/application. Max. 8.4 oz/A/year. Max. 3 applications/year. 7-day min. application interval. Min. 10 GPA by ground, 3 GPA by air. Psyllid: Labeled for Psyllid everywhere at 2-2.8 oz/A; 2ee several states (exp. date not given) for 1st and 2nd instar only at 2.8 oz/A.
					●											Max. 27 fl oz/A/year. 7-day min. application interval. Max. 4 applications/A/crop. Min. 10 GPA by ground, 5 GPA by air. May be applied by sprinkler irrigation; see label. Cucumber Beetle/Flea Beetle: Adults. May be applied by sprinkler irrigation; see label.
	●			●		●	●	●			●	●S		●		
									●S							
																Max. 14.4 oz/A/crop. Max. 4 applications/crop 7-day min. application interval. May be applied by sprinkler irrigation; see label. Do not make >2 consecutive applications of Group 5 insecticides before rotating to another class for at least 1 application. Leafminer/Thrips: Control may improve with addition of adjuvant. 2ee several states (exp. date not given) for Potato Psyllid/Potato Tuberworm control at 3.5 oz/A.
	●	●				●*	●*	●				●				
															●	See individual labels for specific target insects and rates. Max. 2 applications/season. 21-day application interval. Max. 0.5 lb a.i./A/season including all application methods. Soil: Broadcast and incorporated, or T-band into furrow in min. 10 GPA; see label for Flea Beetle application timing. Foliar: Min. 10 GPA by ground, 3 GPA by air.
														●	●	
				●			●									Apply when insects first appear. Max 2 applications before rotating to different MOA. Max. 2.8 oz/A/application. Max 8.4 oz./A/year. Max 3 applications/year. Min. 7 day application interval. See label for additional information on application timing and specific information about Green Peach aphid.
					●		●									Do not combine soil and foliar applications (use only one application method). Max. 28.5 fl oz/A/season foliar applications. Max. 48 fl oz/A/season soil applications. Soil: Apply once at PP, PRE or ground crack; see label. Foliar: Min. 10-50 GPA by ground, 3-10 GPA by air.
													●			For use in Pacific Northwest only. Max. 80 fl oz/A/year. Max. 2 applications/season. 21-day min. application interval, except WA 14-day min. applications interval. Min. 20-50 GPA by ground, 10 GPA by air.
						●										Max. 15.4 fl oz/A/calendar year. 5-day min. application interval. Max. 4 applications/A/calendar year. May be applied by sprinkler irrigation; see label. See label for important resistance management information. Armyworm: Yellowstriped and Beet only. West of Rocky Mountains apply 2.0-3.4 fl oz/A to control Cabbage Looper early instars and Colorado Potato Beetle small larvae. Grasshopper: Performance improves with MSO.
					●		●								●	Rates based on 16-19 lb/A seeding rate; see label for other rates. Length of protection dependent on rate used, soil and environmental conditions and insect pressure.

INSECTICIDE	PRE-HARVEST INTERVAL FOR POTATO	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT: APHID	ARMYWORM	ASTER LEAFHOPPER	BANDED CUCUMBER BEETLE	BEET ARMYWORM	BLISTER BEETLE	BROWN MARMORATED STINK BUG	CABBAGE LOOPER	COLORADO POTATO BEETLE	CUCUMBER BEETLE	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	EUROPEAN CORN BORER	FALL ARMYWORM	FLEA BEETLE	GRASSHOPPER	LEAFHOPPER	LEAFMINER
CRUISERMAXX VIBRANCE POTATO or CRUISERMAXX POTATO or CRUISERMAXX POTATO EXTREME	–	Seed-piece: 0.5 fl oz/cwt or 0.22-0.27 fl oz/cwt or 0.31 fl oz/cwt	●		●						●							●			●
DELTA GOLD ‡	3	1-2.4 fl oz	●							●			●								
		1.5-2.4 fl oz		●	●		●				●					●	●	●		●	
DIMATE 4E	0	0.5-1 pt	●		●														●	●	●
ENDIGO ZCX ‡	14	3.0-3.5			●						●		●					●		●	
		4-4.5 fl oz or 3.0-3.5 fl oz		●			●	●	●			●				●	●		●		
		4.5 fl oz or 3.5 fl oz	●																		●S
ELEVEST ‡	21	3.9-9.6 fl oz																	●		
		5.6-9.6 fl oz		●			●			●	●	●				●		●			
ENTRUST SC	1	3-6 fl oz		●			●			●					●	●	●	●			
		4-8 fl oz																			
FASTAC CS ‡	1	1.3-3.8 fl oz											●								
		1.8-3.8 fl oz			●					●		●				●		●		●	
		3.2-3.8 fl oz	●S	●			●S				●								●		
FULFILL	14	2.75-5.5 oz	●																		
		5.5 oz																			
HERO ‡	21	2.6-6.1 oz											●					●	●		
		4-10.3 oz	●	●	●	●					●	●				●				●	
		10.3 oz																			
LAMBDA-CY AG ‡	7	1.92-3.2 fl oz			●								●							●	
		2.56-3.84 fl oz	●	●		●	●	●	●	●	●	●				●	●	●	●		
		3.84 fl oz																			●S
LEVERAGE 360 ‡	7	2.4-2.8 fl oz	●		●					●			●			●		●		●	
		2.8 fl oz							●*												
MALATHION 5	0	1 pt	●		●															●	
		2 pt																	●		
MALATHION 5EC	0	2 pt	●		●														●	●	

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
LOOPER	LIRIOZYMA LEAFMINER	NEMATODE	PLANT BUG	POTATO LEAFHOPPER	POTATO TUBERWORM	PSYLLID	SOUTHERN ARMYWORM	SWEET POTATO WHITEFLY	SYMPHYLAN	TARNISHED PLANTBUG	THRIPS	TWO-SPOTTED SPIDER MITE	VEGETABLE WEEVIL	WIREWORM	
				●		●									Leafhopper: CruiserMaxx Vibrance Potato labeled for Potato Leafhopper; CruiserMaxx Potato and Potato Extreme labeled for "leafhoppers."
															Max. 12 fl oz/A/growing season. 3-day min. application interval. Apply by ground in sufficient water for full coverage of foliage or in min. 2 GPA by air. Aphid: 1-2.4 fl oz/A Pea aphid, 1.5-2.4 fl oz/A Green peach aphid. Armyworm: 1st and 2nd instar.
			●	●						●					
				●											Max. 1 pt/A/application. Max. 2 pt/A/year. 7-day min. application interval.
				●											See label for max. volume/A/growing season. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. See label for important resistance management information. Cucumber Beetle/Flea Beetle/Vegetable Weevil: Adults.
●			●		●	●	●			●	●		●		
								●				●S			
															Max. 28.8 fl oz/A/year. Max. 2 applications/A/year. Max. 2 sequential applications before rotating to different MOA. Min. 21-day retreatment interval. See label for timing notes. Min. 5 GPA by air. Grasshopper control improves with addition of MSO at 1% v/v. Colorado potato beetle: see label for resistance management and timing notes. Potato tuberworm: see label for timing and life-stage notes. Cabbage looper: West of Rocky Mountains apply to control 1st-3rd instar.
●					●										
●	●						●								Max. 29 fl oz/A/crop for all application methods. Max. 5 applications/calendar year. 4-day min. application interval. Do not make >2 consecutive applications of Group 5 insecticides before rotating to another class for at least 1 application.
											●S				
															Max. 11.4 fl oz/A/season. 4-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. Armyworm: Yellowstriped.
			●										●		
				●						●					
						●S									Max. 5.5 oz/A/application. Max. 11 oz/A/crop season. 7-day min. application interval. Min. 10 GPA by ground, 5 GPA by air.
															Max. 10.3 oz/A/application. Max. 46.35 oz/A/season, including all soil applications. Max. 2 foliar applications. 21-day min. application interval. Min. 10 GPA by ground, 3 GPA by air. Cucumber Beetle/Vegetable Weevil: Adults.
●				●	●										
			●									●			
				●											Max. 0.96 pt/A/season. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. See label for important resistance management information. Cucumber Beetle/Flea Beetle/Vegetable Weevil: Adults.
●			●		●	●	●			●	●		●		
								●S				●S			
				●	●					●			●		5-day min. application interval. Max. 12.8 fl oz/A/crop season. May be applied by ground, air (min. 3 GPA) or sprinkler irrigation. Thrips: Foliage feeding only. 2ee many states (exp. date not given) for Brown Marmorated Stink Bug at 2.8 fl oz/A; 7-day min. application interval.
								●S			●S				
				●											7-day min. application interval.
				●											Max. 2.5 pt/A. Max. 2 applications/year. 7-day min. application interval.

INSECTICIDE	PRE-HARVEST INTERVAL FOR POTATO	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT																		
			APHID	ARMYWORM	ASTER LEAFHOPPER	BANDED CUCUMBER BEETLE	BEET ARMYWORM	BLISTER BEETLE	BROWN MARMORATED STINK BUG	CABBAGE LOOPER	COLORADO POTATO BEETLE	CUCUMBER BEETLE	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	EUROPEAN CORN BORER	FALL ARMYWORM	FLEA BEETLE	GRASSHOPPER	LEAFHOPPER	LEAFMINER
MALATHION 8 FLOWABLE	0	1 pt			●															●	
		1.5 pt	●					●													
MINECTO PRO ‡	14	5.5-10 fl oz		●			●				●					●					
		7.5-10 fl oz								●											
		10 fl oz	●															●S			
MOCAP EC ‡ or MOCAP 15G ‡	–	Soil: 0.66-1 gal orc 27-40 lb																			
		Soil: 1-2 gal or 70-80 lb																			
MOVENTO or MOVENTO HL or MOVENTO MPC	7	4-5 fl oz or 2-2.5 fl oz 7.0-8.0 fl oz	●																		
MUSTANG MAXX ‡	1	1.28-4 fl oz											●								
		1.76-4 fl oz			●	●				●		●				●		●		●	
		3.2-4 fl oz	●S	●			●S				●								●		
NURIZMA	–	In-furrow: 0.08-0.16 fl oz/1000' row																			
OBERON 2SC or OBERON 4SC	7	8-16 fl oz or 4-8 fl oz																			
OMITE-6E ‡	14	32-44 fl oz																			
ONAGER	21	16-24 oz																			
PLATINUM 75 SG	–	Soil: 1.66-2.67 oz	●								●							●			
PYGANIC EC 1.4$_{II}$	0	16-64 fl oz	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●

See notes and footnotes at end of table.

INSECT *(continued)*															COMMENTS AND RESTRICTIONS
LOOPER	LIRIOZYMA LEAFMINER	NEMATODE	PLANT BUG	POTATO LEAFHOPPER	POTATO TUBERWORM	PSYLLID	SOUTHERN ARMYWORM	SWEET POTATO WHITEFLY	SYMPHYLAN	TARNISHED PLANTBUG	THRIPS	TWO-SPOTTED SPIDER MITE	VEGETABLE WEEVIL	WIREWORM	
				●											Max. 1.5 pt/A. Max. 2 applications/year. 7-day min. application interval.
	●				●							●			Must be mixed with a spray adjuvant; see label. Do not make more than 2 sequential applications. Max. 10 fl oz/A/application. Max. 20 fl oz/A/calendar year. 7-day min. application interval. See label for insect-specific timing and directions. Best applied by ground or air, but may be applied by sprinkler irrigation (spider mite control greatly reduced by this application method). Do not feed or graze treated foliage. Aphid: Green peach control and Potato aphid suppression. Armyworm: Yellowstriped armyworm.
						●					●S				
									●					●	Symphylans/Wireworms: 12" band over row (36" spacing); mix with top 2-4" soil during/following treatment. Nematode: See label for specific rates within indicated range for states West vs. East of the Mississippi River and control/suppression of various spp.; banded or broadcast depending on environmental conditions and agronomic practices (see label).
		●S													
		●S				●		●			●S	●S		●S	Maximum application rates per crop season: for Movento, 10 fl oz/A/crop season or for Movento HL 5 fl oz/A/crop season or for Movento MPC, 16 fl oz/A/crop season. 7-day min. application interval. May be applied by sprinkler irrigation; however, superior control results from ground or air application. Must be tank mixed with a penetrating surfactant. Thrips: Western flower thrips larvae.
															Max. 24 fl oz/A/season. 4-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. Armyworm: Yellowstriped.
●													●		
				●						●					
														●	One in-furrow application, as 5"- to 7"-wide spray, avoiding soil surface, at time of planting only; must be thoroughly incoroporated and covered with soil immediately after application. Do not apply over closed furrow. Max. 0.0445 lb a.i./acre/application and/or per year, including seed treatment.
						●*		●				●			Max. 16 fl oz/A or 8 fl oz/A. 7-day min. application interval. Max. 32 fl oz/A/crop season or 16 fl oz/A/crop season. Max. 2 applications/crop season. Min. 10 GPA by ground, 5 GPA by air. May be applied by sprinkler irrigation; see label. Psyllid: Max. 2 applications/crop season. 24c TX (exp. date not given) for Oberon 4SC at 3 applications/crop season (maintaining max. 16 fl oz/A/crop season).
												●			For use in Pacific Northwest only. Max. 88 fl oz/A/year. Max. 2 applications/season. 21-day min. application interval, except WA 14-day min. applications interval. Min. 20-50 GPA by ground, 10 GPA by air. May be applied by sprinkler irrigation; see label.
						●						●			For use in Western U.S. only (see label). Max. 24 oz/A/calendar year. Max. 1 application/calendar year. Apply by ground, or in min. 5 GPA by air. May be applied by sprinkler irrigation; see label.
				●		●								●	Max. 2.67 oz/A/growing season. Max. 1 application/season. Apply in-furrow, impregnated on dry granular fertilizer, at plant emergence direct spray, broadcast or at plant emergence by sprinkler irrigation; see label. Wireworm: Seed piece protection only.
●	●		●	●	●	●	●	●	●	●	●	●	●	●	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.

INSECTICIDE	PRE-HARVEST INTERVAL FOR POTATO	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT: APHID	ARMYWORM	ASTER LEAFHOPPER	BANDED CUCUMBER BEETLE	BEET ARMYWORM	BLISTER BEETLE	BROWN MARMORATED STINK BUG	CABBAGE LOOPER	COLORADO POTATO BEETLE	CUCUMBER BEETLE	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	EUROPEAN CORN BORER	FALL ARMYWORM	FLEA BEETLE	GRASSHOPPER	LEAFHOPPER	LEAFMINER
PYGANIC EC 5.0$_{II}$	0	4.5-15.61 fl oz	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
RADIANT SC	1	5-10 fl oz		●			●			●	●					●	●				
		6-10 fl oz													●			●S			
REGENT 4 SC ‡	90	In-furrow: 3.2 fl oz																			
REQUIEM EC	–	2-3 qt																			
RIDGEBACK	21	4.5-13.8 fl oz	●		●	●						●						●		●	
		13.8 fl oz							●												
SALIBRO (Nematicide)	40	PPI: 30.7 to 61.4 fl oz																			
		In Furrow: 15.4 to 61.4 fl oz																			
		Drip Irr.: 15.4 to 61.4 fl oz																			
SENSTAR	7	8-10 fl oz	●																		
SIVANTO 200 SL or SIVANTO PRIME	7	7-10.5 fl oz or 7-14 fl oz	●		●															●	
		10.5-14 fl oz or 10.5-14 fl oz or 5.5-7 fl oz	●								●										
STEWARD	7	4.6 - 11.3 fl oz								●											
		5.6 - 11.3 fl oz																			
		6.7 - 11.3 fl oz									●					●					

See notes and footnotes at end of table.

INSECT *(continued)*															COMMENTS AND RESTRICTIONS
LOOPER	LIRIOZYMA LEAFMINER	NEMATODE	PLANT BUG	POTATO LEAFHOPPER	POTATO TUBERWORM	PSYLLID	SOUTHERN ARMYWORM	SWEET POTATO WHITEFLY	SYMPHYLAN	TARNISHED PLANTBUG	THRIPS	TWO-SPOTTED SPIDER MITE	VEGETABLE WEEVIL	WIREWORM	
●	●		●	●	●	●	●	●	●	●	●	●	●	●	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
●						●*	●								Max. 30 fl oz/A year. 4-day min. application interval. Max. 5 applications/calendar year. Do make >2 consecutive applications of Group 5 insecticides before rotating to another class for at least 2 applications. Thrips: Do make >3 applications of Group 5 insecticides/season. Armyworm: All except Yellowstriped and Western Yellowstriped. 2ee all states except TX, NY (exp. date not given) for Psyllid control at 4-8 fl oz/A. 2ee TX (exp. date not given) for Psyllid control at 4 fl oz/A.
											●				
														●	Rate based on 30-36" rows; see label for other rates/row spacings. Do not apply if <30" row spacing. Make 1 in-furrow application at planting. Must be incorporated. Max. 3.2 fl oz/A.
						●									Begin treatments when thresholds have been reached.
				●											Treat in accordance with local economic thresholds. Use higher rate for heavy pest populations. 21-day min. application interval. Max. 2 applications/year. Max. 27.6 fl oz/A/year.
		●													Applications for nematode management. Apply as a Pre-plant incorporated, 6" band at plant In-furrow soil or In-season drip chemigation. Do not make more than 2 applications/year, max. 61.4 fl oz/A/year with a 14 day retreatment interval. For pre-plant applications incorporated within 7 days prior to planting. Refer to the product label for application buffer zones and additional details.
						●					●S				Ground application in 20-50 GPA water. Only whole fields should be treated. Max. 10 fl oz/A/application. Max. 2 applications/season. Max. 20 fl oz/A/crop season. Min. 14-day application interval. Do not allow livestock to graze treated areas.
				●											10-day min. application interval. Max. 28 fl oz/A/year Sivanto 200 SL/Sivanto prime. Min. 10 GPA by ground, 3 GPA by air for Sivanto prime, 2 GPA by air for Sivanto 200 SL. Aphid: Green Peach Aphid control with higher rate ranges. Psyllid: Best control with Sivanto Prime using MSO adjuvant or similiar.
						●		●							
															Make no more than 4 applications per acre per crop. Do not apply more than 45 fl oz/A of STEWARD® EC insecticide or 0.44 lb ai/A of indoxacarb-containing products per crop. Do not apply more than 135 fl oz/A of STEWARD® EC insecticide or 1.32 lb ai/A of indoxacarb-containing products per calendar year. The minimum interval between sprays is 5 days. In situations where Colorado potato beetle populations are known or suspected to be difficult to control with current insect control products, a combination of STEWARD® EC insecticide applied at a rate of 6.7 – 11.3 fl oz/A combined with a product containing 0.5 lb ai/A of the synergist piperonyl butoxide (PBO) may be necessary to achieve the most effective control of Colorado potato beetle larvae. For Potato Tuberworms for ground applications use at least 10 gal/A of water. For aerial applications, use at least 5 gal/A of water. For best results with foliar sprays, add Methylated Seed Oil (MSO) as a spray adjuvant at 1 gal per 100 gal of spray volume (1% v/v). For chemigation applications, apply in 0.1 to 0.2 inches of water per acre and add MSO at 12 to 16 fl oz/A. Do not make more than two sequential applications of STEWARD® EC insecticide for control of potato tuberworm before rotating to another registered insecticide having a different mode of action.
					●										

INSECTICIDE	PRE-HARVEST INTERVAL FOR POTATO	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT: APHID	ARMYWORM	ASTER LEAFHOPPER	BANDED CUCUMBER BEETLE	BEET ARMYWORM	BLISTER BEETLE	BROWN MARMORATED STINK BUG	CABBAGE LOOPER	COLORADO POTATO BEETLE	CUCUMBER BEETLE	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	EUROPEAN CORN BORER	FALL ARMYWORM	FLEA BEETLE	GRASSHOPPER	LEAFHOPPER	LEAFMINER
TELONE II ‡	–	Soil: 9-18 gal																			
THIMET 20-G ‡	90	At-plant: 8.5-17.3 oz/1000′ row	●		●						●							●		●	●
		POST: 8.5-11 oz/1000′ row									●										
TRANSFORM WG	7	0.75-1.5 oz	●																		
		1.5-2.25 oz																		●	
		2-2.25 oz																			
TRIGARD	17	2.66-5.32 oz/A (1-2 packets)									●										●
TUNDRA EC ‡/ BRIGADE 2EC ‡/ ***BIFEN 2 AG GOLD*** ‡	21	At-plant: 19.2 fl oz																			
		Lay-by: 3.2-9.6 fl oz																			
		Foliar: 2.1-6.4 fl oz				●						●						●			
VANTACOR	14	1.2-2.5 fl oz		●			●			●	●					●					
		0.7-1.7 fl oz																	●		
VELUM PRIME	7	Soil: 4.0-6.0 fl oz																			
VELUM RISE	–	Soil: 13.0 fl oz																			
VENOM	7	Soil: 6.5-7.5 oz	●S								●							●			
		Foliar: 1-1.5 oz	●S	●	●						●							●		●	
VERIMARK	–	Seed piece: 0.46-0.75 fl oz/cwt	●S	●			●			●	●					●		●S			
		Soil: 6.75-13.5 fl oz					●			●	●										
		Soil: 10.13.5 fl oz														●		●S			
		Soil: 13.5 fl oz	●S																		

See notes and footnotes at end of table.

INSECT *(continued)*																COMMENTS AND RESTRICTIONS
	LOOPER	LIRIOZYMA LEAFMINER	NEMATODE	PLANT BUG	POTATO LEAFHOPPER	POTATO TUBERWORM	PSYLLID	SOUTHERN ARMYWORM	SWEET POTATO WHITEFLY	SYMPHYLAN	TARNISHED PLANTBUG	THRIPS	TWO-SPOTTED SPIDER MITE	VEGETABLE WEEVIL	WIREWORM	
			●*							●					●S*	See label for rates associated with Nematode/Symphylan/Wireworm control in mineral or muck/peat soil types. Use 18 gal/A for cyst-forming nematodes in all soil types. 2ee several states, WA certain counties in WA (exp. date not given) for suppression of nematodes and wireworm; 2ee several states (exp. date not given) for simultaneous or sequential application at 11 gal/A with other fumigants for suppression of V. dahliae and nematodes.
					●		●								●	Max 1 application/crop season regardless of timing. At-plant: 8.5-11.3 oz/A on light or sandy soils; 13-17.3 oz/A for heavy or clay soils; at-plant controls Wireworm. POST: Apply granules on each side of row 4-6 weeks after planting; do not use on heavy soils; early-season Colorado Potato Beetle control (do not use on DelMarVa Peninsula); Wireworm suppression only.
				●*	●											Max. 8.5 oz/A/year. Max. 4 applications/crop. Max 2 consecutive applications/crop. 14-day min. application interval. PHI 7 days. May be applied by sprinkler irrigation; see label. 2ee several states (exp. date not given) to control Plant Bug at 1.5-2.25 oz/A.
							●		●							
																Max. 1 lb/A/growing season. 7-day min. application interval. Apply by ground in sufficient water to ensure coverage, or in min. 5 GPA by air. Colorado Potato Beetle: 1-2 packets/A; does not control adults. Leafminer: 1 packet/A.
															●	Max. 0.5 lb a.i./A/season, including soil applications. At-plant: Apply in-furrow or as T-band for Tobacco wireworm control. Lay-by: See label for soil application methods to control Southern potato wireworm. Foliar: Max. 2 applications/season at min. 21-day application interval; min. 10 GPA by air, 3 GPA by air. Flea Beetle: Black only.
															●	
														●		
						●										Max. 5.1 fl oz/A/calendar year. 5-day min. application interval. Max. 4 applications/A/calendar year. May be applied by sprinkler irrigation; see label. See label for important resistance management information. Armyworm: Yellowstriped and Beet only. West of Rocky Mountains apply 0.7-1.2 fl oz/A to control Cabbage Looper early instars and Colorado Potato Beetle small larvae. Grasshopper: Performance improves with MSO.
																Soil Application, Max 13.7 fl oz per season in two applications. Apply via overhead irrigation, in-furrow spray during planting directed on or below seed or drench. See label for additional details. Not labeled for use in AZ, CA, HI.
																Apply as an in-furrow spray at planting. Single application of 13 fl oz per season. Despite suppression of root-knot nematode, tuber quality may not be adequately protected. If root-knot nematode is a severe economic pest, addiditonal suppression measures should also be used.
					●		●									Aphid: Green peach aphid and potato aphid only. Soil: Apply once at PP, PRE or at ground crack (see label for application methods); min. 10-100 GPA by ground. Foliar: Max. 4.5 oz/A/season; 14-day min. application interval; apply in 10-50 GPA by ground, 3-10 GPA by air.
					●		●S									
							●S									Max. 0.4 lb a.i./A/calendar year of all cyantraniliprole products regardless of application method and timing. Armyworm: Western yellowstriped. Seed piece: See label for rate/cwt based on seeding rate; max. 0.176 lb a.i./A. Soil: Max. 13.5 fl oz/A at plant.
							●S									

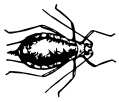
POTATO LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR POTATO	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT																		
			APHID	ARMYWORM	ASTER LEAFHOPPER	BANDED CUCUMBER BEETLE	BEET ARMYWORM	BLISTER BEETLE	BROWN MARMORATED STINK BUG	CABBAGE LOOPER	COLORADO POTATO BEETLE	CUCUMBER BEETLE	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	EUROPEAN CORN BORER	FALL ARMYWORM	FLEA BEETLE	GRASSHOPPER	LEAFHOPPER	LEAFMINER
VOLIAM FLEXI	14	4 oz	●				●			●	●					●		●			
VYDATE C-LV ‡	7	Soil: 34-68 fl oz																			
		Foliar: 8.5-34 fl oz	●								●							●			
WARRIOR II ‡	7	0.96-1.6 fl oz			●								●							●	
		1.28-1.92 fl oz	●	●		●	●	●	●	●	●	●				●	●	●	●		
		1.92 fl oz																			●S
XPEDIENT PLUS V ‡	0	Soil: 9.6-19.2 fl oz																●			

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

POTATO INSECT MANAGEMENT GUIDELINES



APHID: ET: many aphids transmit potato viruses. Treat seed stock when aphid densities reach 10/100 leaves. Table stock - treat when aphids reach 30-50/100 leaves. Sample middle to lower leaves.



COLORADO POTATO BEETLE: ET: egg masses - spray when 30-50% of egg masses have hatched. Leaf defoliation - 20-30% preflower, 5-10% flowering and 30% tuber formation. Avoid insect resistance to pyrethroids by rotating insecticide classes.



CUTWORM: ET variegated cutworm: 4 or more worms per row foot. **ET black cutworm:** 2 plants/100 with tuber feeding.



EUROPEAN CORN BORER: ET: >1 egg mass/25 leaves on mid to lower leaves.



FLEA BEETLE: ET: treat when 10% of leaf area is lost due to feeding or if adults exceed 50/25 sweeps.



LEAFHOPPER: ET: 2 PLH adults/sweep or 1 adult/sweep plus 15 nymphs/25 leaves.



PLANT BUG, TARNISHED: ET: 1 per sweep.

INSECT *(continued)*															COMMENTS AND RESTRICTIONS
LOOPER	LIRIOZYMA LEAFMINER	NEMATODE	PLANT BUG	POTATO LEAFHOPPER	POTATO TUBERWORM	PSYLLID	SOUTHERN ARMYWORM	SWEET POTATO WHITEFLY	SYMPHYLAN	TARNISHED PLANTBUG	THRIPS	TWO-SPOTTED SPIDER MITE	VEGETABLE WEEVIL	WIREWORM	
				●											Max. 8 oz/A/season of foliar applied thiamethoxam products. 7-day min. application interval. Min. 10 GPA by ground, 5 GPA by air. May be applied by sprinkler irrigation; see label.
		●													Soil and Foliar: See label for pest-specific/state-specific application rates and methods based on U.S. geography. Max. gal/A/season, min. application interval and max. applications/crop are based on geography; see label.
				●						●		●S			
				●											Max. 7.68 fl oz/A/season. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. See label for important resistance management information. Cucumber Beetle/Flea Beetle/Vegetable Weevil: Adults.
●			●		●	●	●			●	●		●		
								●S				●S			
														●	At plant: Apply as incorporated broadcast, directed bed spray or T-band into open furrow. Max. 0.3 lb a.i./A/season/at plant application.

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees..

POTATO LABELED FUNGICIDES

	SEED PIECE DISEASE*										
FUNGICIDE	Black Scurf	Canker, Stem	Fusarium (Dry Rot)	Fusarium Seed Piece Decay	Fusarium Tuber Rot	Late Blight	Rhizoctonia Solani	Rhizoctonia Shoot Blight	Scab, Seed Borne	Seed Decay	Silver Scurf
ACTINOVATE AG			●	●	●		●	●			
AGRI TIN FLOWABLE ‡											
AMISTAR TOP											
APROACH											
BADGE SC/BADGE X2											
BIO-TAM	●	●	●	●	●		●		●	●	
BLOCKER 4F/BLOCKER 10G	●	●							●[1]		
BRAVO ULTREX/WEATHER STIK/***PRAIZ***											
CHAMP DRY PRILL/CHAMP FORMULA 2 FLOWABLE/CHAMP WG											
CHAMPION++											
CONTANS WG											
CRUISERMAXX POTATO[2]/MAXX POTATO EXTREME[2]	●	●		●			●				●
CUPROFIX ULTRA 40 DISPERSS											
CRUISERMAXX VIBRANCE POTATO	●	●	●	●			●				●
CURZATE 60 DF						●					
DITHANE F-45 RAINSHIELD				●		●		●	●		●
DYNASTY	●S	●S									●
ELATUS		●									●
ELUMIN											
ENDURA											
EMESTO SILVER	●S	●S	●S	●S			●S				●S
EVERLON/PRIAXOR							●[1]				
EVITO 480 SC	●										
FLINT XTRA											
FORUM											
GAVEL 75DF											
HEADLINE SC											
KOCIDE 3000											
LUNA PRO											
LUNA TRANQUILITY											
MANZATE PRO-STICK/MAX				●					●		
MAXIM 4FS	●	●	●				●			●	●
MINUET			●So	●So	●So		●So	●So	●So		
MIRAVIS PRIME											
MONCUT SC	●										
OMEGA 500F									●S[1]		
OMEGA TOP MP											
ORONDIS GOLD											
ORONDIS GOLD 200											
ORONDIS GOLD B											
ORONDIS OPTI											
ORONDIS ULTRA											
PENNCOZEB 75DF				●					●		
PH-D											
PHOSTROL											
PREVICUR FLEX											

See note and footnotes at end of table.

SOIL/FOLIAR DISEASE*												
Black Dot	Black Scurf	Botrytis Vine Rot	Early Blight	Late Blight	Pink Rot	Powdery Mildew	Pythium Leak	Pythium Seedling Disease	Septoria Leaf Spot	Silver Scurf	Tuber Blight	White Mold
						●	●	●				
			●	●								
●			●			●			●			
			●									●
			●	●		●						
●[4]												●[4]
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FUNGICIDE	SEED PIECE DISEASE*											
	Black Scurf	Canker, Stem	Fusarium (Dry Rot)	Fusarium Seed Piece Decay	Fusarium Tuber Rot	Late Blight	Rhizoctonia Solani	Rhizoctonia Shoot Blight	Scab, Seed Borne	Seed Decay	Silver Scurf	
PREVISTO												
PROVYSOL												
QUADRIS OPTI									●			
QUADRIS RIDOMIL GOLD SL							●					
QUADRIS TOP												
QUASH												
RANMAN												
REVUS						●						
REVUS TOP												
RIDOMIL GOLD BRAVO SC												
RIDOMIL GOLD MZ WG												
RIDOMIL GOLD SL												
RIDOMIL GOLD COPPER												
ROVRAL 4F									●			
SCALA SC												
SERENADE ASO							●					
SERENADE OPTI												
TANOS				●								
TETRABAN												
TOP MP				●								
TOPSIN 4.5FL/TOPSIN M WSB/T-METHYL 4.5 F/T-METHYL 70 WSB												
ULTRA FLOURISH												
VELTYMA												
VELUM PRIME												
VELUM RISE	●S, So	●S, So										
VIBRANCE		●					●				●	
VIBRANCE ULTRA POTATO	●		●			●					●	
ZAMPRO												
ZING												

* Many other diseases may be controlled, see label.
● - control; ●S - suppression; ●So - soil application
See Fungicide Resistance Management in the Tehnical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

[1] 24c, 2ee or Supplemental label; see Comments and Restrictions.
[2] These CruiserMaxx products also contain insecticide; see Potato Insects section.
[3] Manzate Pro-Stick only
[4] Blocker 4F only.
[5] Bravo Weather Stik and Praiz only.
See Seed and Grain section for seed treatments labeled in potato such as CruiserMaxx Potato.

	SOIL/FOLIAR DISEASE*												
	Black Dot	Black Scurf	Botrytis Vine Rot	Early Blight	Late Blight	Pink Rot	Powdery Mildew	Pythium Leak	Pythium Seedling Disease	Septoria Leaf Spot	Silver Scurf	Tuber Blight	White Mold
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Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				SEED PIECES OR IN-FURROW
ACTINOVATE AG	3-12 oz	0	0	See label for soil-borne diseases controlled/suppressed. At plant, in-furrow in 10-200 GPA. May be applied by drip, overhead or other irrigation systems; see label. May also be used as seed piece treatment; see label.
BLOCKER 10G	1.65 lb	45	NO	Apply in furrow as 8.5" band with 34" row spacing, directing product into furrow over seed and cover as part of hilling during planting. Best to apply when soil is slightly moist. Not for use in CA.
BLOCKER 4F	5-10 pt	–	–	Do not exceed 5 lb a.i./A per season. For stem canker and black scurf, apply in spacing in 8.5" band in furrow at time of planting. 2ee many states (exp. date not given) for suppression of common scab on potatoes via band application. 10-20 GPA based on 34" row
CRUISERMAXX POTATO or CRUISERMAXX POTATO EXTREME	0.22-0.27 fl oz/100 lb seed pieces or 0.31 fl oz/100 lb seed pieces	–	–	Seed treatment. For CruiserMaxx Potato, rate depends on seeding rate and row spacing. Note 3.
CRUISERMAXX VIBRANCE POTATO	0.5 fl oz/cwt	–	–	Seed treatment. Does not control bacterial disease or diseases present within the seed or protect against bacteria that may infect and decay the seed after planting. Do not use a seed treatment rate that will result in more than 0.1 lb a.i. sedaxane/A per 24 months. Treated seed potatoes cannot be planted to the same field in successive years. Note 3.
CURZATE 60 DF	0.25 oz/cwt seed pieces	14	–	For seed piece treatment to suppress infection of emerging plant tissue by seed borne late blight, apply at indicated rate; must be combined with other fungicides with registered uses for seed piece treatment. Notes 1, 2.
DITHANE F-45 RAINSHIELD	1.5-2.5 fl oz/cwt	–	–	Do not use treated seed potatoes for food or feed purposes.
DYNASTY	0.1-3.75 fl oz/100 lb seed pieces	–	–	Use higher rate when disease pressure is expected to be high. Combine with Pythium-active seed treatment such as Apron XL to offer broad-spectrum protection against seed and seedling disease complex. See label.
ELATUS	0.34-0.5 oz	14	NR	In-furrow at planting as narrow band over seed piece. No more than 9.5 oz/A as banded application. See label for annual a.i. maximums.
EMESTO SILVER	0.31 fl oz/100 lb seed pieces	–	–	Do not apply to potatoes used for food, feed, or fodder. Apply in a diluted spray solution of not more than 2.5 fl oz of slurry to 100 lb of seed pieces. An inert ingredient absorbent is recommended to improve suberization. Maximum 3 applications per year.
EVERLON/PRIAXOR	0.5-0.6 fl oz/1000' row	–	–	Rhizoctonia control. Registered in all states except CA for suppression of damping off. Fusarium seed rot and Pythium.
EVITO 480 SC	2-3.8 fl oz; 0.16-0.24 fl oz/1000' row	7	–	For foliar diseases, begin applications preventively and continue as needed on 7- to 10-day interval. For soil-borne diseases, apply prior to infection as directed spray, or in furrow spray in 3-7 gallons of water at planting.
MANCOZEB 6%	1 lb/100 lb seed pieces	–	–	Apply for thorough coverage. Plant as soon after treatment as possible.
MAXIM 4FS	0.08-0.16 fl oz/100 lb seed pieces	–	–	Labeled for potatoes grown for seed or for commercial production. Apply using equipment that ensures uniform coverage.
MINUET	12.24 fl oz	0	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MONCUT SC	16-25 fl oz	–	–	Apply in-furrow as direct spary around/over seed-piece in 4-8 inch band. Min. 3 gal spray volume/A. See label for in-furrow rates. Higher rate when disease pressure is expected or if history of Rhizoctonia infestation. Do not apply via chemigation.
ORONDIS GOLD	27.8 fl oz	14	NL	Apply in 3-15 GPA as 6- to 8-inch band directly over seed pieces in furrow and then close furrow. Max. 27.8 fl oz/A in-furrow. Max. 14-day application interval. Do not follow in-furrow application with foliar applications of other FRAC 49-containing products. Use higher rate in fields with history of pink rot or Pythium leak. If variety if susceptible ro pink rot or Pythium leak or in areas with a long growing season, follow with foliar application of different product (e.g., mefenoxam- or chlorothalonil-containing) at tuber inititation.
ORONDIS GOLD 200	4.8-9.6 fl oz	5	–	Apply in-furrow at planting as 6- to 8-inch band over seed pieces, then close furrows. Max. 9.6 fl oz/A/year soil or soil-directed applications. See label lfor important resistance management information.
ORONDIS GOLD B	0.42 fl oz/1000' row 3.2 fl oz	14	–	In-furrow: Apply directly over seed pieces as 6- to 8-inch band prior to row closure or use markout application. May be impregnated on dry fertilizer or applied with liquid fertilizer. Do not apply beyond at-plant stage; do not use "dribble" application. At tuber inititation, followed by 2nd application 14 days later (additional application if needed 14 days later): Broadcast or soil-directed by air, ground or chemication. See label for foliar application instructions. Max. 0.42 fl oz/1000' row/yr; 9.6 fl oz/A/yr
PHOSTROL	3.75-10 pt	0	–	Apply with 11.6-13 fl oz Ultra Flourish (mefenoxam) fungicide as band directly over seed pieces prior to row closure in min. 3 GPA water.

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				SEED PIECES OR IN-FURROW *(continued)*
QUADRIS RIDOMIL GOLD SL	0.82 fl oz/1000' row	–	–	Apply in-furrow in 3-15 GPA. Direct spray into furrow just before seeds are covered.
RANMAN	0.42 oz/1000' row (36" row)	–	–	Apply in-furrow. Apply in ≥5 GPA in a 6 to 8" band directly over seed pieces. Can also be applied broadcast by layby at hilling only in combination with an in-furrow application. Use 2.75 oz/A + organosilicone adjuvant and a minimum of 20 GPA. 2ee many states (exp. date not given) for Pythium ultimum suppression.
REVUS	0.2-0.4 fl oz/100 lb seed pieces	–	–	Apply a fungicide belonging to a group other than group 40 as the first foliar application of the season. Will not prevent late blight infection of plants or tubers after germination.
RIDOMIL GOLD SL	0.42 oz/1000' row on 6-8" band	–	–	Control of Pythium leak, pink rot, and Pythium seedling disease. Apply in a minimum of 3 GPA water directly over seed pieces prior to row closure. May be impregnated on dry fertilizer. May be applied in combination with liquid fertilizer.
SERENADE ASO	2-4 qt	0	–	Bacillus subtilis is a biological fungicide. Drench at planting or at any stage of growth; shanked-in and injected; in-furrow. See supplemental label for additional information.
ULTRA FLOURISH	0.84 fl oz/1000' row	14	–	Apply in 6-8" band at planting band directly over seed pieces prior to row closure in min. 3 GPA water. Foliar fungicide may be needed; see label.
VELUM PRIME	6.0-6.84 fl oz	7	7	For soil Applications, Apply specified dosage as an in-furrow spray during planting directed on or below seed. Apply specified dosage using overhead chemigation equipment. Apply by chemigation in delivery volumes between 0.5-0.75" of water to suppress early blight and whitemold. Do not apply more than 13.7 fl oz (0.446 lbs fluopyram)/A/year, regardless of formulation or method of application (soil or foliar). Do not make >2 sequential applications of Velum Prime or any Group 7-containing fungicide before rotating to a different group. In growing areas where MRLs are enabled for export markets, Velum Prime may be applied in a 3-5" band in-furrow at planting. Check with contracting company to ensure that this method of application is approved. Velum Prime is also a nematicide. Velum Prime is not labeled for use in AZ, CA, or HI.
VELUM RISE	Soil: 13.0 fl oz	–	–	Velum Rise is also a nematicide. Apply as an in-furrow spray at planting. In furrow spray - Mount spray nozzles to direct the spray as a 3- to 6-inch band down the row center onto the seed pieces in the furrow just before the seed is covered. Max single applicaiton of 13.0 fl oz per season. Not for use in California without a supplemental label.
VIBRANCE	0.05-0.08 fl oz/cwt	–	–	Under high Rhizoctonia solani pressure use the high rate (0.08 fl oz/cwt). Do not exceed 0.1 lb a.i. per acre/24 months. Treated seed potatoes cannot be planted in the same field in successive years. This restriction applies to potatoes only. 0.1 lb a.i./acre is equal to 4000 lb of potato planted/A having been treated with 0.08 fl oz/100 lb of potato seed.
VIBRANCE ULTRA POTATO	0.50 fl oz/cwt	–	–	See label for max. a.i. rates/A/year. Provides early-season protection against injury from labeled diseases. Apply a fungicide belonging to a group other than Group 3, 7, or 40 as the 1st foliar application of the season when using this product.
				FOLIAR
ACTINOVATE AG	3-12 oz	0	0	See label for foliar diseases controlled/suppressed. Apply in 10-150 GPA. Reapply every 7-14 days depending on disease pressure and environmental conditions. Best to use spreader-sticker (adjuvant). May be applied by air; see label.
AGRI TIN FLOWABLE ‡	4-6 fl oz	7	NR	Apply in min. 15 GPA water or by air in 3-10 GPA. Max. 18 fl oz/A/season. Product also suppresses potato insect: Colorado potato beetle.
AMISTAR TOP	8-14 fl oz	14	NL	Apply prior to disease development and continue on 7- to 14-day interval. Not more than 2 sequential applications before switching to different mode of action. Use of NIS or COC is recommended. Notes 1,2.
APROACH	6-12 fl oz	3	NL	Make initial application at 100% full bloom of primary inflorescence, or prior to row closure. 14-day min. application interval. Do not make >2 sequential applications before switching to a different mode of action. Max. 36 fl oz/A, max. 3 applications/year.
BADGE SC	1-4 pt	0	NR	Apply at 5- to 10-day intervals starting when plants are 2-6" high. Apply up to 4 pt/A when disease is more severe. Badge SC can be tank mixed with other compatible fungicides. 2ee many states (exp. date not given) for brown spot. 2ee in ID,WA,OR (exp. date not given) for aerial stem rot. 2ee TX (exp. date not given) for bacterial stem rot. Badge X2 is OMRI listed.
BADGE X2	1-4 lb	0	NR	Apply at 7-10 day intervals starting when plants are 2-6" high. Apply up to 4 lb/A when disease is more severe. Badge X2 is OMRI listed.
BIO-TAM 2.00	2.5-5 lb	–	–	Can be applied in-furrow 1.5-3 oz/1000 row' and banded 2.5-3 lb/A. Broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. Note 2.

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				FOLIAR *(continued)*
BLOCKER 4F	3-5 pt	28	–	For white mold: Apply by chemigation only at first sign of disease or no later than just prior to or after row closure. Thorough coverage of foliage essential. For use in ID, NV, WA, OR only. Do not exceed 5 lb a.i./A per season.
BRAVO WEATHER STIK/***PRAIZ*** or BRAVO ULTREX	1-1.5 pt or 0.9-1.36 lb or 1.5-2.25 pt	7	–	Apply at 7-10 day intervals. First application may be banded at 0.75 pt/A or 0.7 lb/A or 1.125 pt/A. See label for details. Notes 1,2.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE OR CHAMP WG	0.67-2.67 or 0.66-2.66 pt or 1.0-5.0 lb	–	–	Begin when plants are 6" high at 5- to 10-day intervals. May also provide supression of Colorado potato beetle; see label. Max. 2.67 lb or 2.66 pt or 1.5 lb/A/application. Max. 66.7 lb or 69.0 pt or 50.0 lb/A/year.
CHAMPION++	0.5-1.75 lb	0	NR	Apply at 5- to 10-day intervals starting when plants are 2-6" high. Tank mix with other compatible fungicides for improved disease control under severe disease conditions. Max. 83.3 lb/A/year.
CONTANS WG	1-4 lb	0	NR	Apply prior to planting, at planting, or after crop emergence. Incorporate into soil to 2". Make 2 applications, but no more than 8, for maximum efficacy. Note 2.
CUPROFIX ULTRA 40 DISPERSS	0.75-3 lb	–	–	Apply low rates at 7-10 day intervals starting when plants are 6" high in locations where disease is light and up to 3 lb/A where disease is severe. Under severe disease, control will be improved by tank mixing with other compatible potato fungicides. Notes 1, 2.
CURZATE 60 DF	3.2 oz	14	–	Provides 1-3 days kick-back control along with 2-3 days of forward protection. Must be tank mixed with a base rate of a protectant fungicide such as mancozeb or chlorothalonil. Apply on a 7-day schedule and base rate of a protectant fungicide such as mancozeb or chlorothalonil. Apply on a 7-day schedule and switch to a 5-day schedule under heavy pressure. Notes 1, 2.
DITHANE F-45 RAINSHIELD	0.4-1.6 qt	3	–	Begin when plants are 4-6" high. Repeat at 5-10 day intervals. Do not apply more than 11.2 lb of active ingredients/acre/year. The addition of a surfactant performance will improve performance. Notes 1, 2.
ENDURA	2.5-4.5 oz: early blight 5.5-10 oz: white mold	10	0	For white mold, apply prior to row closure or at onset of disease. Make second application 14 days later. For early blight, apply prior to onset of disease and continue at 7-14 day intervals. Do not apply more than 2 sequential applications before rotating or more than 4 total. NIS at 0.25% v/v may improve performance. Notes 1, 2.
EVERLON/PRIAXOR	4-8 fl oz	7	–	Apply prior to when conditions favor disease development and continue on 7-14 day schedule. Use higher rate and shorter interval when disease has been confirmed and conditions are conducive to disease development. Use 6-8 fl oz/A for leaf spot, powdery mildew, rust, and white mold. Maximum 24 fl oz/A/season. Maximum 3 applications before rotating to another mode of action. Crop injury can result from use with OS or oil-based adjuvants.
EVITO 480 SC	2-3.8 fl oz	7	–	Apply as preventative on 7-10 day interval for early blight and a 7 day interval Alternate or tank mix with a low rate of a protectant fungicide. Apply as banded spray or in-furrow. Notes 1,2. for late blight suppression.
FLINT EXTRA	3-3.8 fl oz	7	–	Use 3.8 fl oz/A tank mixed with a protectant late blight fungicide. Begin applications preventatively. 7-10-day application interval. Max. one foliar application before alternating to a labeled effective non-QoI fungicide. Note 1. PHI 7 days.
FORUM	4-5.5 oz	4	–	Use as a preventative fungicide. Do not apply 2 consecutive treatments. Notes 1,2.
GAVEL 75DF	1.5-2 lb	3-14	–	Apply at the first sign of disease or when late blight is reported in the area. Apply every 5-7 days when pressure is high. Notes 1,2.
HEADLINE SC	6-12 fl oz	3	–	Use 6-9 fl oz/A for black dot and early blight. Apply at 7 day intervals. Apply in a program approach with products of alternate mode of action. Maximum of 6 applications per season. NIS at 0.25% v/v may improve performance. Notes 1, 2.
KOCIDE 3000	0.5-1.75 lb	0	–	Apply at 7- to 10 day intervals. Notes 1, 2.
LUNA PRO	10 fl oz	14	–	Apply at the critical timings for disease control. Continue as needed on a 7- to 14-day interval as long as the maximum annual rate is not exceeded. Maximum single application rate: 10.0 fl oz/A. Max annual application rate: 20.0 fl oz/a. Min. retreatment interval: 7 days. Apply by ground, aerial, or chemigation application equipment. Read and follow label disease resistance management directions for use.
LUNA TRANQUILITY	11.2 fl oz	7	–	Begin applications preventatively and continue a 7-14-day interval. May be applied by ground, air, or sprinkler chemigation. Maximum of 54.7 fl oz/A/season. Tank mix with chlorothalonil or an EDBC to aid in resistance management. Do not make more than 2 sequential applications of this or any Group 7- or Group 9-containing fungicide before rotating with a fungicide from a different MOA.

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				FOLIAR *(continued)*
MANZATE PRO-STICK or MANZATE MAX	1-2 lb or 0.4-1.6 qt	3,14	–	Apply at 5-10 day intervals. PHI 3 days in CT, DE, FL, MA, ME, MI, NH, NY, OH, PA, RI, VT, WI; 14 days elsewhere. Notes 1, 2.
MIRAVIS PRIME	9.2-11.4 fl oz	14	NO	Max. 34.2 fl oz/A/year. Max. 3 applications at max. rate/year. 7-day min. application interval. May be applied by ground, air (10 GPA; max. 2 applications), or sprinkler irrigation. An adjuvant may be used. Do not make >2 applications of this or other Group 7, 12 fungicides before rotating to different MOA. White mold: 13.4 fl oz/A at row closure followed by 2nd applications 14 days later.
OMEGA 500F	5.5-8 fl oz: foliar 24-48 fl oz: in-furrow	14	–	Foliar for late blight and white mold: Apply when potatoes are 6-8" tall or when conditions favor disease development. Use higher rate for moderate to high white mold pressure. Maximum 3.5 pt/A per season. In-furrow for powdery scab suppression: Apply in 5-10 GPA; rate depends on disease field history. Notes 1, 2.
OMEGA TOP MP	5.5-8 fl oz	14	–	Use 5.5 fl oz/A for late blight and 5.5-8 fl oz/A for white mold. Begin when plants are 6-8" and conditions favor disease development. Repeat at 7-10 day intervals. Use 5.5 fl oz/A for low to medium white mold pressure.
ORONDIS OPTI	1.75-2.5 pt	7	NR	Begin ground (min. 15-20 GPA), air-assisted (min. 10 GPA) or aerial (min. 5 GPA) applications prior to disease development; continue on a 5-day interval. Max. 2.5 pt/A/application. Max. 10 pt/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
ORONDIS ULTRA	5.5-8.0 fl oz	14	–	Begin ground (min. 15 GPA) or aerial (min. 5 GPA) applications prior to disease development. Min. 7-day application interval. Max. 8 fl oz/A/application. Max. 32 fl oz/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
PENNCOZEB 75DF	0.5-2 lb	3, 14	–	Begin applications when plants are 4-6" high with 0.5-1 lb. As vines increase in size, apply 1.5-2 lb/A at 5-10 day intervals or 0.75-1 lb at 3-5 day intervals. Maximum of 15 lb/A per crop. PHI (3 days in MI, NY, OH, PA, WI and northeastern states). Use within an IPM program. Notes 1, 2.
PH-D	6.2 fl oz	0	–	Apply preventatively and continue on a 10-14 day interval.
PHOSTROL	2.5-10 pt	0	–	Late blight and storage rot diseases: Apply by air, ground or sprinkler irrigation every 4-14 days depending on disease conditions. Post-harvest late blight, pink rot and silver scurf: Apply 0.1 gallon/ton of tubers in spray volume of 0.5 gallon; see label for Maine restrictions.
PREVICUR FLEX	0.7-1.2 pt	14	–	Use only in tank mixes with other fungicides and use in a preventative program. Apply on a 7-10 day interval. Maximum 6 pt/A/season. Min. 6 GPA by air. Under conditions that favor rapid disease development and severe disease conditions, apply at 1.2 pt/A with tank mix partner on a 10 day interval; alternating on the fifth day with a contact fungicide. Notes 1, 2
PREVISTO	1-3 qt	0	NR	Apply lower rates at 7-10 day intervals starting when plants are 6" high and higher rates under severe disease pressure.
PROVYSOL	3-5 fl oz	7	7	Max. 5 fl oz/A/application. Max. 3 applications/year at 5 fl oz/A, or max. 5 applications/year at 3 fl oz/A. Max. 15 fl oz/A/year. 7- to 14-day min. application interval.
QUADRIS OPTI	1.6 pt	14	–	Do not make more than 1 sequential foliar application of Quadris Opti or other QoI fungicide before alternating to fungicide with alternate MOA. Do not make more than 6 applications per acre per year of Quadris Opti or other QoI fungicide. Notes 1, 2.
QUADRIS TOP	8-14 fl oz	14	–	Begin applications prior to disease development. Continue on 7-14 day interval. Include a spreading/penetrating adjuvant. Do not apply >55.3 fl oz/A/year. Notes 1, 2.
QUASH	2.5-4 oz	1	NO	Apply when conditions favor disease development and continue on 7-10 day intervals. Maximum 4 applications/season. Do not make more than 2 sequential applications. Adjuvants may not be used. For white mold control, apply at 4 fl oz/A prior to infection. Make second application 14 days later if conditions favor development.
RANMAN	1.4-2.75 fl oz	7	–	For late blight, apply on a 7-10 day schedule beginning when warning forecast disease infection periods, generally at row closure or when conditions are favorable for disease development. Use the high rate and shortest interval for high disease pressure and/or fast crop development for best control. Apply with organosilicone adjuvant only. Use water volumes of 20-50 GPA for complete coverage. Maximum of 27.5 oz/A/season. 2ee many states (exp. date not given) for suppression of Pythium ultimum at 2.75 fl oz/A lay by/hilling .

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
				FOLIAR *(continued)*
REVUS	8 fl oz	14	–	May be applied by ground, air or sprinkler irrigation. Max. 2 applications before rotating to another mode of action. Max. 32 fl oz/A/year, all application methods (including seed piece treatment); see label for max. lb a.i./A mandipropamide. Include NIS or COC. Begin applications prior to disease development and continue on a 7- to 10-day schedule.
REVUS TOP	5.5-7 fl oz	14	–	Begin applications prior to disease development. Continue on 7-10 day interval. Include NIS or COC.* Notes 1, 2
RIDOMIL GOLD BRAVO SC	2.5 pt	14	–	When used as a foliar application in a preventative disease control program, will provide effective control of early and late blight, pythium leak and pink rot. Prevention: Make preventative applications early in the season when conditions favor disease development (before infection), but no later than when foliage uniformly meets within the row. Make 3 applications at 14-day intervals. The full rate of a protectant should be applied before, between or after Ridomil Gold Bravo SC applications. Notes 1,2.
RIDOMIL GOLD COPPER	2 lb	14	–	When used as a foliar application in a preventative disease control program program, will provide effective control of late blight, pythium leak and pink rot. Prevention: Make preventative applications early in the season when conditions favor disease development (before infection), but no later than when foliage uniformly meets within the row. Do not make more than 3 applications/ year. The full rate of a protectant should be applied before, between or after Ridomil Gold Copper applications.
RIDOMIL GOLD MZ WG	2.5 lb	3, 14	–	When used as a foliar application in a preventative disease control program, it will provide effective control of late blight, pythium leak and pink rot. Prevention: Make preventative applications early in the season when conditions favor disease development (before infection), but no later than when foliage uniformly meets within the row. Make 3 applications at 14-day intervals. The full rate of a protectant should be applied before, between or after Ridomil Gold MZ WG applications. PHI 14 days, except 3 days in CT, DE, FL, MA, ME, MI, NH, NY, OH, PA, RI, VT, WI (see label). Notes 1, 2.
RIDOMIL GOLD SL	0.42 fl oz/1000′ row 1-2 pt (foliar)			Apply in-furrow over seed pieces in 6-8″ band, or use markout application method (incorporated). May need to follow in-furrow with prepack or tank mix foliar application at tuber initiation.
ROVRAL 4F	1-2 pt	14	–	Apply at 10-14 day intervals or as required for early blight control. When applying through irrigation, deliver between 0.1-0.2″ water per acre. DO NOT irrigate for 24 hrs. after application. A maximum of 4 applications may be made per season. For white mold, apply just prior to row closure or at first sign of disease and repeat on 14-21 day interval, if disease development continues. Notes 1, 2.
SCALA SC	7 fl oz	7	–	Begin applications (7-14 day interval) as soon as crop/or environmental conditions become favorable for disease development. Do not apply more than 35 fl oz/A per season. Tank mix Scala with a protectant fungicide such as a chlorothalonil or mancozeb. Supplemental label many states (exp. date not given) for early blight, Botrytis leaf spot, black dot (suppression), late blight and brown spot at reduced rates in a tank mix.
SERENADE ASO	2-4 qt	–	–	Bacillus subtilis is a biological fungicide. Drench at planting or at any stage of growth; shanked-in and injected; in-furrow. See supplemental label for additional information.
SERENADE OPTI	14-20 fl oz	0	0	Bacillus subtilis is a biological fungicide. Suppression or control, application timing and repeat interval depends on disease - see label for additional diseases listed as control and disease control restrictions specific to California.
TANOS	6-8 oz	14	–	Use 6 oz/A for brown spot and early blight. Must be tank mixed with an appropriate contact fungicide that has a different mode of action, such as mancozeb or chlorothalonil. Do not make >1 application of Tanos before alternating with a fungicide that has a different mode of action. Maximum of 6 applications or other group 11 fungicides per season. Notes 1, 2.
TETRABAN	0.4-0.8 fl oz/1000′ row; 6-20 fl oz	14	–	See label application rates, methods and timing for soilborne vs. foliar diseases.
TOP MP	5.5-7 fl oz	14	–	Begin at first sign of disease or when conditions are conducive for disease development. Continue on 7-14 day schedule. Notes 1,2.
TOPSIN 4.5FL/T-METHYL 4.5 F or TOPSIN M WSB/ T-METHYL 70 WSB	20-30 fl oz or 1-1.5 lb	21	–	Make the first application just prior to row closure. Repeat within 7-14 days if conditions for disease development are favorable. Thorough coverage of the lower stems and branches is essential. Maximum of 80 fl oz/A/season or 4 lb/A/season. May be tank mixed with other fungicides. Notes 1, 2.
ULTRA FLOURISH	6.4-4 fl oz	14	–	Pythium leak and pink rot: Foliar applications beginning at flowering and then 14 days later (with third application 14 days later in fields with history of disease). Max. 1.36 pt/A/crop.

See notes and footnotes at end of table.

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
FOLIAR *(continued)*				
VELTYMA	5-10 fl oz	7	7	Max. 10 fl oz/A/application. Max. 3 applications/year at 10 fl oz/A, or max. 6 applications/year at 5 fl oz/A. Max. 30 fl oz/A/year. 7- to 14-day min. application interval. Late blight: Follow application with a non-Group 11 late blight specific fungicide 5 to 7 days later.
VELUM PRIME	6.0-6.84 fl oz	7	7	For soil Applications, Apply specified dosage as an in-furrow spray during planting directed on or below seed. Apply specified dosage using overhead chemigation equipment. Apply by chemigation in delivery volumes between 0.5-0.75" of water to suppress early blight and whitemold. Do not apply more than 13.7 fl oz (0.446 lbs fluopyram)/A/year, regardless of formulation or method of application (soil or foliar). Do not make >2 sequential applications of Velum Prime or any Group 7-containing fungicide before rotating to a different group. In growing areas where MRLs are enabled for export markets, Velum Prime may be applied in a 3-5" band in-furrow at planting. Check with contracting company to ensure that this method of application is approved. Velum Prime is also a nematicide. Velum Prime is not labeled for use in AZ, CA, or HI.
ZAMPRO	11-14 fl oz	4	–	Begin applications prior to disease development and continue on 5-7 day interval. May be applied after vine kill. Maximum 3 applications/season. Do not make more than 2 sequential applications before switching to a different mode of action.
ZING!	32-34 fl oz	7	NR	Apply on preventative schedule. Use a 5-7 day schedule when the diesease is present. Notes 1,2.

GROWTH RETARDANTS

Products	Rate/Acre	Use	Comments/Restrictions
ROYAL MH-30 XTRA or ROYAL MH-30 SG	1-1.33 gal or 5 lb	Sprout Inhibitor	Use 1.33 gal/A Royal MH-30 Xtra where vines are robust or stay green up to time of desiccation. See Royal MH-30 SG label for use directions East or West of the Rocky Mountains.

PHI – preharvest interval days. G/F – grazing and feeding interval days. NO – do not graze or feed.
NOTE 1: May be applied by air.
NOTE 2: May be applied by chemigation.
NOTE 3: Apply Cruiser using Syngenta approved equipment designed for liquid seed treatment. See label for equipment calibration and delivery of maximum fl oz/cwt final solution. Compatible with Maxim 4FS. Do not exceed 0.125 lb thiamethoxam a.i./A.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Inforamtion section for more information on use restrictions.

NOTES

KEY
9-10 = EXCELLENT
8 = GOOD
7 = FAIR
<6 = POOR
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES										BROADLEAVES														
			Barnyardgrass	Broadleaf Signalgrass (bracharia)	Crabgrass	Fall Panicum	Flatsedges	Nutsedge	Red Rice	Spikerush	Sprangletop (tighthead) (Christmas Tree Grass)	Sprangletop (loosehead) (bearded sprangletop)	Amania (red stem)	Cocklebur	Dayflower	Ducksalad	Ecipta	False pimpernel	Gooseweed	Groundcherry	Northern jointetch(curly indigo)	Indian jointvetch	Morningglory	Palmleaf Morningglory	Hemp Sesbania (coffeebean)	Smartweed	Water Hyssop
PREEMERGENCE OR WATER SEEDED																											
BOLERO, DELAYED PRE	E	15	7	5	7	7	7	4	N	7	**9**	**9**	7	4	**8**	7	**8**	**8**	6	N	5	5	5	5	5	5	7
BOLERO, WATER SEEDED	G	15	**8**	7	7	7	7	3	**8**	5	**8**	**8**	3	N	6	6	5	5	6	U	4	4	5	U	6	5	5
CLEARPATH[1]	E	2	**9**	**9**	**9**	7	**9**	**9**	**8**	**8**	**9**	7	**9**	**8**	**9**	**8**	**9**	3	6	U	**8**	**8**	**9**	**9**	**8**	7	3
COMMAND 3ME, PRE/ DELAYED PRE	F/G	13	**9**	**9**	**9**	**9**	N	N	N	1	**9**	**9**	N	2	3	3	3	U	N	U	3	3	3	4	2	2	N
FACET L, DELAYED PRE	G	4	**9**	**9**	**9**	**8**	5	N	N	1	N	N	3	4	5	3	**8**	3	3	**8**	7	7	7	7	6	N	6
FACET L + BOLERO, DELAYED PRE	F/G	4,15	**9**	**9**	**9**	**9**	**8**	N	N	7	**8**	**8**	6	4	7	7	**9**	7	5	N	**8**	**8**	**8**	**8**	**8**	5	6
FACET L + PROWL H2O, DELAYED PRE	F/G	4,3	**9**	**9**	**9**	**9**	5	N	N	1	7	7	3	N	5	3	**8**	3	3	N	7	7	**8**	**8**	7	N	6
FIRSTSHOT	G/E	2	U	U	U	U	U	5	U	U	U	U	6	**8**	U	7	7	U	U	U	**8**	**8**	U	7	**8**	**9**	U
LEAGUE	E	2	N	N	N	N	**9**	**8**	N	5	N	N	7	N	**8**	**8**	**8**	7	**8**	7	**8**	**8**	7	7	**8**	**8**	**9**
PROWL H2O, DELAYED PRE	F	3	**8**	6	**8**	7	N	N	N	N	6	6	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
EARLY																											
AIM EC, EARLY	F/G	14	N	N	N	N	N	N	N	N	N	N	6	**9**	7	5	7	6	5	**8**	**8**	**8**	**8**	**8**	**9**	**8**	7
AVALANCHE ULTRA + PROPANIL, EARLY	G	14,5	**8**	**8**	**8**	**8**	**8**	5	N	**8**	4	5	6	5	5	7	**8**	7	5	**8**	**9**	**9**	**8**	**8**	**9**	7	**8**
BASAGRAN/BASAGRAN 5L, EARLY	E	6	N	N	N	N	**8**	6	N	**8**	N	N	**8**	**9**	**9**	6	7	7	7	N	3	3	3*	**8**	3	**8**	**8**
CLINCHER, POST-FLOOD	E	1	**8**	7	**9**	**9**	N	N	N	N	**8**	**8**	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CLINCHER, EARLY POST, MIDSEASON	E	1	**9**	**9**	7	**9**	N	N	N	N	**9**	**9**	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FACET L, EARLY POST	E	4	**9**	**9**	**9**	6	5	N	N	1	N	N	3	7	3	3	**9**	3	3	**8**	**8**	**8**	**8**	**8**	**8**	N	3
FACET L + BOLERO, EARLY POST	E	4,15	**9**	**9**	**9**	**9**	7	N	N	7	**8**	**8**	6	7	7	7	**9**	7	5	**8**	**8**	**8**	**8**	**8**	**8**	4	6
GRANDSTAND + PROPANIL, EARLY	E	4,5	**9**	**9**	**9**	**9**	**9**	5	N	**9**	5	6	**9**	**9**	5	7	**9**	**8**	**8**	4	**9**	**9**	**9**	7	**9**	7	**8**
GRASP, EARLY POST	G	2	**9**	4	N	N	**10**	6	N	**8**	N	N	**8**	**9**	**9**	**9**	**9**	7	**8**	**8**	**9**	**9**	6	6	**9**	7	**8**
GRASP, POST-FLOOD	G	2	**9**	N	N	N	**9**	6	N	U	N	N	6	**8**	**8**	**9**	**9**	U	U	**8**	**8**	**8**	N	N	**8**	**8**	**8**
GRASP XTRA, EARLY POST	G	2,5	**8**	2	N	N	**10**	N	N	N	N	N	**8**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**8**	7	**9**
HERBIVORE/PERMIT, PRIOR TO FLOOD	F	2	N	N	N	N	**8**	**9**	N	5	N	N	5	**9**	**8**	3	N	5	5	6	3	3	4	3	7	5	5
LEAGUE, EARLY POST	E	2	N	N	N	N	**8**	N	N	N	7	**8**	**8**	4	**8**	7	**8**	**8**	**8**	**8**	**9**	**8**	7	**9**	7	**8**	**9**
LONDAX, EARLY POST-FLOOD	E	2	N	N	N	N	**8**	6	N	**8**	N	N	**9**	5	**8**	7	**8**	**9**	**9**	N	6	6	5	5	6	6	**9**
LOYANT	G	E	**8**	**8**	5	7	**9**	**8**	5	**8**	7	5	**9**	U	**9**	**9**	**9**	U	**8**	7	**9**	**9**	7	5	**9**	7	**9**
NEW PATH, 2 APPLICATIONS	F	2	**9**	**9**	**9**	5	**9**	**8**	**9**	**9**	**8**	7	**8**	**9**	5	**8**	6	N	5	**9**	N	N	7	7	N	**8**	6
PROPANIL, *(Stam M4)* EARLY *(weeds < 2")*	E	2	**9**	**9**	**9**	**9**	**9**	4	N	**9**	5	6	6	5	5	6	**8**	7	5	3	**8**	**8**	5	5	**9**	7	**8**

See notes and footnotes at end of table

RICE HERBICIDE PERFORMANCE RATINGS *continued*

KEY
9-10 = EXCELLENT
8 = GOOD
7 = FAIR
<6 = POOR
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES										BROADLEAVES													
			Barnyardgrass	Broadleaf Signalgrass (bracharia)	Crabgrass	Fall Panicum	Flatsedges	Nutsedge	Red Rice	Spikerush	Sprangletop (tighthead) (Christmas Tree Grass)	Sprangletop (loosehead) (bearded sprangletop)	Amania (red stem)	Cocklebur	Dayflower	Ducksalad	Ecipta	False pimpernel	Gooseweed	Groundcherry	Northern jointetch(curly indigo)	Indian jointvetch	Morningglory	Palmleaf Morningglory	Hemp Sesbania (coffeebean)	Smartweed	Water Hyssop
EARLY *(continued)*																										
REBEL EX, EARLY POST	G	2,1	**8**	7	7	**9**	**9**	**8**	**8**	N	6	**8**	**8**	**9**	**9**	**9**	**9**	7	**8**	**9**	**9**	6	6	**9**	**8**	**8**	**8**
REBEL EX, POST-FLOOD	E	2,1	**8**	**9**	**8**	**8**	**9**	**8**	**8**	N	6	5	6	**8**	**8**	**9**	6	6	**8**	**8**	**8**	N	N	**8**	6	**8**	**8**
REGIMENT, PRE or POST-FLOOD	G	2	**9**	N	N	N	**8**	6	N	7	3	3	**8**	U	**8**	**8**	7	6	7	U	**9**	7	6	3	7	7	7
RICESTAR HT, EARLY POST	F/G	1	**8**	**9**	**8**	7	N	N	N	N	**9**	7	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
STRADA	E	2	N	N	N	N	**9**	7	N	U	N	N	**8**	U	7	**8**	7	U	U	4	**9**	**8**	7	6	**9**	5	U
MID-SEASON																											
AVALANCHE ULTRA + PROPANIL, MIDSEASON	G	14,5	5	5	5	5	6	4	N	7	N	N	5	6	2	4	5	5	2	5	6	6	**8****	7	**9**	4	**8**
GRANDSTAND + PROPANIL, MIDSEASON	G	4,5	4	4	4	2	**8**	3	N	**8**	N	N	**9**	**9**	6	6	6	**8**	7	3	**9**	**9**	**9**	**9**	**9**	5	**8**
LOYANT	G	E	**8**	**8**	5	7	**9**	**8**	5	**8**	7	5	**9**	U	**9**	**9**	**9**	U	**8**	7	**9**	**9**	7	5	**9**	7	**9**
2, 4-D, MIDSEASON	F/G	4	N	N	N	N	**8**	5	N	**8**	N	N	**9**	**9**	**9**	**9**	**9**	**9**	6	5	5	5	**9**	**9**	**9**	6	**9**
2, 4-D + PROPANIL, MIDSEASON LEVEES	F/G	4,5	6	6	6	6	**8**	6	N	**8**	6	6	**9**	**9**	**9**	**8**	**9**	**9**	**8**	5	**8**	**8**	**9**	**8**	**9**	7	**9**

[1] Clearfield rice only.
[A] Site of action, described in Technical Information section.
* Rating is 8 for palmleaf morningglory.
** Runners less than 1 ft.

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

RICE HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast(hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
AIM EC	PP POST PH	PP up to 30 days before planting to emerged weeds. POST to 2 leaf or larger rice. Apply when crop is mature and grain has begun to dry down.	10	3	6-8	NR	NR	4 3
AVALANCHE ULTRA	POST	Apply from later tillering (past 3 leaf) up to early boot stage.	10-50	10	4	NO	NO	50
BASAGRAN/BASAGRAN 5L	POST	Apply early before weed exceed maximum size on label.	10-20	10	4	NR	NR	NR
BEYOND XTRA	POST	Apply between rice tillering and panicle initiation plus 14 days, only to Clearfield rice.	10	10	1	NR	NR	NR
BOLERO 8EC	PRE POST	Delayed PRE for dry seeded. Early POST for dry or water seeded. See label for timing and restrictions.	10-20	10		NR	NR	NR
BOLERO ULTRAMAX	POST	After flooding when rice is 2 leaf.				NR	NR	NR
BUTTE	PRE POST	Postflood at day of seeding. Postflood up 4 true leaf rice.	NL	NR	NL	NL	NL	82
CLEARPATH	PP PRE POST	Clearfield rice only. PP up to 7 days prior to planting. PRE before rice emergence. POST prior to permanent flood. Rice should be spike to 5 leaf for drill or broadcast seeded and 2-5 leaf for water seeded.	10	10	0.5	NR	NR	45
CLINCHER SF	POST	Apply from 1 leaf rice up to 60 days PHI.		10	2	NR	NR	60
COMMAND 3ME	PP PRE POST	PP up to 14 days before planting. PRE up to 7 days after planting, but before weed emergence; 24c LA, TX for aerial application. POST at 1-5 leaf rice.	10-40	24c		NO	NO	NL
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP PRE	Apply prior to planting or crop emergence to emerged weeds. Before crop emerges.	3-40	3-15	S	56	56	56
CREDIT XTREME		SEE ROUNDUP						
DUET	POST	Apply to 1-3 leaf grass for best results. Labeled up to 6 leaf grass.	20-30	10	48	NR	NR	60
ELEVORE	PP	Burndown up to 14 days before planting.	8	5	1	NL	NL	NL
EXPRESS	PP	Burndown. Delay planting ≥ 14 days.	5	25	4	NO	NO	NR
FACET L	PP,PRE POST	PP or PRE for dry seeded only. Aerial application in select states and counties only; see label. POST for dry or water seeded. Do not apply if rice is heading.	5-40	5	6	NR	NR	40
FIRSTSHOT SG	PP	Prior to planting in AR, LA, MO, MS.	5	5		NO	NO	NR
FRAMEWORK 3.3 EC or PROWL H20	PRE POST	Drilled seeded rice only. Delayed PRE. Rice must have imbibed water. Early POST in tank mixes.	10	5		NO	NO	NR
GRAMOXONE SL 3.0 ‡	PP,PRE	Apply prior to planting or crop emergence to emerged weeds.	10	5	0.5	NR	NR	NR
GRANDSTAND R	PP POST	PP at least 21 days before dry seeded and at least 14 days before water seeded rice. POST from 2-3 leaf rice to 0.5″ internode elongation.	10	5	3	NR	NR	60
GRASP SC	PRE POST	After rice planting and before rice and weeds emerge. Apply from emergence (drilled) or pegging at 1 leaf with no exposed roots (water seeded) up to 60 days PHI.	10	5-10	1	NR	NR	60
GRASP XTRA	POST	Drill seeded: 2-3-leaf to 1/2″ internode elongation. Water seeded: 3-4-leaf to 1/2″ internode elongation.	10	10	1	NR	NR	60
HERBIVORE	PRE POST	Prior to crop emergence Apply at 3-5 leaf stage.	10	3-15	4	30	30	48
HONCHO K6		SEE ROUNDUP						
LEAGUE	PRE POST	Apply to moist seed bed in drill seeded rice. Apply to at least 2-leaf rice that is drill- or water-seeded. AUp to 2″ internode rice for dry or waterseeded.	10	10	6 6	NR	NR	A
LEAGUE MVP	PRE	Apply after flooding when rice is in the expanded two-leaf stage	–	–	–	–	–	–

See notes and footnotes at end of table

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast(hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
LONDAX	PP PRE POST	PP with glyphosate. Apply to submerged weeds PRE to early POST. 5 GPA by ground/air post flood submerged. 5 GPA ground/air wet or post flood submerged. Apply at 1-3 leaf rice.	5 or 10	5 or 10 10	4 5	60 (80 CA)	60 (80 CA)	60 (80 CA)
LOYANT	POST	Apply when daytime and nighttime temperatures are ≥60 °F from 2-leaf stage (drill seeded or water-seeded) with no exposed roots up to 60 days preharvest.	10	10	2	NL	NL	60
NEWPATH	PP PRE POST	For Clearfield rice only. PPI up to 7 days before planting. PRE before rice emergence. POST from 3-5 leaf rice. Spike-2 leaf allowed with sequential.	10	10	0.5	NR	NR	45
PANOFLEX	PP	PP and Post-harvest burndown.	5-20	2-5	4	14	7	NR
PERMIT PLUS	PRE POST	Burndown prior to planting. From prior to rice emergence through permanent flood or 48 days PHI.	10	3	4	NR	NR	48
PERMIT 75WG	PP POST	PP burndown, wait at least 2 months before planting. POST to 3-5 leaf rice or dry broadcast to 1-2 leaf rice.	10	3-15	4	NR	NR	48 (69 CA)
PROWL H2O		SEE FRAMEWORK 3.3 EC						
REBEL EX	POST	Drilled seeded: from rice emergence up to 60 days PHI. Water seeded: from rice pegging 1-lf up to 60 days PHI.	10	10	2	NR	NR	60
REGIMENT	POST	Apply to rice after 3 leaf up to panicle initiation (green ring).	15-20	10	8	NR	NR	NR
RICESTAR HT	POST	Preflood: rice 2 leaf to late tillering but before panicle initiation. Post flood: rice after first tiller.	10	10	1	NO	NO	65
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	PP PRE	Apply prior to planting or crop emergence to emerged weeds. Before crop emerges.	3-40	3-15	S	56	56	
RUGGED	PP POST	Apply 4 or more weeks before planting. Apply in the late tillering stage at the time of first joint development.	5	2	6	NR	NR	60
SHARPEN	PP PRE POST	PP burndown ≥15 days before planting in drained fields and ≥45 days before permanent flood is established. Apply up to 3 days after rice planting. Add an adjuvant system. Apply to small actively growing emerged broadleaf weeds when rice has reached the 2-leaf stage up to internode elongation.	3	5	1	NR	NR	NR
STAM M4	POST	Apply to 1-4 leaf grass for best results. Labeled up to 6 leaf and early tillering grass.	15-20	12-15	8	60	60	60
STAM 80 EDF	POST	Apply to 1-4 leaf grass for best results. Labeled up to 6 leaf and early tillering grass.	15-20	12-15	8	60	60	60
STORM	POST	Late tillering up to early boot.	10-50	5-10	4	NO	NO	50
STRADA	POST	Dry seeded-early POST to pre-flood. Water seeded-early POST to mid-late POST. In CA, use pin-point system.	10	5	6	NR	NR	NR
STRADA PRO	POST	Apply in 2-4 leaf rice.	10	3-15	6	30	30	48
STRADA XT2	PP PRE POST	Dry seeded rice. Dry seeded rice. At least 2-leaf rice up to 1/2" internode elongation or PHI 40 days. Do not apply to rice in heading.	10-40 10-40 10-20	5	6	NR	NR	40
SUPERWHAM!	POST	Apply to 1-3 leaf grass for best results. Labeled up to 6 leaf grass.	20-30	10	48	NR	NR	NR
VALOR SX/VALOR EZ	POST	Apply after 10/15 in Region 2 and 11/15 in region 1 or when soil temperature falls below 50 °F at 2".	15-60	7-10	–	–	–	60

See notes and footnotes at end of table

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast(hrs)	Intervals[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
2, 4-D AMINE 4/WEEDAR 64/ WEEDONE 638/WEEDAR XHL	PP POST	PP 4 weeks or more prior to planting. POST in late tillering at first joint, but not after panicle initiation or rice internodes >0.5", or at early seedling, early panicle, boot, flowering or early heading growth stages.	see label	see label	4-6	NR	NR	60

[1] Application Timing and Interval
[2] Includes labeled minimum or range.
PP - Preplant surface, unless otherwise specified
PRE - Preemergence
PPI - Preplant incorporated
POST - Postemergence
PH - Preharvest
NR - No restrictions
NO - Not permitted
NL - No related information on label
CA - California
S - Heavy rainfall seeon after application may require retreatment.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

RICE HERBICIDE APPLICATION RATES

BURNDOWN		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal, include WC+NIS as needed*	Apply EPP through planting. Can tank mix with Harmony Extra SG or 2, 4-D. See label for perennial rates. Note 10.
CREDIT XTREME	SEE ROUNDUP	
ELEVORE	1 fl oz	PP burndown to actively growing weeds up to 14 days before planting. Use with MSO.*
EXPRESS	0.25-0.5 oz + 0.5-1 gal HSOC-COC or HSOC-MSO/100 gal*	PP. Delay planting ≥ 14 days. NIS may be used. UAN/AMS may be added.*
FIRSTSHOT SG	0.5-0.8 oz	As a burndown treatment to control emerged weeds. If applying 0.5-0.6 oz/A, must use with another registered burndown herbicide (see label for tank mixutres). Sequential treatments (allow 30 days between applications) provided total amount applied is not >1 oz/A/year. COC, MSO, NIS improve control.*
GRAMOXONE SL 3.0 ‡	1.3-2.7 pt + 2 pt NIS/100 gal	Use high rate on weeds over 3". Can tank mix with Harmony Extra SG or 2,4-D. Do not flood or flush within 48 hour of application to ensure complete weed kill. Min. 7-day application interval. Max. 3 applications/year. Max. 1.0 lb a.i./A/year.
GRANDSTAND R	1 pt	Apply at least 21 days before planting dry-seeded rice. Do not exceed 2 pints/growing season.
HARMONY EXTRA SG	0.45-0.9 oz	Use 0.45-0.9 oz/A with Gramoxone SL 3.0 or Roundup. Do not apply within 45 days of planting.
HONCHO K6	SEE ROUNDUP	
LONDAX	0.5 oz	Tank mix with Roundup for improved control of yellow nutsedge, Penn. smartweed, hemp sesbania and morningglory species.
PANOFLEX	0.3-0.6 oz	Burndown treatment when weeds have emerged and actively growing. Apply to crop stubble or fallow treatment. May be applied 0 days before planting. Include NIS, COC or MSO with UAN/AMS.*
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums; add 17 lb AMS/100 gal, or WC+NIS*	Apply EPP through planting. Can tank mix with Harmony Extra SG or 2, 4-D. See label for perennial rates. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates. Note 10.
ROUNDUP POWERMAX 3; WEATHERMAX + HARMONY EXTRA SG or LONDAX or PERMIT 75WG or ***2,4-D AMINE 4***	See label for precise rates associated with weed species and annual per acre maximums + 0.45-0.9 oz or 0.5 oz or 0.67 oz or 1-2 pt	Field must be free of standing water. Use 5-10 GPA spray volume. May use other glyphosate herbicides: Roundup herbicides, Cornerstone or others at labeled rates. Note 10. Apply at least 45 days before planting. Apply at least 7 days before seedbed prep or planting. Apply at least 7 days before seedbed prep or planting. Do not plant for 4 weeks. Use only formulations labeled for burndown.
SHARPEN	1-2 fl oz + 0.75 pt HSOC-MSO*	PP burndown ≥ 15 days before planting in drained fields and ≥45 days before permanent flood is established. See label for tank mixes and other restrictions.
2,4-D AMINE 4	1-2 pt	Use only formulations labeled for burndown in rice. Do not plant for 4 weeks. Not labeled in CA.
PREPLANT OR PREEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
BOLERO 8EC (dry seeded only)	2 qt	DELAYED PRE. Apply 1-5 days before emergence (5-9 days after planting) to soil sealed by rain or flood. Tank mixes: Facet L, propanil or Prowl H2O (drilled rice only). Notes 2, 3.
CLEARPATH	8 oz + 0.5 gal HSOC-COC or 1 qt NIS/100 gal*	Apply to Clearfield rice only up to 7 days PP, PRE, or POST prior to permanent flood. Rice should be less than 5-leaf. PHI 45 days. See label for states specific restrictions.
COMMAND 3ME	**Coarse soil:** 11-14 fl oz **Medium soil:** 17-21 fl oz **Fine soil:** 21-34 fl oz	PP or PRE. Apply up to 14 days before planting through 7 days after planting, but prior to weed emergence to smooth seedbed with rice covered soil. For conventional, stale seedbed, and no-till. Add glyphosate if emerged vegetation is present. 24c LA (exp. 5/2027); TX (exp. 12/2029): for aerial application. Notes 6, 9.
FACET L (dry seeded only)	**Sandy loam soil:** 22-28 fl oz **Medium soil:** 32 fl oz **Fine soil:** 43 fl oz:	Apply before, during, or after planting of dry-seeded rice. Do not apply if rice is heading. Ground application 5-40 GPA, aerial 5 GPA. Can tank mix with Prowl H2O. Always include a drift control adjuvant like InterLock. Notes 1, 2.

See notes and footnotes at end of table

PREPLANT OR PRE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
FRAMEWORK 3.3 EC or PROWL H2O (dry seeded only)	1.8-2.4 pt or 1.5-2 pt	DELAYED PRE. Apply after planting and before rice or weed emergence of drilled, dry-seeded rice only. Rice must have imbibed water or injury can occur. Can apply PRE and early post with a tank mix partner. Prowl H2O alone has no post activity. See label for additional restrictions. Notes 1, 2.
GRASP SC	2 fl oz + 1 pt HSOC-COC or HSOC-MSO*	For use in AR, FL, LA, MS, MO, TX only. Apply PRE prior to permanent flooding. Always use 1 qt COC or MSO.* Improved weed control has been seen with 1 qt/A MSO.* Can be tank mixed with Command 3ME, Prowl H2O, Grandstand, Facet L, Stam, Newpath, Herbivore/Permit, or Londax as needed for expanded weed control. Prevent drift to sensitive crops such as soybeans, cotton, and other broadleaf crops.
HERBIVORE	0.67-1.33 oz + 1-2 qt NIS/100 gal*	PP or PRE. Apply before crop emergence. Include NIS. May be tank mixed with glyphosate or propanil as a preplant burndown. Maximum 1.33 oz/A/use year.
LEAGUE	3.2-6.4 oz	Apply to moist seed bed. Seal by flushing or rainfall prior to application. For sequential program, follow with a POST application no sooner than 21 days after PRE. Drill-seeded rice. Use at 6.4 oz/A on high clay soil with pH >8 may stunt rice.
LEAGUE MVP	30-35 lb	Apply after flooding when rice is in the expanded two-leaf stage. Only fixed wing aircraft can be used in aerial application.
NEWPATH	4 fl oz PPI,PRE followed by 4 fl oz POST	For Clearfield rice only. Controls many annual broadleaves and grasses including red rice. Growers must be certified by the Clearfield Rice Stewardship program to purchase and use. Tank mixes include Facet L, Basagran, Avalanche Ultra and propanil.
PERMIT PLUS	0.75 oz	Burndown prior to planting in a tank mix with glyphosate. Include NIS or COC + UAN/AMS.* Supplemental label in AR (exp. date not given) for 2 way tankmix and Permit Plus at 0.75-1.5 oz/A.
PROWL H2O	SEE FRAMEWORK 3.3 EC	
SHARPEN	1-4 fl oz	Apply up to 3 days after planting. Add HSOC-COC or HSOC-MSO at 1 pt/A.*
STRADA XT2	6.5-10 oz	Apply before, during or after planting dry-seeded rice. Do not use PRE in water-seeded rice.
2,4-D AMINE 4 or WEEDAR 64	1-2.1 pt or 1-2.5 pt	Do not use in CA. Max. per application: 2.1 pt/A or 2.5 pt/A. Max. 1 PP application/crop cycle. Max. per crop cycle: 3.16 pt/A or 3.25 pt/A or 2.5 pt/A incl. POST application.
WEEDAR HXL	10.6 - 21 fl oz	Do not use in CA. Max. per application: 21 fl oz/A. Max. 1 PP application/crop cycle. Max. per crop cycle: 32 fl oz/A incl. POST application.

POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
AIM EC	1.5 fl oz: dry seeded 3-6 fl oz: post flood	Apply to 2 leaf or larger rice. Add 0.25% v/v NIS. Apply after permanent flood when 80% of weed foliage is exposed. May be tank mixed with NewPath, Herbivore/Permit, Facet L, Grandstand R, 2,4-D, Basagran, and Avalanche Ultra.
AVALANCHE ULTRA	0.5-1 pt + 1 qt NIS/100 gal if used alone	Do not apply past boot stage. Can tank mix with Facet, propanil or Basagran.
BASAGRAN/ BASAGRAN 5L	1.5-2 pt/1.2-1.6 pt	Tank mix with propanil for grass control.
BEYOND XTRA	4-6 fl oz + 0.5 gal HSOC-COC*/100 gal	Apply from 4-leaf to panicle initation plus 14 days on Clearfield rice varieties or from 4-leaf up to panicle initiation on Clearfield rice hybrids.
BOLERO 8EC	3 pt	Can tank mix with Facet L or propanil. Notes 2, 3.
BOLERO ULTRAMAX	23.3 lb	Apply after flooding when rice is in the expanded 2 leaf stage.
BUTTE	7.5-9 lb	Only labeled for use in CA on water seeded rice that will be followed by rice the following year. Seeding up to 4 true leaf rice. For optimum grass suppression, apply at 0.5 to 2 true leaf stage grass weeds. Do not apply within 50 ft of any sensitive crops. Minimum water hold period for BUTTE herbicide is 20 days.
CLEARPATH	8 oz + 0.5 gal HSOC-COC* or 1 qt NIS/100 gal	Apply to Clearfield rice only up to 7 days PP, PRE, or POST prior to permanent flood. Rice should be less than 5-leaf. See label for states specific restrictions.
CLINCHER SF	13.5-15 fl oz + 1 pt HSOC-COC or HSOC-MSO*	Apply PREFLOOD to 1-4 leaf grasses, or within 2 weeks after permanent flood for larger grasses. Good soil moisture is essential for PREFLOOD applications. 70% of grass foliage should be exposed above the water for good control. Maintain flood after application, especially for larger grasses. PHI 60 days. May be tank mixed with Command, Prowl H2O, Facet L or Grasp.

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
COMMAND 3ME	10.7-14.1 fl oz: coarse soils 17.1-21.3 fl oz: medium soils 21.3-34.1 fl oz: fine soils	Early post. Apply by ground in 10-40 GPA from the 1 to 5 leaf grass stage. May be applied as split PRE and POST applications; see label. Do not use in water-seeded rice. Do not apply on fields in which concurrent crayfish or catfish farming are included. Max. 34.1 fl oz/A/application. Max. 34.1 fl oz/A/year. Max. one application as PRE and one application as POST. 7-day min. application interval. Do not graze or harvest for food or feed cover crops planted <9 months after use.
DUET	3-6 qt	Apply 3 qt/A when most grasses have reached 1- to 3-leaf stage; use 4-6 qt/A when grasses are 4- to 6-leaf stage, or under certain weather conditions (see label).
FACET L	26-43 fl oz + 1 pt HSOC-COC*	Tank mix with Basagran, Blazer, Bolero, Command, Newpath, Prowl H2O, Storm. Soil must remain moist for control. Always include a drift control adjuvant like InterLock. Note 1.
GRANDSTAND R	0.5-1 pt	Apply to rice from 2-4 leaf stage to 0.5" internode elongation. Can be tank mixed with Stam M4, Stam 80 EDF, and other propanil herbicides, Herbivore/Permit, Facet L, Newpath, Grasp SC, or Aim EC. Delay flooding 72 hours after application. Note 3.
GRASP SC	2-2.8 fl oz + 1 pt HSOC-COC or HSOC-MSO*	For use in AR, FL, LA, MS, MO, TX only. Apply early POST with good soil moisture conditions. POST FLOOD applications should be made within 2 weeks after flood. Use higher rates when applied POST-FLOOD. 70% of weed foliage should be exposed above the water for good control. Always use 1 qt COC or MSO.* Improved weed control has been seen with 1 qt/A MSO.* Can be tank mixed with Command 3ME, Prowl H2O, Grandstand R, Facet L, Stam, Newpath, Herbivore/Permit, or Londax as needed for expanded weed control. Prevent drift to sensitive crops such as soybeans, cotton, and other broadleaf crops.
GRASP XTRA	16-18 fl oz + 1 qt COC or MSO*	Apply from 2-3-leaf (drill seeded) or 3-4-leaf (water seeded) rice up to 1/2" internode elongation. Weeds must be ≥70% exposed. See label for tank mixes and restrictions. 24c MS (exp. date not given) for Clearfield and hybrid rice.
HERBIVORE	0.67-1.33 oz + 1-2 qt NIS/100 gal*	Apply at 3-5 leaf stage. May be applied post-flood at 1-1.33 oz/A/season. When weeds have <2 leaves, apply at 1-2 leaf stage of rice. Maximum 1.33 oz/A/use year.
LEAGUE	3.2-4 oz	Apply up to 2" internode rice for dry- or water-seeded. See label for application timing relative to growth stage. See PRE section for sequential information. See label for all precautions. For emerged weeds, include a surfactant.
LONDAX	1-1.67 oz + 0.5 gal HSOC-COC/100 gal*	Apply to emerging weeds. Apply within 5 days after flooding. Maintain flood for 7 days. Londax is very water soluble which requires nonmoving water. Can tank mix with Bolero. Early POST/pre-flood when tank mixed with propanil containing herbicides.
LOYANT	16 fl oz	Do not apply >32 fl oz/A/year. Allow 14 days between applications. Do not apply to ratoon rice. 24c AR (exp. 1/2027) aerial application for selective grass, sedge and broadleaf control.
NEWPATH	4-6 fl oz PPI or PRE followed by 4-6 fl oz POST + 1 qt NIS/100 gal	Apply first POST at 1-2 leaf rice and second post from 3-5 leaf stage weeds at least 2 days prior to permanent flood. Do not apply to standing water. For Clearfield rice only. Controls many annual broadleaves and grasses flood. Do not apply to standing water. For Clearfield rice only. Controls many annual broadleaves and grasses including red rice. Growers must be certified by the Clearfield Rice Stewardship program to purchase and use. Tank mixes include Facet L.
PERMIT	0.67-1.33 oz + 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal*	Apply to emerged weeds just prior to flooding by air or ground. Do not apply into flood.
PERMIT PLUS	0.75 oz + 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal + 2-4 qt UAN or 2-4 lb AMS*	Apply from prior to rice emergence through permanent flood or 48 days PHI. Wait ≥ 24 hr before reintroducing water.
REBEL EX	16-20 fl oz + 1 qt COC or MSO*	Apply from rice emergence (drill seeded) or rice pegging at 1-leaf (water seeded) up to 60 days PHI. Weeds must be ≥70% exposed in fields. See label for restrictions on insecticides, application timing for other sequential herbicides and soil characteristics. Labeled in AR, FL, LA, MS, MO, TN, and TX.
REGIMENT	0.4-0.57 oz + 24 fl oz Silkin and 2 gal N-Pak AMS Liquid/100 gal*	Apply to rice that is 3 leaf up to panicle initiation (green ring). May be applied pre- or post-flood in water seeded or dry seeded rice. Regiment is a contact herbicide and a minimum of 70% of the weed surface must be exposed above flood water for adequate coverage. Prevent drift to sensitive crops as corn, soybean, and cotton.
RICESTAR HT	17 fl oz: 3-4 leaf grass 13 fl oz: 1-2 leaf grass	For certain grasses in the 1-5 leaf stage. Rice should be from 2 leaf to late tillering but before panicle initiation. Do not flood for 48 hours. May be tank mixed with Facet L, Command 3ME, Aim EC, Prowl H2O, Bolero, Basagran, Herbivore/Permit, Londax, and Storm. 24c LA (exp. 4/2026), TX (12/2026): 17-24 fl oz/A for control or suppression of grass weeds. 2ee AR (exp. date not given) for tank-mix in aerial application. 2ee AR (exp. date not given) for tank mixes in aerial application.

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
SHARPEN	1-2 fl oz	Apply before or after flooding when rice has reached the 2-leaf stage up to internode elongation. DO NOT apply at spike or 1-leaf stage. Apply with HSOC-COC* at 1 pt/A.
STAM M4/ SUPERWHAM! + PERMIT	3-4 qt + 0.67 oz	Apply by air or ground. Do not apply into flood.
STAM M4 + LONDAX	3-4 qt + 0.75-1 oz	Propanil + Londax = Duet. Apply 1-7 days prior to permanent flood. Maintain flood and keep water as static as possible.
STAM M4 or STAM 80 EDF	3-4 qt or 3.75-5 lb + 0.5-1 pt HSOC-COC* or1 qt NIS/100 gal	Early post. Apply from the 1 to early 4 leaf grass stage. Four to 6 qt may be used 4-6 leaf and early tillering. Apply midseason for control of certain weeds. Use lower rate in tank mixes. Can tank mix with Prowl H20, Grasp, Grandstand R, Bolero, Facet L, Herbivore/Permit or Londax. Notes 4, 6, 7.
STAM M4 + GRANDSTAND R	3-4 qt + 0.5-1 pt	Best results PRE-FLOOD when weeds are actively growing. Can be tank mixed with Newpath in Clearfield rice for coffeeweed and indigo control. Follow water management practices on Grandstand R label.
STORM	1.5 pt	Apply from early tillering to early boot. Include NIS or COC plus UAN/AMS*.
STRADA	1.7-2.1 oz + 1-2 pt NIS/100 gal	Apply to 1-4 leaf weeds, usually 2-4 leaf rice. Dry-seeded: from early-POST to pre-flood. Water-seeded: early to mid-late POST. WG is for rice in AR, LA, MS, MO, TN, and TX. Use Strada CA or GR in CA. GR is only for flooded rice. Drain the day before application.
STRADA PRO	2.08-2.5 oz + 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal*	Apply to actively growing weeds, usually when rice has 2-4 leaves. Drain field before application. May flood 24-48 hours after application. Include UAN/AMS. Do not use NIS, COC, or organosilicone surfactants together.
STRADA XT2	6.5-10 oz + 1 pt HSOC-COC*	Apply POST to rice at least 2-leaf. May be used in dry and water seeded rice. Establish permanent flood within 2 days after application. Do not apply after 1/2" internode elongation or within 40 days of harvest, or to heading rice. Labeled in AR, LA, MS, MO, TN and TX. Rate is based in weed species, size, and residual.
SUPERWHAM!	3-6 qt	Apply 3 qt/A when most grasses have reached 1- to 3-leaf stage; use 4-6 qt/A when grasses are 4- to 6-leaf stage, or under certain weather conditions (see label).
VALOR SX/VALOR EZ	1-2 oz or 1-2 fl oz	For burndown use. Apply after 10/15 in Region 2 and 11/15 in region 1 or when soil temperature falls below 50 °F at 2". Before planting a minimum of 30 days must pass + 1" of rain before planting rice.
2,4-D AMINE 4 or WEEDAR 64	1-2.5 pt; see comments	Do not use in CA. Do not apply after panicle initiation, after internodes exceed 0.5", at early seedling, early panicle, boot, flowering or early heading. Apply in the late tillering stage at first joint development. Max. 1 POST application/crop cycle. Max. per crop cycle: 3.16 pt/A or 3.25 pt/A or 2.5 pt/A incl. PP application.
WEEDAR HXL	10.6 - 26 fl oz	Do not use in CA. Apply in the late tillering stage at first joint development. Do not apply after panicle initiation, after internodes exceed 0.5", at early seedling, early panicle, boot, flowering or early heading. Max. per application: 26 fl oz/A. Max. 1 PP application/crop cycle. Application rates of 26 fl oz per acre may be applied to handle difficult weed control problems. However, do not use the 26 fl oz per acre rate unless possible crop injury is acceptable. Max. per crop cycle: 32 fl oz/A incl. POST application.
	HARVEST AIDS	
AIM EC	1-1.5 fl oz	PHI 3 days as harvest aid. Removes leaves and seed of hemp sesbania and indigo.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
NOTE 1: Tomatoes and cotton are very sensitive to drift.
NOTE 2: Soil should be sealed by rain or flush. Soil must remain moist for acceptable weed control.
NOTE 3: See label for sensitive variety restrictions. Do not apply to Millie varieties.
NOTE 4: Stam: Avoid drift to cotton, soybeans and other sensitive crops. Do not apply if minimum temperature is <75 or >100 °F. See label for insecticide restrictions. Propanil resistant barnyardgrass exists in some areas.
NOTE 6: A drift retardant is recommended where drift is a concern.
NOTE 7: Do not apply Stam past the end of tillering stage rice.
NOTE 9: Application by ground equipment only. If grasses emerge after application, rainfall or flushing may be needed for activation and reactivation. Grasses may emerge white, however usually die off after emergence. Application on newly cut ground can result in severe injury. Rice in low areas of the field, or where water is prone to stand may show more injury. Field treated with Command should be scouted for nutsedge and flatsedge species and other broadleaf weeds and treated if necessary.
NOTE 10: Do not reflood for 8 days.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

RICE LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR RICE	RATE PER ACRE *(foliar unless otherwise noted)*	INSECT							
			APHID	ARMYWORM	CHINCH BUG	GRAPE COLASPIS	GRASSHOPPER	RICE STALK BORER	RICE STINK BUG	RICE WATER WEEVIL
BELAY INSECTICIDE	–	4.5 fl oz	●		●				●	●
CRUISER 5FS	–	0.03 mg a.i./seed			●					●
DERMACOR X-100	–	1.5-6 fl oz/cwt						●		●
DIMILIN 2L ‡	80	8-16 fl oz								●
FORTENZA	–	0.03 mg a.i./seed								●
GRIZZLY TOO ‡	21	1.6-2.56 fl oz	●	●	●		●		●	●
		1.92-2.56 fl oz						●		
LAMBDA-CY AG ‡	21	3.2-5.12 fl oz	●	●	●		●		●	●
		3.84-5.12 fl oz						●		
MALATHION 5	7,14	Non-ULV: 2 pt ULV: 15.6 fl oz							●	
MALATHION 5EC	7	1-2 pt							●	
MALATHION 8 FLOWABLE	7	1.25 pt							●	
MUSTANG MAXX ‡	14	2.64-4 fl oz			●				●	
		3.2-4 fl oz	●S	●			●	●		●
NIPSIT INSIDE	–	1.92 fl oz/cwt	●		●	●				●
PYGANIC EC 1.4$_{II}$	0	16-64 fl oz	●	●	●		●		●	●
PYGANIC EC 5.0$_{II}$	0	4.5-15.61 fl oz	●	●	●		●		●	●
WARRIOR II ‡	21	1.6-2.56 fl oz	●	●	●		●		●	●
		1.92-2.56 fl oz						●		

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

COMMENTS AND RESTRICTIONS
For use in AR, CA, LA, MO, MS, TX only (see label for CA pest control exclusions). Max. 0.2 lb a.i./a/year regardless of application method. Max. 0.075 lb a.i./A/year as foliar treatment. Do not use treated rice fields for the aquaculture of edible fish and crustacea. Do not release floodwater within 14 days of an application.
Dry-seeded rice only. Max. 120 lb seed/A seeding rate. See Seed and Grain Section.
For application to dry rice seed. Rate/cwt depends on rice seeding rate; see label. Provides protection against injury by Rice Water Weevil larvae, and early-to-mid-season control of Rice Stalk Borer. Max. 0.084 lb a.i./A. Do not use treated rice fields for the aquaculture of edible fish and crustacea.
Rice Water Weevil: Larvae and eggs. 12-16 fl oz/A in dry seeded, drill seeded, or water seeded delayed flood. Split applications on water seeded, pinpoint flood or continuous flood: 8 fl oz/A after permanent flood, then 8 fl oz/A 5-7 days later. 8-16 oz/A once/year in CA. Apply in at least 5 GPA. Do not use treated rice flood waters for irrigating crops except for uses currently established for Dimilin. Do not impregnate on granular materials. Treat based on leaf scar treatment threshold and/or at initial oviposition. Insect growth regulator that controls larvae and eggs. Do not use treated rice fields for the aquaculture of edible fish and crustacea.
Commercial seed treatment only. For dry-seeded rice (not for use in CA). Early season protection against rice water weevil. Max. 0.17 lb a.i./A as seed treatment. Max. 0.4 lb a.i./A/calendar year inlcuding all types of applications. Do not use treated rice fields for the aquaculture of edible fish and crustacea. See Seed and Grain Section for additional details.
Max. 7.68 fl oz/A/season. Max. 2.56 fl oz/A within 21-27 days of harvest. Do not release flood water within 7 days of an application. Do not use treated rice fields for the aquaculture of edible fish and crustacea. Aphid: Bird Cherry-Oat. Armyworm: Fall, True, Yellowstriped. Rice Water Weevil: Adult.
Max. 0.96 pt/A/season. Max. 0.32 fl oz/A within 21-27 days of harvest. Do not release flood water within 7 days of an application. Do not use treated rice fields for the aquaculture of edible fish and crustacea. Aphid: Bird Cherry-Oat. Armyworm: Fall, True, Yellowstriped. Rice Water Weevil: Adult.
Broadcast use only over intermittently flooded areas. Apply by air in 2 GPA during early milk and dough stage. 7-day min. application interval. Non-ULV: PHI 7 days. ULV: PHI 14 days. Do not apply around bodies of water where fish or shellfish are grown/harvested commercially.
Max. 2 pt/A. Max. 2 applications/year. 7-day min. application interval. Broadcast use only over intermittently flooded areas. Apply by air in 2 GPA during early milk and dough stage. Do not apply around bodies of water where fish or shellfish are grown/harvested commercially.
Max. 1.25 pt/A. Max. 2 applications/year. 7-day min. application interval. Broadcast use only over intermittently flooded areas. Do not apply around bodies of water where fish or shellfish are grown/harvested commercially.
Max. 16 fl oz/A/season. 7-dat min. application interval. Do not release flood water within 7 days of an application. Do not use treated rice fields for the aquaculture of edible fish and crustacea. Aphid: Bird Cherry-Oat. Armyworm: Fall, True, Yellowstriped. Rice Stalk Borer: Control before larvae bore into stalk. Rice Water Weevil: Adults only; see label for management in dry seeded rice vs. water-seeded rice.
Early season protection. Use only on dry seed rice; cover planted seed with soil. Do not follow with spray treatment of another neonicotinoid insecticide. Max. 0.2 lb a.i./A/year. Do not apply around bodies of water where fish or shellfish are grown/harvested commercially; see label for specific restrictions. See Seed and Grain Section for additional details.
OMRI listed. For terrestrial uses, do not apply directy to water, or to areas wehre surface water is present or to intertidal areas; see label. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/ season.
OMRI listed. For terrestrial uses, do not apply directy to water, or to areas wehre surface water is present or to intertidal areas; see label. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
Max. 7.68 fl oz/A/season. Max. 2.56 fl oz/A within 21-27 days of harvest. Do not release flood water within 7 days of an application. Do not use treated rice fields for the aquaculture of edible fish and crustacea. Aphid: Bird Cherry-Oat. Armyworm: Fall, True, Yellowstriped. Rice Water Weevil: Adult.

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.



ARMYWORM: True armyworms may attack rice in May and June. The larvae are drab green to black in color with three longitudinal stripes and are relatively smooth. Fall armyworm caterpillars infest rice fields from borders or levees and may destroy levee vegetation during July and August. The larvae can be identified by the relatively smooth, olive drab body and the inverted yellow "Y" on the head capsule. ET: treat when six or more armyworms or two or more large larvae plus head-cutting are found per sq ft.



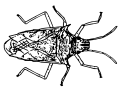
CHINCH BUG: Treat when chinch bugs are causing stand reduction. Emergence through flooding.



GRASSHOPPER: In general, only the short-horned grasshoppers pose much of a threat to yield. ET: seedling rice should be treated when short-horned grasshopper populations exceed one per square foot, whereas headed rice should be treated when numbers exceed 10 per 100 heads.

MIDGE LARVAE: Midges can be a problem in water seeded rice. To avoid midge problems use presprouted seed, promptly apply seed as soon as a field is flooded, and avoid seeding during cool weather. Plants are safe from injury if > 3" tall.

RICE STALK BORERS: Includes various stalk or stem borers such as Mexican rice borer, rice stalk borer, and sugarcane borer. Larva feed on inside surface of leaf sheaths for 3-4 days before boring into stem. Early planting can avoid high populations of borers that occur later in the season.



RICE STINK BUG: The rice stink bug is a shield-shaped insect about 3/8" long with a sharp spine on either side at the widest point of the body. The upper side of the adult is straw-brown while the underside is bright yellow. Populations generally develop in grassy areas before moving into rice. Avoid mowing grassy field borders when rice is heading. Scout in morning or late afternoon for best results. ET: treat when the average per 10 sweeps exceeds five bugs during the first two weeks after 75% panicle emergence. The threshold during the third through the fourth week increases to 10 or more per 10-sweep sample.



RICE WATER WEEVIL (ADULTS): Treatment Levels for Rice Water Weevil Using the Leaf Feeding Scar Method[1]
Total Number of Plants with Feeding Scars on New Larvae[2]

Larval stage burrows into or prunes roots and are very difficult to control with insecticides. Drying the soil out about 2 weeks after flooding will reduce mobility or kill larvae.

[1] Best results when used within 7 days after first flooding.
[2] Inspect youngest leaf on 40 rice plants at each stop out in the bay area at least 6 feet from larvae or on area with a thin stand.
[3] Total number should be accumulated. (Example: stop 1 total, plus stop 2 total, plus 3 total, etc.).
[4] If a decision is not reached within a reasonable number of stops, either reinspect field in 4 to 5 days or follow trend. (Example: Treat if totals progressively move toward treat level. Do not treat if levels progressively move toward the don't treat level.)
[5] No decision can be made – continue scouting.

Stop Number[3]	Don't Treat/ Stop Treating When Total Is Less Than	No Decision[4]/ Keep Scouting When Total Is	Treat/ Stop Scouting When Total Is More Than
1	No[5]	Between	40
2	11	Between	56
3	28	Between	72
4	44	Between	89
5	61	Between	105
6	78	Between	122
7	94	Between	139
8	111	Between	156
9	128	Between	173
10	145	Between	189



RICE WATER WEEVIL (LARVAE AND EGGS): Larval stage burrows into or prunes roots and are very difficult to control with insecticides. Drying the soil out about 2 weeks after flooding will reduce mobility or kill larvae.

FUNGICIDE	Disease*															
	AGGREGATE SHEATH SPOT	BLACK SHEATH ROT	BLACK SHEATH SPOT	BROWN BLOTCH	BROWN LEAF SPOT	BROWN LEAF SPOT (NARROW)	FALSE SMUT	KERNEL SMUT	LEAF BLAST**	LEAF SMUT	PANICLE BLAST**	PANICLE BLIGHT	RICE BLAST**	SHEATH BLIGHT	SHEATH SPOT	STEM ROT
ACTINOVATE AG												●		●	●	
AMISTAR TOP	●	●			●	●	●S	●		●	●				●	
FLINT EXTRA													●	●		
KOCIDE 3000												●				
QUILT XCEL/AFRAME PLUS	●	●			●	●	●S	●	●	●	●			●	●	●
SERENADE ASO					●				●					●	●	●
TETRABAN	●	●	●		●	●		●		●	●			●		●
TOPAZ/TILT	●	●			●	●	●S	●		●				●	●	●S

* Many other diseases may be controlled, see label.
** Same diseases, caused by Pyricularia grisea.

● - control; ●S - suppression
See Fungicide Resistance Management in the Technical Information section.

RICE DISEASE MANAGEMENT GUIDELINES

BACTERIAL PANICLE BLIGHT:	Bacterial Panicle Blight is typified by spikelets of grayish brown then to a straw color with sterility or abortion of kernels. Panicle will remain erect. The lower portion of the grain will have a darker color and brown margin.
BLACK SHEATH ROT:	Dark brown-black discoloration from the crown up the stem. Leaves of heavily infected sheaths die. Tillering and yield may be reduced. Usually only a problem in fields during the first few years rice is grown. Some cultivars are more susceptible than others. It overwinters in infected plant debris as mycelium or ascospores in perithecia, which serve as primary inoculum. These are rain-splashed onto new leaves or float to the water line and into contact with leaves. Ascospores and conidia are produced on lesions, then water-splashed and windblown for secondary infection.
BLAST:	Gray, football-shaped leaf lesions with brown margins. Leaf symptoms are rare. Nodes and panicles are darkened. When panicle infection occurs, heads will be white. The panicle may collapse. Worse when rains occur frequently and temperatures are above 80°F. Plant for a stand of 15 to 20 plants per square foot. Apply nitrogen at the time and rate recommended. Maintain flood to 4" depth. Avoid susceptible varieties.
BROWN SPOT:	Small oval to circular, brown leaf lesions. Infected heads are blackened. May be confused with kernel smut. Fingers will not be discolored when kernels are handled, as with kernel smut. Occurs on plant stressed by low temperature, herbicide injury, other diseases and nitrogen deficiency. To control, prevent plant stress that may retard growth.
FALSE SMUT:	False smut is typified by enlarged green grains eventually developing into orange-red smut balls resulting from infected grain.
LEAF SMUT:	Leaf smut produces small, slightly raised black spots or streaks under the epidermis of leaves and occasionally on leaf sheaths. Leaf smut survives between crops as teliospores on infected leaf debris in the soil. Sporidia are wind disseminated to leaves. Infection normally occurs in late season. High plant nitrogen levels, especially in later growth stages, favor the disease.
KERNEL SMUT:	Minute, black masses of spores inside the hull burst the hull and are then visible. Hands are blackened by the spores when the kernels are handled. Worse during warm, rainy weather at bloom. Apply recommended rates of nitrogen. Avoid susceptible varieties. Yield losses are seldom severe.
NARROW BROWN LEAF SPOT:	Symptoms are most commonly seen in late growth stages and consist of short, elliptical to linear brown lesions on the leaf blades. Lesions are darker and smaller on resistant cultivars, and wider and lighter brown with gray necrotic centers on susceptible cultivars. Similar symptoms may be seen on leaf sheaths, pedicels and glumes. Narrow brown leaf spot, enters through the stomata and grows in host tissue cells. Symptoms may not be seen for up to 30 days after infection. Optimum growth of the fungus occurs at 77°-82°F. Rice plants are most susceptible from panicle emergence to maturity.
SHEATH BLIGHT:	Gray-green lesions with red-brown border near water line. Lesions may be small at internode elongation and later extend up the stem. Worse when humidity is high and temperatures are 90°F. Yield loss can be severe. Plant least susceptible varieties. Follow recommended nitrogen rate and timing. This fungus survives in the soil from year to year as a hard, weather-resistant structure called sclerotium. A sclerotium will float to the surface of rice flood water. When it contacts a rice plant, the fungus grows out from the sclerotium and moves into the leaf sheath. Current Clearfield varieties are rarely affected by sheath blight.
SHEATH SPOT:	Similar to sheath blight, but symptoms are confined to the sheaths. Occurs in patches a few feet in diameter. Occurs rarely. Avoid planting Lemont and Gulfmont in fields with a history of the problem. Application of fungicides may help. Rainy, overcast conditions during the heading stage are optimum for disease development.
STEM ROT:	Small black lesions on leaf sheath near water line. Stems can be rotted and lodge. Dark gray mold and small black particles that resemble powdered charcoal can be seen inside stems. Apply proper rates of potash and nitrogen. Avoid highly susceptible varieties. Stem rot over-winters as sclerotia in soil and crop debris. The sclerotia float to the surface of the paddy flood to cause primary infection on the stem at the water line. The sclerotia are spread by irrigation water and in soil on farm equipment.

RICE DISEASE TREATMENT GUIDELINES

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
ACTINOVATE AG	3-12 oz	0	0	Spray only when there is no standing water in bed. See label for soil-borne and foliar diseases controlled/suppressed. Soil-applied: At plant, in-furrow in 10-200 GPA; may be applied by drip, overhead or other irrigation systems, and may also be used as seed treatment; see label. Foliar: Apply in 10-150 GPA; reapply every 7-14 days depending on disease pressure and environmental conditions; best to use spreader-sticker (adjuvant); may be applied by air (see label).
AMISTAR TOP	10-15 fl oz	28	NL	Apply 11.25-15 fl oz/A when disease is <4" above the water line (usually between PD +5-10 days, or at initial sign of disease. Under heavy disease pressure and conditions favorable for disease development, use 15 fl oz/A and a 2nd application may be applied. Minimum retreatment interval of 14 days. May be applied to a ratooned crop for control of Sheath blight. Use 15 fl oz/A at mid-boot to boot-split but prior to full head emergence to prevent panicle blast - see label.
FLINT EXTRA	3.1-4.7 fl oz	35	NL	3.8-4.7 fl oz/A for sheath blight; apply from panicle differentiation to boot split at initial sign of disease; see label for rate in timing information. 3.1-4.7 fl oz/A for rice blast; begin applying prior to disease development; for panicle blast, apply at mid-boot to 5% heading; see label for timing of second application, if needed. See label resistance management restrictions and for floodwater hold times and irrigation restrictions. Notes 3,4,5.
MINUET	6-12 fl oz	0	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
QUILT XCEL/AFRAME PLUS	14-27 fl oz	35	–	Apply 21-27 fl oz/A for rice blast. For panicle blast, apply at 10% head emergence followed by azoxystrobin at 90% emergence. Apply 14 fl oz to varieties with at least moderate resistance to sheath blight from late boot to boot split. For all other diseases, apply at initial sign of disease. Timing depends on disease severity, complex, and rice hybrid. Notes 3, 4.
SERENADE ASO	0.5-2 qt	–	–	Foliar application; Repeat on 7- to 10-day interval or as needed. Use higher rates and shorter application intervals under heavy disease pressure. Supplemental label (exp. date not given) for soil surface (drench), shanked-in, injected and in-furrow applications: Bacillus subtilis is a biological fungicide. Begin applications when environmental conditions are conducive to disease development.
TETRABAN	6-18.5 fl oz	28	–	Foliar applications by ground, air or irrigation. For stem/sheath diseases other than sheath blight, apply when disease is <4" above water line, usually between panicle differentiation +5-10 days, or at initial sign of disease. For foliar and panicle diseases apply prior to disease development.
TOPAZ/TILT	6-10 fl oz	35/35/45	–	Aerial spray in 5-10 gal of water at first internode elongation (up to 2" panicle) and repeat at swollen boot, 14 days after the first application, but before the boot splits and the head emerges. The first application is recommended when 5% or fewer of the tillers are infected. Apply 10 fl oz/A at first internal elongation if greater than 10% of the tillers are infected with sheath blight. Do not release flood waters within 7 days of application. PHI days for grain differ depending on product used. Notes 1, 3,4, 5.

PHI – preharvest interval days. G/F – grazing and feeding interval days.
NOTE 1: Do not apply in areas where catfish and crayfish are commercially cultivated.
NOTE 3: Do not use in rice fields where commercial farming of crayfish will be practiced
NOTE 4: Do not use water to irrigate other crops. Use may be prohibited in certain counties in AR or in counties with federally listed threatened and endangered species or critical habitat. (Not GEM). See label.
NOTE 5: May be applied by air.

SORGHUM HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN
NL = NOT LABELED

	CROPS LABELED					GRASSES									
	Grain Sorghum	Forage Sorghum	Sorghum - Sudangrass	CROP TOLERANCE	Site of Action[A]	Barnyardgrass	Broadleaf Signalgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Goosegrass	Nutsedge,yellow	Sandbur,field	Shattercane
PREPLANT OR PREEMERGENCE															
ATRAZINE ‡ *(atrazine)*	L	L	L	F/G	5	F	P/F	F	P	F	F	P	F	F	P
CHARGER MAX/DUAL II MAGNUM/EVERPREX** *(s-metolachlor)*	L	L	NL	G	15	**E**	F	**E**	**E**	**E**	**E**	**E**	F/**G**	P/F	P
CHARGER MAX ATZ ‡ /BICEP II MAGNUM ‡ / BICEP II MAGNUM FC** ‡ *(s-metolachlor + atrazine)*	L	L	NL	F/G	15,5	**E**	F	**E**	**E**	**E**	**E**	**E**	F/**G**	F	P
CHARGER MAX ATZ LITE ‡ /BICEP LITE II MAGNUM** ‡ *(s-metolachlor + atrazine)*	L	L	NL	F/G	15,5	**E**	F	**E**	**E**	**E**	**E**	**E**	F/**G**	F	P
FULTIME NXT ‡ *(acetochlor + atrazine)*	L	NL	NL	E	15,5	**E**	**G/E**	**E**	**E**	**E**	**E**	**E**	F/**G**[2]	F	P
LUMAX EZ ‡ /LEXAR EZ ‡ *(mesotrione + s-metolachlor + atrazine)*	L	NL	NL	F/G	27,15,5	**E**	F	**E**	**E**	**E**	**E**	**E**	**G**	F	P
OUTLOOK** *(dimethenamid-p)*	L	NL	NL	G	15	**E**	F	**E**	**E**	**E**	**E**	**E**	F/**G**	P/F	P
SEQUENCE *(glyphosate + s-metolachlor)*	L	L	NL	G	9,15	**E**	**E**	**E**	**E**	**E**	**E**	**E**	P/F	**E**	**E**
SHARPEN [burndown ratings] *(saflufenacil)*	L	NL	NL	E	14	N	N	N	N	N	N	N	N	N	N
VERDICT/***TESTIFY*** *(saflufenacil + dimenthenamid-P)*	L	NL	NL	G/E	14,15	**E**	F	**E**	**E**	**E**	**E**	**E**	F/**G**	P/F	P
VIDA *(pyraflufen)*	L	NL	NL	G	14	P	N	P	P	P	P	P	P	P	P
POSTEMERGENCE															
AIM EC/SHARK EW *(carfentrazone)*	L	L	NL	G	14	P	N	P	P	P	P	P	P	P	P
ALLY XP/PATRIOT + ***2,4-D*** *(metsulfuron + 2,4-D)*	L	NL	NL	F	2,4	P	P	P	P	P	P	P	P	P	P
ATRAZINE ‡ + OIL *(atrazine)*	L	L	L	F/G	5	F	F	F	P	F	F	P	P	P/F	P
BASAGRAN *(bentazon)*	L	L	NL	E	6	P	N	N	N	N	N	P	**G**	N	N
CORNERSTONE 5 PLUS/GLYPHOSATE*** *(glyphosate)*	L	NL	NL	N	9	**E**	**E**	**E**	**E**	**E**	**E**	**E**	P	**E**	**G/E**
HERBIVORE/PERMIT *(halosulfuron)*	L	NL	NL	G	2	P	N	P	P	P	P	P	**E**	P	P
HUSKIE *(pyrasulfotole + bromoxynil)*	L	L	NL	F/G	27,6	N	N	N	N	N	N	N	N	N	N
MAESTRO 2EC *(bromoxynil)*	L	L	NL	G/E	6	P	P	N	P	P	P	P	P	F	P
PEAK *(prosulfuron)*	L	NL	NL	E	2	P	N	P	P	P	P	P	P	P	P
PEAK + ***ATRAZINE*** ‡ *(prosulfuron + atrazine)*	L	NL	NL	G	2,5	F	P/F	F	P	F	F	P	P	P/F	P
STARANE ULTRA/STAREDOWN *(fluroxypyr)*	L	NL	NL	E	4	N	N	N	N	N	N	P	N	N	N
STERLING BLUE/***CLARIFIER***/CLARITY/***DICAMBA MAX 4*** *(dicamba)*	L	L	NL	F	4	P	N	P	P	P	P	P	P	P	P
YUKON *(dicamba + halosulfuron)*	L	NL	NL	G	4,2	P	N	P	P	P	P	P	**E**	P	P
2,4-D *(2,4-D)*	L	NL	NL	F	4	P	N	P	P	P	P	P	P	P	P
POSTPLANT INCORPORATED															
FRAMEWORK 3.3 EC/PROWL H20 + ***ATRAZINE*** ‡ *(pendimethalin + atrazine)*	L	NL	NL	F/G	3,5	**E**	**G**	**G**	**G**	**G**	**G**	**E**	P	F	P
TRUST/TREFLAN HFP *(trifluralin)*	L	NL	NL	F	3	**E**	**E**	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**

** Apply only if Concep- or Screen-treated seed is planted
[A] Site of action, described in the Technical Information Section.
See corn burndown chart for more information.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																				
Bindweed, field	Buffalobur	Cocklebur	Devilsclaw	Jimsonweed	Kochia	Kochia, triazine resistant	Lambsquarters,common	Morningglory, annual	Nightshade, black	Pigweed[1]	Puncture vine	Ragweed, common	Russian thistle	Sida, prickly	Smartweed, Pennsylvania	Sunflower	Velvetleaf	Venice Mallow	Waterhemp	Wild Buckwheat	
PREPLANT OR PREEMERGENCE																					
P	P/F	F/G	F/G	G	G	P	E	G	E	E	F	G/E	E	G/E	E	F/G	F	F	G/E	E	***ATRAZINE*** ‡
P	P	P	P	P	P	P	F	P	G	G	P	P	P	P	P	P	P	P	F/G	P	***CHARGER MAX***/DUAL II MAGNUM/ EVERPREX**
P	P	F/G	F	G	G	P	E	G	E	E	F	G	G	E	G	F/G	F	F	G/E	G	***CHARGER MAX ATZ*** ‡ /BICEP II MAGNUM ‡ / BICEP II MAGNUM FC** ‡
P	P	F	F	F/G	G	P	E	G	E	G/E	F	F/G	F/G	G/E	G	F	F	F	G	F/G	***CHARGER MAX ATZ LITE*** ‡ /BICEP LITE II MAGNUM** ‡
P	P	F/G	U	G	G/E	P	E	G	E	E	U	G/E	F	G/E	U	F/G	F	F	E	G	FULTIME NXT ‡
P/F	G/E	G	E	E	G/E	G/E	E	G	E	E	G	G	F/G	G	E	G/E	E	E	E	G	LUMAX EZ ‡ /LEXAR EZ ‡
P	P	P	P	P	P	P/F	F	P	G	G	P	P	P	P	P	P	P	P	G	P	OUTLOOK**
F	G	E	E	E	E	G	G	E	F	G	E	G	G/E	F/G	F/G	F/G	G/E	E	E	E	SEQUENCE
U	E	E	P	G	G	E	E	G	E	E	G	G	E	E	G	G/E	G	G	E	E	SHARPEN [burndown ratings]
U	E	G/E	P	G	E	E	E	G	E	E	F	E	E	E	G	E	G	G	E	E	VERDICT/***TESTIFY***
P/F	P/F	F/G	P	E	G	G	G/E	G	G/E	G/E	F	F	F/G	F	G	P	G	G	G	G	VIDA
POSTEMERGENCE																					
P/F	P/F	F/G	P	E	G	G	G/E	G	G/E	G/E	F	F	F/G	F	G	P	G	G	G	G	AIM EC/SHARK EW
P	P	E	E	F	E	E	E	E	F	E	E	E	G	G	F	E	F	G	G/E	F/G	ALLY XP/PATRIOT + ***2,4-D***
P	G	E	G	E	G	P	E	E	E	E	F	E	F	E	E	E	G/E	G	E	E	***ATRAZINE*** ‡ + OIL
P	P	E	F/G	E	F	P	F	F	P	P	F	F/G	P	G	E	G/E	G/E	G/E	P/F	F/G	***BASAGRAN***
P	P	G	F	G	F	F	P	P	P	P	P	F	P	F	F	F	F	P	P	P	***CORNERSTONE 5 PLUS***/GLYPHOSATE***
P	G/E	E	G	P/F	F	F	P	P/F	P	G/E	G	G/E	P	F	G	E	G/E	G	F/G	P	***HERBIVORE***/PERMIT
P	U	G/E	U	G/E	G	G	E	G	G	G	U	G	P/F	U	E	E	U	E	E	G	HUSKIE
P	G	E	F/G	G/E	G	G	G	G	E	F/G	G	E	G	P	E	E	G	E	F	G/E	MAESTRO 2EC
P/F	E	E	E	G	F/G	F/G	G	G	P	G	E	E	G	G	G	E	G	E	P/F	G	PEAK
P/F	G/E	E	E	E	G	F	E	E	E	E	E	E	G	E	E	E	G/E	E	P/F	E	PEAK + ***ATRAZINE*** ‡
G	F	E	F/G	F	E	E	P	E	G	P	G	E	F	U	G	G	G	E	P	G	STARANE ULTRA/STAREDOWN
F	F	E	P	G	E	G	G	E	G	G	G	E	G/E	G	E	G	F/G	F	G	E	***STERLING BLUE/CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***
P/F	G/E	E	G	G	G	G	E	G	P	G	G	E	F	G	E	E	E	G	E	F	YUKON
F/G	P	E	E	F	F	F	G	E	F	G	G	G	G	G	P	F/G	F/G	G	F/G	P	***2,4-D***
POSTPLANT INCORPORATED																					
P	F	G	P	G	G	P	E	F	E	G/E	F	E	F	G	E	G	E	G	E	G	***FRAMEWORK 3.3 EC***/PROWL H20 + ***ATRAZINE*** ‡
P	P	P	P	P	F/G	F/G	G	P	P	G	F	P	P	P	P	P	P	P	G	P	***TRUST***/TREFLAN HFP

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

SORGHUM HERBICIDE APPL. TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast(hrs)	Intervals[1] (Days)		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
AIM EC/SHARK EW	PP POST PH	G,F	Up to 1 day after planting. Foliar to G sorghum only up to pre-boot. Directed to G,F up to pre-boot. Up to 3 days of harvest.	–	–	10	3	 RE	NR	NR	NR 3
ALLY XP/PATRIOT + ***2,4-D AMINE***	POST	G	Apply from 3-15" sorghum. Use drop nozzles over 10". Apply before boot stage.			10	3	4	30		
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	PP PRE POST	G,F,SS	Incorporated application. 0-14 days before planting. Apply prior to crop emergence. Apply with COC - from 3-leaf to 12" sorghum.	–	–	5-10	2	4	21	21	NR
BASAGRAN/ BASAGRAN 5L	POST	G,F	Do not apply to sorghum that is heading or blooming.	–	–	10-20	5	4	12	12	NR
BICEP II MAGNUM ‡/ BICEP II MAGNUM FC ‡ or BICEP LITE II MAGNUM ‡	EPP,PP PRE POST	G,F G,F	EPP only for Bicep II Magnum FC with Concep III-treated sorghum. PP 0-14 days before planting. May incorporate. Apply prior to crop emergence. Bicep II Magnum FC only: Apply to Concep III-treated forage or grain sorghum before weeds are >2-leaf stage, and from sorghum 3-leaf stage to 12" in height.	–	–	10	2		NR	NR	NR
BRASH/ WEEDMASTER	POST	G,F	To sorghum in 3-5 leaf stage (4-8" tall). Do not use this product if the potential for sorghum injury is not acceptable. Do not apply this product to sorghum grown for seed production.	–	–	5-40	3-10	4	Delay-M	Delay-M	30
CALLISTO/ ***INCINERATE***	PP PRE	G	Up to 21 days before planting. KS and NE. Prior to crop emergence.			10-80	NL	1	NR	NR	NR
CHARGER MAX/ DUAL II MAGNUM/ EVERPREX/ ***CHARGER BASIC***/ DUAL MAGNUM	PP PRE POST FALL	G,F G,F F	Only for Concep-treated seed. Preplant surface for minimum and no-till 45 days before planting. PPI 2" up to 14 days before planting. Apply prior to crop emergence. Charger Basic/Dual Magnum/Dual II Magnum/EverpreX only Sept 1-Dec 1 for control of glyphosate-resistant Italian ryegrass.	–	–	10	2		NR	NR	NR 75
CLARIFIER/CLARITY/ ***DICAMBA MAX 4***/ ***STERLING BLUE***	PP POST PH	G,F	Apply at least 15 days before planting. Spike to under 15". Use drops >8" sorghum. OK, TX only. After crop has reached soft dough stage.	–	–	3-50	1-10	4	Delay-M	Delay-M	30
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP PRE POST PH	G	Apply before planting to emerged weeds. Apply prior to crop emergence to emerged weeds. Wiper application - weed >6" taller than crop. Preharvest when grain is 30% moisture or less.	–	–	3-10	3-15	 RE	56 NO	56 NO	56 40 7
CREDIT XTREME			SEE ROUNDUP								
DEGREE XTRA ‡ / FULTIME NXT ‡	PP PRE POST	G	PPI up to 14 days before planting. Within 5 days of last tillage. Up to 11" or 5-6 leaf sorghum.	–	–	10	NL	–	60	NR	NR
ELEVORE	PP	G,F	Burndown up to 14 days before planting.	NL	NL	8	5	1	NL	NL	NL
ENVERSA		PRE POST	Preplant Incorporated and preemergence applications of this product must be made ONLY to sorghum planted with seed that has been properly treated with seed safener. Aerial application allowed in selected states only, refer to the product label for listed states. Up to 11" or 5-6 leaf sorghum.	–	–	10	3-15	–	60	60	NR
EVERPREX			SEE CHARGER MAX								
EXPRESS	PP	G	Burndown. Delay planting ≥ 14 days.	–	–	5	2-5	4	NO	NO	NR

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast(hrs)	Intervals[1] (Days)		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
FACET L	PP PRE POST	G	Apply before planting to control emerged weeds Apply to control emerged weeds Plants up to 12″ tall	–	–	5-40	5	6	NR	NR	NR
FIRSTSHOT SG	PP	G	Apply more than 14 days before planting.	–	–	5	5		NO	NO	NR
FRAMEWORK 3.3 EC/PROWL H20	POST	G	Incorporated after 4″ sorghum to layby (Culti-Spray, or POST in certain states).	–	–	10	NL		21	21	NR
FULTIME NXT ‡			SEE DEGREE XTRA								
GRAMOXONE SL 3.0 ‡	PP PRE	G G	Before planting to emerged weeds. Prior to crop emergence to emerged weeds.	–	–	10	5	0.5	20	20	48
HALEX GT	PP,PRE	G	From 21 days before planting up through preemergence.	–	–	10-30	2	–	NO	–	–
HERBIVORE/PERMIT	POST	G	From 2-leaf to layby before head emergence. PHI 30 days for Herbivore.	–	7	10	3-15	4	30	30	30,NR
HI-DEP	POST PP	G G	4-8″ broadcast. 8″ up to boot stage directed spray only. Prior to planting to emerged weeds.	–	10	10	2	4	7	7	NR
HONCHO K6			SEE ROUNDUP								
HUSKIE/HUSKIE FX	POST	G,F	3-leaf up to 30″ sorghum and/or prior to flag leaf emergence. PHI 60 days for stover.	–	–	10	NL	1	7 or 40	7 or 40	60 or 70
INCINERATE			SEE CALLISTO								
KOCHIAVORE	POST	G,F	Apply from V4 but prior to pre-boot stage. Use drops and directed spray (toward soil surface) only from V8 to pre-boot stage. Do not apply during boot, flowering or early dough stages. 1 application/season.	–	–	8	3	1	45	45	70
LEXAR EZ ‡	PP PRE	G	Up to 21 days before planting; >7 days preferred. Prior to crop emergence.	–	–	10-80	NL		NR	NR	NR
LINEX 4L	PRE POST	G	Apply after planting before crop emergence Apply after plants are 12″ tall and weeds are ≤2″, or after plants are 15″ tall and weeds are 2-4″ tall.	–	–	25	NO	–	90	90	75
LUMAX EZ ‡	PP PRE	G	Up to 21 days before planting; >7 days preferred. Prior to crop emergence.	–	–	10-80	NL		45	45	NR
MAESTRO 2EC	PRE POST	G,F,S	Prior to crop emergence. 3-leaf to prior to preboot stage.	5	5-7	10	5	 1	45	45	NR
OUTLOOK	PP PRE POST	G	Before planting up to 45 days. PPI within 14 days. Before crop emergence. Best within 5 days of last tillage. Up to 12″ sorghum. PHI 80 days for fodder.	–	–	5	2		60,80	60	80
PANOFLEX	PP	G,F	PP (up to 14 days before) and post-harvest burndown and fallow weed control.	–	–	5-20	2-5	4	-D66	7	NR
PATRIOT			SEE ALLY XP								
PEAK	PRE POST	G	During planting up to before crop emergence (KS, NE only). From 5″ to 30″ or preboot. Post directed over 20″.	– –	10 –	5	2	 4	30-graze 40-silage	30	60
PERMIT			SEE HERBIVORE								
PROWL H20			SEE FRAMEWORK 3.3 EC								
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	PP PRE POST PH	G	Apply before planting to emerged weeds. Apply prior to crop emergence to emerged weeds. Wiper application - weed>6″ taller than crop. Preharvest when grain is 30% moisture or less.	– – – –	– – – –	10-20	3-15	 RE 	56 NO 	56 NO 	56 40 7
RT 3	PP PRE PH	G	Before planting. Before crop emergence. Apply at 30% moisture or less.	–	10	3-40	3-15	RE	NR 7	NR 7	NR 7
RUGGED			SEE 2,4-D								
SADDLE-UP/ SPITFIRE	POST	G,F	To sorghum in 3-5 leaf stage (4-8″ tall).	–	–	5-40	3-10	4	see label	see label	30

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments/Restrictions	Do Not Till		GPA[3]		Rainfast(hrs)	Intervals[1] (Days)		
				Days Before	Days After	Ground	Aerial		Feeding Forage	Grazing Animals	Grain Harvest
SEQUENCE	PP PRE	G,F	Up to 30 days before planting. Before crop emergence.	–	3	10-40	3-15		NR	NR	NR
SHARPEN	PP PRE	G	Burndown. Before crop emerges.	–	–	5	3	1	70	70	NR
SHREDDER E-99			SEE 2,4-D								
SPITFIRE			SEE SADDLE-UP								
STARANE NXT	PP POST	G,F	Apply prior to planting to just prior to crop emergence. 4-7 leaf stage; 8-leaf stage to prior to boot stage using drop nozzles	–	–	8	3	1	45	45	45
STARANE ULTRA/ STAREDOWN	PRE POST	G	Burndown prior to sorghum emergence. Apply from 3- to 7-leaf sorghum; drop nozzles from 8 leaf through boot stage.	–	14	8	3	1	40	40	70
TRUST/TREFLAN HFP	POST	G	Sorghum 8-24". Incorporate <24 hrs. with cultivator. See label.	–	–	5-40	NL		NR	NR	NR
VALOR SX/VALOR EZ	POST	G	Apply after Oct. 15 in Region 2 and Nov. 15 in Region 1 or when soil temperature falls below 50 °F at 2".	–	–	15-61	7-10	–	–	–	60
VERDICT/***TESTIFY***	PP PRE	G	Up to 14 days before planting. PPI 1-2". After planting prior to crop emergence.	–	–	3	3	1	70	70	70
VIDA	PP	G,F,S,SS	Apply 24 hours before planting.	–	–	10	5	1	NL	NL	NL
WARRANT	PPI,PRE POST	G,F	Up to 11". Does not control emerged weeds. Aerial application in select states only; see label. Before sorghum exceeds 11".	–	–		 3-15		 60	 60	 NR
WEEDAR 64/ WEEDONE 638/ WEEDAR XHL			SEE 2,4-D								
WEEDMASTER			SEE BRASH			5-40	3-10				
WEEDMASTER XHL	POST	G	To sorghum in 3-5 leaf stage (4-8" tall). Do not use this product if the potential for sorghum injury is not acceptable. Do not apply this product to sorghum grown for seed production.	–	–	5-40	3-10	4	30	30	30
YUKON	POST	G	Apply from 2-leaf to 15" sorghum. Use drop nozzles for >8" sorghum.	–	7	10	5-15	4	Delay-M	Delay-M	NR
2,4-D AMINE 4; LV4; LV6, SHREDDER E-99/ RUGGED/WEEDAR 64/WEEDONE 638/ WEEDAR XHL	POST	see comments	5-15" (6-15": Shredder E-99/Weedar 64/Weedone 638/Weedar XHL) sorghum. Use drop nozzles ≥ 8". Do not spray during boot, flowering, or dough stage. Shredder E-99 forage sorghum only. Weedone 638 grain sorghum only. Rainfast: Ester - 1 hr, others 4 hr.	–	–	3	2	1-4	7, 30	7	NR,30

[1] Application Timing and Intervals
[2] G – grain sorghum, F – forage sorghum, S – sudangrass, SS – sorghum-sudangrass
[3] Includes labeled minimum or range.
EPP - Early preplant
PP - Preplant surface, unless otherwise specified
PRE - Preemergence
PPI - Preplant incorporated
POST - Postemergence
PH - Preharvest

NR - No Restrictions
NO - Not Permitted
Delay-M - Delay until maturity
RE - Heavy rainfall soon after application may require retreatment.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PREPLANT OR PREEMERGENCE		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**		**Comments/Restrictions**
AIM EC/SHARK EW	G,F	**All soil textures:** Up to 1 fl oz			Apply PP, PRE up to 1 day after planting. Add to tank before other herbicides.
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	G,F,SS	DO NOT USE	1.6-2 qt or 1.8-2.2 lb		PP, PPI or PRE. For good grass control, add a grass herbicide. For no-till or ridge plant. Avoid tillage after application. In wheat-sorghum-fallow systems up to 3 lb a.i./A may be applied to stubble ground following wheat harvest. Notes 1, 5, 7.
BICEP II MAGNUM ‡/BICEP II MAGNUM FC ‡/ BICEP LITE II MAGNUM ‡		SEE CHARGER MAX ATZ ‡			
CALLISTO/ ***INCINERATE***	G	**All soil textures:** 6-6.4 fl oz			PP or PRE. Up to 21 days before planting; less than 7 days before increases risk of crop injury. Use NIS or COC plus UAN/AMS if weeds are present.* Do not apply to emerged sorghum. Do not apply to coarse-textured soils. Do not make >1 application/ year. Do not apply south of I-20 or east of Highway 277 in TX.
CHARGER MAX/ DUAL II MAGNUM/ EVERPREX/***CHARGER BASIC***/ DUAL MAGNUM	G,F	*PP*			PP, PPI or PRE. EPP for minimum or no-till. Apply 2/3 rate at 30-45 days prior to planting in IA, KS, NE, SD, IL, CO, or MO. Apply remaining at planting. PP on coarse soils ≤ 4 days before planting on coarse soils. Concep treated seed only. FALL (except Charger Max) Sept 1 - Dec 1; see label for rates and restrictions. Note 3.
		1-1.33 pt	1.5 pt		
		PPI, PRE			
		1-1.33 pt	1.33-1.5 pt		
CHARGER MAX/ DUAL II MAGNUM/EVERPREX + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	G,F	DO NOT USE	1-1.33 pt + 2.33 pt 1.3 lb		PPI or PRE. Do not use on medium soils with less than 1.5% organic matter. Note 3. Notes 1, 5, 7. Notes 1, 5, 7.
CHARGER MAX ATZ/ BICEP II MAGNUM ‡/BICEP II MAGNUM FC ‡ or ***CHARGER MAX ATZ LITE*** ‡/ BICEP LITE II MAGNUM ‡	G,F	DO NOT USE	1.6-2.1 qt or 1.1-1.5 qt		PP, PPI or PRE. Do not use on soils <1% O.M. and medium texture - see label. Notes 1, 3, 5, 7, 8. For no-till or ridge plant. In IL, IA, eastern KS, MO, NE, SD may be applied EARLY PP. Apply 2/3 of total rate 30-45 days prior to planting; balance at planting. Do not apply on coarse textured soils or medium textured soils with <1% O.M. Notes 1, 3, 5, 7, 8, 10.
CLARIFIER/CLARITY		SEE STERLING BLUE			
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	G	**All soil textures:** Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal, inlcude NIS or WC+NIS*			PP or PRE. Apply prior to crop emergence. See label for perennial rates. Emerged crop will be killed. Apply in 3-10 GPA.
CREDIT XTREME		SEE ROUNDUP			
DEGREE XTRA ‡/ FULTIME NXT ‡	G	*1-1.5% O.M.*			PPI with 14 days of planting or PRE to safened seed. See label for restrictions in TX. Note 3.
		2-2.5 qt	2-2.5 qt		
		≥1.5% O.M.			
		2.3-2.9 qt	2.3-3.7 qt		
DICAMBA MAX 4		SEE STERLING BLUE			
ELEVORE	G,F	**All soil textures:** 1 fl oz			PP burndown to actively growing weeds up to 14 days before planting. Use with MSO.*
ENVERSA	G,F	**Soil Texture:**	<1.5% OM (qts.)	>1.5% OM (qts.)	For preplant incorporated, preemergence, or postemergence in sorghum. Refer to the product label for weeds controlled. If weeds are emerged at time of application, apply a labeled postemergence herbicide with this product to control the emerged weeds. Preplant Incorporated and preemergence applications of this product must be made ONLY to sorghum planted with seed that has been properly treated with a seed protectant or safener. Application rates from the table should be based on the soil texture and the tolerance of the sorghum hybrid. Do not exceed a maximum of 3 quarts per acre (2.25 lb ai/acre) of this product as a single application. Do not exceed 4 quarts (3 lb ai/acre) per acre per year when making multiple applications.
		Coarse:	1.25 to 1.6	1.25 to 1.7	
		Medium:	1.25 to 1.7	1.25 to 1.9	
		Fine:	1.25 to 1.9	1.25 to 2.0	
EVERPREX		SEE CHARGER MAX			
EXPRESS	G	**All soil textures:** 0.35-0.5 fl oz + 0.5-1 gal HSOC-COC or HSOC-MSO/100 gal*			PP. Delay planting ≥14 days. NIS may be used. UAN/AMS may be added.

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*		Rate/Acre		
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Comments/Restrictions**
FACET L + ***2,4-D AMINE 4*** or ***CORNERSTONE 5 PLUS*** or ***ATRAZINE*** ‡ or CLARITY	G	**All soil textures:** 22-32 fl oz + 0.375-1 lb a.i. or 12-32 fl oz or 0.5-1 lb a.i. or 4-16 fl oz		PP apply at 22 fl oz/A for control of annual grass and broadleaf weeds. PRE apply 22-32 fl oz/A.
FIRSTSHOT SG	G	**All soil textures:** 0.5-0.8 oz		Apply more than 14 days before planting to emerged broadleaves. In light soils, or soil pH >7.9, extend 7 additional days. May use 0.5-0.6 oz/A in tank mixes. Do not exceed 1 oz total if sequential application. Include MSO, COC, NIS plus UAN or AMS.*
FULTIME NXT ‡		SEE DEGREE XTRA		
GRAMOXONE SL 3.0 ‡	G	**All soil textures:** 1.3-2.7 + 2 pt NIS/100 gal		Broadcast or band application to emerged weeds before crop emergence. Rate depends on weed size. Min. 7-day application interval. PHI 20 days forage; 48 days grain.
HALEX GT	G	**All soil textures:** 4-6 pt		Sorghum seed must be treated with protectant effective for safening s-metolachlor to sorghum or crop death will occur. Do not exceed 6 pt/A/year. Use NIS with optional AMS for control of emerged weeds2. TX: Do not apply south of I-20 or east of Hwy 277.
HONCHO K6		SEE ROUNDUP		
INCINERATE		SEE CALLISTO		
LEXAR EZ ‡	G	**All soil textures:** 3 qt		PP or PRE. Up to 21 days before planting; less than 7 days before increases risk of crop injury. Use NIS or COC plus UAN/AMS if weeds are present.* Do not apply to sandy soils or emerged sorghum. Concep III safened seed only. Application may be split. Do not apply south of I-20 or east of Hwy 277 in TX.
LUMAX EZ ‡	G	**All soil textures:** 2.7 qt		PP or PRE. Up to 21 days before planting; less than 7 days before increases risk of crop injury. Use NIS or COC plus UAN/AMS if weeds are present.* Do not apply to sandy soils or emerged sorghum. Concep III safened seed only. Application may be split. Do not apply south of I-20 or east of Hwy 277 in TX.
OUTLOOK	G	12-18 fl oz	14-21 fl oz	PP, PPI or PRE. Do not use on sweet or forage sorghum. Do not use PPI in CA. Seed must have a safener. Note 3.
OUTLOOK + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡	G	DO NOT USE	14-21 fl oz + 1.5-4 pt 1.7-2.2 lb	PP, PPI or PRE. Do not use on medium soils with less than 1% organic matter. See Outlook above. Use on safened seed. Make application within 5 days of the last preplant tillage. Under high soil moisture or cool conditions application may cause injury. Note 3
PANOFLEX	G,F	**All soil textures:** 0.3-0.6 oz		Burndown treatment when weeds have emerged and actively growing. Apply to crop stubble or fallow treatment. PP apply 14 days or more before planting. On light textured soils or pH >7.9 extend time to planting 7 days. Include NIS, COC or MSO and UAN/AMS.*
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	G	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*		For no-till or ridge plant. Apply prior to crop emergence. See label for perennial rates. Emerged crop will be killed. Apply in 3-10 GPA. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
RT 3	G	**All soil textures:** 16-32 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*		PP or PRE. Apply before crop emergence. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY, and specific countied in KS, MN, NE, NM OK.
SEQUENCE	G,F	**All soil textures:** 2.5-4 pt + 8.5-17 lb AMS/100		PP or PRE. Apply up to 30 days before planting and before crop emergence. Soil restrictions apply. Use Concep treated seed. See label.
SHARPEN	G	**All soil textures:** 1-2 fl oz + 0.75 pt HSOC-MSO* + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal		PP or PRE. Apply as a burndown or prior to crop emergence to actively growing broadleaf weeds. Do not apply within 30 days where at-plant OP or carbamate insecticides have been used or are planned. It may be applied when Aztec or Fortress are used in a band, T-band, or in-furrow. Some hybrids or varieities may be sensitive.
STARANE NXT	G,F	**All soil textures:** 21 fl oz		Apply prior to planting to prior to crop emergance. POST Supplemental label CO, KS, NE (exp. date not given) apply 4-7 leaf stage, 8 leaf stage using drop nozzles.

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**		**Comments/Restrictions**
STARANE ULTRA/ STAREDOWN	G	**All soil textures:** 0.4 pt			Apply as a burndown prior to sorghum emergence.
STERLING BLUE/***CLARIFIER***/ CLARITY/***DICAMBA MAX 4***	G,F	**All soil textures:** 0.5 pt			Apply at least 15 days before planting.
VALOR SX or VALOR EZ	G	**All soil textures:** 1-2 oz or 1-2 fl oz			For burndown use. Apply ≥10/15 in Region 2 and ≥11/15 in Region 1 or when soil temperature falls below 50 °F at 2". Before planting a minimum of 30 days must pass plus 1" of rain or irrigation before planting.
VERDICT/***TESTIFY***	G	*>1.5% O.M. in NE, SD*			PP or PPI up to 14 days before planting. PPI 1-2". PRE after planting and prior to crop emergence. Do Not use in NE or SD with <OM 1.5%. In all other states apply with Outlook or equivalent dimethenamid-p product at 4-10 fl oz/A in coarse soil and 6-12 fl oz/A in medium and fine soil.
		10-12 fl oz	13-15 fl oz		
		All other states with Outlook or equivalent dimethenamid-p Tank-Mix			
		DO NOT USE	10 fl oz		
VIDA	G,F,S,SS	**All soil textures:** 0.5-2 fl oz + 2 pt NIS/100 gal			PP. Apply up to 24 hours before planting.
WARRANT	G,F	*<1.5% O.M.*			Apply PPI or PRE. Use safened seed. In TX, use only in the Panhandle and finer-textured soils of the Gulf Coast and the Blacklands. In TX and OK Panhandle, do not apply PPI. Aerial application: See label for listed states.
		1.5-2.25 qt	1.5-2.25 qt		
		≥1.5% O.M.			
		2-2.5 qt	2-3 qt		

[1] G – grain sorghum, F – forage sorghum, S – sudangrass, SS – sorghum-sudangrass

[2] Coarse – Sand, loamy sand, sandy loam. Medium – Loam, silt, silt loam. Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay. O.M. – Soils with low organic matter – use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POSTEMERGENCE			
Herbicide	**Labeled Crops[1]**	**Rate/Acre**	**Comments/Restrictions**
AIM EC/SHARK EW	G,F	0.5-1 fl oz	Foliar broadcast to G sorghum only to pre-boot. Directed or shielded applications to G,F sorghum to pre-boot. Avoid application directly over the whorl and under cold, wet stress conditions. Max. 1 fl oz/A/season.
ALLY XP/PATRIOT + ***2,4-D AMINE 4***	G	1/20 oz + 8 fl oz	For KS, TX (North of I-20), OK, NE and CO. Apply to 3-15"sorghum. Use drop nozzles after 10" and prior to boot stage. Always mix with 2,4-D to reduce potential crop injury. See label for restrictions on irrigation, cultivation, and crop stress.
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	G,F,SS	3.2-4 pt or 1.8-2.2 lb	Apply from emergence to 12" crop height, but before weeds exceed 1.5". Notes 5, 7.
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	G,F,SS	2.4 pt or 1.3 lb (broadleaves) + 1 pt HSOC-COC*	Broadleaves only. Apply from 3-leaf stage to 12" crop height, but to weeds less than 4". In drier areas of CO, western KS, OK, TX apply only when crop is 6-12" tall but before boot stage. Notes 5, 7.
BASAGRAN/BASAGRAN 5L	G,F	1.5-2 pt/0.8-1.6 pt + 1 pt HSOC-COC*	See herbicide label for weed species, size and rates and use of additives. May tank mix with atrazine. Note 12.
BICEP II MAGNUM FC ‡	G,F	**Coarse soils:** 1.3-1.6 qt **Medium soils:** 1.6-2.1 qt **Fine soils:** 2.1-2.58 qt	Apply only to Concep III-treated sorghum; use higher rate on soils with >3% O.M. for additional residual control
BRASH/WEEDMASTER or WEEDMASTER	G	1 pt or 0.8 pt	Apply to sorghum in 3-5 leaf stage (4-8"). Best control if broadleaf weeds <3" tall. Early season temporary crop injury symptoms can be expected. Adjuvants are not recommended.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre**	**Comments/Restrictions**
CALLISTO/ ***INCINERATE***	G	3 fl oz	POST directed when grain is minimum of 8 inches tall. Direct spray onto the crop can result in crop injury. Do not make >1 application/year. Use NIS at 0.25% v/v or HSOC-COC at 0.5% v/v, and WC+NIS at 2.5% v/v or AMS at 8.5 lb/100 gallons.*
CLARIFIER/CLARITY		SEE STERLING BLUE	
CREDIT XTREME		SEE ROUNDUP	
DEGREE XTRA ‡/ FULTIME NXT	G	2-3.7 qt	POST up to 11" or 5-6 leaf sorghum. See the label for restrictions in TX. Notes 3, 8.
DICAMBA MAX 4		SEE STERLING BLUE	
DUAL MAGNUM/CHARGER BASIC/DUAL II MAGNUM/ EVERPREX	G,F	**Coarse soils:** 1-1.33 pt **Medium soils:** 1.33-1.5 pt **Fine soils:** 1.33-1.67 pt	Does not control emerged weeds. PHI 75 days.
EVERPREX		SEE DUAL MAGNUM	Apply after spike stage but before sorghum is 15" tall. Check with state regulatory authorities for current registration status, updated labels and product-specific timing and training requirements.
FACET L + ***2,4-D AMINE 4*** or ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡ or CLARITY or PEAK	G	22+13 fl oz + 0.125-0.5 lb a.i. or 0.5-1 lb a.i. or 0.5-1 lb a.i. or 8 floz or 0.25 oz	Apply to plants up to 12" tall for control of annual grass and broadleaf weeds. Add 1 pt HSOC-COC or 0.5-1 pt HSOC-MSO; WC+NIS or a UAN can be added for better efficacy.*
FRAMEWORK 3.3 EC or PROWL H2O	G	*Northern area* **Coarse soils:** 2.4 pt or 2 pt **Medium, Fine soils:** 3.6 pt or 3 pt *Southern area* **Coarse soils:** 1.8 pt or 1.5 pt **Medium soils:** 2.4 pt or 2 pt **Fine soils:** 3.6 pt or 3 pt	Postplant incorporated (culti-spray). Apply when sorghum is 4" tall up to last cultivation at layby. Also be applied early POST in states east of Miss. river and AR, east TX, LA and MO bootheel (and AZ for H2O only). Early POST rate is 2 pt/A H2O or 2.4 pt/A Framework 3.3 EC on medium and fine soils only. May tank mix with 1 qt atrazine, but limited to 12" crop. Culti-spray. Note 15.
HERBIVORE/PERMIT + CLARITY/***CLARIFIER***/ ***DICAMBA MAX 4***/ STERLING BLUE or ***2,4-D AMINE 4***	G	0.67-1 oz + 0.025-0.5 pt or 0.25-0.5 pt	Apply alone to grain sorghum from 2-leaf through layby stage, before head emergence or with the following tank mixes. See label for state restrictions. Do not apply if organophosphate insecticides are used. Use 1-2 qt NIS/100 gal with Permit alone or with dicamba or 2,4-D. Tank mixes with 2,4-D, and Atrazine 4L labeled for Herbivore. Sorghum to 15", 8-15" use drops. Sorghum 6-15"; use drops 8-15".
HI-DEP	G	0.66-1 pt	Apply 0.66-1 pt to 4 - 6 leaf grain. Apply 1 pt/A to 6 leaf to boot stage as directed spray only.
HONCHO K6		SEE ROUNDUP	
HUSKIE/HUSKIE FX	G,F	12.8-16 fl oz or 15-19 fl oz	Apply to actively growing sorghum from 3-leaf up to 30" and/or prior to flag leaf emergence and weeds up to 4". Maximum 2 applications. May be mixed with atrazine, 2,4-D, and dicamba. Temporary leaf burn may occur after application. AMS may optimize performance. In arid environs add AMS with 0.25% v/v NIS* or 0.5% v/v HSOC-COC or HSOC-MSO.* Unacceptable crop injury may occur if mesotrione (i.e. Lexar EZ or Lumax EZ) was previously applied.
INCINERATE		SEE CALLISTO	
KOCHIAVORE	G,F	1-1.5 PT	Do not apply during boot, flowering or early dough stages. Higher rate may be needed for some weeds but may result in injury; see label. Max. 1 application/ growing season. Max. 1.5 pt/A/application.
MAESTRO 2EC	G,F,S	1 pt: emergence up 1.5 pt: 4 leaves up 2 pt: chemigation rate	Apply from emergence to prior to preboot stage. See weed size table on label. Can tank mix with Sterling Blue, Clarifier, Clarity, Dicamba Max 4 for improved control of kochia.
OUTLOOK	G	12-21 fl oz	POST up to 12" sorghum.
PATRIOT		SEE ALLY XP	

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre**	**Comments/Restrictions**
PEAK	G	0.5-1 oz + 1 pt HSOC-COC*	Apply to sorghum from 5" to 30" or preboot. Post direct over 20". See label for weed heights. In northern regions, use only 0.5 oz with certain crop rotations or on high pH-low organic matter soils. Can add 2-4 qt/A UAN or 2 lb/A AMS for enhanced activity. Do not use liquid fertilizer as a spray carrier. Note 14.
PEAK + ***ATRAZINE 4L*** ‡ or ***ATRAZINE 90DF*** ‡ or ***STERLING BLUE/DICAMBA MAX 4*** or ***2,4-D AMINE 4***	G	0.5-0.75 oz + 0.75-1 qt or 0.85-1.1 lb or 4-8 fl oz or 4-8 fl oz	Add 1 qt NIS/100 gal. With atrazine substitute 1 pt/A HSOC-COC.* Apply to sorghum broadcast: 5-12", 8-12" directed.
PERMIT		SEE HERBIVORE	
PROWL H2O		SEE FRAMEWORK 3.3 EC	
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	G	See label for precise rates associated with weed species and annual per acre maximums.	WIPER APPLICATION. Apply only when weeds are at least 6" taller than crop. Do not apply when weeds are wet.
RUGGED		SEE 2,4-D	
SADDLE-UP/SPITFIRE	G	1 pt	Apply to sorghum in 3-5 leaf stage (4-8"). Best control if broadleaf weeds <3" tall. Early season temporary crop injury symptoms can be expected. Adjuvants are not recommended.
STARANE ULTRA/ STAREDOWN	G	0.4 pt	Apply from 3 to 7 leaf sorghum by ground or air. Use drop nozzles from 8 leaf to boot stage. Can tank mix with atrazine and other labeled herbicides. Do not mix with Ally XP or Patriot unless also mixed with 2,4-D. Apply up to 2 times, 1.33 pt/A/season. May use other glyphosate herbicides: Roundup herbicides, Cornerstone or others at labeled rates.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	G,F	0.5 pt	Apply from spike stage (all sorghum emerged) but before crop is 15" tall. Crop >8": use drops. For best crop safety, apply at 3-5 leaf stage. Do not apply if temperature exceeds 85 °F. May add UAN or AMS in dry conditions. Best control is on weeds <4", particularly hard to control weeds like palmer amaranth and waterhemp.
TRUST/TREFLAN HFP	G	**Coarse soils:** 0.75-1 pt **Medium soils:** 1-1.5 pt **Fine soils:** 1.5-2 pt	Apply over the top to 8-24" sorghum. Cultivate before application and incorporate within 24 hr.
WARRANT	G,F	**Coarse** qt / **Medium** qt / **Fine** qt *<1.5% O.M.* 1.5-2.25 / 1.5-2.25 / 1.5-2.5 *≥ 1.5% O.M.* 2-2.5 / 2-3 / 2.25-3	Apply PP, PPI and POST up to 11" sorghum. Use safened seed. In TX, use only in the Panhandle and finer-textured soils of the Gulf Coast and the Blacklands. In TX and OK Panhandle, do not apply PPI.
YUKON	G	4-6 oz + 1-2 qt NIS/100 gal	Apply from 2 leaf to 15" sorghum. Use drop nozzles for >8" sorghum. Minimize crop injury by avoiding contact with leaves or whorl.
2,4-D AMINE 4/***RUGGED*** or ***2,4-D LV4*** or ***2,4-D LV6*** or WEEDAR 64 or ***SHREDDER E-99*** or WEEDONE 638 or WEEDAR XHL	G G,F F G G,F	1-1.5 pt or 0.5-1 pt or 0.5-0.67 pt or 0.5-1.5 pt 0.33-0.67 pt or 1-1.33 pt or 8.5-15 fl oz	Spray when weeds are small and sorghum 5-15" tall (6 -15" for Weedar XHL, 6-16" tall for Shredder E-99/Weedar 64/Weedone 638). Do not spray during boot, flowering or early dough stages. Crop ≥8"", use drops.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*			
Herbicide	**Labeled Crops[1]**	**Rate/Acre**	**Comments/Restrictions**
		PREHARVEST	
AIM EC/SHARK EW	G,F	Up to 1 fl oz	Preharvest. NIS, COC, or MSO is required.* Desiccates morningglory, pigweed, and velvet leaf. PHI 3 days.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	G	Up to 2 qt or Up to 3 pt + 8.5-17 lb AMS/100 gal, NIS or WC+NIS as needed*	Preharvest. Apply when grain moisture is 30% or less. Not recommended on grain sorghum grown for seed because of reduced germination or vigor. PHI 7 days.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	G	See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, WC+NIS as needed*	Preharvest. Apply when grain moisture is 30% or less. Not recommended on grain sorghum grown for seed because of reduced germination or vigor. PHI 7 days. 14 days needed for desiccation. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
RT 3	G	Up to 44 oz + 8.5-17 lb AMS/100 gal, WC+NIS as needed*	Preharvest. Apply when grain moisture is 30% or less. Not recommended on grain sorghum grown for seed because of reduced germination or vigor. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY, and specific counties in KS, MN, NE, NM, OK. PHI 7 days.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	G	0.5 pt	Preharvest. TX and OK only. Apply after sorghum has reached soft dough stage. PHI 30 days.

[1] G – grain sorghum, F – forage sorghum, S - sudangrass, SS – sorghum-sudangrass

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

NOTE 1: State restrictions apply — see label.

NOTE 3: Use only on fields planted with seed treated with approved seed protectant.

NOTE 5: FOR ALL SOIL APPLICATIONS PRIOR TO CROP EMERGENCE: ON HIGHLY ERODIBLE SOILS (as defined by NRCS). If conservation tillage is practiced, leaving at least 30% of soil covered with plant residue at planting, apply a maximum of 2 lb (active ingredient) per acre as broadcast spray. Exception: fallow system (see above). If the soil coverage with plant residue is less than 30% at planting, a maximum of 1.6 lb (active ingredient) per acre may be applied as a broadcast spray.

ON SOILS NOT HIGHLY ERODIBLE. Apply a maximum of 2 lb (active ingredient) per acre as a broadcast spray. Exception: fallow system (see above).

FOR POSTEMERGENCE APPLICATION: If no atrazine was applied prior to crop emergence, a maximum of 2 lb (active ingredient) per acre may be applied. If a postemergence treatment is required following an earlier atrazine application, the total Atrazine applied may not exceed 2.5 lb (active ingredient) per acre per calendar year. TAKE INTO ACCOUNT THE USE OF COMBINATION PRODUCTS (see NOTE 8).

NOTE 7: Do not use Atrazine on sandy, high pH, or calcareous soils, or soils with less than 1% organic matter – crop injury can occur.

NOTE 8: Do not exceed maximum rate of atrazine allowed per year. (NOTE 5). These combination products contain the following amounts of atrazine: Charger MAX ATZ/Bicep II Magnum/Bicep II Magnum FC (each qt) 0.6675 lb; — Charger MAX ATZ Lite/Bicep Lite II Magnum (each qt) 0.4175 lb; — Confidence Xtra (each qt) 0.625 lb; — Conf. Xtra 5.6L (each qt) 0.425 lb; — Fultime NXT (each qt) 0.335 lb.

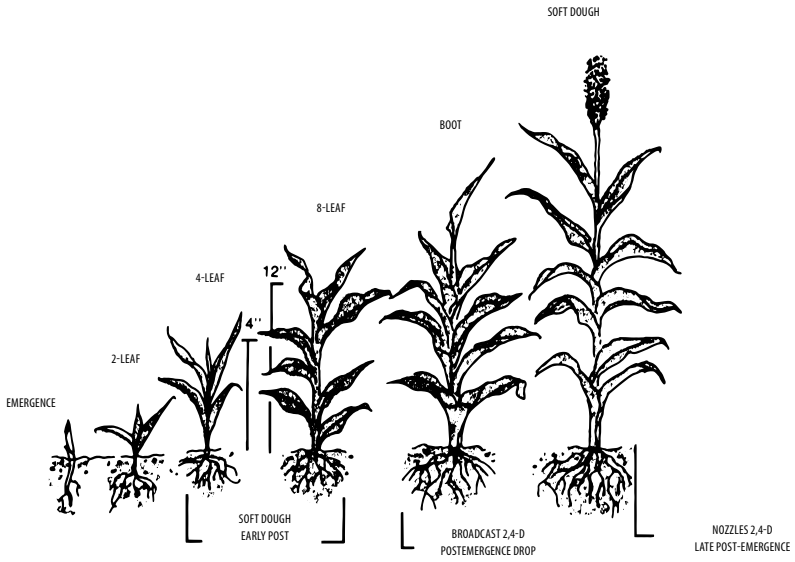
NOTE 10: Gramoxone SL 3.0, Cornerstone or Roundup may be added, if needed, for control of emerged weeds.

NOTE 12: If velvetleaf is the primary weed target, and lambsquarters or common ragweed are not a problem, substitute 2-4 qt UAN/A.

NOTE 14: If using north of I-80/US 20, see label for rate and rotational restrictions.

NOTE 15: These treatments enhance late-season control of grasses, including fall panicum, shattercane, crabgrass and field sandbur. These herbicides will not control emerged broadleaf and grassy weeds. Field must be cultivated and all emerged weeds destroyed prior to application. Cultivation should be with sweep or rolling cultivator operated to throw at least 1" of soil over the base of the crop plants. After application in 10 gallons or more water per acre, thoroughly incorporate to a depth of 1-2". Use drop nozzles if foliage prevents spray from reaching ground.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.



RIDGE PLANT

RIDGE PLANT — In crops planted after mid-May, weeds can be expected to grow vigorously before planting. In a ridge plant system these weeds may become too large to uproot and smother unless control efforts are applied in late April or early May. Two approaches can be used to control these weeds. The first would be to select an early preplant treatment and apply by mid to late April. Since the planting operation will destroy this herbicide barrier, a second herbicide application over the row is required at planting. A split application of 2/3 rate applied preplant + 1/3 banded over the row at planting should be effective. Another strategy is to apply a postemergence herbicide such as Roundup WeatherMAX, Cornerstone or Gramoxone SL 3.0 to destroy weeds before growth exceeds 3 to 4 inches in height. Application is needed in late April to early May. Apply a preemergence herbicide at planting. In most cases the time interval from application of the preplant knockdown herbicide to planting should not exceed three to four weeks. Weeds such as kochia, marestail, smartweed, and winter annuals will warrant early treatment. Lambsquarters, velvetleaf, and grasses will emerge early in some years. The key to successful weed control is timely application of the herbicides. Appropriate herbicides can be selected from the no-till and tilled seedbed sections for this crop. (Univ. of Nebraska)

SORGHUM LABELED INSECTICIDES

INSECTICIDE	LABELED CROP: GRAIN SORGHUM (G)	LABELED CROP: FORAGE SORGHUM (F)	LABELED CROP: SUDANGRASS (S)	LABELED CROP: SORGHUM-SUDANGRASS (SS)	PRE-HARVEST INTERVAL	RATE PER ACRE	AT PLANT INSECTS: CHINCH BUG	AT PLANT INSECTS: SORGHUM GREENBUG	AFTER PLANTING INSECTS: APHID	ARMYWORM	CHINCH BUG	CORN EARWORM	CUTWORM	EUROPEAN CORN BORER	GRASSHOPPER	SORGHUM GREENBUG
ASANA XL ‡	G				21	5.98-9.6 fl oz					●	●	●			
BAYTHROID XL ‡	G				14	1-1.3 fl oz							●			
						13.-2.8 fl oz				●		●		●		
						2-22.8 fl oz					●				●	
BESIEGE ‡	G				30	5-6 fl oz							●			
						6-10 fl oz				●		●		●	●	
						10 fl oz					●					
BLACKHAWK	G	F			21,3	1.1-3.3 oz				●						
						1.7-3.3 oz				●		●			●S*	
COUNTER 20G ‡	G	F			100,50	5.2 oz/1000′ row or ≤8.4 lb	●	●	●							●
COMITE ‡ or COMITE II ‡	G	F			60,30	24-32 fl oz or 24-36 fl oz										
CORAGEN	G	F	S	SS	1	2-5 fl oz								●		
						3.5-7.5 fl oz			●		●		●			
DELTA GOLD ‡	G	F			14	1-1.5 fl oz						●	●		●	
						1.3-1.9 fl oz			●S	●	●			●		
						1.5-1.8 fl oz										
DIMATE 4E	G	F			28	0.25-1 pt										
						0.5-1 pt			●							
						1 pt									●	
DIPEL ES	G									●		●	●	●		
FASTAC CS ‡	G	F			14,45	1.3-3.8 fl oz							●			
						1.8-3.8 fl oz				●		●		●		
						3.2-3.9 fl oz			●	●	●				●	
GRIZZLY TOO ‡	G				30	0.96-1.28 fl oz							●			
						1.28-1.92 fl oz				●		●		●	●	
						1.92 fl oz					●					
INTREPID 2F	G	F			21,3	4-12 fl oz				●*						
LAMBDA-CY AG ‡	G				30	1.92-2.56 fl oz							●			
						2.56-3.84 fl oz				●		●		●	●	
						3.84 fl oz					●					

See notes and footnotes at end of table.

AFTER PLANTING INSECTS *(continued)*					COMMENTS AND RESTRICTIONS
SORGHUM MIDGE	SORGHUM WEBWORM	SOUTHWEST CORN BORER	SPIDER MITE	STINK BUG	
					Max. 0.15 lb a.i./A/season. Cutworm: After planting control of Cutworms; for at plant control of Black Cutworm use 3.2-9.6 fl oz/A. Chinch Bug: Direct to base of plants for optimum results.
●					Max. 2.8 fl oz/A/10-day interval. Max. 8.4 fl oz/A/crop season. Armyworm: 1st and 2nd instar. European/Southwestern Corn Borer: Apply prior to larva boring into plant. May be applied by sprinkler irrigation; see label.
	●	●		●	
●					Max. 18 fl oz/A/year. Max. after soft-dough stage 6 fl oz/A/year. Max. 4 applications/A/crop. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. Chinch Bug/Sorghum Midge: See label for application timing. European Corn Borer: Apply prior to larva boring into plant.
	●			●	
					Max. 12.4 oz/A/year. Max. 3 applications/calendar year. 4-day min. application interval. Min. 5-10 GPA by ground, 5 GPA by air. May be applied by sprinkler irrigation; see label. Do make >2 consecutive applications of Group 5 insecticides before rotating to another class for at least 1 application. PHI 21 days grain, 3 days forage. Do not allow grazing until spray has dried. Armyworm: 1.1-3.3 oz/A for True Armyworm, 1.7-3.3 for all others. 2ee all states (exp. date not given) for control of Armyworms, Corn Earworm, Sorghum Midge, Southwest Corn Borer, Sorghum Webworms at 1.3-3.3 oz/A. 2ee OK (exp. date not given) for Grasshopper suppression at 1.5-3.3 oz/A.
●*	●	●			
					Rate based on min. 20" row spacing. At plant: Banded applications. At bedding: Knifed-in applications. Do not use banded applications for aphid in NM, west TX, OK panhandle. Chinch Bug: For us in AL, AK, FL, GA, LA only.
			●		For use only East of Rocky Mts. Check for sorghum variety phytotoxicity. Max. 1 applications/season. Min. 10 GPA by ground, 5 GPA by air. PHI 60 days grain, 30 days silage.
					Foliar or overhead chemigation. Max. 15.4 fl oz/A/calendar year. 7-day min. application interval. Max. 4 applications/A/calendar year. Grasshopper: Performance improves with MSO.
	●	●			
	●				Max. 3.8 fl oz/A/growing season. Min. 5 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label.
●					
				●	
●					Max. 1 pt/A/application. 7-day min. application interval. Max. 2 pt/A year. Min. 35-40 GPA by ground, 1 GPA by air. May be applied by sprinkler irrigation; see label. Mites: Excludes Trans-Pecos area of TX.
			●		
	●				
●					Max. 11.4 fl oz/A/season. 10-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. PHI 14 days grain and stover, 45 days forage. Armyworm: 3.2-3.9 fl oz/A or 3.2-3.8 fl oz/A for Beet, 1.8-3.8 fl oz/A for all others. Chinch Bug/Sorghum Midge: See label for application timing. European Corn Borer: Apply prior to larva boring into plant.
	●	●		●	
●					Max. 5.12 fl oz/A/season. Max. 3.84 fl oz/A/season after crop emergence. Max. 1.28 fl oz/A/season once crop is in soft-dough stage. 5-day min. application interval. Apply by ground in sufficient water to obtain coverage, or in min. 2 GPA by air. May be applied by sprinkler irrigation; see label. Chinch Bug/Sorghum Midge: See label for application timing. European Corn Borer: Apply prior to larva boring into plant.
	●	●		●	
		●*			Max. 12 fl oz/A/application. Max. 48 fl oz/A/year. Min 15 GPA by ground, 10 GPA by air. PHI 21 days grain and stover, 3 days forage or sweet sorghum stalk. Supplemental label all states except NY (exp. date not given) for 8-10 fl oz/A.
●					Max. 0.64 pt/A/season. Max. 0.48 pt/A/season after crop emergence. Max. 0.16 pt/A/season once crop is in soft-dough stage. Apply by ground in sufficient water to obtain coverage, or in min. 2 GPA by air. May be applied by sprinkler irrigation; see label. Chinch Bug/Sorghum Midge: See label for application timing. European Corn Borer: Apply prior to larva boring into plant.
	●	●		●	

SORGHUM LABELED INSECTICIDES *continued*

INSECTICIDE	LABELED CROP: GRAIN SORGHUM (G)	FORAGE SORGHUM (F)	SUDANGRASS (S)	SORGHUM-SUDANGRASS (SS)	PRE-HARVEST INTERVAL	RATE PER ACRE	AT PLANT INSECTS: CHINCH BUG	AT PLANT INSECTS: SORGHUM GREENBUG	AFTER PLANTING INSECTS: APHID	ARMYWORM	CHINCH BUG	CORN EARWORM	CUTWORM	EUROPEAN CORN BORER	GRASSHOPPER	SORGHUM GREENBUG
LANNATE LV ‡ or LANNATE SP ‡	G	F	S		14	1.5 pt or 0.5 lb										
						0.75-1.5 pt or 0.25-0.5 lb				●		●				
MALATHION 5EC or MALATHION 8 FLOWABLE	G				7	1.5 pt or 1 pt										●
MUSTANG MAXX ‡	G	F	S	SS	14,45	1.28-4 fl oz							●			
						1.76-4 fl oz				●		●		●		
						3.2-4 fl oz			●	●	●				●	
ONAGER	G	F			30	10-24 oz										
PYGANIC EC 1.4$_{II}$	G	F			0	16-64 fl oz			●	●		●		●	●	●
PYGANIC EC 5.0$_{II}$	G	F			0	4.5-15.61 fl oz			●	●		●		●	●	●
SEFINA	G	F	S	SS	7,14	6 fl oz			●							
SIVANTO 200 SL or SIVANTO PRIME	G	F			21,7	7-10.5 fl oz or 7-14 fl oz			●*							
THIMET 20-G ‡	G	F			30	4.5-6 oz/1000'row or ≤6.5 lb		●			●					
VANTACOR	G	F	S	SS	1	0.7-1.7 fl oz									●	
						1.2-2.5 fl oz				●		●		●		
WARRIOR II ‡	G				30	0.96-1.28 fl oz							●			
						1.28-1.92 fl oz				●		●		●	●	
						1.92 fl oz					●					

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

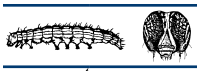
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BEE ALERT

See Insecticide Classification in the Technical Section for information on insecticide toxicity to bees.

AFTER PLANTING INSECTS *(continued)*						COMMENTS AND RESTRICTIONS
	SORGHUM MIDGE	SORGHUM WEBWORM	SOUTHWEST CORN BORER	SPIDER MITE	STINK BUG	
		●				Max. 3 pt/A/crop or 1 lb/A/crop. Max 2 applications/crop. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label.
	●					
						Max. 1.6 pt/A/application or 1 pt/A/application. 7-day min. application interval. Max. 2 applications/year.
	●					Max. 20 fl oz/A/season. 10-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. May be applied by sprinkler irrigation; see label. PHI 14 days grain and stover, 45 days forage. Armyworm: 3.2-4 fl oz/A for Beet, 1.76-4 fl oz/A for all others. Chinch Bug/Sorghum Midge: See label for application timing. European Corn Borer: Apply prior to larva boring into plant.
		●	●		●	
				●		For use in Western U.S. only, including OK, TX; see label. Max. 24 oz/A/calendar year. Max. 1 application/calendar year. 15-20 GPA by ground, 5 GPA by air. May be applied by sprinkler irrigation; see label.
	●	●		●	●	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
	●	●		●	●	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
						6 fl oz/A. Adjuvant may improve performance. Min. 10 GPA by ground, 3 GPA by air. 14-day min. application interval. Max. 2 sequential applications before using insecticide with differing MOA. Max. 12 fl oz/A/season. Max. 1 crop season/year.
						Max. 28 fl oz/A/calendar year. 7-day min. application interval. Min. 10 GPA by ground, 3 GPA by air. May be applied by sprinkler irrigation; see label. PHI 21 days grain/stover/straw, 7 days forage. Aphid (Sugarcane Aphid): 2ee Sivanto primemany states (exp. date not given) for control at 4-7 fl oz/A and reduced PHI of 14 days grain/stover/straw.
						Max. 1 application/crop season. At-plant for Sorghum Greenbug: Rate based on min. 30" row spacing; banded or drilled applications; see label. After plant for Chinch Bug (nymphs only) in CO, KS, NE only: Apply to base of plants ahead of cultivation shovels so as to cover with soil. Do not feed foliage before grain harvest.
						Foliar or overhead chemigation. Max. 5.1 fl oz/A/calendar year. 7-day min. application interval. Max. 4 applications/A/calendar year. Grasshopper: Performance improves with MSO. Vantacor 2ee all states, expiration date 12/31/2027 for control of headworms and fall arymworms in grain sorghum. Higher rates may be necessary to manage heavy infestations of fall armyworm and to provide extended residual activity. Apply VANTACOR® insect control at 0.9 - 2.5 fl. oz. per acre (0.035 - 0.098 lb. a.i./A) as a foliar spray.
		●	●			
	●					Max. 5.12 fl oz/A/season. Max. 3.84 fl oz/A/season after crop emergence. Max. 1.28 fl oz/A/season once crop is in soft-dough stage. 5-day min. application interval. Apply by ground in sufficient water to obtain coverage, or in min. 2 GPA by air. May be applied by sprinkler irrigation; see label. Chinch Bug/Sorghum Midge: See label for application timing. European Corn Borer: Apply prior to larva boring into plant.
		●	●		●	

See Insecticide Resistance Management in the Technical Information section.



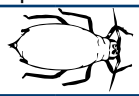
ARMYWORM: Damage may occur from July through frost. Insects attack whorl and leaves, later the heads. **Great Plains ET:** 5% yield loss/larva/head. Treatment suggested when 2 worms/plant on 25% of plants. Treatment is rarely profitable in the whorl stage.



CHINCH BUG: Do not plant sorghum adjacent to wheat, especially thin wheat. Bugs migrate from small grains, congregate at base of plants, sucking juices. Planting time treatments provide protection for 3-4 weeks, if planting near maturing small grain fields. Control of infested fields by sprays is difficult unless high gallonage is used, with drop nozzles directing spray to base of the plants. Bugs must be hit directly with the spray – direct spray at base of plants. Sprays will not give residual protection against continued migration from nearby unsprayed areas. Aerial application is seldom effective and not recommended. The approach of relying entirely on foliar sprays during the seedling period can prove unsatisfactory. For instance, a delay of only two days in spraying 3-inch sorghum at KSU, resulted in an 80% to 90% stand loss where moderate numbers of chinch bugs were present. In locations where small grains will be maturing within three weeks of sorghum planting and chinch bugs are threatening, planting time insecticide should be considered. Another management technique is to plant a 50 ft. barrier strip of sorghum or sudan between wheat and sorghum. Concentrate on spraying this barrier and outer portion of the regularly planted sorghum during migration. Seed treatments such as Gaucho and Cruiser are effective on low to moderate populations. False chinch bugs: grayish-brown adults (chinch bugs are black) can also cause crop damage. **Great Plains ET:** seedling sorghum - 7 to 10 bugs per plant; larger plants, over one foot tall, 50 or more bugs per plant. **Texas ET:** when 2 or more adult bugs are found on 20% of the seedlings less than 6 inches tall. On taller plants, initiate control when immature and adult bugs infest 75% of the plants.



CORN EARWORM (SORGHUM HEADWORM): Occasionally feed on heads of sorghum. Corn Earworms are cannibalistic, therefore influencing the number of larvae in sorghum heads. Control of worms in the whorl stage is seldom justified. Base control decisions on the expected yield, price, cost of application, and the amount of feeding that can be prevented by control measures. Planting of "open-headed" sorghum hybrids tends to reduce the occurrence of larvae in sorghum heads. Begin inspection of heads soon after flowering and continue until soft dough stage. **Great Plains ET:** an average of 1 larva per head will cause about a 5% decrease in yield, 2 larvae per head will cause about a 9 to 10% reduction in yield.



CORN LEAF APHID: Plants generally tolerate large numbers in the whorl without measurable yield losses. Typically, aphids decline after the boot stage. Although rare, control may be profitable if infestation persists and increases in emerging heads. Seed treatments such as Gaucho and Cruiser are effective on low to moderate populations on seedlings.



CUTWORMS: Damage is less frequent than with corn. Spot treat if 20% stand loss.

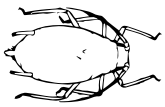
FALSE CHINCH BUG: These bugs are often mistaken for chinch bugs. Size and general appearance are similar. Nymphs of false chinch bugs usually are grayish to brown in color, whereas chinch bugs are bright orange. Adult false chinch bugs are grayish to brown with wings entirely transparent and chinch bugs are black with wings marked by a dark triangle near outer margin. Damage is generally not observed; however, if treatment is necessary, foliar sprays used on chinch bugs should reduce false chinch bugs as well.

FALSE WIREWORM: False wireworms are yellowish-brown, relatively long-legged, hard-shelled larvae up to 1.5" or more in length, which may destroy seed before germination. Use lindane or lindane/diazinon planter box insecticidal seed treatment.



GRASSHOPPER: **Great Plains ET:** 20 small hoppers per sq. yd. in field margins. Once dispersed through the field, 8 per sq. yd. Spray field margins when grasshoppers are small and before they disperse into fields. Use high rates for adults and heavy vegetation, and plenty spray volume.

KAFIR ANT: Tiny (1/16 inch) ants orange colored. Hollow out seed and leave mealy substance in vicinity. Use planter box insecticidal seed treatment.



SORGHUM GREENBUG: Light yellowish-green aphids found on the underside of lower leaves. The insects inject a toxin into the plants, thus cause more damage than other aphids. Planting time treatments are recommended for 3-4 week control where serious early season infestations may be expected. Otherwise, foliar application, if and when an infestation develops, may give control through the season. Producers should consider planting greenbug resistant sorghum hybrids in areas where greenbugs commonly occur. Be aware that the primary type of resistance is tolerance, and do not expect plants to be free of greenbugs. Seed treatments such as Gaucho and Cruiser are effective on low to moderate populations.

Greenbug Treatment Guide (Susceptible Hybrids)* Based on Avg. No. of Greenbugs per plant

Plant Growth Stage**	Threatening Level	Treatment Level***	Based on Visual Rating****
0 to 1 leaf	10-25	25-50	Colonies or numerous winged adults present on majority of plants. May be risky to wait until visible damage is obvious.
3 leaf	25	50-100	As above, before general signs of stress are visible. Light to threatening levels often decline naturally.
5 leaf	50	150-300	When a majority of plants are infested with rapidly increasing colonies of green bugs and initial signs of reddening starting to appear.
Mid-whorl stage (About 1 month after emergence)	200	300-600	When majority of plants are infested with rapidly increasing colonies, but before leaves begin to die. Damaging levels uncommon at this stage, but beginning infestations are often starting to appear.
Late whorl (through soft dough stages)	700	1,000	Some lower leaves beginning to become wet and sticky with honeydew. Some leaves showing yellowing and reddening with occasional leaves dying. Small to large colonies present and increasing on the majority of plants.

*Some upward adjustment in numbers and damage is usually indicated to justify treatment on resistant hybrids particularly in early growth stages.
**One leaf stage means collar of first leaf visible, same system for 3rd and 5th leaf stages.
***Assumes minimal beneficial activity. Remember, frequent field visits are necessary in order to make wise decisions.
Greenbug Resistance to Insecticides - Every effort should be made to minimize spraying. Difficulty in achieving greenbug control has been a growing problem since 1987 in western Kansas and surrounding states. 1) Use resistant hybrids in management. Even though these hybrids support greenbugs, they suffer less damage at a similar level of infestation and where infestations are not heavy, the need for control is reduced. 2) Planting dates - historically, the risk of encountering early season infestations has been greater in both very early and very late planting. 3) Risks of infestations can be reduced using reduced tillage or no-till. Research indicates greenbugs in flight appear to land more frequently in bare soil compared to fields with crop residues. 4) Use natural populations of beneficial insects wherever possible. Lady beetles control light, beginning greenbug infestations. Parasitic wasps are extremely effective later in season.



SORGHUM MIDGE: A pest of late blooming sorghum. Spray when 25-30% of heads have just started blooming and adult midges exceed 1 per head. Two applications are usually needed timed at 30% head emergence and then again 3-5 days later. Fields should be inspected mid-morning until early afternoon when midge are most abundant on flowering heads. Use of a clear plastic bag as a trapping device, quickly slipped over sorghum heads, is helpful in detecting and counting midge adults.



SORGHUM WEBWORM: Worms feed within developing seed from August to October. To examine heads, beat heads on a white paper or cloth. Small larvae less than 1/8-inch long commonly overlooked will be detected with this method. **Great Plains ET:** treatment when 5 or more worms per head are feeding during the early post-bloom period.



SPIDER MITE: Banks grass mites start in lower leaves and build up through the plant, especially after boot formation and during hot dry weather. Protecting from water stress will help plants to tolerate mites. It is difficult to say when chemical control is economical, but if populations are heavy in the lower third of the leaves and the plant has not reached hard-dough stage, control is probably justified. Sufficient gallonage is important for consistent control. Complete control is usually neither practical nor possible. Avoid waiting too long before initiating treatment. Rapidly expanding infestations that have become established throughout the canopy are usually extremely difficult to bring under control. Strive, where practical, to maintain a degree of control that will keep the leaves in the upper 2/3 of the canopy functional until the hard-dough stage is reached. Mark randomly selected plants and count the mites before treating the field. When re-entry intervals permit, reinspect treated fields as promptly as possible after treatment; recounting the mites on the marked plants 2 to 3 days after treatment is advisable.

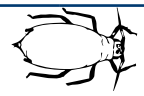


STINK BUG: **ET:** Treat if 5 or more stink bugs/head form flowering to soft dough or 16 or more/head during hard dough.

SUGARCANE ROOTSTOCK WEEVIL: Small, black weevil adults. Small larva can cause stalk tunneling at or near the base of the plant. Larva feed in stalk for 3-4 weeks. Adults are small, black weevils. No ET established.



WIREWORM: True wireworms are immature stages of click beetles. Generally shiny, slender, hard body. Color ranges from yellow to brown. Legs are present on the first 3 segments behind head. To detect problems before planting, sample the soil by sifting 1-foot samples to a depth of 4 inches through a piece of hardware cloth of 1/4-inch mesh. Repeat in 5 to 10 places in field. If replanting, use an in-furrow insecticide such as Counter 20G or seed treated with Cruiser, Gaucho, or Poncho. **ET:** apply insecticide if 2 or more wireworms are found per square foot.



YELLOW SUGARCANE APHID: Lemon-yellow aphid injects a toxin during feeding which causes purple-colored leaves in seedling plants, and stunting and yellowing in mature plants. It can cause death of plants in the preboot stage. Infestations typically occur soon after plants emerge from the soil. Fields should be scouted the first week of emergence and twice weekly thereafter. As plants grow larger they become more tolerant to feeding. **Texas ET:** use specific Tables in Guide B-1220 from Extension Service.

SORGHUM LABELED FUNGICIDES

FUNGICIDE	GRAIN SORGHUM (G)	FORAGE SORGHUM (F)	DISEASE*					
			ANTHRACNOSE	CHARCOAL ROT	DAMPING-OFF	ERGOT	GRAY LEAF SPOT	POWDERY MILDEW
APROACH	G	F	●				●	
ADASTRIO/FORCIVO	G		●			●	●	
HEADLINE SC	G		●				●	
LUCENTO	G							●
NEXICOR	G	F	●				●	
QUILT XCEL/AFRAME PLUS	G		●			●	●	
REVYLOK	G	F	●				●	
TETRABAN	G		●		●		●	
TOPAZ/TILT	G	F				●		
TOPGUARD	G	F	●			●	●	
TOPGUARD EQ	G	F	●			●	●	
VELTYMA	G		●				●	
XYWAY LFR	G		●				●	

* Many other diseases may be controlled, see label.
● - control; ●S - suppression

See Fungicide Resistance Management in the Technical Information section.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
ADASTRIO/FORCIVO	G	7-9 fl oz	30	30	Apply by ground, air or chemigation. For Ergot, make 1st application at or just prior to flowering. Max. 9 fl oz/A/application. Max 2 applications/year. Max. 18 fl oz/A/year.
APROACH	G,F	6-12 fl oz	14	NO	Apply prior to disease development, continue on 7-14 day interval. Make no more than 2 sequential applications. Notes 1, 2.
HEADLINE/HEADLINE SC	G	6-12 fl oz			PHI - no later than 25% of flowering. Use higher rates when pressure is high. 1 application/season.
LUCENTO	G	3-5.5 fl oz	30	30	Apply by ground, air or irrigation prior to disease development. Apply lower rates in early season. Application at high rate at flag leaf ligule emergence protects upper foliage during grain fill. Tank mix with surfactant for optimum control. Max. 2 applications/year. Max. 11 fl oz/A/year. Do not make >2 sequential applications/year before alternating to another fungicide from FRAC group other than 7 and 3.
MINUET	G,F	6-12 fl oz	0	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
NEXICOR	G,F	7-13 fl oz	21	30	Begin applications prior to disease development and continue on 7- to 14-day interval. Higher rate and shorter interval when disease pressure is high.
QUILT XCEL/AFRAME PLUS	G	10.5-14 fl oz	21	30	Apply at the first sign of disease. For ergot, apply at or just prior to flowering and repeat on a 5-7 day interval.
REVYLOK	G,F	4.5-6.5 fl oz	21	21	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. 14-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
TETRABAN	G,F	6-15.5 fl oz	14	14	Foliar applications by ground, air or irrigation. See label application rates, methods and timing for soilborne vs. foliar diseases.
TOPAZ/TILT	G,F	3-4 fl oz	21	30	Make the first application at or just prior to flowering and repeat at 5-7 day intervals up to 4 times.
TOPGUARD	G	7-14 fl oz	30	30	Apply preventively. No more than 2 applications or greater than 28 oz/year. Applications must be minimum of 7 days apart.
TOPGUARD EQ	G,F	5-7 fl oz	30	30	Foliar application after planting. Apply preventatively. No single application may exceed 7 fl oz/A. Do not apply >2 applications/year.
VELTYMA	G	7-10 fl oz	21	21	Max. 10 fl oz/A/application. Max. 1 application/year at 10 fl oz/A.
XYWAY LFR	G	7.6-15.2 fl oz	30	NO	At planting off the row (see label) within 3 inches of seed; or POST directed to soil at base of plant. Applications to soil surface require subsequent rainfall or irrigation. DO not apply in-furrow in direct contact with seed. For control of late-season infestations, heavy disease pressure situations, or foliar diseases not listed above, a supplemental foliar application may be needed.

PHI – preharvest interval days. G/F – grazing and feeding interval days.
* G - grain sorghum, F - forage sorghum.

SUGAR CANE HERBICIDE PERFORMANCE RATINGS

The fallow year offers the best time to control weeds before the planted cane and stubble crops. Plowing or disking the soil during hot, dry weather will bring rhizomes and weed seed to the soil surface and expose them to adverse conditions. Herbicides may be used in conjunction with fallow plowing or to substitute for part of the fallow plow program. The fallow year is important in controlling Johnsongrass and itchgrass.

KEY
E = EXCELLENT (90-100%)
G = GOOD (70-89%)
F = FAIR (50-69%)
P = POOR (49% OR BELOW)
N = NONE

	SITE OF ACTION[A]	WEEDS						
		Seedling Johnsongrass	Rhizome Johnsongrass	Itchgrass	Bermudagrass	Browntop Panicum	Morningglory/ Tie Vine	Nutsedge[1]
FALLOW FIELDS								
ATRAZINE ‡ *(atrazine)*	5	P	P	P	P	P	**G**	N
ROUNDUP** *(glyphosate)*	9	**E**	**G**	**G/E**	F	**E**	F	F
PREEMERGENCE								
ATRAZINE ‡ *(atrazine)*	5	P	P	P	P	P	**G/E**	P
COMMAND 3ME *(clomazone)*	13	**E**	P/F	**E**	**G/E**	**G/E**	**G/E**	N
DIMETRIC EXT*/*DIMETRIC LIQUID *(metribuzin)*	5	**G/E**	P	P	F	F/**G**	**G/E**	P
KARMEX/DIREX *(diuron)*	5	F	P	P	P	F	F/**G**	P
PROWL H2O *(pendimethalin)*	3	**E**	P	**G/E**	F/**G**[2]	**G/E**	P	P
SINBAR WDG *(terbacil)*	5	**G/E**	P	P	F/**G**	P	**G**	P
SPARTAN 4F *(sulfentrazone)*	14	P	N	P	N	P	**E**	F
SPARTAN CHARGE *(sulfentrazone + carfentrazone-ethyl)*	14,14	P	N	P	N	P	**E**	F
TRUST/TREFLAN HFP *(trifluralin)*	3	**E**	P	**G/E**	F/**G**	**G/E**	P	P
VALOR SX/VALOR EZ/PANTHER SC *(flumioxazin)*	14	**G**	P	P/F	P	P	**G/E**	P
POSTEMERGENCE								
2,4-D *(2, 4-D)*	4	P	P	P	P	P	**G/E**	N
ASULAM 3.3/ASULOX *(asulam)*	18	**G**	**G**	P/F	P	**G**	P	N
ATRAZINE ‡ *(atrazine)*	5	P	P	P	P	P	**E**	P
BRASH/WEEDMASTER/WEEDMASTER XHL/***SADDLE-UP*** *(dicamba + 2,4-D)*	4,4	P	P	P	P	P	**E**	P
ENVOKE *(trifloxysulfuron)*	2	**G**	F	**E**	P	F	F	F
HERBIVORE/PERMIT *(halosulfuron)*	2	P	P	P	P	P	P	**G**
KARMEX/DIREX *(diuron)*	5	F	P	**G**	P	F	F/**G**	P
STERLING BLUE*/*CLARIFIER/CLARITY/***DICAMBA MAX 4*** *(dicamba)*	4	P	P	P	P	P	**G/E**	N

** May use other glyphosate herbicides: Cornerstone brands/Credit Xtreme/Honcho K6 or others at labeled rates.
[1] Yellow is generally easier to control than purple.
[2] When incorporated.
[A] Site of action, described in Technical Information section.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SUGAR CANE HERBICIDE APPLICATION RATES

PREEMERGENCE	Fallow Fields	
Herbicide	**Rate/Acre**	**Comments/Restrictions**
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	2 qt or 2.2-4.4 lb	Do not use where Johnsongrass, itchgrass or browntop panicum is a problem. After bedding in May or June, apply to a weed-free bed.
POSTEMERGENCE	**Fallow Fields**	
Herbicide	**Rate/Acre**	**Comments/Restrictions**
CORNERSTONE 5 PLUS	**All soil textures:** 16-48 fl oz + WC+NIS*	May also be applied to last stubble of ratoon cane at 4-5 qt/A in 10-40 GPA. May be applied by ground or aerial.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5 -17 lb AMS/100 gal, or WC+NIS*	Do not cultivate for seven days after application. If necessary, make repeat application. Problem weeds such as Johnsongrass, itchgrass, bermudagrass and equisetum (popping weed) should be controlled on ditchbanks to prevent infestation into adjacent fields, to reduce fallow plowing or to destroy existing sugar cane stubble. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
PREEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
ALION	2.0-3.75 fl oz	Apply Alion Herbicide to newly planted cane either as a pre-emergent at 2.0 fl oz/A followed by a second application of 2.0 fl oz at cultivation/layby prior to sugarcane canopy closure, or as a single application of 2.0 to 3.75 fl oz/A either prior to emergence, or at cultivation/ layby prior to canopy closure. Do not apply more than a total of 4.0 fl oz product/A (0.05 lb ai/A) per year when used in any sugarcane planting. Refer to the Alion label for additional restrictions.
ARMEZON	0.5-2 fl oz	After crop harvest and before planting. Best control when weeds are small and actively growing. Can apply sequentially with min. 14-day application interval. Max. 2 fl oz/A/year.
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	4-8 pt or 2.2-4.4 lb	Use highest rates on heavier soils. Control some annual grasses and most broadleaf weeds but may not control Johnsongrass, itchgrass or browntop panicum. Apply at planting or ratooning but before cane emerges. Additional application may be made.
CALLISTO/ ***INCINERATE***	6-7.7 fl oz	Apply after planting or after harvest of ratoon cane. Include NIS or COC with UAN/AMS* if weeds are emerged. Can be applied through aerial applications.
COMMAND 3ME	2.67-3.33 pt	For newly planted cane in late summer, early fall, or ratoon sugar cane in spring through layby.
CORNERSTONE 5 PLUS	16-48 fl oz + WC+NIS2 2.5 -5 gal/100 gal	Apply with WC+NIS* or AMS. Do not apply to vegetation in or around ditches, canals or ponds containing water to be used for irrigation.
DIMETRIC EXT or ***DIMETRIC LIQUID***	2-4 lb or 4-8 pt: broadcast 1-2 lb or 2-4 pt: band	LA and TX only. At planting in fall after planting or after harvest. Make a second application in early spring. See label for FL and HI rates and restrictions.
FRAMEWORK 3.3 EC or PROWL H2O	4.8-7.2 pt or 4.2-6.2 pt	PRE through layby to plant or ratoon sugar cane. See label instructions for muck soils in FL. May be surface applied or preplant incorporated. Use highest rates if surface applied. Add Atrazine or Karmex DF/Direx 4L for broadleaf weed control.
GRAMOXONE SL 3.0 ‡	1.3-2.5 + 2 pt NIS/100 gal	Supplemental label Gramoxone SL 3.0 LA (exp. date not given) for broadcast application prior to sugarcane emergence to ≤4 leaves.
HERBIVORE/PERMIT	0.67-1.33 oz	Prior to planting or PRE.
INCINERATE	SEE CALLISTO	
KARMEX DF or DIREX 4L	2-4 lb or 1.6-3.2 qt	PRE in FL only. See label for rate ranges based on geographic location. Use highest rates on heavier soils. Do not make more than 3 applications or apply more than 4.8 lb a.i. total/A between planting (or ratooning) and harvest.
LUMAX EZ ‡	2.75-3.75 qt	PP,PRE after new plantings,PH prior to ratoon-cane: Use higher rate on soils with higher O.M. Use 1 gal COC/100 gal or 1 qt NIS/100 gal.* May add 2.5 gal UAN/100 gal or 8.5 lb AMS/100 gal to emerged weeds.
PANTHER SC	SEE VALOR SX	
PERMIT	SEE HERBIVORE	
PROWL H2O	SEE FRAMEWORK 3.3 EC	
RUGGED	2 qt	Apply to emerged weeds before canes appear. May use NIS, COC, or HSOC adjuvants.*

See notes and footnotes at end of table.

SUGAR CANE HERBICIDE APPLICATION RATES *continued*

PREEMERGENCE *(continued)*				
Herbicide	**Rate/Acre**			**Comments/Restrictions**
SINBAR WDG	1-1.5 lb			At planting in late summer or fall. After planting, roll or pack top of row before applying herbicide. Do not exceed 0.5 lb/A on a 30" treated band on sandy soils or apply on varieties or soils that have shown previous Sinbar WDG injury. In the spring to weed-free row where Sinbar WDG or Dimetric EXT/Dimetric Liquid was applied in fall, apply before weeds emerge. Use maximum rate when heavy Johnsongrass infestations are expected.
SONIC BOOM	**Coarse** fl oz	**Medium** fl oz	**Fine** fl oz	Apply to newly planted or ratoon sugarcane as a broadcast or banded pre-emergent soil applied treatment. Within the ranges indicated, use the higher rates for soils of pH less than 7.0. Use the lower rates for pH greater than 7.0. Also use the higher rate on clay soils and/ or soils with organic matter content higher than 2 percent. Minimum 5 gal/A water by air or minimum of 10 gal/A by ground. For additional control of emerged weeds, may be applied with other herbicides registered for use in sugarcane. 120 day PHI. Max 42 fl oz/a / 12 month period. Do not graze treated sugarcane or harvest for forage or hay.
	1.0 - 2.0% O.M.			
	21-26 fl oz	26-33 fl oz	33-39 fl oz	
	2.0 - 4.0% O.M.			
	26-33 fl oz	33.39 fl oz	39-42 fl oz	
SPARTAN CHARGE	**Coarse** fl oz	**Medium** fl oz	**Fine** fl oz	Apply PRE to newly planted or ratoon sugarcane, aerially or at lay-by timing. Use higher rate on clay soils or high (>2%) organic matter.
	<1.5% O.M.			
	5.7-7.6	7.6-10.2	10.2	
	1.5-3% O.M.			
	5.7-7.6	7.6-10.2	10.2	
	>3% O.M.			
	10.2-12.8	12.8-15.2	15.2	
SPARTAN 4F	4.5-10.1 fl oz			PRE to newly planted or ratoon sugar cane or as directed spray for lay-by. Rates vary by O.M. and pH. May be used as a directed spray for layby. PHI 120 days.
TRUST/TREFLAN HFP	2-4 pt			Adjust rate according to weed pressure. Incorporate as soon as possible, but within 24 hrs of application. Apply and incorporate twice a year. Make the first application in the fall on firmly packed beds immediately after seed pieces are planted. Make second application in the spring. Take care that incorporation equipment does not damage the seed pieces or emerging shoots.
VALOR SX or VALOR EZ/PANTHER SC	6-8 oz or 6-8 fl oz			Apply at lay-by when sugarcane is >24" and jointing has begun. Directed spray on lower 6" of plant. PHI 90 days.
2,4-D AMINE 4/RUGGED/ WEEDAR 64	2 qt or 2-4 pt			PRE to emerged weeds before canes appear.

POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
AIM EC/SHARK EW	1-2 oz	7 day PHI. Apply alone or in tank mixtures as a post treatment or as hooded sheild application to row middles. Also can be used as a harvest aid treatment to dessicate broadleaf weeds.
ASULAM 3.3/ASULOX	6-8 pt + 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal*	First application: Apply 4 pt /A to a 36" band or proportionately more or less according to band width. Johnsongrass should be 12-18" tall and before emergence of the seed head at time of application. A second application at 3.5 pt/A on a 36" band will provide effective control. Treat itch grass plants while small, usually when the largest plants are 6 inches tall, at 3 pt/A on a 24-inch band or 4.2 pt/A on a 36-inch band. Do not graze or feed forage. PHI 100-140 days – see label.
BRASH or WEEDMASTER or WEEDMASTER XHL	2-5.6 pt or 2-5.5 pt or 1.6-4.2 pt	Apply after weeds have emerged and are actively growing but before close-in stage of sugar cane. Retreatment allowed. Do not exceed 11 pt/A/crop cycle. For WeedMaster XHL, do not exceed 8.4 pts/A/year. For Brash: Do not harvest prior to crop maturity; Weedmaster/ WeedMaster XHL PHI 87 days.
CALLISTO/ ***INCINERATE***	3 fl oz	POST over-the-top or POST-directed. Include NIS or COC with UAN/AMS* if weeds are emerged. PHI 100 days directed, 114 days otherwise. Apply to broadleaf weeds <5". Add atrazine to improve control of broadleaf weeds.
CALLISTO XTRA ‡	20-24 fl oz + 1 qt NIS or 0.5 gal HSOC-COC/100 gal* +2.5 gal UAN or 8.5-17 lb AMS/100 gal	POST broadcast or directed after crop emergence up to 114 days PHI (broadcast) or 100 days PHI (directed). Maximum 2 applications; 1 if mesotrione was used PRE. Do not make a second application with 14 days of first.
CLARIFIER/CLARITY	SEE STERLING BLUE	
CORNERSTONE 5 PLUS	5-28 fl oz	Application rates and timings vary by state. See label for details. Foliar applied to hasten ripening and increase the level of sucrose.

See notes and footnotes at end of table.

POSTEMERGENCE *(continued)*		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
CREDIT XTREME	SEE ROUNDUP	
DICAMBA MAX 4	SEE STERLING BLUE	
DIMETRIC EXT or ***DIMETRIC LIQUID***	1.33-2.67 lb or 2-8 pt	LA, TX: 2-4 lb/A or 4-8 pt/A broadcast, 1-2 lb/A or 2-4 pt band. FL: 1.33-2.66 lb/A or 2.66-5.33 pt/A broadcast. Broadcast <14" sugar cane, or directed >14". May be aerially applied. See label for additional restrictions. See label for HI instructions.
ENVOKE	0.3 oz + 1 qt NIS/100 gal	Apply post prior to spiking (FL) or ratoon up to 24". Labeled in FL, LA, and TX. Post directed from 0.3-0.6 oz/A up to 18" sugar cane. May use 1-2 qt HSOC-COC/100 gal* post directed. PHI 100 days.
EVIK DF	0.5-3 lb	Broadcast in ≥5 GPA air, or broadacast/band in ≥20 GPA ground. Repeat as needed with final application prior to close-in. See label for state-specific weeds controlled, weed heights and additional precautions. FL,LA,TX: Not to exceed 3 lb/A/crop cycle. HI: Not to exceed 9 lb/A/crop cycle.
GRAMOXONE SL 3.0 ‡	0.4-2 pt + 2 pt NIS/100 gal	POST-directed. Controls small grasses and broadleaf weeds. FL-1.3 pt/A; LA-0.7-2 pt/A; FL and TX as harvest aid - 0.4-0.7 pt/A.
HERBIVORE/PERMIT	0.67-1.33 oz + 1-2 qt NIS/100 gal	May be applied until row closure and tank mixed with Asulam 3.3, Atrazine, and 2,4-D.
HONCHO K6	SEE ROUNDUP	
INCINERATE	SEE CALLISTO	
KARMEX DF or DIREX 4L	2-8 lb or 1.6-5 qt	See label for rate ranges based on geographic location. Use highest rates on heavier soils. Control some annual grasses and most broadleaf weeds but after planting or after harvesting crop (for ratoon). Do not contact cane shoots or leaves. Do not make more than 3 applications or apply more than 4.8 lb a.i. total/A between planting (or ratooning) and harvest.
LUMAX EZ ‡	1.5-3 qt	Broadcast or directed spray. Total PRE+POST applications cannot exceed 5.25 qt/A/year. Use 1 gal COC/100 gal or 1 qt NIS/100 gal.* May add 2.5 gal UAN/100 gal or 8.5 lb AMS/100 gal to emerged weeds. PH prior to ratoon-cane: Use higher rate on soils with higher O.M. PHI 100 days.
POLADO L	6-14 fl oz	Plant growth regulator. Apply 3-5 weeks before harvest or ratoon cane in LA or TX.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	See label	Sugar cane ripening. See label for timing in each state. Also labeled for hooded application. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
RUGGED	2 qt	Apply in spring after cane emerges through layby.
SADDLE-UP	2-5.33 pt	Apply after weeds have emerged and are actively growing but before close-in stage of sugar cane. Retreatment allowed. Do not exceed 11 pt/A/crop cycle. PHI 87 days.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	0.5-4 pt	Apply after weeds emerge but before close-in stage of sugar cane. When possible, direct spray below the crop canopy. May tank mix with a prometryn, Asulox 3.3, atrazine, or 2,4-D. Maximum use rate per season is 4 pt/A.
WEEDMASTER/ WEEDMASTER XHL	SEE BRASH	
2,4-D AMINE 4/***RUGGED***/ or WEEDAR 64	2 qt or 2-4 pt	Apply in spring after cane emerges through layby for annual morningglory and other susceptible broadleaf weeds. Use proper precautions to prevent drift onto non-target areas

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SUGAR CANE LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR SUGAR CANE	RATE PER ACRE	INSECT				COMMENTS AND RESTRICTIONS
			MEXICAN RICE BORER	SUGAR CANE BORER	SUGAR CANE NEMATODES	WIREWORMS	
ASANA XL ‡	21	6.4-9.6 fl oz		●			Repeat as necessary to maintain control. Max. 0.2 lb ai/A/season. See label requirements for vegetative filter strip near aquatic habitat, for application buffer zones, and for spray drift controls.
BAYTHROID XL ‡	15	2.1 fl oz		●			Apply in sufficient water for complete coverage of foliage. Up to 6 applications may be made per crop season. Allow 7 days between applications. See label requirements for vegetative filter strip near aquatic habitat, for application buffer zones, and for spray drift controls.
BESIEGE ‡	21	8-10 fl oz	●	●			Max. 31 fl oz/A/season. See label requirements for vegetative filter strip near aquatic habitat, for application buffer zones, and for spray drift controls.
CONFIRM 2F	14	6-8 fl oz		●			Sugar cane borer: Apply at first signs of feeding damage or at threshold levels as defined by Extension Service of other professional authorities. Mexican rice borer: Apply under heavy infestations of continuous moth flights and/or egg masses and larvae in all development stages; reapply on a 10- to 14-day schedule to protect new growth until moth flights and/or hits subside.
		16 fl oz	●				
CORAGEN	14	3.5-5 fl oz	●	●			Max. 15.4 fl oz/A/season. Max. 4 applications/A/calendar year. Min. 7-day application interval.
GRIZZLY TOO ‡	21	1.6-2.56 fl oz	●	●			Max. 0.64 pt/A/season. For control before larvae bore into the plant stalk. See label requirements for vegetative filter strip near aquatic habitat, for application buffer zones, and for spray drift controls. Apply in min. 10 GPA by ground, or 2 GPA by air.
LAMBDA-CY AG ‡	21	3.2-5.12 fl oz	●	●			Max. 1.28 pt/A/season. For control before larvae bore into the plant stalk. See label requirements for vegetative filter strip near aquatic habitat, for application buffer zones, and for spray drift controls. Apply in min. 10 GPA by ground, or 2 GPA by air.
MOCAP 15G ‡	–	1.8-3.6 lb/1000' row			●		Apply as 12-15" band over seed pieces in the open furrows or beds; immediate cover with soil. Min. 6-ft row spacing. Make only 1 application/season. See label for field worker protection requirements.
MUSTANG MAXX ‡	21	3-4 fl oz	●	●			Max. 16 fl oz (0.1 lb a.i.)/A/season. See label requirements for vegetative filter strip near aquatic habitat, for application buffer zones, and for spray drift controls.
THIMET 20-G ‡	–	14.6-19.5 lb				●	FL only. Apply in 10-12" band directly on seed piece and surrounding soil in the open furrow immediately before covering. Do not make >1 application/crop season. Do not graze or feed treated hay or forage to livestock.
VANTACOR	14	3.5-5 fl oz	●	●			Max. 5.1 fl oz/A/season. Max. 4 applications/A/calendar year. Min. 7-day application interval.
WARRIOR II ‡	21	1.6-2.56 fl oz	●	●			Max. 0.64 pt/A/season. For control before larvae bore into the plant stalk. See label requirements for vegetative filter strip near aquatic habitat, for application buffer zones, and for spray drift controls. Apply in min. 10 GPA by ground, or 2 GPA by air.

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.

SUGAR CANE INSECT MANAGEMENT GUIDELINES



SUGAR CANE BORER: The following farming practices can reduce sugar cane borer infestations and damage. Plant non-infested seed cane to improve crop stands. Sugar cane borer larvae in seed cane can destroy 20% or more of the vegetative buds (eyes). Plant corn as far as possible from sugar cane to reduce mid-summer moth migration from senescing cornfields to sugar cane. Plow out old stubble as quickly as possible after final harvest to reduce the number of overwintering larvae. Scrap heavily infested fields of mill cane during harvest to reduce the number of overwintering larvae. Leave crop residues such as cane tops, pieces of broken stalks or old stubs exposed on the soil surface throughout winter to obtain maximum kill of larvae by low temperature.



WIREWORMS: Soil treatment is recommended to control wireworms where sod land is planted to cane or where wireworms are a problem. Wireworm damage generally occurs in spots, and is usually confined to sandy loam soils. Spray cane seed pieces in the open furrow in a band 12-16" wide so that all the seed pieces will be covered. The spray should be applied just before the seed pieces are covered with soil.

SUGAR CANE DISEASE MANAGEMENT GUIDELINES

Disease	Comments/Restrictions
LEAF SCALD	Leaves of young plants may show bleaching or yellowing. The characteristic symptom of leaf scald is the presence of one or more narrow white "pencil lines" running longitudinally down the leaf blade into the sheath. Bands of dead tissue may develop along pencil lines and expand until the entire leaf is dead. Young shoots may be killed. Mature stalks may show leaf symptoms and develop side shoots with symptoms. Under severe disease conditions, entire plants may die.
MOSAIC	The mosaic pattern of irregular, indefinite, pale green to yellowish areas on leaves varies with cane variety, stage of growth temperature and the strain of the virus involved.
PINEAPPLE DISEASE	Propiconazole fungicides may be used for cut seed piece treatments.
RATOON STUNTING DISEASE	Plants may be shorter with little or no decrease in diameter of the stalk. Affected plants, when split, may show a pinkish color in the growing point of young shoots and orange to brownish discoloration of vascular bundles at the nodes in the lower portion of mature stalks.
RED ROT	Splitting of the infected plants shows a reddening of the tissues of the internodes and the presence within the red areas of white spots usually elongated at right angles to the long axis of the stalk.
RUST	Small chlorotic areas appear on the leaves at first as flecks. Later, the flecks elongate and become reddish brown. The spots continue to enlarge, with a slight yellow halo surrounding the lesion on some varieties. The lesion takes on a pustular appearance and pustules burst, releasing a powdery mass of spores. On susceptible varieties, leaves turn brown and die.
SMUT	Smut is characterized by the production of a whip-like structure at the apex of the stalk. The whip often elongates to a length of 2-3 feet and usually curls downward. The whip is covered by a layer of dark brown fungal spores. Spores are released and blown about in air currents and spread the disease over short or long distances.
WHITE STRIPE	Characterized by severe white striping on leaves in some stools, usually occurring in late spring. The white stripes extend the full length of the leaf. Striping can occur in all varieties, but is most often found in CP 74-383. Striping is not considered infectious, but rather a growth response to environmental conditions. Occasionally, a plant may shrivel and die.

Adapted from LSU.

SUGARBEET HERBICICDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	CROP TOLERANCE	SITE OF ACTION[A]	GRASSES										BROADLEAVES	
			Barnyardgrass	Crabgrass	Fall Panicum	Foxtail, gi/gr	Foxtail, yellow	Sandbur, field	Shattercane	Wild Oat	Yellow Nutsedge		Bindweed, field	Buffalobur
PREPLANT														
AIM EC/SHARK EW *(carfentrazone)*	F/G	14	P	P	P	N	N	U	U	U	P		U	U
EPTAM 7E/EPTAM 20-G *(EPTC)*	G	15	**G/E**	**E**	**E**	**E**	**E**	**G/E**	F	**G**	F		P	**G**
NORTRON *(ethofumesate)*	G	15	P	**G**	F/**G**	**G**	F/**G**	F	P	**G**	P		P	**G**
VIDA *(pyraflufen)*	F/G	14	P	P	P	N	N	U	U	U	P		U	U
PREEMERGENCE														
NORTRON *(ethofumesate)*	G	8	P	**G**	**G**	F	F	F	P	F/**G**	P		P	**G**
POSTMERGENCE														
ASSURE II/TARGA *(quizalofop)*	E	1	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	**E**	N		N	N
CHARGER BASIC/DUAL MAGNUM/DUAL II MAGNUM/EVERPREX *(s-metolachlor)*	G/E	15	**G/E**	**E**	**E**	**E**	**E**	F	P	P	F		N	P
CORNERSTONE 5 PLUS/GLYPHOSATE[1] *(glyphosate)*	E	9	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	F		**G**	**G**
EPTAM 7E/EPTAM 20-G *(EPTC)*	G	15	F	**G/E**	**G/E**	**E**	**E**	**E**	**G**	F/**G**	P		P	**G**
OUTLOOK[2] *(dimethenamid-p)*	G	15	**G/E**	**E**	**E**	**E**	**E**	F	P	P	F		P	P
POAST *(sethoxydim)*	E	1	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**G/E**	N		N	N
SECTION THREE/CLEANSE *(clethodim)*	E	1	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	N		N	N
SEQUENCE[1] *(glyphosate + s-metolachlor)*	G/E	9,15	**E**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	F		**G**	**G**
STINGER/STINGER HL *(clopyralid)*	G	4	N	N	N	N	N	N	N	N	N		P	**G**
TRUST/TREFLAN HFP *(trifluralin)*	G	3	**G**	**G**	**G**	**G**	F/**G**	F	F	P/F	N		P	N
UPBEET *(triflusulfuron)*	G/E	2	P	P	P	F	F	P	P	N	P		P	U

[A] Site of action, described in the Technical Information section.
[1] Roundup Ready sugarbeet only. May use other glyphosate herbicides: Roundup brands/Credit Xtreme or others at labeled rates.
[2] Provides soil residual control only. Does not control emerged weeds.
[3] See label of pigweed species controlled.

BROADLEAVES																	
Canda Thistle	Cocklebur	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Mallow, common	Morningglory, annual	Mustard, wild	Nightshade, black	Nightshade, hairy	Pigweed[3]	Ragweed, common	Russian Thistle	Smartweed, annual	Sunflower	Velvetleaf	Wild Buckwheat	
PREPLANT																		
U	**G**	**G/E**	U	**E**	**G/E**	**G/E**	**E**	U	**G**	P/F	**G/E**	F	**E**	**G/E**	**G/E**	**G/E**	U	AIM EC/SHARK EW
P	P	P	P	F	F	P	F/**G**	P	F/**G**	F	F	F	P	P	P	P/F	P	EPTAM 7E/EPTAM 20-G
P	P	P	P/F	**G**	P/F	F	F	F	F/**G**	P/F	**G/E**	P	F	**G**	P	P	F/**G**	NORTRON
U	**G**	**G/E**	U	**E**	**G/E**	**G/E**	**E**	U	**G**	P/F	**G/E**	F	**E**	**G/E**	**G/E**	**G/E**	U	VIDA
PREEMERGENCE																		
P	P	P	P/F	F/**G**	P/F	F	P	P/F	F	F	**G**	P	F	**G**	P	P	F/**G**	NORTRON
POSTEMERGENCE																		
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	ASSURE II/TARGA
N	P	P	P	P	F	P	P	P	**G**	P	**G**	P	P	P	P	P	P	***CHARGER BASIC***/DUAL MAGNUM/DUAL II MAGNUM/EVERPREX
G	**G/E**	**E**	**E**	**E**	**G/E**	**G**	**G**	**G**	**G**	**E**	**E**	**G/E**	**G**	**G/E**	**E**	**G/E**	F	***CORNERSTONE 5 PLUS***/GLYPHOSATE[1]
P	P	P	F/**G**	F/**G**	F	P/F	P	P	F	F	F	F	P	P	P	P	F	EPTAM 7E/EPTAM 20-G
P	P	P	P	P	**G**	P	P	P	**G**	F	**E**	P	P	P	P	P	P	OUTLOOK[2]
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	POAST
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	***SECTION THREE/CLEANSE***
G	**G/E**	**E**	**E**	**E**	**G/E**	**G**	**G**	**G**	**G**	**E**	**E**	**G/E**	**G**	**G/E**	**E**	**G/E**	F	SEQUENCE[1]
G/E	**E**	F	**G**	P	P/F	P	P	P	F/**G**	P	P	**G/E**	P/F	F	**G/E**	P	F/**G**	STINGER/STINGER HL
P	P	P	F/**G**	F/**G**	F/**G**	P	P	P	P	P	F/**G**	P	P/F	P	P	P	P/F	***TRUST***/TREFLAN HFP
N	P	F	F	**G**	P	F/**G**	N	**E**	F	U	**G**	F	P	F	P	**G**	F	UPBEET

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

SUGARBEET HERBICIDE APPL. TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Interval[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Harvest
AIM EC/SHARK EW	PRE	30 days prior to planting.	10	5		NR	NR	NR
ASSURE II	POST	Apply to young actively growing grass from 3-leaf to early tillering stage.	10-15	3	1	60	60	45
CHARGER BASIC/DUAL MAGNUM/ DUAL II MAGNUM/EVERPREX	POST	POST after the first true-leaf stage, and prior to weed emergence.	10	2		NR	NR	60
CHEETAH		SEE LIBERTY 280 SL						
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	PP PRE POST	Prior to planting. Prior to crop emergence. To RR sugarbeets up to 30 days PHI.	3-40		 S	NR	NR	30
DUAL MAGNUM/DUAL II MAGNUM	POST	SEE CHARGER BASIC						
DUAL MAGNUM	PP, PRE	24c MN (indemnified; exp. 12/2025). Fall (> September 30 w/ T at 4" depth 55 °F and falling), PPI and PRE application.	10	2		NR	NR	60
ELEVORE	PP	Burndown up to 14 days before planting.	8	5	1	NL	NL	NL
EPTAM 7E or EPTAM 20-G	PP POST	PPI fall before ground freezes or spring. POST incorporated 2-3" at layby.	10-50	NL		NR	NR	45
ENVERSA	POST	This product may be applied postemergence to sugar beet, 2 leaf up to the 8-leaf stage.	10+	3-15		70	70	70
EVERPREX		See Charger Basic						
FAR-GO	PP	PPI fall or spring. Fall within 3 weeks of freeze up, or until snow cover. Spring before seeding and wild oat emerge.	10	NL		NR	NO	NR
FUSILADE DX	POST	Apply to emerged grass weeds.	5-40	5	1	NR	NR	90
GRAMOXONE SL 3.0 ‡	PP, PRE	PP or PRE to emerged weeds and prior to crop emergence.	10	5	0.5	NR	NR	NR
LIBERTY 280 SL/CHEETAH	PP,PRE POST	Before planting and before crop emergence. Cheetah (Only): Post application to Glufosinate Tolerant Sugarbeets.	15 15	10	4 4	NR NO	NR NO	NR 60
NORTRON SC	PP, PRE POST	PPI 1-2". POST tank mixes.	10-60 20-60	NL	 6	NR	NO	90
OUTLOOK	POST	Apply to sugarbeets after 2-leaf to 8-leaf stage. Also, from 9-leaf to 12-leaf. PHI 95 days for late application.	5	2		NR	NR	60,95
PANOFLEX	PP	PP and Post-harvest burndown and fallow weed control. PP 60 days or more before planting.	5	5	4	NR	7	NR
POAST	POST	Apply to actively growing grasses at labeled sizes.	5-20	5	1	NR	NR	60
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6	PP,PRE POST	PP or PRE to emerged weeds but prior to crop emergence (conventional sugarbeet). POST to RR sugarbeets up to 30 days PHI. Ground appliction in 5-20 GPA for RR crop, 3-40 GPA non RR.	see comment	3-15	S	NR	NR	 30
SECTION THREE/CLEANSE	POST	Apply to actively growing grasses at labeled sizes.	5-40	3-10	1	NO	NO	40
SELECT MAX	POST	Apply to actively growing grasses at labeled sizes.	10-20	5-15	1	NO	NO	40
SEQUENCE	POST	To Roundup Ready sugarbeets from 2-true leaf to canopy closure.	10-40	3-15	S	NR	NR	60
STINGER/STINGER HL	POST	Apply to beets from cotyledon to 8-leaf stage; weeds young and actively growing.	10	5	6	NR	NR	45
TARGA	POST	Apply to young actively growing grass from 3-leaf to early tillering stage.	10-15	3-5	1	60	60	45
TOTAL/TOTAL 2.3/TOTAL SL	PP,PRE POST	Before planting or prior to crop emergence. POST application to LibertyLink sugarbeet only with Total SL/Total 2.3.	10	10	4	NR	NR	NR 60
TRUST/TREFLAN HFP/TREFLAN TR-10	POST	Broadcast over 2-6" sugarbeets. Incorporate at once.	5-40	5-10		NR	NR	NR

See notes and footnotes at end of table

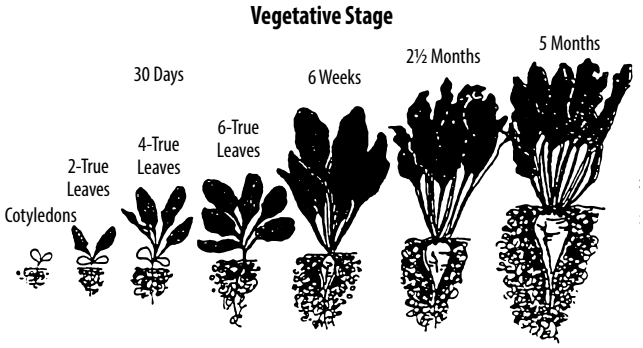
Herbicide	Application Timing[1]	Comments/Restrictions	GPA[2]		Rainfast (hrs)	Interval[1] (Days)		
			Ground	Aerial		Feeding Forage	Grazing Animals	Harvest
UPBEET	POST	Apply to weeds from cotyledon to 2 true-leaf stage.	10	5	6	NR	NR	60
VIDA	PP	Apply up to 24 hours before planting.	10	5	1	NL	NL	NL
WARRANT	POST	Apply from 2-8 leaf stage, with 4 leaf stage ideal.	10	3-15		60	60	NR

[1] Application Timing and Interval
[2] Includes labeled minimum or range.
PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
POST - Postemergence

NR - No restrictions
NO - Not permitted
NL - No related information on label
S – Heavy rainfall soon after application may require retreatment.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SUGARBEET HERBICIDE APPLICATION RATES

PREPLANT OR PREEMERGENCE	Rate/Acre			
Herbicide	**Coarse[1]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC/SHARK EW	**All soil textures**: 1-2 oz			30 days prior to planting.
CHEETAH	SEE TOTAL			
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	**All soil textures:** Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal, include NIS or WC+NIS*			PP or PRE prior to crop emergence. See label for perennial rates.
CREDIT XTREME	SEE ROUNDUP			
DUAL MAGNUM	See Comments/Restrictions			24c MN (indemnified; exp. 12/2025). Fall (>September 30 w/ T at 4" depth 55 °F and falling): In minimum-till or no-tillage systems on soils w/ >2.5% O.M.; 1.67-2.0 pt/A on medium textured soils and 2.0 pt/A on fine textured soils; do not apply to frozen ground; see indemnified label for additional information/restrictions. PPI and PRE application: Coarse soils w/ <3% O.M. 1-1.33 pt/A; w/ ≥3% O.M. 1.33 pt/A (applications on coarse soils before emergence may cause injury); Medium soils 1.33 pt/A; Fine soils w/ <3% O.M. 1.33-1.67 pt/A; w/ ≥3% O.M. 1.67-2.0 pt/A. Max. 2.66 pt/A POST or 4 pt/A from all applications in season. PHI 60 days.
ELEVORE	**All soil textures:** 1 fl oz			PP burndown to actively growing weeds up to 14 days before planting. Use with MSO.*
EPTAM 7E	2.25 pt	3.5 pt	3.5 pt	PPI SPRING (IA, eastern NE,ND, SD, MI, MN) Apply just before planting and incorporate at once, or meter into irrigation water before or after planting. Can be used on high organic matter soil. Crop damage can occur on low organic matter soil. Notes 1, 3, 6.
EPTAM 7E or EPTAM 20-G	4.5 pt or 20 lb	5.25 pt or 22.5 lb	5.25 pt or 22.5 lb	PPI FALL (MN, ND only). Apply and incorporate in late fall before ground freezes. Notes 3, 6.
FAR-GO	**All soil textures:** 1.5 qt			PPI spring or fall in CO, ID, KS, MN, MT, NE, NV, ND, OR, SD, UT, WA, and WY. Apply in fall within 3 weeks of freeze-up or until snow cover or frozen ground or apply in spring before seeding and wild oat emergence. 2ee MN, MT, and ND (exp. date not given) for fertilizer impregnation.
GRAMOXONE SL 3.0 ‡	**All soil textures:** 1.3-2.7 pt + 2 pt NIS/100 gal See Comments/Restrictions for volunteer barley control			PP or PRE. Apply in 10 GPA water by ground and 5 GPA by air. Apply to emerged weeds preplant or preemerge, but prior to crop emergence. Gramoxone SL 3.0 PP/PRE volunteer barley control in CA, WA, OR, ID: 0.5-0.7 pt/A
HONCHO K6	SEE ROUNDUP			
LIBERTY 280 SL	**All soil textures:** 32-36 fl oz			PP or PRE. Apply prior to planting or before crop emergence. Apply to actively growing weeds. Warm temperatures, high humidity, and bright sunlight improve performance. Maximum 36 fl oz/A/season. Include AMS at 1.5-3.0 lb/A or WC+NIS.*
NORTRON SC	*PPI or PRE all regions except MN, ND*			PPI or PRE. Furrow irrigation apply preplant and incorporate 1-2"; for sprinkler irrigation apply preemergence at or shortly after planting and immediately irrigate with 0.5" water. Observe rotation restrictions.
	2.25-3.75 pt	3.75-6 pt	6-7.5 pt	
	PPI or PRE MN, ND			
	6 pt	6 pt	7.5 pt	
PANOFLEX	**All soil textures:** 0.3-0.6 oz			Burndown treatment when weeds have emerged and actively growing. Apply to crop stubble or fallow treatment. PP apply 60 days or more before planting. Include NIS, COC or MSO plus UAN/AMS.*
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*			PP or PRE. Apply to emerged weeds preplant or preemerge, but prior to crop emergence. See label for perennial rates. Apply in 3-10 GPA water. AMS may improve control under stress, cool temperatures or hard water. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
TOTAL*/*TOTAL 2.3*/*TOTAL SL	**All soil textures:** 29-36 fl oz			Burndown PP,PRE. LibertyLink and non-LibertyLink sugarbeet. Apply prior to planting or before crop emergence. Apply to actively growing weeds. Include AMS at 1.5-3.0 lb/A or WC+NIS.*
VIDA	**All soil textures:** 0.5-2 fl oz			Do not apply within 24 hours of planting.



Sugarbeet Growth Stage Terms
(Adapted from the University of Nebraska)

- Cotyledons = Unfolding endosperm or specialized seed leaves.
- 2-True Leaves = First leaves visible above cotyledons.
- 6-True Leaves = 6 leafed nodes visible.

[1]Coarse – Sand, loamy sand, sandy loam.
Medium – Loam, silt, silt loam.
Fine – Silty clay loam, sandy clay loam, silty clay, sandy clay, clay loam, clay.
O.M. – Soils with low organic matter - use lower rate, with high organic matter – use higher rate within the range.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

POSTEMERGENCE		
Herbicide	**Rate/Acre**	**Comments/Restrictions**
ASSURE II	5-12 fl oz: annuals 8-12 fl oz: perennials + 0.5 gal HSOC-COC/100 gal*	Apply to young, actively growing grass from 3-leaf to early tillering stage. Apply a minimum of 24 hours prior to or 7 days after applying broadleaf herbicides. Tank mixes with broadleaf herbicides may result in loss of grass control. 45 day PHI. Do not feed beet tops for 60 days.
CHARGER BASIC/ DUAL MAGNUM/DUAL II MAGNUM/EVERPREX	**Coarse soils:** 1 pt **Medium soils:** 1.33 pt **Fine soils:** 1.67 pt: fine	Apply after the first true-leaf stage. Does not provide control of emerged weeds. May be chemigated. Total of all applications should not exceed 2.67 pt/A. PHI 60 days. May be tank mixed with other registered herbicides. Tank mixtures and the addition of COC or MSO may increase risk of crop response. It is not recommended to make a POST application to fields previously treated with Nortron. Application to coarse soils prior to beet emergence may cause injury.
CHEETAH	SEE TOTAL	
CLEANSE	6-16 fl oz + 0.5 gal HSOC-COC/100 gal*	8-16 oz/A labeled for perennial grasses. Apply to actively growing grasses at sizes specified on label. Nitrogen additive is optional. May tank mix with Stinger. Apply immediately after emergence and at 5-7 day intervals. Certain states only. See label. PHI 40 days.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	Up to 1.5 qt + 8.5-17 lb AMS/100 gal, include NIS or WC+NIS as needed*	Apply only in Roundup Ready sugarbeets up to 30 days PHI. Use up to 1.5 qt/A or 36 fl oz/A up to 8 leaf and up to 1 qt/A or 24 fl oz/A between 8 leaf and canopy closure. PHI 30 days.
CREDIT XTREME	SEE ROUNDUP	
ENVERSA	**Soil Texture:** *<1.5% OM (qts.) or >1.5% OM (qts.)* **Coarse:** 1.25 to 1.6 or 1.25 to 1.7 **Medium:** 1.25 to 1.7 or 1.25 to 1.9 **Fine:** 1.25 to 1.9 or 1.25 to 2.0	For Sugar beets apply broadcast over the top of the crop or directed to the soil surface according to the listed rate table. Application of Enversa made before weeds emerge or after clean cultivation, or application in a labeled tank-mix with an effective postemergence herbicide, is necessary, as this product will not control emerged weeds. Do not exceed 2 quarts of Enversa per acre as a single application and 4 qts per acre per season. Allow at least 7 days between sequential applications. To avoid severe crop injury, refer to the product label for specific environmental and Sugar Beet replant precautions.
EPTAM 7E or EPTAM 20-G	**Coarse soils:** 3.5 pt or 15 lb **Medium soils:** 3.5 pt or 15 lb **Fine soils:** 3.5 pt or 15 lb	LAYBY. Apply to soil at base of plants after thinning and cultivation. Incorporate 2-3" deep at once. Note 1.
FUSILADE DX	Up to 24 fl oz + 1-2 qt HSOC-COC/100 gal*	Apply to emerged grass weeds. May use NIS. Do not apply >48 fl oz/A/year.
OUTLOOK	12-21 fl oz	Apply POST to beet from 2-leaf to 8 true-leaf stage. Extended timing from 9 to 12-leaf; PHI increased to 95 days. No control of emerged weeds. May be chemigated.
POAST	1-1.5 pt + 1 pt HSOC-COC*	Apply to actively growing grasses at sizes and rates specified on label. 0.5 pt/A on wild proso millet only. Add N for many grass species. PHI 60 days. Note 5.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	See label for precise rates associated with weed species and annual per acre maximum; add 8.5-17 lb AMS/100 gal, or WC+NIS*	Apply only to Roundup Ready sugarbeets up to 30 days PHI. See labels for max. to 8-leaf, and max. from 8-leaf to canopy closure. Max. 4 sequential applications at least 10 days apart. See labels for tank mix partners including Assure II, Cleanse, Dual Magnum, Nortron, Outlook, Select 2 EC, Stinger, Stinger HL or Upbeet. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates. PHI 30 days.
SECTION THREE	4-10.67 fl oz	40 day PHI. Maintain 14 day interval for repeat applications. Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS or 8.5-17 lb/100 gallons of AMS.*
SELECT MAX	9-32 fl oz + 1 pt HSOC-COC*	Apply 9-16 fl oz/A for control of annual grasses and 12-32 fl oz/A for control of perennial grasses. AMS may be added. PHI 40 days.
SEQUENCE	Up to 3 pt: 2-8 lf Up to 2.5 pt: 8 lf to canopy closure + 8.5-17 lb AMS/100 gal	Apply to Roundup Ready sugarbeet. Do not exceed 2.5 pt/A on coarse soils and 3 pt/A on medium and fine soils from 2-8 leaf. Maximum of 4 POST applications and 7 pt/A/season.
STINGER/STINGER HL	0.25-0.67 pt/0.15-0.4 pt	Apply to sugarbeets from cotyledon to 8-leaf stage; weeds at sizes and rates specified on label. Use 0.67 pt/A for Canada thistle and perennial sowthistle. May tank mix with Upbeet or Poast. Observe rotational restrictions. PHI 45 days. Aerial application in sugar beet is allowed only in the states of Colorado, Idaho, Michigan, Minnesota, Montana, Nebraska, North Dakota, Oregon, Washington, and Wyoming.
SUGARBEET MIX	4.5-7.5 pt	Apply past the 2-true leaf stage of beets. Use 4.5-6 pt/A at the second application when beets have at least 4 leaves. See label for micro-rates.
TARGA	4-12 fl oz	Do not apply >25 fl oz/A/season, or make >4 applications/A/season. Application interval must be >7 days.
TOTAL 2.3 or ***TOTAL SL***/CHEETAH	**All soil textures:** 15-30 fl oz or 29-36 fl oz	PP or PRE. LibertyLink sugarbeet only. Apply to actively growing weeds. Do not make POST applications if Total 2.3 is used for burndown. Maximum 60 fl oz/A/season through any combination of use patterns. Include AMS at 1.5-3.0 lb/A or WC+NIS.*

See notes and footnotes at end of table

POSTEMERGENCE *(continued)*				
Herbicide	**Rate/Acre**			**Comments/Restrictions**
TRUST/TREFLAN HFP or TREFLAN TR-10	**Coarse soils:** 1 pt or 5 lb **Medium soils:** 1.25-1.5 pt or 6.25-7.5 lb **Fine soils:** 1.25- 1.5 pt or 6.25-7.5 lb			Cover exposed roots with soil before application. Broadcast over 2-6" plants. Incorporate at once, throwing treated soil toward plants in the row. Note 4.
UPBEET ALONE or + STINGER	0.5-1 oz or + 0.25 pt (add 0.5 gal HSOC-COC/100 gal* with UpBeet alone)			Use 0.5 oz/A for most weeds. Apply to weeds from cotyledon to 2 true-leaf stage. Use a minimum of 2 sequential applications (maximum of 1.5 oz/A/year). Use an additive with tank mixes. UpBeet has no soil activity. UpBeet alone will not control ALS-resistant kochia. 21-day rotation restriction for corn; 14-day rotation restriction for all other crops. A tank mix at 0.25-1 oz/A plus glyphosate may be applied as a POST in Roundup Ready sugarbeets. UpBeet improves control of wild buckwheat, common lambsquarters, common mallow, redroot pigweed, and velvetleaf. Do not apply >2.5 oz/A/season.
WARRANT	**Coarse** qt	**Medium** qt	**Fine** qt	Apply from 2-8 leaf stage, with 4 leaf stage ideal. Allow 7 days between sequential applications. Apply before weeds emerge. No control of emerged weeds.
	O.M. < 1.5%			
	1.25-1.6	1.25-1.7	1.25-1.9	
	O.M. >1.5%			
	1.25-1.7	1.25-1.9	1.25-2	

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
NOTE 1: Injury may occur if conditions for germination and growth are not optimum. Harmful residues should not remain after harvest.
NOTE 4: Do not plant sorghum or oats for 12-18 months (see label).
NOTE 5: For control of wild oats, large crabgrass, volunteer corn and volunteer cereals, add 0.5-1 gal. UAN or 2.5 lb AMS per acre.

SUGARBEET LABELED INSECTICIDES

INSECTICIDE	PRE-HARVEST INTERVAL FOR SUGARBEET	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT																				
				APHID	ARMYWORM	BEET ARMYWORM	BEET LEAF BEETLE	BEET LEAFHOPPER	CABBAGE LOOPER	CROSS-STRIPED CABBAGEWORM	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	FLEA BEETLE	GRASSHOPPER	HORNWORM	IMPORTED CABBAGEWORM	LEAFHOPPER	LEAFMINER	LOOPER	LYGUS BUG	NEMATODE	ROOT MAGGOT	
ACTARA	–	–	3-4 oz	●*																				
ADMIRE PRO	21	0	4.4-10.5 fl oz	●										●				●						
ADVISE FOUR/NUPRID 4F MAX	–	–	3-6 fl oz	●										●				●						
AGRI TIN FLOWABLE ‡	21	NO	4-8 fl oz			●S																		
ASANA XL ‡	21	–	At-plant: 0.45 fl oz/1000′ row								●													
			Foliar: 5.8-9.6 fl oz			●S		●	●					●	●			●		●			●	
CLOSER SC	7	–	1.5-2 fl oz	●																				
			2.75-5.75 fl oz															●						
CORAGEN	1	F	3.5-5 fl oz												●									
			3.5-7.5 fl oz		●	●																		
COUNTER 20G ‡	90	90	At-plant: 3-6 oz/1000′ row	●							●S							●				●S	●	
			POST: 3-6 oz/1000′ row	●				●															●	
DIBROM 8E ‡	2	–	1 pt	●	●										●			●			●		●	
DIPEL DF	0	–	0.5-2 lb		●	●				●	●	●				●	●			●				
ENTRUST SC	3		4.5-10 fl oz		●	●			●											●				
FASTAC CS ‡	50	NO	2.2-3.8 fl oz	●	●				●		●			●	●					●			●	
INTREPID 2F	7	–	8-16 fl oz		●	●			●	●	●S									●				
LANNATE LV ‡ or LANNATE SP ‡	21	30	0.75-3 pt or 0.25-1 lb	●	●	●								●										
			1.5 pt. or 0.5 lb								●													
MICROTHIOL DISPERSS	–	–	5-10 lb																					
MOVENTO or MOVENTO HL or MOVENTO MPC	28	–	5-9 fl oz or 2.25-4.5 fl oz 8.0-14.0	●																			●S	
MUSTANG MAXX ‡	50	50	At-plant: 4 fl oz								●												●S	
			Foliar: 2.24-4 fl oz	●	●						●			●	●			●	●	●	●		●	
ONAGER	45	NO	12-24 oz																					
PYGANIC EC 1.4$_{II}$	0	0	16-64 fl oz	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●		●	
PYGANIC EC 5.0$_{II}$	0	0	4.5-15.61 fl oz	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●		●	

See notes and footnotes at end of table.

SALTMARSH CATERPILLAR	SPIDER MITE	SUGARBEET CYST NEMATODE	SYMPHYLAN	WEBWORM	WHITE GRUB	WIREWORM	COMMENTS AND RESTRICTIONS
							24c WA (exp. 12/2027). For control of Green Peach Aphid in Sugar Beets Grown for Seed; max. 8 oz/A/season. Max. 2 applications/season. 7-day min. application interval.
							Addition control listed for White Flies and foliage feeding Thrips. Labeled soil application methods include Chemigation into root-zone, at planting - In furrow or In a narrow (2 inches or less) band directly (1 to 2 inches) below the eventual seed row in a bedding operation 14 or fewer days before planting.
							For use in CA only. Apply below seed furrow during bedding, prior to planting, or at-plant. Max. 6 fl oz/A/year. Do not use on crops grown for seed.
							Apply in min. 15 GPA water or by air in 5-10 GPA. Max. 16 oz/A/season except in MN, ND, MI 24 oz/A/season. Product also controls sugarbeet disease: Cercospora leaf spot.
							Max 0.15 lb a.i./A. Apply by ground in sufficient water to obtain coverage, or in min. 2 GPA by air. May be applied by sprinkler irrigation; see label. At-plant Cutworm: Apply in-furrow, T-band, or 4" band. Foliar Grasshopper: 3.9-5.8 fl oz/A to control nymphal stages; otherwise 5.8-9.6 fl oz/A. Root Maggot: Adult.
●							
							For harvest of sugar beet leaves. Max. 17 fl oz/A/year. 7-day min. application interval. Max. 4 applications/crop. Do not make >2 consecutive applications/crop. Min. 5-10 GPA by ground, 3 GPA by air. May be applied by sprinkler irrigation; see label. Do not use on crops grown for seed.
							Foliar. Max. 15.4 fl oz/A/crop. 3-day min. application interval. Max. 4 applications/A/crop or 16 applications/A/calendar year. Grasshopper: Performance improves with MSO at 1% v/v.
		●S	●S		●	●	Max. 1 application/year. At-plant: Control or suppression of various pests depends on application method (banded, modified in-furrow, or knifed-in); see label. POST: Apply in 5-7" band over row and lightly incorporate.
	●						Max. 5 pt/A/season. 7-day min. application interval. Max. 5 applications/season. Min. 30-250 GPA by ground, 3-10 GPA by air. Root Maggot: Adult.
●				●			Bt. insecticide. Min. 20 GPA by ground, 3 GPA by air (5-10 GPA in arid areas). May be applied by sprinkler irrigation; see label. 3- to 14-day application interval as needed; see label.
							Max. 21 fl oz/crop for all methods of applications. 7-day min. application interval. Min. 5-10 GPA by ground, 5 GPA by air. Do not make >2 consecutive applications of Group 5 insecticides before rotating to another class for at least 1 application.
							Max. 11.4 fl oz/A. Min. 10 GPA by ground, 2 GPA by air. 4-day min. application interval. Root Maggot: Adult. Do not graze or harvest top for livestock feed.
●				●			Apply at egg hatch or when first signs of feeding occur. Max. 64 fl oz/A/year. 14-day min. application interval.
				●			Max. 15 pt/A/crop or 5 lb/A/crop. Max. 10 applications/crop. PHI 21 days roots, 30 days tops. Armyworm: Beet and Western Yellowstriped. May be applied by sprinkler irrigation to control Armyworm, Aphid; see label. Cutworm: Variegated.
	●						Apply as symptoms appear and every 7-14 days.
		●S					Movento Max. 18 fl oz/A/season or for Movento HL, 9 fl oz/A/season or for Movento MPC, 28.8 fl oz/A/crop season . 14-day min. application interval. Aphid: Bean aphid, Root aphid.
					●	●	Max. 12 fl oz/A/season including at-plant and foliar applications. At-plant: Apply in-furrow or as 3-4"T-band over open furrow, as 5-7" band on soil surface, or broadcast; see label. May be applied by sprinkler irrigation; see label. Foliar: Apply in min. 10 GPA by ground, 2 GPA by air. Root Maggot: At-plant suppresses larvae. Leafminer/Root Maggot: Foliar applications control adult.
				●	●		
	●						For use in Western U.S. only (see label for geographic restrictions). Max. 24 oz/a/calendar year. Max. 1 application/calendar year. Min. 15-20 GPA by ground, 5 GPA by air. May be applied by sprinkler irrigation; see label.
●	●		●	●			OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
●	●		●	●			OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.

SUGARBEET LABELED INSECTICIDES *continued*

INSECTICIDE	PRE-HARVEST INTERVAL FOR SUGARBEET	PRE-HARVEST INTERVAL FOR GRAZING/FEEDING	RATE PER ACRE	INSECT																				
				APHID	ARMYWORM	BEET ARMYWORM	BEET LEAF BEETLE	BEET LEAFHOPPER	CABBAGE LOOPER	CROSS-STRIPED CABBAGEWORM	CUTWORM	DIAMONDBACK MOTH	DIPTEROUS LEAFMINER	FLEA BEETLE	GRASSHOPPER	HORNWORM	IMPORTED CABBAGEWORM	LEAFHOPPER	LEAFMINER	LOOPER	LYGUS BUG	NEMATODE	ROOT MAGGOT	
RADIANT SC	7	-	6-8 fl oz		●				●				●	●S					●	●				
SENSTAR	28	NO	9-18 fl oz	●																			●S	
THIMET 20-G ‡	30	-	At-plant: 3.4-4.5 oz/1000' row	●														●	●				●	
			POST: 4.9-7.5 lb	●																			●	
TRANSFORM WG	7	-	0.75-1.0 oz	●																				
			1.5-2.75 oz					●										●			●*			
VANTACOR	1	F	0.7-1.7 fl oz												●									
			1.2-2.5 fl oz		●	●																		
ZIRONAR	0	0	12 fl oz																			●		

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SALTMARSH CATERPILLAR	SPIDER MITE	SUGARBEET CYST NEMATODE	SYMPHYLAN	WEBWORM	WHITE GRUB	WIREWORM	COMMENTS AND RESTRICTIONS
							Max. 32 fl oz/A/year. 7-min. application interval. Max. 4 applications/calendar year. Armyworm: All except Yellowstriped and Western Yellowstriped. Leafminers: Control may improve with use of adjuvant.
							Ground application in 10-50 GPA water. Only whole fields should be treated. Max. 18 fl oz/A/application. Max. 2 applications/season. Max. 36 fl oz/A/crop season. Min. 14-day application interval.
	●						Max. 7.5 lb/A. Max. 1 application/season. At-plant: Drill granules to side of seed or place in band over seed and incorporate. POST: Direct granules over row towards base of plant and incorporate.
	●						
							Max. 8.5 oz/A/year. 7-day min. application interval. Max. 4 applications/crop. Do make >2 consecutive applications/crop. 2ee ID, OR, WA (exp. date not given) for plant bug (Lygus spp.) control at 1.5-2.75 oz/A.
							Foliar. Max. 5.1 fl oz/A/crop. 3-day min. application interval. Max. 4 applications/A/crop or 16 applications/A/calendar year. Grasshopper: Performance improves with MSO at 1% v/v/.
							Apply in minimum 3 GPA by ground. Early season protection of seedling injury. Also a fungicide (see Sugarbeet Diseases section).

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.

SUGARBEET INSECT MANAGEMENT GUIDELINES



APHID : Reduction in yield can reach 0.85%/day/plant so control should be based on the number of days left until harvest and the percentage of plants infested. In other words, the more days left until harvest, the lower the percentage of infested plants can be tolerated. **ET:** Only one colony of >30 aphids per plant.



ARMYWORM: These are foliage feeders that occasionally become common and cause economic damage. No economic level has been established for them. But, more than 10-20% defoliation can be expected to cause economic loss.



CUTWORM: **ET:** 4-5% cutting of seedling beets or 3-5 larvae/square foot in late summer. Watch for Variegated Cutworm.



FLEA BEETLE: Feeding on small seedlings is most damaging. Effect on yield not known. Plants usually recover.



GRASSHOPPER: Not considered to be a serious sugarbeet pest, will occasionally feed in field borders.



LEAFHOPPER: Not usually a problem in sugar beet. Treat when large numbers are seen and leaf curling occurs. Systemic insecticides will kill leafhoppers and sometimes reduce virus incidence.



LYGUS BUG **ET:** 1-4 bugs per plant (adults + nymphs) and >3 weeks until harvest.



NEMATODE: Several species of these soil organisms cause death of sugarbeet seedlings, stunting, yellowing of leaves and wilting during hot part of the day. No resistant varieties. Long rotations are helpful (3 years or more). If infestations are moderate to high, use a nematicide.



SPIDER MITE



SUGARBEET ROOT MAGGOT: Applications at or near peak fly emergence should result in better yield than applications made at planting time. Sticky red stakes, yellow water pans and baited Japanese beetle traps can all be used to monitor fly emergence. Applications of soil insecticides made in absence of the insect will probably reduce yield, but the number of insects which justifies treatment is not well defined.



WEBWORM: **ET:** 50% of the leaves have eggs (small, pearly white) or small larva present in 50-75% of leaves.



WIREWORM: Gaucho provides early season protection.

FUNGICIDE	DISEASE*												
	ALTERNARIA LEAF SPOT	ASCOCHYTA LEAF SPOT	CERCOSPORA LEAF SPOT	CIRCULAR SPOT/ SOUTHERN BLIGHT	DOWNY MILDEW	POWDERY MILDEW	PYTHIUM	PYTHIUM ROOT ROT	RHIZOMANIA	RHIZOCTONIA SOLANI	RHIZOCTONIA STEM CANKER/CROWN ROT	RUST	WHITE RUST
ALTIPRO								●	●	●			
AGRI TIN FLOWABLE ‡			●[1]										
BADGE SC/BADGE X2			●			●							
BIO-TAM 2.0							●	●	●	●	●		●
CHAMP DRY PRILL/CHAMP FORMULA 2 FLOWABLE/CHAMP WG			●										
CHAMPION++			●										
CUPROFIX ULTRA 40 DISPERSS			●										
DELARO 325 SC			●			●				●S	●		
DITHANE F-45 RAINSHIELD			●										
ELATUS				●[1]				●[1]			●[1]		
EMINENT VP			●			●							
ENABLE 2F			●			●							
EVERLON/PRIAXOR			●			●	●So,●S			●So	●		
EXCALIA									●	●	●		
FLINT EXTRA			●			●					●		
HEADLINE SC			●			●				●So			
INSPIRE XT			●			●							
KOCIDE 3000			●										
LUCENTO	●		●	●		●						●	
LUNA FLEX			●			●							
MANZATE PRO-STICK/MANZATE MAX			●									●[2]	
MICROTHIOL DISPERSS						●							
MINUET							●So	●So	●So	●So	●So		
PENNCOZEB 75DF			●									●	
PREVISTO			●										
PROLINE 408 SC			●			●				●	●		
PROPULSE			●			●			●				
PROVYSOL			●										
REVYLOK			●			●							
REVYTEK			●			●					●		
RIDOMIL GOLD GR					●So		●So	●So					
RIDOMIL GOLD MZ WG					●So								
RIDOMIL GOLD SL								●So					
SERENADE ASO						●		●So		●So			
TELONE EC									●S				
TESARIS	●					●							
TETRABAN	●	●	●	●So		●		●So			●So	●	●
TOPAZ/TILT			●			●							
TOPGUARD			●			●							
TOPGUARD EQ	●		●			●							
TOPSIN 4.5FL/TOPSIN M WSB/T-METHYL 4.5 F/T-METHYL 70 WSB			●			●							

See notes and footnotes at end of table.

SUGARBEET LABELED FUNGICIDES *continued*

FUNGICIDE	DISEASE*												
	ALTERNARIA LEAF SPOT	ASCOCHYTA LEAF SPOT	CERCOSPORA LEAF SPOT	CIRCULAR SPOT/ SOUTHERN BLIGHT	DOWNY MILDEW	POWDERY MILDEW	PYTHIUM	PYTHIUM ROOT ROT	RHIZOMANIA	RHIZOCTONIA SOLANI	RHIZOCTONIA STEM CANKER/CROWN ROT	RUST	WHITE RUST
ULTRA FLOURISH							●						
VELTYMA			●			●							
ZIRONAR									●	●			

* Many other diseases may be controlled, see label.
● - control; ●S - suppression; ●So - soil application
See Fungicide Resistance Management in the Technical Information section.
[1] 24c, 2ee or Supplemental label.
[2] Manzate Max only.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

FUNGICIDE	RATE/ACRE	PHI	G/F	COMMENTS/RESTRICTIONS
				SOIL APPLICATION
ALTIPRO	1.06 fl. oz/1,000' of row.	14	NL	In-furrow: Direct the spray into the furrow at planting just before the seeds are covered. Apply in 2.5 to 20 gallons of water. If cool soil conditions are expected after planting which could result in an extended period of plant emergence, do not apply Altipro in-furrow. Banded: Apply in a 7-inch band at the 4-leaf row closure growth stage. Direct the spray to the soil, using single or multiple nozzles which can be adjusted to provide uniform coverage of the lower stems and the soil surfaces surrounding the plants. Apply in a minimum application volume of 10 gallons/acre. Do not make more than 2 sequential applications of Altipro or any Group 11 containing fungicide before rotating with a fungicide from a different Group. If using Altipro at planting, do not use a starter fertilizer as a carrier.
ELATUS	0.3-0.6 oz/1000' row	BBCH 31	NL	Apply in-furrow by ground at planting. Do not apply as dribble application. Do not apply if cool soil conditions are expected after planting. Do not use starter fertilizer.
EVERLON/PRIAXOR	0.2-0.6 fl oz/1000′ row	7	7	Apply prior to infection. Soil-directed banded sprays only. Rate per 1000′ row is dependent on the crop row spacing. See label for chart.
FLINT EXTRA	3-3.6 fl oz	21	NL	Foliar broadcast or banded applications at the 4-lf to row closure growth stage. Apply on 10- to 14-day interval as needed. Maximum of 10 fl oz/A/year.
HEADLINE SC	0.1-0.8 fl oz/1000′ row	–	–	Apply in-furrow as a preventative. For severe infestation, use the equivalent of 9 fl oz/A.
PROLINE 480 SC	5.7 fl oz	7	–	Apply in a 7″ band at the 4-leaf to row closure growth. For control of Rhizoctonia, use 5.7 fl oz rate.
RIDOMIL GOLD GR or RIDOMIL GOLD SL	20-40 lb or 1-2 pt	–	–	See label restrictions for rotational planting within 12 months of application. PPI 2″ surface broadcast or 7″ band. Calculate band rate. Incorporate surface applications mechanically, with rain, or with irrigation.
TETRABAN	0.4-0.8 fl oz/1000′ row	0	–	Apply 3- to 7-inch banded applicaitons in ≥10 GPA at the 2- to 8-leaf stage. Do not apply as dribble over seed row. If applied at planting, do not use with starter fertilizer.
				FOLIAR
ALTIPRO	8-11 fl oz	14	NL	Apply Altipro at the first sign of disease. Repeat applications as needed using a 14- to 21- day spray interval depending on disease pressure. Use a 14-day spray interval under normal to heavy disease pressure and a 21-day spray interval under light disease pressure. Use the higher specified use rate and shorter specified intervals when conditions are favorable for severe disease pressure and/or when growing less disease resistant varieties. Ground: Apply in a minimum application volume of 10 gallons/Acre. Aerial: Apply in a minimum application volume of 5 gallons/Acre. Do not make more than 2 sequential applications of Altipro or any Group 11 containing fungicide before rotating with a fungicide from a different Group.
AGRI TIN FLOWABLE ‡	4-8 fl oz	21	NO	Apply in min. 15 GPA water or by air in 5-10 GPA. Max. 16 oz/A/season except in MN, ND, MI 24 oz/A/season. Product also controls sugarbeet insect: Beet army worm.
BADGE SC or BADGE X2	1-4 pt or 1-4 lb	0	NR	An addition of a spreader/sticker is recommended. Tank mix with other products registered for control of listed diseases. Do not tank mix with glyphosate. Use higher rates when conditions favor disease development. Badge X2 is OMRI listed.
BIO-TAM 2.0	2.5-5 lb	–	–	Can be applied in-furrow (1.5-3 oz/1000 row′) and banded (2.5-3 lb/A). Broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. Note 2.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG	1.33-3.33 lb or 1.33-3.33 pt or 2.0-2.5 lb	–	–	Begin when disease threatens and continue at 10- to 14-day intervals, 4-5 applications. Max. 3.33 lb or 3.33 pt or 2.5 lb/A/application. Max. 21.0 lb or 21.7 pt or 15.7 lb/A/year.
CHAMPION++	0.75-2 lb	0	–	Start spraying when disease threatens, and every 10-14 days depending on weather and disease. Addition of spreader/sticker recommended. Max 26.2 lb/A/year.
DELARO 325 SC	8-11 fl oz	21	–	Apply at first sign of disease. For suppression of soilborne diseases, begin either foliar or broadcast applications at 4-leaf to row closure growth stage. 14- to 30-day spray schedule.
DITHANE F-45 RAINSHIELD	1.2-1.6 qt	14	NO	Application frequency: 7-10 days. A surfactant improves performance. Notes 1, 2.
ELATUS	7.1 oz	BBCH 31	NL	Apply at 2- to 8-leaf stage. Apply by ground using 3-7 inch banded applications in min. 10 GPA. Max. 7.1 oz/A. Max 14.6 oz/A/year. Max. 2 applications/year. Min. 5-day application interval. Apply up to the BBCH 31 growth stage.
EMINENT VP	8-13 fl oz	14	NL	Apply when conditions favor diesease development or based on forecasting system. After application, alternate to a non-triazole (non-Group 3) fungicide. For powdery mildew, apply at first sign of disease. 13 fl oz/A for Cercospora leaf spot.

See notes and footnotes at end of table.

SUGARBEET DISEASE TREATMENT GUIDELINES *continued*

FUNGICIDE	RATE/ACRE	PHI	G/F	COMMENTS/RESTRICTIONS
				FOLIAR *(continued)*
ENABLE 2F	8 fl oz	14	–	Apply at 14-21 day intervals. Max. 12 fl oz/application. Max. 48 fl oz/A/crop. Do make >2 consecutive applications (alternate with different mode of action within 14 days). Do not apply via irrigation.
EVERLON/PRIAXOR	6-8 fl oz	7	7	Apply prior to disease development on 14 day interval. Use higher rate when disease pressure is high. Apply at 8 fl oz for Rhizoctonia. Do not use with EC or solvent-based formulations, COC, MSO, OS, MSO/OS, or NIS adjuvants. Maximum 24 fl oz/A/season. Maximum 3 applications before rotating to another mode of action.
EXCALIA	2 fl oz	50	NR	Apply at 2- to 8-leaf stage. Broadcast in min. 10 GPA or as banded application in 6-7" band over crop row. Max. 2 applications/year as broadcast for max. of 4 fl oz/A/year; 21-day retreatment interval. Max. 1 application/year as banded application for max. of 2 fl oz/A/year; do not apply as dribble application over seed row .
FLINT EXTRA	3-3.6 fl oz	21	NL	Apply on 10- to 14-day interval as needed. Alternate each application with fungicide having a different mode of action. Maximum of 10 fl oz/A/year.
HEADLINE SC	9-12 fl oz	7	–	Apply at 14 day intervals. Rotate with products having alternate mode of action. Do not make more than 2 sequential or 4 total applications per year. Notes 1, 2, 3.
INSPIRE XT	7 fl oz	21	–	Apply in a 10-21 day schedule and alternate with a non-Group 3 fungicide. Maximum 21 fl oz/A/season. No more than 3 applications/year. Notes 1, 2.
KOCIDE 3000	0.75-2 lb	–	–	Application frequency: 10-14 days. Include a spreader-sticker. Notes 1, 2.
LUCENTO	3-5.5 fl oz	21	NO	Apply by ground, air or sprinkler irrigation. Max. 2 applications at highest rate (total of 11 fl oz/A/year) or 3 applications at lowest rate (total 9 fl oz/A/year). Max. 11 fl oz/A/year. 21-day min. application interval. Do not make >2 sequential applications before alternating to a fungicide different from FRAC group 7 and 3.
LUNA FLEX	13.6 fl oz	7	–	Maximum single application rate: 13.6 fl oz/A. Maximum number of applications per year: 2. Apply by ground, aerial, or chemigation equipment. Pre-Harvest Interval (PHI): 7 days. Minimum interval between applications: 7 days. To limit the potential for development of disease resistance to this fungicide class, Do not make more than 2 sequential applications of LUNA FLEX or any Group 7-containing fungicide before rotating with a fungicide from a different Group.
MANZATE PRO-STICK or MANZATE MAX	1.5-2 lb or 1.2-1.6 qt	14	NO	Begin when disease first threatens. Application frequency: 7-10 days. Notes 1, 2.
MICROTHIOL DISPERSS	5-10 lb	–	–	Begin applications when disease first threatens. Repeat at 7-14 day intervals. Notes 1, 2.
MINUET	6-12 fl oz	0	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
PENNCOZEB 75DF	1.5-2 lb	14	–	Begin when disease first threatens. Application frequency: 7-10 days. Notes 1, 2.
PREVISTO	1-2 qt	0	NR	Begin applications when conditions first favor disease development and repeat at 10- to 14-day intervals or as needed.
PROLINE 480 SC	5-5.7 fl oz	7	–	Apply at the first sign of disease. Use the higher use rate and shorter intervals when conditions are favorable for severe disease pressure and/or when growing less disease resistant varieties.
PROPULSE	6-13.6 fl oz	7	–	Max. 2 applications/A/year. Max. 34.2 fl oz/A/year. See label for max. a.i./A/year including all soil/foliar uses from all products. 14-day min. application interval. Apply by ground, air or sprinkler irrigation. Powdery Mildew: Control at 6-13.6 fl oz/A. All other labeled diseases controlled at 13.6 fl oz/A. Rhizoctonia and Nematodes suppressed with soil application (in-furrow directed or via sprinkler irrigation) at 10-13.6 fl oz/A. Max. 2 sequential applications of this or any Group 7 or Group 3 fungicide before rotating to fungicide from different Group. 2ee ID, OR, WA (exp. date not given) for Powdery Mildew control at 6-8 fl oz/A.
PROVYSOL	2.5-5 fl oz	7	21	Max. 5 fl oz/A/application. Max. 2 applications/year at 5 fl oz/A, or max. 4 applications/year at 2.5 fl oz/A. Max. 10 fl oz/A/year. 14-day min. application interval.
REVYLOK	4.5-6.5 fl oz	7	7	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. 14-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
REVYTEK	8-15 fl oz	7	–	Max. 15 fl oz/A/application. Max 2 applications at 15 fl oz/A/year or 3 applications at 8 fl oz/A/year. Max. 30 fl oz/A/year. 14-day min. application interval. See label for tank-mix formulation restrictions prior to 12-leaf growth state.
RIDOMIL GOLD MZ WG	2.5 lb	14	NO	Apply when conditions favor disease development and continue on 14-day intervals. Max. 2.5 lb/A/application. Max. 10 lb/A/year. Max. 4 applications/year before switching to other product for downy mildew control.

See notes and footnotes at end of table.

FUNGICIDE	RATE/ACRE	PHI	G/F	COMMENTS/RESTRICTIONS
				FOLIAR *(continued)*
SERENADE ASO	2-6 qt	–	–	Bacillus subtilis is a biological fungicide. Begin application soon after emegence or transplant and when environmental conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed.
TESARIS	3.4-4.6 fl oz	7	–	Begin applications prior to disease development. Repeat on 7- to 14-day interval as needed. 7-day min. application interval. Max. 4.6 fl oz/A/application. Max. 3 applications/year. Max. 13.8 fl oz/A/year. Do not make >2 sequential applications before switching to a non-Group 7 fungicide.
TETRABAN	6-20 fl oz	0	–	See label for disease-specific rates, timing and application methods.
TOPAZ/TILT	4 fl oz	21	–	Begin application at first sign of disease. Repeat at 10-14 day intervals. Maximum of 2 consecutive applications and 12 fl oz/A/year. Notes 1, 2.
TOPGUARD	10-14 oz	21	NR	Apply preventively when conditions are favorable for disease development. 14 day retreatment interval. No more than 2 applications/year.
TOPGUARD EQ	5-7 fl oz	21	–	Apply preventively when conditions are favorable for disease development. 14 day retreatment interval. No more than 2 applications/year.
TOPSIN 4.5FL/T-METHYL 4.5 F or TOPSIN M WSB/T-METHYL 70 WSB	10-20 fl oz or 0.5-1 lb	21	–	Application frequency: 14 days. Apply sequentially with a non-benzimidazole fungicide. Notes 1, 2.
ULTRA FLOURISH	2-4 pt	–	–	PPI (broadcast or band) in sufficient water or liquid fertilizer; mechanically incorporate in top 2" of soil; or, surface application (broadcast or band) in sufficient water or liquid fertilizer at planting. For banded applications, use 7" band; see label for calculations.
VELTYMA	7-10 fl oz	21	21	Max. 10 fl oz/A/application. Max. 2 applications/year. Max. 20 fl oz/A/year. 14-day min. application interval.
ZIRONAR	12 fl oz	–	–	Apply in minimum 3 GPA by ground. Early season protection of seedling injury. Also a nematicide (see Sugarbeet Insects section).

PHI – preharvest interval days.
G/F – grazing and feeding interval days.
NO – do not graze or feed.
NR – no restrictions.
NOTE 1: May be applied by air.
NOTE 2: May be applied by chemigation.
NOTE 3: NIS at 0.25% v/v may improve performance.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SUNFLOWER HERBICIDE PERFORMANCE RATINGS

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN
L = LABELED
NL = NOT LABELED

	CROPS				GRASSES											
	SUNFLOWER	SAFFLOWER	CROP TOLERANCE	SITE OF ACTION[A]	Barnyardgrass	Crabgrass	Fall Panicum	Foxtail, gi/gr	Foxtail, yellow	Quackgrass	Sandbur,field	Shattercane	Volunteer Wheat	Wild Oat	Wild Proso Millet	Yellow Nutsedge
PREPLANT OR PREEMERGENCE																
AIM EC/SHARK EW [burndown only] *(carfentrazone)*	L	L	E	14	N	N	N	N	N	N	N	N	N	N	N	N
AUTHORITY ELITE/BROADAXE XC *(sulfentrazone + s-metolachlor)*	L	NL	G/E	14,15	**G/E**	**E**	**E**	**E**	**E**	N	F	P/F	P	P	F	F/**G**
AUTHORITY SUPREME *(pyroxasulfone + sulfentrazone)*	L	NL	E	15,14	**E**	**E**	**E**	**E**	**E**	N	**G**	F	N	**G**	F	**G**
CHARGER BASIC/DUAL MAGNUM/DUAL II MAGNUM/EVERPREX *(s-metolachlor)*	L	L	E	15	**G/E**	**E**	**E**	**E**	**E**	N	F	P	P	P	F	F/**G**
EPTAM 7E/EPTAM 20-G *(EPTC)*	L	L	E	15	**E**	**E**	**E**	**E**	**E**	F	**G**	F	**G**	**G**	F	**G**
EPTAM 7E + ***TRUST***/TREFLAN HFP *(EPTC + trifluralin)*	L	L	E	15,3	**E**	**E**	**E**	**E**	**E**	F	**G/E**	F/**G**	**G**	**G**	F	**G**
FRAMEWORK 3.3 EC/PROWL H2O *(pendimethalin)*	L	NL	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	P/F	F	F	P
SEQUENCE *(glyphosate + s-metolachlor)*	L	NL	E	9,15	**E**	**E**	**E**	**E**	**E**	**G/E**	**E**	**E**	**E**	R	**E**	F
SONALAN *(ethalfluralin)*	L	L	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	P/F	F	F	P
SPARTAN 4F *(sulfentrazone)*	L	NL	G	14	P	P/F	P/F	P/F	P/F	N	N	N	P	P	P	**G**
SPARTAN CHARGE *(sulfentrazone + carfentrazone)*	L	NL	G	14,14	P	F	F	P/F	P/F	N	N	N	P	P	P	**G**
TRUST/TREFLAN HFP *(trifluralin)*	L	L	E	3	**E**	**E**	**E**	**E**	**E**	P	**E**	**G**	P/F	F	F	P
VIDA *(pyraflufen)*	L	L	E	14	N	N	N	N	N	N	N	N	N	N	N	N
POSTEMERGENCE																
ASSURE II/TARGA *(quizalofop)*	L	NL	E	1	**E**	**E**	**E**	**E**	**G/E**	**G/E**	**E**	**E**	**E**	**E**	**E**	P
BEYOND XTRA [Clearfield sunflower only]*(imazamox)*	L	NL	E	2	**G**	F/**G**	**G**	**E**	F/**G**	P	F	**E**	**G**	**G**	**G**	P
EXPRESS [ExpressSun sunflower only]*(tribenuron)*	L	NL	E	2	N	N	N	N	N	N	N	N	N	N	N	N
POAST*(sethoxydim)*	L	L	E	1	**E**	**E**	**E**	**E**	**E**	F	**E**	**E**	**G**	**E**	**E**	P
SECTION THREE/***CLEANSE****(clethodim)*	L	L	E	1	**E**	**E**	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	P
HARVEST AID																
GRAMOXONE SL 3.0 ‡ *(paraquat)*	L	NL		22	**G**	**G**	**G**	**G**	**G**	P	**G**	**G**	**G**	**G/E**	**G**	F
SHARPEN *(saflufenacil)*	L	NL		14	N	N	N	N	N	N	N	N	N	N	N	N

[A] Site of action, described in the Technical Information section.
[1] See label for pigweed species controlled.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BROADLEAVES																					
Bindwwed, field	Buffalobur	Canada Thistle	Cocklebur	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Marshelder	Morningglory,annual	Mustard, wild	Nightshade, black	Nightshade, hairy	Pigweed[1]	Puncturevine	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed	Sunflower,volunteer	Velvetleaf	Wild Buckwheat	
PREPLANT OR PREEMERGENCE																					
N	P/F	P	P	**G/E**	U	**G**	**G/E**	F	F/**G**	P	**G/E**	**G/E**	**G/E**	U	F	F	F/**G**	P	P	**E**	P/F	AIM EC/SHARK EW
P	F	N	P	P	P	**E**	**E**	P	**G/E**	P	**G/E**	**G**	**G/E**	P/F	F	P	**G/E**	**G**	P	F	P	AUTHORITY ELITE/ BROADAXE XC
N	P	P	P	**G**	U	**E**	**E**	U	**G**	F/**G**	**E**	U	**E**	U	**G**	P	**E**	**G**	P	**G/E**	F	AUTHORITY SUPREME
N	P	N	P	P	P	P	F	P	P	P	**G**	F	P	P	**G**	P	P	P	P	P	P	***CHARGER BASIC***/DUAL MAGNUM/DUAL II MAGNUM/EVERPREX
P	F	P	P	P	P	F	F	P	F/**G**	P	F/**G**	F/**G**	F	U	F	P	P	P	P	P/F	P	EPTAM 7E/EPTAM 20-G
P	F	P	P	P	P	**G**	**G**	P	F	P	F/**G**	F/**G**	**G**	P	F	P	F	P	P	P	P	EPTAM 7E + ***TRUST***/TREFLAN HFP
P	P	P	P	P	P	**G**	**G**	P	P	P	P	P	**G**	P	P	P	F/**G**	P	P	P	P	***FRAMEWORK 3.3 EC***/PROWL H2O
F/**G**	**G**	**G**	**E**	**E**	**G**	**G**	**E**	U	F	**E**	**G**	**G**	**E**	U	**E**	**E**	**E**	**G**	**E**	**E**	F/**G**	SEQUENCE
P	P	P	P	P	P	**G/E**	**E**	P	P	P	F	F	**E**	U	P	P	F/**G**	P	P	P	P/F	SONALAN
F	U	N	P	F	P	**E**	**E**	F/**G**	**G/E**	P/F	**G/E**	F/**G**	**G/E**	P	P/F	P	**G/E**	**G**	P	F	F/**G**	SPARTAN 4F
F	U	N	F	**G/E**	P/F	**E**	**E**	U	**E**	P	**E**	U	**E**	U	F	P	**G/E**	**G**	P/F	**E**	F/**G**	SPARTAN CHARGE
P	P	P	P	P	P	**G**	**G**	P	P	P	P	P	**G**	P	P	P	F/**G**	P	P	P	P	***TRUST***/TREFLAN HFP
N	P/F	P	P	**G/E**	U	**G**	**G/E**	F	F/**G**	P	**G/E**	**G/E**	**G/E**	U	F	F	F/**G**	P	P	**E**	P/F	VIDA
POSTEMERGENCE																					
N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	ASSURE II/TARGA
P	**G**	F	**G**	**G**	P/F	**G**	**G**	**G/E**	F/**G**	**E**	**E**	**G**	**E**	**G**	F	F	F	**G**	**G**	**G**	F	BEYOND XTRA
N	N	**G/E**	F	N	F	**E**	**E**	**G**	N	**E**	N	F	**G/E**	**G**	N	N	**E**	N	P/F	N	P/F	EXPRESS
N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	POAST
N	N	N	N	N	N	N	N	P	N	N	N	N	N	N	N	N	N	N	N	N	N	***SECTION THREE/CLEANSE***
HARVEST AID																					
P	P	P	F	U	P	F/**G**	**G**	P	**G**	**E**	F	F	F/**G**	U	**G**	**G**	**G**	F/**G**	F	**G**	F	GRAMOXONE SL 3.0 ‡
F	U	F	**E**	**G**	U	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**G**	**E**	**E**	**E**	**E**	**E**	**E**	**E**	SHARPEN

Note on Herbicide Resistance: All ratings assume a level of activity on a specific population of the target weed species. As weed resistance continues to expand geographically, specific site of action products that previously controlled a target species may no longer provide control. For current US weed species and confirmed site of action resistance updates, refer to the Weed Science Society of America website at: https://www.weedscience.org/Pages/filter.aspx

SUNFLOWER HERBICIDE APPL. TIMING AND RESTRICTIONS

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments Restrictions	GPA[3]		Rainfast(hrs)	Intervals (Days)[1]		
				Ground	Aerial		Feeding Forage	Grazing Animals	Harvest
AIM EC/SHARK EW	PP PRE	SU,SA	PP prior to planting. PRE within 24 hr after planting.	10	3	6-8	NR	NR	0
ANTHEM FLEX	PP,PPI, PRE	SU	Early PP and PPI 15-45 days before planting (see label notes on coarse soils). PRE prior to sunflower cracking or emergence.	10	3	0	NR	NR	NR
ASSURE II	POST	SU	Apply up to 60 days PHI.	10	3	1	NO	NO	60
AUTHORITY ELITE			SEE BROADAXE XC						
AUTHORITY SUPREME	PP,PRE	SU	Before planting and <3 days after planting. Do not apply if sprouts are close to surface or after crop emergence.	10	5		NR	NR	0
BEYOND XTRA	POST	SU	Clearfield sunflowers only in 2-8 leaf stage. Apply when broadleaves are <3" and grasses <4-5 leaf.	10	5	1	NR	NR	NR
BROADAXE XC/ AUTHORITY ELITE	PRE	SU	Apply up to 3 days after planting. PPI 2".	10	5		NO	NO	NR
CHARGER BASIC/ DUAL MAGNUM/ DUAL II MAGNUM/ EVERPREX	PP PRE	SU,SA	PPI up to 2" up to 14 days before planting. NR for safflower. PRE prior to crop emergence.	10	2		NO,NR	NO,NR	NR
CORNERSTONE 5 PLUS	PP PRE	SU	PP prior to planting. PRE prior to crop emergence.	3-40	3-15	S	NO	NO	NR
CREDIT XTREME			SEE ROUNDUP						
DUAL MAGNUM/DUAL II MAGNUM			SEE CHARGER BASIC						
ELEVORE	PP	SU	Burndown up to 14 days before planting.	8	5	1	NL	NL	NL
EPTAM 7E/EPTAM 20-G	PP	SU,SA	Sunflowers: PPI spring- apply and incorporate just before planting. Use 20-G only in CO, KS, NE, MN, ND, and SD. PPI FALL - apply in late fall before ground freezes. Use 20-G only in MN and ND. Safflowers: apply and incorporate just before planting- see 7E label for states.	10	NL		NR	NR	NR
EVERPREX			SEE CHARGER BASIC						
EXPRESS	PP POST	SU SU	ND only for Express Sun. DuPont ExpressSun trait sunflowers only from V1 to pre-bud.	5	2	3+	NR	NR	70
FRAMEWORK 3.3 EC	PP PRE	SU	PPI spring, 1.5-2" up to 60 days before planting- incorporate within 7 days. PPI FALL in MN, ND, SD late fall soil temp ≤45°F and before ground freezes. Incorporate immediately in fall and spring. Conventional tillage: up to 2 days after planting (except CA). NO-TILL (except CA): PP up to 30 days before planting or PRE immediately after planting.	10	5		NO	NO	NR
GRAMOXONE SL 3.0 ‡	PP PRE PH	SU,SA SU	PP prior to planting. PRE prior to crop emergence. Apply when back of heads are yellow and bracts turning brown and seed moisture is <35%.	10	5	0.5	NR NO	NR NO	NR 7
HONCHO K6			SEE ROUNDUP						
PANTHER SC			SEE VALOR SX						70,30
POAST	POST	SU,SA	Apply up to PHI- 70 days sunflower, 30 days safflower.	5-20	5	1	NO	NO	70,30
PROWL H2O	PP PRE	SU	PPI spring, 1.5-2" up to 60 days before planting. PPI FALL in MN, ND, SD late fall soil temp ≤45 °F and before ground freezes. Incorporate immediately in fall and spring. Conventional tillage: up to 2 days after planting (except CA). NO-TILL (except CA): PP up to 30 days before planting or PRE immediately after planting.	10	5		NO	NO	NR

See notes and footnotes at end of table.

Herbicide	Application Timing[1]	Labeled Crops[2]	Comments Restrictions	GPA[3]		Rainfast(hrs)	Intervals (Days)[1]		
				Ground	Aerial		Feeding Forage	Grazing Animals	Harvest
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	PP PRE POST PH	SU,SA	PP prior to planting. NR for safflower. PRE prior to crop emergence. Shielded/hooded sprayer or wiper. Safflower: when seed has lost opaque color, ap 20-30 days after the end of secondary branch flowering; sunflower when back of heads are yellow and bracts turning brown and seed moisture is <35%.	3-40	3-15	 S 	NO,NR 7	NO,NR NR	NR 7
RT 3	PP PRE PH	SU,SA	PP prior to planting. See label for state and county restrictions. NR for safflower. PRE prior to crop emergence. Safflower when seed has lost opaque color, about 20-30 days after the end of secondary branch flowering; sunflower when back of heads are yellow and bracts turning brown and seed moisture is <35%.	3-40	3-15	 S	NR 7	NR 7	NR 7
SECTION THREE*/ *CLEANSE	POST	SU,SA	Apply up to 70 days PHI.	5-40	3-10	1	NR	NR	70
SELECT MAX	POST	SU,SA	Apply up to 70 days PHI.	5-40	3	1	NR	NR	70
SEQUENCE	PP,PRE	SU	Apply before, during, or after planting but before crop emergence.	10-40	3-5	S	NO	NO	NR
SHARPEN	PH	SU	Apply to mature crop, <36% moisture. Not for seed production.	5	3	1	NR	NR	7
SONALAN HFP/ SONALAN 10G	PP	SU,SA	PPI spring or fall prior to planting, incorporate 2-3" within 2 days. PPI FALL, Oct 1-Dec 31, (HFP on dry fertilizer for sunflower) and incorporate. Second incorporation 3-5 days later.	5	NO		NO	NO	NR
SPARTAN 4F	PP PRE	SU	PP in spring. PPI up to 2"; at least 7-14 days before planting on coarse soils. FALL in ND, SD, MT, MN, WY, CO, NE, or KS. Up to 3 days after planting.	10-40	5		NR	NR	NR
SPARTAN CHARGE	PP PRE	SU	PP FALL or spring. Up to 3 days after planting, but before crop seedling is close to the soil surface.	10	5		NR	NR	NR
TARGA	POST	SU	7-day application interval.	10-15	3-5	1	NL	NL	60
***TRUST*/TREFLAN HFP/ TREFLAN TR-10**	PP	SU,SA	PPI FALL or spring and incorporate 2-3" immediately. Spring- wait 5 days for a second pass; fall- wait til spring for second pass.	5-40	5-10		NR	NR	NR
VALOR SX/VALOR EZ/ PANTHER SC	PH	SU,SA	Apply to mature crop, <35% seed moisture. Apply after 10/15 in Region 2 and 11/15 in region 1 or when soil temperature falls below 50 °F at 2".	15-30		1	NR	NR	5
VIDA	PP	SU,SA	Apply up to 24 hours before planting.	10	5	1	NL	NL	NL

[1] Application Timing and Intervals
PP - Preplant surface, unless otherwise specified
PPI - Preplant incorporated
PRE - Preemergence
POST - Postemergence
PH - Preharvest
PGR - Plant growth regulator
NA - Not applicable
NR - No Restrictions
NO - Not Permitted
Delay-M - Delay until maturity.

[2] SU – sunflower, SA – safflower

[3] Includes labeled minimum or range

S - Heavy rainfall soon after application may require retreatment.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SUNFLOWER HERBICIDE APPLICATION RATES

PREPLANT OR PREEMERGENCE		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Fine**	**Comments/Restrictions**
AIM EC/SHARK EW	SU,SA	**All soil textures:** 0.5-1 oz + 0.5 gal HSOC-MSO or HSOC-COC or 2 pt NIS/100 gal*			PP or PRE. PRE within 24 hrs after planting. Apply to emerged weeds. Add to tank before other herbicides.
ANTHEM FLEX	SU	*<3% O.M.*			For early PP and reduced tillage systems, use higher rate in range. Max. 7.3 fl oz/A/application. Max. 3 applications/year. Max 9.12 fl oz/A/year. 14-day min. application interval. See label notes on dry weather.
		2-2.8 fl oz	2.8-4.5 fl oz	4.5-7.3 fl oz	
		>3% O.M.			
		2-3 fl oz	3-5.5 fl oz	5-7.3 fl oz	
AUTHORITY ELITE		SEE BROADAXE XC.			
AUTHORITY SUPREME	SU,SA	*<1.5% O.M.*			PP, PRE or PPI. Higher rates for soils with pH <7.2. Do not apply >6.9 fl oz/A/year. Rainfall and/or irrigation of ≥0.5" prior to weed emergence may be needed for activation - see label. Verify sensitivity of crop variety with local Extension. FALL: Authority Supreme may be broadcast after crop harvest when soil temperatures at the 4" depth are sustained at <55 °F and before the ground freezes to control weeds in minimum or no tillage fields planted the following spring. Do not apply to frozen soils.
		5.8-7.2 fl oz	5.8-8.7 fl oz	7.2-10.1 fl oz	
		1.5-3% O.M.			
		5.8-8.7 fl oz	5.8-11.6 fl oz	8.7-13 fl oz	
		>3% O.M.			
		7.2-11.6 fl oz	8.7-13 fl oz	11.6-15.4 fl oz	
BROADAXE XC/ AUTHORITY ELITE	SU	*<1.5% O.M.*			Apply up to 3 days after planting if seedlings have not broken soil surface. Plant sunflowers 1.5" deep. PPI 2". Maximum 38.7 fl oz/A/crop year. For soils with pH >7.2, use lowest rate for specified O.M. and texture. Do not use on soils with <1% O.M.
		19-21 fl oz	19-25 fl oz	21-30 fl oz	
		1.5-3% O.M.			
		19-25 fl oz	21-32 fl oz	25-32 fl oz	
		>3% O.M.			
		21-25 fl oz	25-32 fl oz	32-38.7 fl oz	
CHARGER BASIC/ DUAL MAGNUM/DUAL II MAGNUM/EVERPREX	SU,SA	*<3% O.M.*			PPI or PRE. PPI up to 2". Do not allow livestock to graze or feed in treated areas.
		1-1.33 pt	1.33-1.67 pt	1.33-1.67 pt	
		≥3% O.M.			
		1.33 pt	1.33-1.67 pt	1.67-2 pt	
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	SU	**All soil textures:** Up to 1 qt or Up to 24 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*			PP or PRE prior to crop emergence to emerged weeds.
CREDIT XTREME		SEE ROUNDUP			
DUAL MAGNUM/DUAL II MAGNUM		SEE CHARGER BASIC			
ELEVORE	SU	**All soil textures:** 1 fl oz			PP burndown to actively growing weeds up to 14 days before planting. Use with MSO.*
EPTAM 7E or EPTAM 20-G	SU,SA	2.5 pt or 10-15 lb	2.5-3.5 pt or 10-15 lb	3-3.5 pt or 10 lb	PPI in spring. Apply and incorporate just before planting. Can tank mix Eptam 7-E with Trust/Treflan or Prowl H2O. Use Eptam 20-G only in CO, KS, NE, MN, ND, SD; just before planting.
		4.5 pt or 20 lb	5.25 pt or 22.5 lb	5.25 pt or 22.5 lb	PPI FALL APPLICATION. Use 20G only in MN, ND. Incorporate in late fall before the ground freezes. Can tank mix Eptam 7E in all states with Prowl or Trust/Treflan. Safflower: Use 3.5 pt/A 7E in northern, PNW, and western regions or 15 lb/A 20G PPI just before planting in all states.
EVERPREX		SEE CHARGER BASIC			
EXPRESS	SU	**All soil textures:** 0.25-0.5 oz + 0.5 gal HSOC-MSO/100 gal*			PP burndown prior to Express Sun sunflowers.
FRAMEWORK 3.3 EC/ PROWL H2O	SU	*PPI Spring or PRE Conv. Tillage-Northern*			PPI. Apply in spring 0-60 days prior to planting and incorporate within 7 days unless adequate rain or irrigation is received. PRE up to 2 days after planting (except CA). Medium soil: Framework 3.3. EC Note 1.
		2.4 pt	3 *(<3% O.M)*-3.6 pt *(>3% O.M.)*	3.6 pt	
		2 pt	2.5 *(<3% O.M.)*-3 pt *(>3% O.M.)*	3 pt	
		PPI Spring or PRE Conv. Tillage-Southern			PP or PRE NO-TILL. Apply up to 30 days prior to planting. Apply up to 3 pt H2O or 3.6 pt Framework 3.3 EC. Rainfall or irrigation within 7 days required for activation. Use a burndown herbicide for existing weeds. Note 1.
		1.8 pt	2.4 pt	3.6 pt	
		1.5 pt	2 pt	3 pt	
		PPI FALL			PPI FALL in MN, ND, SD. Apply in late fall when soil temperature is below 45 °F. Incorporate once in fall and again in spring. Note 1.
		3 pt	3.6 *(<3% O.M.)*-4.2 pt *(>3% O.M.)*	4.2 pt	
		2.5 pt	3 *(<3% O.M.)*-3.5 pt *(>3% O.M.)*	3.5 pt	

See notes and footnotes at end of table.

PREPLANT OR PRE *(continued)*		Rate/Acre			
Herbicide	**Labeled Crops[1]**	**Coarse[2]**	**Medium**	**Fine**	**Comments/Restrictions**
GRAMOXONE SL 3.0 ‡	SU,SA	**All soil textures:** 1.7-2.7 pt + 2 pt NIS/100 gal			
HONCHO K6		SEE ROUNDUP.			
PROWL H2O		SEE FRAMEWORK 3.3 EC			
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	SU,SA	**All soil textures:** See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*			PP or PRE. Apply prior to crop emergence to emerged weeds. Apply in 3-10 gal of water/A. See labels for max. single application rates and annual maximum rates. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
RT 3	SU,SA	**All soil textures:**11-44 fl oz + 8.5-17 lb AMS/100 gal, or WC+NIS*			PP or PRE prior to crop emergence for emerged weeds. Maximum 22 fl oz/A/season in sunflower. For use in CO, ID,MT, NV, ND, OR, SD, TX, UT, WA, WY, and specific counties in KS, MN, NE, NM, OK.
SONALAN HFP or SONALAN 10G	SU,SA	1.5-2 pt or 5.5-7.5 lb	2-2.5 pt or 7.5-9.5 lb	2.5-3 pt or 9.5-11.5 lb	PPI FALL or spring or minimum-till, granules are preferred. Incorporate 2-3" as soon as possible within 2 days. Note 1. PPI FALL. Apply from Oct. 1 - Dec. 31 and incorporate as above. A second incorporation should be delayed 3-5 days. HFP may be applied with dry fertilizer only for sunflower. Note 1.
SPARTAN 4F	SU	3-6 fl oz	3-6.75 fl oz	3.75-8 fl oz	PP, PPI or PRE. May be applied in fall in ND, SD, MT, MN, WY, CO, NE, or KS. Apply PRE up to 3 days after planting. Rates vary by O.M. and pH. Crop injury can occur, particularly on coarse soils with <1.5% O.M. or high pH. On coarse soils, apply PPI at least 7-14 days prior to planting. Do not incorporate >2" deep.
SPARTAN CHARGE	SU,SA (24c)	*<1.5% O.M.*			PP or PRE. See label for pH and rate. Use lower rates within the range for soil pH>7.0. Apply in fall, spring or PRE up to 3 days after planting. Burndown activity on small susceptible broadleaf weeds as well as PRE control of kochia. Can be mixed with glyphosate. 24c for SA: MT (exp. 12/2027), UT (exp. 7/2028) for control of Russian thistle and kochia; see 24C labels for rates.
		3.75-5 fl oz	3.75-5.75 fl oz	5-6.5 fl oz	
		1.5-3% O.M.			
		3.75-5.75 fl oz	5-7.75 fl oz	5.75-8.5 fl oz	
		>3% O.M.			
		5-7.75 fl oz	5.75-8.5 fl oz	7.75-10.2 fl oz	
TRUST/TREFLAN HFP or TREFLAN TR-10	SU,SA	*Sunflower*			PPI SPRING or FALL. Incorporate at once. A second incorporation improves performance. Wait 5 days before second pass. With fall treatment, do the second incorporation in spring. Fall application: b/w Sept. 15-Dec. 31 in CA, MN, ND SD and b/w Oct. 15-Dec. 31 in all other states (granules preferred for heavy crop residue or for fall application). See label for effect of O.M., soil texture and rainfall on rates.
		1 pt or 5 lb	1.25-1.5 pt or 6.25-7.5 lb	1.5-2 pt or 7.5-10 lb	
		Safflower Spring			
		1 pt or 5 lb	1.25-1.5 pt or 6.25-7.5 lb	1.5-2 pt or 7.5-10 lb	
		Safflower Fall			
		1.5 pt or 7.5 lb	2 pt or 10 lb	2.5 pt or 12.5 lb	
VIDA	SU,SA	**All soil textures:**0.5-2 fl oz + 0.5 gal HSOC-MSO or HSOC-COC or before other herbicides.* 2 pt NIS/100 gal			PP. Apply up to 24 hours before planting. Minimum of 30 days between applications. Do not apply >3 applications/year or 5.5 fl oz/A/year.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

POSTMERGENCE			
Herbicide	**Labeled Crops[1]**	**Rate/Acre**	**Comments/Restrictions**
ASSURE II	SU	8-10 fl oz + 1 qt NIS/100 gal*	Apply 4-8 oz for control of volunteer corn. Maximum of 18 fl oz/A/season. Apply at >7 day intervals. Do not apply to crop under stress. PHI 60 days.
BEYOND XTRA	SU	4-6 fl oz + 1 qt NIS/100 gal + 2.5 gal 28%N or 12-15 lb AMS/100 gal	Apply 4 fl oz/A to Clearfield sunflowers, 4-6 fl oz/A to Clearfield Plus sunflowers; when broadleaves are <3" and grasses <4-5 leaf. Sunflower should be 2-8 leaf. Does not control ALS resistant weeds. See label for resistance management. Can use HSOC-MSO or HSOC-COC in place of NIS.*
CLEANSE	SU,SA	6-16 fl oz: SU 6-8 fl oz: SA + 0.5-1 pt HSOC-COC* + 2.5 lb AMS	Apply to actively growing grasses. Rate is dependent on grass species and size. PHI 70 days. May be tank mixed with some insecticides. See label. Note 1.
EXPRESS	SU	0.25-0.5 oz + 0.5 gal HSOC-MSO/100 gal*	ExpressSun trait sunflowers only. Do not apply Express to sunflowers that are not ExpressSun - severe crop injury or death will occur. Apply from V1 to pre-bud (prior to beginning of bud formation) sunflower. Does not control ALS resistant weeds. Maximum use is 1 oz/A/ season. PHI 70 days.
POAST	SU	1-1.5 pt + 1 pt HSOC-COC*	Rates vary from 0.5 to 2.5 pt depending on species and region. Add 2-4 pt 28% N or 2.5 lb of AMS for volunteer cereals, crabgrass and quackgrass. 70 days phi. Apply to spring germinating volunteer cereals before tillering.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	SU,SA	See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*	Postemergence with a hooded sprayer or wiper application. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates. Note 1.
SECTION THREE	SU,SA	4-10.67 fl oz: SU 4-5.33 fl oz: SA	70 day PHI. Maintain 14 day interval for repeat applications. Use 1 pt/A of HSOC-COC or HSOC-MSO, WC+NIS or 8.5-17 lb/100 gallons of AMS.*
SELECT MAX	SU,SA	9-32 fl oz + 1 qt NIS/100 gal	AMS may be added. Safflower at 9-16 fl oz/A. PHI 70 days.
TARGA	SU	4-18 fl oz + 1 qt NIS/100 gal	Maximum of 18 fl oz/A/season. Apply at > 7 day intervals. Do not apply to crop under stress. PHI 60 days.
PREHARVEST			
GRAMOXONE SL 3.0 ‡	SU	0.8-1.3 pt + 2 pt NIS/100 gal	PREHARVEST. Apply when back of heads are yellow and bracts turning brown; seed moisture <35%. Do not graze or feed forage to livestock. Apply in 5-10 GPA by air or 20-30 GPA by ground. PHI 7 days. HSOC-COC can be substituted for NIS.* Note 1.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	SU,SA	See label for precise rates associated with weed species and annual per acre maximums; add 8.5-17 lb AMS/100 gal, or WC+NIS*	PREHARVEST. Apply to safflower when seed has lost opaque color, approximately 20-30 days after the end of flowering of secondary branches. Sunflower, when backsides of heads are yellow and bracts are turning brown and seed moisture is <35%. May use other glyphosate herbicides: Cornerstone brands or others at labeled rates. PHI 7 days.
RT 3	SU,SA	Up to 64 fl oz: SA Up to 22 fl oz: SU + 8.5-17 lb AMS/100 gal, WC+NIS*	PREHARVEST. See Comments/Restrictions for Roundup PowerMAX 3; WeatherMAX/etc. PHI 7 days.
SHARPEN	SU	1-2 fl oz + 0.75 pt HSOC-MSO* + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal	PREHARVEST. Apply when backs of the heads are yellow and bracts are turning brown; (≤35% seed moisture). PHI 7 days. Do not use on crops grown for seed production. May tank mix with glyphosate. Use ≥5 GPA water by air or ≥10 GPA by ground.
VALOR SX or VALOR EZ/ PANTHER SC	SU,SA	1.5-3 oz or 1.5-3 fl oz + 0.5 qt HSOC-MSO* + 2-2.5 lb AMS or 1-2 qt 28% UAN	Harvest aid. Apply when crop is mature when backs of heads are turning yellow and bracts are turning brown and seed are <35% moisture. PHI 5 days. Add Cornerstone 5 Plus for additional weed control.

[1] SU - sunflower, SA - safflower
NOTE 1: Do not graze or feed treated forage.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSCOC and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner. oner.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SUNFLOWER LABELED INSECTICIDES

INSECTICIDE	LABELED CROP: SUNFLOWER (SU)	LABELED CROP: SAFFLOWER (SA)	PRE-HARVEST INTERVAL	RATE PER ACRE	INSECTS: CUTWORM	FLEA BEETLE	GRASSHOPPER	HEAD-CLIPPER WEEVIL	LYGUS BUG	SEED WEEVIL	STEM WEEVIL
ASANA XL ‡	SU		28	1.45-5.8 fl oz							
				5.8-9.6 fl oz	●		●			●	●
BAYTHROID XL ‡	SU		30	0.8-1.6 fl oz	●						
				1.6-2.4 fl oz							●
				2-2.8 fl oz			●	●		●	
				2.8 fl oz		●					
BESIEGE ‡	SU		45	5-8 fl oz	●						
				6-10 fl oz			●	●		●	●
CAPTURE 3RIVE 3D ‡	SU	SA	–	4.0-16.0 fl oz	●						
CAPTURE LFR ‡	SU	SA	–	3.4-17 fl oz	●						
CARBINE 50WG	SU	SA	0	2.8 oz					●		
CORAGEN	SU	SA	1	2-5 fl oz			●				
				3.5-7.5 fl oz							
CRUISER 5FS	SU	SA	–	0.25 mg a.i./seed		●					
DELTA GOLD ‡	SU		21	1-1.5 fl oz	●	●	●			●	●
DIMATE 4E		SA							●		
DIPEL DF	SU	SA	0	0.5-1 lb	●						
				0.5-2 lb	●						
ETHOS XB ‡	SU	SA	–	3.4-17 fl oz	●						
ETHOS 3D ‡	SU	SA	–	0.21-1.05 fl oz/1000'	●						
GRIZZLY TOO ‡//WARRIOR II ‡	SU		45	0.96-1.6 fl oz	●						
				1.28-1.92 fl oz			●	●		●	●
LAMBDA-CY AG ‡	SU		45	1.92-3.2 fl oz	●						
				2.56-3.84 fl oz			●	●		●	●
MUSTANG MAXX ‡	SU	SA	30	4 fl oz	●						
			14	4 fl oz	●				●		
PYGANIC EC 1.4$_{II}$	SU	SA	0	16-64 fl oz	●	●	●	●	●	●	
PYGANIC EC 5.0$_{II}$	SU	SA	0	4.5-15.61 fl oz	●	●	●	●	●	●	
VANTACOR	SU	SA	1	0.7-1.7 fl oz			●				
				1.2-2.5 fl oz							
XENTARI	SU	SA	0	0.5-1 lb	●						
				0.5-2 lb	●						

Products may control/suppress many other insects; see label
● - control; ●S - suppression
* - 24c, 2ee or Supplemental label; see Comments and Restrictions

‡ TThis product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.
See Insecticide Resistance Management in the Technical Information section.

INSECTS *(continued)*				COMMENTS AND RESTRICTIONS
SUNFLOWER BEETLE	SUNFLOWER MOTH	THISTLE CATERPILLAR	WIREWORM	
●				Max. 0.2 lb a.i./A/season. Grasshopper: For 1st and 2nd instar, use 3.9-5.8 fl oz/A; see label for application timing. Sunflower Beetle: Not in CA.
	●			
				Max. 2.8 fl oz/A/application. 7-day min. application interval. Max. 8.4 fl oz/A/season. Flea Beetle: Pale striped. Stem Weevil: Adults.
●	●			
●				Max. 31 fl oz/A/year. Max. before bloom initiation 28 fl oz/A/year. 5-day min. application interval. Min. 20 GPA by ground, 2 GPA by air. Max. 5 applications/crop. Do not apply as ULV spray. If using adjuvant, use only NIS. Head Clipper Weevil/Seed Weevil/Stem Weevil: Adults.
	●	●		
			●	Must be applied with 3rive 3D system. Based on 30-inch row spacings. Max. 1 application/year.
			●	Apply as 5- to 7-inch T-band over open furrow, or in-furrow with seed. For cutworms may also over the row or broadcast; see label. Max. 1 application/year.
				Apply when insects first appear. Max 2 applications before rotating to different MOA. Max. 2.8 oz/A/application. Max 8.4 oz./A/year. Max 3 applications/year. Min. 7 day application interval.
				Max. 15.4 fl oz/A/season. Max. 4 applications/A/calendar year. Min. 5-day application interval.
	●			
●			●	Early season protection of seedlings. Highly recommended to use with compatible fungicides such as Apron XL, Dynasty or Maxim 4FS.
●	●			Max. 3.8 fl oz/A/growing season. Do not apply by ULV. Min. 5 GPA by ground, 2 GPA by air.
				For us in AZ, CA only. Max. 1 pt/A/application. Max. 1 pt/A/year. 14-day min. application interval.
	●			Bt. Insecticide. Thorough coverage of larval feeding sites within flowers is needed for adequate control.
			●	Apply as 5- to 7-inch T-band over open furrow, or in-furrow with seed. For cutworms may also over the row or broadcast; see label. Max. 1 application/year.
			●	Must be applied with 3rive 3D system. Based on 30-inch row spacings. Max. 1 application/year.
●				Max. 7.68 fl oz/A/season. Max. 5.76 fl oz/A/season after bloom initiation. Apply by ground in sufficient water to obtain coverage, or in min. 2 GPA by air. Do not apply as ULV. Head-Clipper Weevil/Seed Weevil/Stem Weevil/Thistle Caterpillar: Adults.
	●	●		
●				Max. 0.96 pt/A/season. Max. 0.72 pt/A/season after bloom initiation. Apply by ground in sufficient water to obtain coverage, or in min. 2 GPA by air. Do not apply as ULV. Head-Clipper Weevil/Seed Weevil/Stem Weevil/Thistle Caterpillar: Adults.
	●	●		
			●	SU: Max. 4 fl oz/A/application; max. 20 fl oz/A/season including all application methods and timings; do not make >5 applications at max. rate/season; do not graze or cut treated crops for feed; Cutworm/Wireworm control is at-plant; see label for application methods. SA: Max. 12 fl oz/A/season; apply as needed based on pest thresholds; 14-day min. application interval; min. 5 GPA. Flea Beetle: Pale striped. Head-Clipper Weevil/Seed Weevil/Stem Weevil: Adults.
●		●		OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
●		●		OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
				Max. 5.1 fl oz/A/season. Max. 4 applications/A/calendar year. Min. 5-day application interval.
	●			
	●			Bt. Insecticide. Thorough coverage of larval feeding sites within flowers is needed for adequate control. Ground application only.

BEE ALERT

See Insecticide Classification in the Technical Information section for information on insecticide toxicity to bees.

SUNFLOWER INSECT MANAGEMENT GUIDELINES



CUTWORM, DINGY, DARK-SIDED, SANDHILL: Check field early. **ET:** control if 20% or more of plants are cut or damaged and cutworms are less than 3/4" in length.



GRASSHOPPER ET: Treat if there are 8 per square yard, or before 25% defoliation.



HEAD-CLIPPER WEEVIL: Metallic, black weevils 1/4" long. Females girdle the stem just below developing head. Severe damage usually limited to field borders.



LYGUS BUG ET: Confection sunflowers - 1 per 9 heads. Oilseed - not generally a significant problem.



SEED WEEVIL: These snout beetles may be 1/8-1/4" long and reddish brown or gray. Eggs are laid in seeds in the head and larvae feed internally. Thus controls must be directed against the adults. **ET:** Treatment should be made when 30-40% of plants have a ring of flowers in bloom. Treatment levels are 9-10 adults per plant (oil) and 1 per plant (confectionary). Estimate absolute red sunflower seed weevil adults when sampling using a commercial formulation of mosquito repellent.

No. counted in the field	Absolute number	No. counted in the field	Absolute number	No. counted in the field	Absolute number	No. counted in the field	Absolute number
1	1.4	6	10.7	11	19.5	16	29.3
2	2.9	7	12.4	12	21.3	17	31.1
3	4.4	8	14.2	13	23.1	18	32.9
4	5.8	9	16.0	14	24.9		
5	7.3	10	17.8	15	26.6		

Confection Sunflower - Red sunflower seed weevil control on confection sunflower is based on a need to keep seed damage below 3 or 4% due to industry standards. Treatment is recommended when 1-2 weevils are found per plant. Insecticide should be applied before egg laying occurs.



STEM WEEVIL: Prevent egg laying and subsequent larval damage by controlling the adult. While systemic planting time treatments are registered, yields have not improved enough to justify this type of treatment. **ET:** if 1 or more adults are found per 3 plants from the 14-leaf to early bud stage, foliar treatment is probably justified. Adults are difficult to find due to size, color and habit of playing dead.



SUNFLOWER HEAD MOTH, BANDED SUNFLOWER MOTH: Adult head moths are buff to gray colored, about 3/8" long. When at rest, the wings are rolled tightly against the body. Banded Sunflower Moths have straw-colored forewings marked with dark brown. 4-5 days after hatching, larvae enter the heads where they cannot be effectively controlled. Controls should be directed against the adult moth to prevent egg-laying. Controls must be applied at early bloom (yellow ray petals visible). **ET:** treat when there are 1-2 head moths per 5 plants, or 1 banded moth per 2 plants, or in field margins.



SUNFLOWER BEETLE: Yellowish, brown-striped beetles begin defoliation early in the season. **ET:** treat if there are 2 adults per 4-leaf plant or 10-15 larvae per plant. Do not allow defoliation to exceed 25%.



THISTLE CATERPILLAR: **ET:** Control measures generally warranted only for spot treating when defoliation reaches 25% during bloom and larvae are less than 1.25" long.

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
APROACH	SU	6-12 fl oz	7	–	Apply prior to disease development at early growth through flowering and seed production, with second applications on 5- to 14-day interval. Max. 36 fl oz/A/year. Max. 2 sequential applications before switching to a different mode of action. Max. 3 applications/year.
BIO-TAM 2.0	SU	2.5-5 lb	–	–	Can be applied in-furrow (1.5-3 oz/1000' row) and banded (2.5-3 lb/A). Broadcast apply at sowing, restart of vegetative growth, and before the infection risk period. Note 2.
CONTANS WG	SU,SA	1-4 lb	0	NR	Apply prior to planting, at planting, or after crop emergence. Incorporate into soil to 2". Make 2 applications, but no more than 8, for maximum efficacy. Note 2.
EVERLON/PRIAXOR	SU	4-8 fl oz	21	NR	Apply prior to disease development on 7- to 14-day interval. Use higher rate and shorter interval when disease pressure is high. Maximum 16 fl oz/A/sesaon. Maximum 2 applications before rotating to another mode of action.
HEADLINE SC	SU,SA	6-12 fl oz	21	Yes	Apply prior to disease development and continue on a 7- to 14-day schedule. Adjuvants may be included. Maximum of 2 applications.
ONSET 3.6L	SU	4-6 fl oz	50	NR	Apply at 4-6 fl oz/A at the first sign of disease or when weather conditions favor rust development. Apply higher rate to highly susceptible varieties, and/or under severe disease conditions. Apply in 20 GPA by ground and 5 GPA by air. Include NIS.
REVYLOK	SU,SA	4.5-6.5 fl oz	21	NR	Max. 6.5 fl oz/A/application. Max. 2 applications/A/year. Max. 13 fl oz/A/year. 7-day min. application interval. See label for max. a.i./A totals and for adjuvant use limitations.
SERENADE ASO	SU,SA	2-6 qt	–	–	Bacillus subtilis is a biological fungicide. Suppression of White Mold: Begin application soon after emegence and when conditions are conducive to disease development. Repeat on 7- to 10-day interval or as needed.
TETRABAN	SU,SA	6-15.5 fl oz	30	–	Apply by ground, air or irrigation 6 fl oz/A at early bud, followed by 14 fl oz/A about 45 days before harvest (a 3rd application of 7 fl oz/A may be made 30 days before harvest).
ZORINA	SU	10 - 20 fl oz	21	–	Begin applications prior to the onset of disease. The minimum retreatment interval is 14 days. Maximum of 20 fl oz/A/Application. Maximum of 2 sequential applications before alternating to a labeled non-Group 3 or non-Group 7 fungicide. Maximum of 2 applications at 20 fl ozs/A/Year with the maximum of 40 fl ozs/A/Year.

PHI – preharvest interval days. G/F – grazing and feeding interval days.
* SU - sunflower, SA - safflower: See labels for disease controlled/suppressed.

See Fungicide Resistance Management in the Technical Information section.

NOTES

SEED AND GRAIN

- Inoculants 518
- Seed Treatments 524
- Stored Grain 540

SEED AND GRAIN



HELP GROWERS KEEP THEIR CROP PROTECTION INVESTMENTS ON TARGET WITH INTERLOCK® DRIFT REDUCTION ADJUVANT .

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- Improve on-target spray potential by up to 33%.[2]
- Reduce driftable fine droplets by 60% for even stronger ROI potential.[3]

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"1 2016 WinField United field research data.
2 In 2023, InterLock reduced the number of driftable fines from the baseline treatment by an average of 33% across four herbicide tank mixtures and two nozzles compared against herbicide alone. 3 2018 WinField United Innovation Center wind tunnel data. © 2024 WinField United. Important: Before use always read and follow label directions. Crop performance is dependent on several factors, many of which are beyond the control of WinField United. Including without limitation: soil type, pest pressure, agronomic practices and weather conditions. Growers are encouraged to consider data from multiple locations, over multiple years and to be mindful of how such agronomic conditions could impact results. InterLock and WinField are registered trademarks of WinField United."

INOCULANT TECHNICAL INFORMATION

Inoculants and non-pesticide seed treatments contain living Rhizobia, Bacillus, Trichoderma or other species of bacteria, and/or may also contain specific molecules, all of which combine to allow legumes to produce root nodules and other plants to increase root volume, germinate faster, and grow healthier. Inoculants are also designed to increase nutrient availability. Inoculation is most beneficial to legumes on land that has not grown the legume crop for several years, or recently leveled land. Light green colored leaves or poorly nodulated roots are signs of a need for inoculant. Non-legume crops respond especially to certain nutrients or other substances, and to phosphorus deficiency symptoms. Key points for successful inoculation are:

1) **Each species of legume or non-legume requires an inoculant specific** to that crop. (See table below - Source column).

2) Most inoculants contain live bacteria. **Viability is generally reduced by temperatures above 70 °F; check individaul labels.** With dry inoculants, a binder can be made using powdered milk, corn syrup, or sugar combined with water to form a 10% solution. Store in a cool, dry location. Do not open until ready to use. Many inoculants must be used within 24 hours of opening. Use before the expiration date. Plant as soon as possible after inoculation.

3) **Treating seed with some fungicides or molybdenum can weaken or kill inoculant bacteria.** Minimize time the inoculant is in contact with the seed treatment. When using fungicides with inoculants treat the seed first and allow the seed treatment to dry before adding inoculant to reduce the effect on the inoculant. Insecticides are more toxic to inoculants than fungicides.

4) **Molybdenum is required by legume nodules to fix nitrogen** from the air. Molybdenum (Mo) treatments are of most value on acid, very sandy, or highly weathered soils. Symptoms of Mo deficiency include poor nodulation, pale green color and stunted growth.

5) **Inoculant and seed treatment compatibility.** Check inoculant labels and speak to manufacturer representatives about compatibility.

6) **Chlorinated water should not be used** with many inoculants; be sure to carefully read labels.

Inoculant: Primary Product Name	Crop or Multi-Crop Specific Labels	Form/ Carrier	Source	Method[1]	Rate	Planting Window[2]	Mixing and Application Comments/Restrictions
AMERICA'S BEST INOCULANT	Pea/Lentil	Liquid, sterile	Rh leg bv viceae	PB,CA,IF	0.5 fl oz/1000' row	Immediately after seed treatment	Use mix w/in 24 hr
	Peanut + Supplemental label for other pulses	Liquid, sterile	Br sp	IF	Based on row spacing; see label		Contact supplier
	Soybean	Liquid, sterile	Br jap or Br jap + Plus 30 Extender	B,BU,CA,IF	2.1 fl oz/140,000 seeds	Addition of Plus 30 Extender provides longer planting window	Use package w/in 24 hr of opening; if using Plus 30 Extender, see label
	Soybean	Dry/Peat, sterile	Br jap	SA	1.5 oz/bag	24 hr	If not sown w/in 24 hr, re-inoculate
	Soybean	Dry/Peat, nonsterile	Rh sp	BU,PB	1.9 oz/50 lb	24 hr	If not sown w/in 24 hr, re-inoculate
CELL-TECH	Chickpea	Dry/Granular	Me cic	IF, AS, BGA, HPD	6 oz/1000' row		
	Pea/Lentil	Dry/Granular	Rh leg	IF, AS, BGA, HPD	1.4 oz/1000' row		
	Peanut	Dry/Granular	Br jap	IF	6 oz/1000' row		
	Soybean	Dry/Granular	Br jap	IF,AS,BGA	Based on row spacing; see label		
	Soybean	Dry/Peat	Br jap	PB	1 bag/1,500 lb	48 hr	
	Pea/Lentil	Dry/Peat	Rh leg	SA	1 bag/50 bu	6 hr	
	Peanut	Dry/Peat	Br sp	PB	6.6 oz/100 lbs	24 hr	
	Pea/Lentil	Liquid	Rh leg	SA,B,CA	2.5 fl oz/60 lb	48 hr Pea 6 hr Lentil	
	Soybean	Liquid	Br jap	SA IF,B,CA	2.1 fl oz/50 lb or 0.5-1 fl oz/1000' row	4 d	Use mix w/in 4 hr
EXCALIBRE-SA	Soybean	Liquid	Br jap + Tri vir + Extender Polymer (liquid)	CO	0.05 oz/140,000 seeds	120 d	Use mix w/in 24 hr
EXCEED	Peanut	Dry/Peat	Br sp Vigna	SA	2.5 oz/50 lb		Product has 1 season shelf life
	Chickpea	Dry/Peat, granular	Mes cic	PB,GA,AS	5 lbs/acre		Product has 1 season shelf life
	Pea/Vetch/Lentil	Dry/Peat, granular	Rh leg	PB,GA,AS	5 lbs/acre		Product has 1 season shelf life

See notes and footnotes at end of table.

Inoculant: Primary Product Name	Crop or Multi-Crop Specific Labels	Form/ Carrier	Source	Method[1]	Rate	Planting Window[2]	Mixing and Application Comments/Restrictions
EXCEED (OMRI)	Chickpea	Dry/Peat	Mes cic	PB,GD	2.5 oz/50 lb		Product has 1 season shelf life
	Peanut	Dry/Peat	Rh sp Vigna	PBS,SA	2.5 oz/50 lb		Product has 1 season shelf life
	Peanut	Liquid	Br sp Vigna	IF	1.1 fl oz/1000' row		Product has 1 season shelf life
	Soybean	Liquid	Br jap	SA IF	3.4 oz/100 lb 0.5-1 oz/1000' row		Product has 1 season shelf life; IF: Use mix w/in 24 hr
EXCEED STIC	Chickpea	Dry/Peat + Sticking Agent	Mes cic	PB,GD	5 oz/100 lb		Product has 1 season shelf life
	Peanut	Dry/Peat + Sticking Agent	Br sp Vigna	GD	5 oz/100 lb		Product has 1 season shelf life
	Soybean	Dry/Peat + Sticking Agent	Br jap	PB,GD	6 oz/100 lb		Product has 1 season shelf life
EXCEED SAR	Peanut	Liquid	Br sp Vigna + Poly-D-Glucosamine	IF	1.1 fl oz/1000' row		Product has 1 season shelf life
EXCELLORATE	Corn/Soybean/Cereals	Liquid	N, P, K, B, Co, Cu, Fe, Mn, Mo, Zn (see label)	Foliar IF SA	8-16 fl oz/acre 4-6 fl oz/acre 0.5 oz/80,000 corn seeds; 140,000 soybean seeds; 100 lb cereal grains		
GRAPH-EX	Soybean	Dry/Talc-Graphite	Br	PB,BU	0.5 oz/140,000 seeds	72 hr	If not sown w/in 72 hr, re-inoculate
GRAPH-EX SA	Dry Bean	Dry/Talc-Graphite	Rh leg bv phasoli + Tri vir	PB,BU	0.5 oz/50 lb		
	Pea/Vetch/Lentil/ Cowpea/Lespedeza/ True Clover/Forage Grasses/Cover Crops	Dry/Talc-Graphite	Rh leg + Br sp Vigna + Rh leg bv tri + Tri vir + Tri afr + Tri atr	PB,GD	4 oz/100 lb	48 hr	If not sown w/in 48 hr, re-inoculate
	Peanut	Dry/Talc-Graphite	Br sp Vigna + Tri vir	PB,BU	1 oz/50 lb	72 hr	If not sown w/in 72 hr, re-inoculate
	Soybean	Dry/Talc-Graphite	Br + Tri spp	PB,BU	0.5 oz/140,000 seeds	72 hr	If not sown w/in 72 hr, re-inoculate
GUARD-N (OMRI)	Soybean/Dry Bean/ Lentil/Pea/Peanut/ Vetch	Dry/Granular	Br sp V + Br jap + Rh leg bv phaseoli + Rh leg bv viceae	SA,PB	1.5 oz/8 lb	24 hr	
JUMPSTART	Alfalfa/Clover Canola/Mustard Chickpea Corn Dry Bean/Lentil/Wheat Pea Soybean Sorghum Sugarbeet Sunflower	Dry/Wettable Powder	Pe bil	B,CA (see label)	2 oz/150 lb 2 oz/140 lb 2 oz/55 bu 2 oz/10 bags 2 oz/40 bu 2 oz/70 bu 2 oz/42 bu 2 oz/300 lb 2 oz/5 units 2 oz/230 lb	7 d 60 d 30 d 60 d 30 d 30 d 30 d 30 d 7 d 30 d	
MEGA-PACK	Soybean	Liquid	Br jap	CO	0.6 fl oz/50 lb		Use opened container w/in 72 hr; use mix w/in 4 hr
N-CHARGE	Chickpea	Dry/Peat	Me cic	SA	2.5 oz/50 lb	24 hr	
	Dry Bean	Dry/Peat	Rh leg bv phaseoli	SA	2.5 oz/50 lb	24 hr	
	Pea/Vetch/Lentil	Dry/Peat	Rh leg bv viceae	SA	2.5 oz/50 lb	24 hr	
	Soybean	Dry/Peat	Br jap	SA	2.5 oz/50 lb	24 hr	

See notes and footnotes at end of table.

INOCULANT TECHNICAL INFORMATION *continued*

Inoculant: Primary Product Name	Crop or Multi-Crop Specific Labels	Form/ Carrier	Source	Method[1]	Rate	Planting Window[2]	Mixing and Application Comments/Restrictions
N-CHARGE S	Soybean	Dry/Peat, sterile	Br jap	PB,SA	1.4 oz/50 lb	24 hr	
N-DURE	Bird's Foot Trefoil	Dry/Peat	Mes lot	PBS,SA	6 oz/50 lb		Plant as soon as possible
	Dry Bean	Dry/Peat	Rh leg	PBS,SA	2.5 oz/50 lb		Plant as soon as possible
	Sanfoin	Dry/Peat	Rh zp	PBS,SA	2.5 oz/50 lb		Plant as soon as possible
N-DURE (OMRI)	Alfalfa/True Clover	Dry/Peat	Sin me	PBS,SA	6 oz/50 lb		Plant as soon as possible
	Chickpea	Dry/Peat	Me cic	PBS,SA	2.5 oz/50 lb		Plant as soon as possible
	Pea/Vetch/Lentil	Dry/Peat	Rh leg bv viceae	PBS,SA	2.5 oz/50 lb		Plant as soon as possible
	Peanut/Cowpea/ Lespedeza/Mung	Dry/Peat	Br sp Vigna	PBS,SA	2.5 oz/50 lb		Plant as soon as possible
	Soybean	Dry/Peat	Br jap	PBS,SA	2.5 oz/50 lb		Plant as soon as possible
	True Clover	Dry/Peat	Sin me	PBS,SA	6 oz/50 lb		Plant as soon as possible
N-TAKE	Pea/Vetch/Lentil	Liquid	Rh leg bv viciae	SA IF	1.75 fl oz/50 lb See label		
	Soybean	Liquid	Br jap	SA IF	1.75 oz/50 lb; See label		
N-TAKE XL	Soybean	Liquid	Br jap	CO	2.5 fl oz/cwt		Use opened bag w/in 24 hr; 1 season shelf-life
NITRAGIN GOLD	Alfalfa/Clover	Dry/Granular	Sin me	B,CA (see label)	6.67 oz/50 lb		Use opened bag w/in 24 hr
NODULATOR	Chickpea	Dry/Clay, granular	Mes cic	IF,GA	5 lb/A		
	Pea/Lentil	Dry/Peat, granular	Rh Leg bv viciae	IF,GA,AS	Based on row spacing; see label		
	Pea/Lentil	Dry/Peat, sterile	Rh Leg bv viciae	SA	2.6 lb/1,320 lb seed	4-6 hr	If not sown w/in 24 hr, re-inoculate
NODULATOR (OMRI)	Pea/Lentil	Liquid	Rh leg	PB,BU	2.5 fl oz/60 lb	4-6 hr	Use opened bladder w/in 24 hr
OPTIMIZE	Pea	Liquid	Br sp + Lipo-chito saccharide	IF	1 fl oz/1000' row		
OPTIMIZE 200	Soybean	Liquid	Br jap + Lipo-chito saccharide	CO	4.25 oz/cwt	220 d	Use mix w/in 24 hr
OPTIMIZE XC	Soybean	Liquid	Br jap + Lipo-chito saccharide	CO	1.5 fl oz/cwt	120 d	Use mix w/in 24 hr
PEANUT POWER	Peanut	Dry/Peat	Br sp Vigna	SA	4 oz/50 lb	24 hr	
	Peanut	Dry/Peat, sterile	Br sp Vigna		7 oz/cwt	25 hr	
PRESIDE CL	Soybean	Liquid	Br jap	CO	2.5 fl oz/cwt		
PRESIDE ULTRA	Soybean	Liquid	Br jap	CO	1.5 fl oz/cwt		
PRE-VAIL (OMRI)	Alfalfa/True Clover	Dry/Clay, granular	Azo br + Rh leg b tri + Sin me	SA	8 oz/60 lb	9 mo	
	True Clover	Dry/Clay, granular	Azo br + Rh leg b tri	SA	9 oz/60 lb	10 mo	
PRIMO	Chickpea Pea/Vetch/Lentil	Liquid Liquid	Me cic Br jap + Azo br + Growth Promoter	SA SA	3.7 fl oz/cwt 4.25 fl oz/cwt	4 hr 24 hr	
PRIMO CL	Soybean	Liquid	Br jap + Biostimulant	CO	2.5 oz/cwt		

See notes and footnotes at end of table.

Inoculant: Primary Product Name	Crop or Multi-Crop Specific Labels	Form/ Carrier	Source	Method[1]	Rate	Planting Window[2]	Mixing and Application Comments/Restrictions
PRIMO GX2	Chickpea	Dry/Peat, granular	Me cic + Azo br	IF,GA	Based on row spacing; see label		Use opened bag w/in 24 hr
	Dry Bean	Dry/Peat, granular	Rh leg bv phaseoli + Azo br	IF,GA	Based on row spacing; see label		Use opened bag w/in 24 hr
	Pea/Vetch/Lentil	Dry/Peat, granular	Rh leg bv viceae + Azo br	IF,GA	Based on row spacing; see label		Use opened bag w/in 24 hr
	Peanut	Dry/Peat, granular	Br sp Vigna + Azo br	IF,GA	Based on row spacing; see label		Use opened bag w/in 24 hr
	Soybean	Dry/Peat, granular	Br jap + Azo br	IF,GA	Based on row spacing; see label		Use opened bag w/in 24 hr
PRIMO POWER CL	Peanut	Liquid	Br sp Vigna	IF	Based on row spacing; see label		Product has 1 season shelf life
PRIMO ULTRA	Soybean	Liquid	Br jap + Extension Solution	CO	1.5 fl oz/cwt		Product has 1 season shelf life; use opened bladders w/ in 24 hr
QUICKROOTS PB	Alfalfa	Dry/Talc	Ba amy + Tri vir	CO,PB (see label)	0.9 oz/bag		
	Canola/Corn/Cotton/ Sorghum	Dry/Talc	Ba amy + Tri vir	CO,PB (see label)	0.56 oz/bag		
	Cotton	Dry/Talc	Ba amy + Tri vir	CO,PB (see label)	0.56 oz/bag		
	Pea/Lentil	Dry/Talc	Ba amy + Tri vir	CO,PB (see label)	0.3 oz/bag		
	Soybean/Chickpea/Dry Bean/Lentil/Pea or Sugarbeet or Sunflower	Dry/Talc	Ba amy + Tri vir	CO,PB (see label)	0.3 oz/bag or 0.62 oz/bag or 1.24oz/bag		
	Wheat	Dry/Talc	Ba amy + Tri vir	CO,PB (see label)	0.9 oz/bag		
QUICKROOTS WP	Canola/Sorghum or Corn or Cotton	Dry/Wettable Powder	Ba amy + Tri vir	CO,PB (see label)	0.35 oz/bag or 0.25 oz/80,000 seeds or 0.21 oz/220,000 seeds	18 mo	Apply slurry w/in 2 hr
	Chickpea/Dry Bean/ Lentil/Pea or Soybean or Sugarbeet or Sunflower	Dry/Wettable Powder	Ba amy + Tri vir	CO,PB (see label)	0.04 oz/bag or 0.1 oz/bag or 0.3 oz/bag or 1.06 oz/bag	18 mo	Apply slurry w/in 2 hr
	Cotton	Dry/Wettable Powder	Ba amy + Tri vir	CO,PB (see label)	0.21 oz/220,000 seeds	18 mo	
	Pea/Lentil	Dry/Wettable Powder	Ba amy + Tri vir	CO,PB (see label)	0.04 oz/bag	18 mo	
	Wheat	Dry/Wettable Powder	Ba amy + Tri vir	CO,PB (see label)	0.1 oz/cwt	18 mo	Apply slurry w/in 2 hr
RHIZO-FLO	Soybean	Dry/Granular	Br jap	IF	Based on row spacing; see label		
SABREX IF	Corn	Liquid	Tri haz + Tri atr	IF	1 fl oz/1000' row		
SABREX LQ	Corn	Liquid	Tri haz + Tri atr	CO	0.16 fl oz/80,000 seeds	2 seasons	
	Cotton	Liquid	Tri haz + Tri atr + Tri vir	IF	0.16 fl oz/50 lb bag or acre		
	Soybean	Liquid	Tri vir	SA	0.16 fl oz/140,000 seeds		
	Wheat/Cereals	Liquid	Tri haz	CO	0.125 fl oz/50 lb	2 seasons	

See notes and footnotes at end of table.

INOCULANT TECHNICAL INFORMATION *continued*

Inoculant: Primary Product Name	Crop or Multi-Crop Specific Labels	Form/ Carrier	Source	Method[1]	Rate	Planting Window[2]	Mixing and Application Comments/Restrictions
SABREX PB	Corn	Dry/Talc-Graphite	Tri haz + Tri atr	PB,BU	0.5 oz/80,000 seeds		
	Cotton	Dry/Talc-Graphite	Tri spp	BU,PB	1 oz/50 lb		
	Rice	Dry/Talc-Graphite	Tri afr + Tri str + Tri vir	PB,BU,GD	2 oz/100 lb		
	Wheat/Cereals	Dry/Talc-Graphite	Tri haz	PB,BU,GD	0.5 oz/50 lb		
TAGTEAM	Chickpea	Dry/Granular	Me cic + Pe bil	IF,GA,AS	Based on row spacing; see label		Use opened bag w/in 24 hr
	Pea/Lentil	Dry/Granular	Rh leg + Pe bil	IF,GA,AS	Based on row spacing; see label		Use opened bag w/in 24 hr
	Soybean	Dry/Granular	Br jap + Pe bil	IF,GA	Based on row spacing; see label		Use opened bag w/in 24 hr
	Chickpea	Dry/Peat	Me cic + Pe bil	SA	4.8 lb/50 bu	6 hr	Use entire bag after opening
	Pea/Lentil	Dry/Peat, sterile	Rh leg + Pe bil	SA	4.8 lb/50 bu, Pea 4.8 lb 30 bu, Lentil	48 hr	Use entire bag after opening
TAG TEAM LCO	Pea/Lentil	Liquid	Pe bil + Rh leg + Lipo-chito saccharide	SA,AS,GD	4.2 fl oz/cwt		Use premix w/in 4 hr
	Peanut	Liquid	Pe bil + Br jap + Lipo-chito saccharide	IF	1 fl oz/1000' row		
TAG TEAM LCO XC	Soybean	Liquid	Pe bil + Br jap + Lipo-chito saccharide	CA	1.5 fl oz/cwt	120 d	Use premix w/in 4 hr
TAKE OFF ST	Barley/Canola/Cotton/ Rice/Rye/Wheat/ Sugarbeet or Corn or Soybean or Vegetable/Permanent Crops	Liquid	Cit acid + Glut + Proline	SA	0.3 oz/cwt or 0.6 oz/80,000 seeds or 0.3 oz/140,000 seeds or Based on seed size; see label		
TUXEDO	Barley/Cereal Rye/Rice/ Wheat + other cereals	Liquid	Cu + Zn	CO	2 fl oz/cwt		Apply as sequential application
	Soybean/Pea/Lentil/ Chickpea/Dry Bean + other pulse crops	Liquid	Cu + Zn + Mn	CO	3 fl oz/cwt		Apply as sequential application
VAULT	Peanut	Liquid	Br sp Vigna + Integral Liquid Biofungicide	IF	Based on row spacing; see label		Use mix w/in 24 hr
VAULT IP/VAULT IP PLUS	Soybean	Liquid	Ba sub + Ba amy MB1600 (Component A)/ Br jap (Component B)	CO: 4x200 pkg CO: 2(4x50) pkg	5 fl oz/cwt standalone 1.1 fl oz/cwt w/ other seed treatments		Use mix w/in 24 hr
VAULT NP (OMRI)	Soybean	Liquid	Br jap	CO PB BU IF	3.92-4.2 fl oz/cwt; see label 2.1 fl oz/50 lb See label for flow valve settings Based on row spacing; see label		Use opened bladder w/in 24 hr

See notes and footnotes at end of table.

Inoculant: Primary Product Name	Crop or Multi-Crop Specific Labels	Form/ Carrier	Source	Method[1]	Rate	Planting Window[2]	Mixing and Application Comments/Restrictions
VAULT SP	Peanut	Dry/Peat, sterile	Br sp Arachis	PB	3.5 oz/50 lb	24 hr	
	Soybean	Dry/Peat, sterile	Br jap	PB	1.4-2.8 oz/50 lb; see label		

[1] AS- air seeder, B- batch, BGA- bulk granular applicator, BU- bulk, CA- continuous application, CO- commercial, GA- granular applicator, GD- grain drill, HPD- hoe or press drill, IF- in furrow, PB- planter box, PBIF- planter box in furrow, PBS- planter box slurry, SA- seed applied.

[2] Planting window for seed may vary depending on treatment method: tank mix or sequential.

COMMERCIAL SEED TREATMENTS BY CROP

L = LABELED	CROPS																								
	Alfalfa	Barley	Beans	Beans, dry	Canola	Clover	Corn	Cotton	Flax	Forage Grasses	Forage Legumes	Lentils	Oats	Peanuts	Peas	Potatoes	Rice	Rye	Safflower	Sorghum	Soybeans	Sugarbeets	Sunflowers	Triticale	Wheat
COMMERCIAL																									
10% MOLY LIQUID																					L				
AERIS								L																	
ALLEGIANCE-FL*	L	L	L	L	L	L	L	L		L	L	L	L	L	L		L	L		L	L	L	L	L	L
APRONMAXX RFC			L	L								L			L						L				
APRON MAXX RTA																					L				
APRON MAXX RTA + MOLY																					L				
APRON XL	L	L	L	L		L	L	L		L	L	L	L	L	L		L	L		L	L	L	L		L
APRON XL 350ES							L																L		
ASCEND PRO	L	L		L	L		L	L					L	L	L		L	L		L	L	L	L		L
ASCEND SL	L	L		L	L		L	L					L	L	L		L	L		L	L	L	L		L
ASCEND ST3	L	L		L	L	L		L		L			L	L	L	L	L	L		L	L	L	L	L	L
ASCEND WSG	L	L		L	L		L	L					L	L	L		L	L		L	L	L	L		L
AVEO EZ																					L				
AVICTA 500 FS																					L				
AVICTA COMPLETE BEANS 500																					L				
AVICTA COMPLETE CORN 250							L																		
AVICTA DUO CORN							L																		
AVICTA DUO 250 CORN							L																		
AVICTA DUO COTTON								L																	
AVODIGEN	L	L	L	L	L		L	L		L	L		L	L	L		L	L			L	L	L	L	L
BION 500FS								L												L			L		
CRUISER 5FS		L	L	L			L	L	L			L			L		L			L	L	L	L		L
CRUISERMAXX			L	L											L						L				
CRUISERMAXX APX																					L				
CRUISERMAXX CEREALS		L																						L	L
CRUISERMAXX VIBRANCE CEREALS		L											L					L			L			L	L
CRUISERMAXX POTATO																L									
CRUISERMAXX POTATO EXTREME																L									
CRUISERMAXX RICE																	L								
CRUISERMAXX VIBRANCE				L																	L				
CRUISERMAXX VIBRANCE POTATO																L									
CRUISERMAXX VIBRANCE PULSES				L								L			L										
CURZATE 60 DF																L									
DITHANE F-45 RAINSHIELD							L	L	L					L		L	L		L	L					
DIVIDEND EXTREME		L					L	L					L					L					L	L	L
DYNASTY		L	L	L	L		L	L				L		L		L	L			L	L			L	L
DYNASTY CST								L																	
DYNASTY PD														L											
EMESTO SILVER																L									
EQUITY																					L				
EVERGOL ENERGY	L	L	L	L			L					L	L		L		L	L			L			L	L
EVERGOL ENERGY SB																					L				

See notes and footnotes at end of table..

L = LABELED	CROPS																								
	Alfalfa	Barley	Beans	Beans, dry	Canola	Clover	Corn	Cotton	Flax	Forage Grasses	Forage Legumes	Lentils	Oats	Peanuts	Peas	Potatoes	Rice	Rye	Safflower	Sorghum	Soybeans	Sugarbeets	Sunflowers	Triticale	Wheat
COMMERCIAL *(continued)*																									
FORTENZA					L		L	L									L				L			L	
GAUCHO 600/SENATOR 600 FS		L	L		L		L		L		L	L		L			L	L	L	L	L		L	L	L
HELIX VIBRANCE					L																				
HELIX XTRA					L																				
ILEVO																					L				
INTEGO SUITE SOYBEANS																					L				
LUMISENA																					L		L		
MANZATE MAX							L	L	L					L			L		L	L					
MAXIMUM 025FS																							L[1]		
MAXIM 4FS	L	L	L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
MAXIM QUATTRO							L																		
MAXIM XL	L	L	L	L		L	L	L		L	L		L	L			L	L		L	L		L	L	L
MERTECT 340-F	L	L				L[3]					L		L		L			L			L			L	L
NIPSIT INSIDE		L			L								L				L	L		L	L	L		L	L
OBVIUS			L		L				L					L											
OBVIUS PLUS			L																		L				
PLENARIS 200FS																							L		
PONCHO BETA																						L			
PONCHO VOTIVO							L	L												L	L	L			
PONCHO XC		L											L					L			L			L	L
PROSPER EVERGOL					L																				
RANCONA CREST		L											L					L						L	L
RANCONA PINNACLE		L											L					L						L	L
RANCONA SUMMIT		L		L									L		L			L			L			L	L
RAXIL PRO MD		L											L											L	L
RAXIL PRO SHIELD		L																						L	L
RESONATE 480 ST		L	L		L		L	L					L		L			L		L	L	L		L	L
REVUS																L									
RIGHTSTART **																									
RIZOLEX	L	L	L	L			L	L				L	L		L			L		L	L	L		L	L
SALTRO					L																L				
STAMINA	L	L	L				L					L	L		L			L		L		L	L		L
STAMINA F4 CEREALS		L											L					L						L	L
SYSTIVA XS		L	L	L									L		L			L						L	L
TERAXXA/TERAXXA F4		L																L						L	L
TREBUSET		L		L			L	L					L		L			L						L	L
TRUNEMCO							L	L													L				
VAYANTIS							L														L				
VIBRANCE		L		L	L		L	L				L	L	L		L	L	L		L	L	L		L	L
VIBRANCE CST								L																	
VIBRANCE EXTREME		L											L					L						L	L
VIBRANCE MAXX			L[2]	L[2]								L			L[2]										
VIBRANCE MAXX PULSES RTA			L												L										
VIBRANCE RST																	L								
VIBRANCE TRIO																					L				

See notes and footnotes at end of table..

COMMERCIAL SEED TREATMENTS BY CROP *continued*

L = LABELED	CROPS																								
	Alfalfa	Barley	Beans	Beans, dry	Canola	Clover	Corn	Cotton	Flax	Forage Grasses	Forage Legumes	Lentils	Oats	Peanuts	Peas	Potatoes	Rice	Rye	Safflower	Sorghum	Soybeans	Sugarbeets	Sunflowers	Triticale	Wheat
COMMERCIAL *(continued)*																									
VIBRANCE ULTRA POTATO																L									
WARDEN CEREALS II		L											L					L						L	L
WARDEN CEREALS HR		L											L					L						L	L
WARDEN CEREALS WRII		L											L					L						L	L
WARDEN CX II																					L				
WARDEN RTA																					L				
ZELTERA		L	L		L		L						L		L		L	L		L	L	L		L	L

*Not labeled in CA on certain crops.
**Custom blends available.

[1] For export only.
[2] See label for specific beans, dry beans and peas allowed.
[3] 24c, 2ee or Supplemental label.

L = LABELED	CROPS																								
	Alfalfa	Barley	Beans	Beans, dry	Canola	Clover	Corn	Cotton	Flax	Forage Grasses	Forage Legumes	Lentils	Oats	Peanuts	Peas	Potatoes	Rice	Rye	Safflower	Sorghum	Soybeans	Sugarbeets	Sunflowers	Triticale	Wheat
ON-FARM																									
ALLEGIANCE-FL[2]	L	L	L	L	L	L	L	L		L	L	L	L	L	L		L	L		L	L	L	L	L	L
APRONMAXX RFC			L	L								L			L						L				
APRON MAXX RTA																					L				
APRON MAXX RTA + MOLY																					L				
APRON XL	L	L	L	L		L	L	L		L	L	L	L	L	L		L	L		L	L	L	L		L
ASCEND PRO	L	L		L	L		L	L					L	L	L		L	L		L	L	L	L		L
ASCEND SL	L	L		L	L		L	L					L	L	L		L	L		L	L	L	L		L
ASCEND ST3	L	L		L	L	L		L		L			L	L	L	L	L	L		L	L	L	L	L	L
ASCEND WSG	L	L		L	L		L	L					L	L	L		L	L		L	L	L	L		L
AVEO EZ																					L				
AVODIGEN	L	L	L	L	L		L	L		L	L		L	L	L		L	L			L	L	L	L	L
CRUISERMAXX			L	L											L						L				
CRUISERMAXX CEREALS		L																						L	L
CRUISERMAXX POTATO EXTREME																L									
CRUISERMAXX VIBRANCE CEREALS		L											L					L						L	L
CRUISERMAXX VIBRANCE POTATO																L									
CRUISERMAXX VIBRANCE PULSES			L									L			L										
CURZATE 60 DF																L									
DITHANE F-45 RAINSHIELD							L	L	L					L		L	L		L	L					
DIVIDEND EXTREME		L					L	L					L					L						L	L
DYNASTY		L	L	L	L		L	L				L		L		L	L			L	L			L	L
DYNASTY CST								L																	
DYNASTY PD														L											
MANZATE MAX							L	L	L					L			L		L	L					
MAXIMUM 025FS																							L[1]		
MAXIM 4FS	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

See notes at end of table.

L = LABELED	CROPS																							
	Alfalfa	Barley	Beans	Beans, dry	Canola	Clover	Corn	Cotton	Flax	Forage Grasses	Forage Legumes	Lentils	Oats	Peanuts	Peas	Potatoes	Rice	Rye	Safflower	Sorghum	Soybeans	Sugarbeets	Sunflowers	Triticale	Wheat
ON-FARM *(continued)*																									
MAXIM XL	L	L	L	L		L	L	L		L	L		L	L			L	L		L	L		L	L	L
MERTECT 340-F	L	L									L		L		L			L			L			L	L
NIPSIT SUITE CEREALS OF		L											L											L	L
OBVIUS			L		L				L					L											
OBVIUS PLUS			L																		L				
PONCHO XC		L											L					L						L	L
RANCONA CREST		L											L					L						L	L
RANCONA PINNACLE		L											L					L						L	L
RACONA SUMMIT		L		L									L		L			L			L			L	L
RAXIL PRO MD		L											L											L	L
RAXIL PRO SHIELD		L																						L	L
REVUS																L									
RIZOLEX	L	L	L	L			L	L				L	L		L			L		L	L	L		L	L
STAMINA	L	L	L				L					L	L		L			L		L		L	L		L
STAMINA F4 CEREALS		L											L					L						L	L
TERAXXA/TERAXXA F4		L																L						L	L
VIBRANCE		L		L	L		L	L				L	L	L		L	L	L		L	L	L		L	L
VIBRANCE CST								L[2]																	
VIBRANCE EXTREME		L											L					L						L	L
VIBRANCE MAXX			L[2]	L[2]								L			L[2]										
VIBRANCE MAXX PULSES RTA			L												L										
VIBRANCE RST																	L								
VIBRANCE TRIO																					L				
VIBRANCE ULTRA POTATO																L									
WARDEN CEREALS HR		L											L					L						L	L
WARDEN CEREALS II		L											L					L						L	L
WARDEN CEREALS WRII		L											L					L						L	L
WARDEN RTA																					L				
ZELTERA		L	L		L		L						L		L		L	L		L	L	L		L	L

[1] For export only.
[2] Except in CA.

APPLYING SEED TREATMENTS

SLURRY SEED TREATMENT: Seed treatments may be applied as a slurry (seed treatment mixed into water) as seed is being augered into a drill, planter or truck. The treating equipment meters chemical into an auger conveyor where it is mixed with seed. The equipment is designed to mount to a truck bed, bin or transport augers and drill fill augers. Treaters consist of a metered pump, hoses and tank. The equipment is commonly used in bulk seed operations and provides uniform application of chemical to seed which enhances seed treatment performance.

READY TO APPLY: Seed treatments with a formulation that does not need to be mixed with water prior to application.

PLANTER-BOX TREATMENT: Seed treatments should be thoroughly mixed with seed in the planter box to ensure sufficient coverage. Recommendations for maximizing the effectiveness of planter-box seed treatments are as follows: 1) Fill box half full of seed; 2) Add half of required amount of product and mix thoroughly with paddle or stick; 3) Add remainder of seed to planter box and the rest of product; 4) Mix well — thorough coverage is essential. At end of day, clean planter population monitors. IMPORTANT: Treated seed must not be used or mixed with food or animal feed or processed for oil. With dry products, clean electric eye monitors frequently.

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2]		On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
			PHI	Grazing/ Forage						
10% MOLY LIQUID	L	N	NR	NR	x	x	Molybdenum 10%	Soybeans 3.5-5.0		
AERIS	L	N	NR	NR		x	Thiodicarb 24% (2.5) Imidacloprid 24% (2.5)	Cotton 25.6		For early season protection against certain sucking and lepidopteran insects and suppression of certain nematodes. Do not apply >25.6 fl oz/100 lbs seed.
ALLEGIANCE-FL	L	N	NR	NR		x	Metalaxyl 28.35% (2.60)	Alfalfa 0.75-1.5 Barley 0.75 Beans 0.75 Beans, dry 0.75 Canola* 0.25-0.5 Clover 0.75-1.5 Corn 0.75 Cotton 0.75-1.5 Forage Grasses 0.75 Forage Legumes 0.75-1.5 Lentils 0.75	Oats 0.75 Peanuts* 0.75 Peas 0.75-1.5 Rice* 0.1-0.375 Rye 0.75 Sorghum 0.375-0.75 Soybeans 0.75-1.5 Sugarbeets* 0.75 Sunflowers 1.5-3.0 Triticale 0.75 Wheat 0.75	A systemic fungicide for Pythium and Phytophthora (early season) diseases and suppression of downy mildew. *See label and Supplemental label (exp. date not given) for CA-specific use.
APRONMAXX RFC	L	Y	NR	NR	x	x	Fludioxonil 2.31% (0.21) Mefenoxam 3.46% (0.31)	Beans 1.5 Beans, dry 1.5 Lentils 1.5	Peas 1.5 Soybeans	A combination of Apron XL and Maxim 4FS.
APRON MAXX RTA	L	Y	NR	NR	x	x	Mefenoxam 1.1% (0.096) Fludioxonil 0.73% (0.064	Soybeans 5.0		
APRON MAXX RTA + MOLY	L	Y	NR	NR	x	x	Mefenoxam 1.02% Fludioxonil 0.68% Molybdenum 5.55%	Soybeans 5.0		
APRON XL	L	N	NR	NR	x	x	Mefenoxam 33.3% (3.00)	Alfalfa 0.64 Barley 0.32-0.64 Beans 0.16-0.64 Beans, dry 0.16-0.64 Clover 0.64 Corn 0.0425-0.085 Cotton 0.32-0.64 Forage Grasses 0.085-0.64 Forage Legumes 0.64 Lentils 0.16-0.64 Oats 0.32-0.64	Peanuts 0.16-0.64 Peas 0.16-1.28 Rice 0.32-0.64 Rye 0.32-0.64 Sorghum 0.32-0.64 Soybeans 0.16-0.64 Sugarbeets 0.085-0.64 Sunflowers 1.28 Triticale 0.32-0.64 Wheat 0.32-0.64	A systemic fungicide for pythium and phytophthora (early season) diseases and suppression of downy mildew.

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
APRON XL 350ES	L	Y	NR	NR		x	Mefenoxam 32.8% (2.92)	Sunflowers 1.35 or 3.5-4.6 Corn (sweet) 0.34-1.35 or 0.77-7.67		Sunflower: 1.35 fl oz/cwt for DOMESTIC use, 3.5-4.6 fl oz/cwt FOR EXPORT use. Sweet corn: 0.34-1.35 fl oz/cwt for DOMESTIC use, 0.77-7.67 fl oz/cwt for EXPORT use.
ASCEND PRO	L	N	NR	NR	x	x	Cytokinin 0.09% (0.03 oz/qt) Gibberellic Acid 0.03% (0.01 oz/qt) Indole Butyric Acid 0.045% (0.015 oz/qt)	Alfalfa 1.05-4.2 Barley 1.05-4.2 Beans, dry 1.05-4.2 Canola 1.05-4.2 Corn 1.05-4.2 Cotton 1.05-4.2 Oats 1.05-4.2 Peanuts 1.05-4.2	Peas 1.05-4.2 Rice 1.05-4.2 Rye 1.05-4.2 Sorghum 1.05-4.2 Soybeans 1.05-4.2 Sugarbeets 1.05-4.2 Sunflowers 1.05-4.2 Wheat 1.05-4.2	A plant growth regulator labeled for in-furrow use in many crops. See label for crops and use rates.
ASCEND SL	L	N	NR	NR	x	x	Cytokinin 0.09% (0.03 oz/qt) Gibberellic Acid 0.03% (0.01 oz/qt) Indole Butyric Acid 0.045% (0.015 oz/qt)	Alfalfa 1.05-4.2 Barley 1.05-4.2 Beans, dry 1.05-4.2 Canola 1.05-4.2 Corn 1.05-4.2 Cotton 1.05-4.2 Oats 1.05-4.2 Peanuts 1.05-4.2	Peas 1.05-4.2 Rice 1.05-4.2 Rye 1.05-4.2 Sorghum 1.05-4.2 Soybeans 1.05-4.2 Sugarbeets 1.05-4.2 Sunflowers 1.05-4.2 Wheat 1.05-4.2	A plant growth regulator labeled for in-furrow and foliar uses in many crops. See label for crops and use rates.
ASCEND ST3	L	N	NR	NR	x	x	Cytokinin, as Kinetin 0.46% Gibberellins (GA4 + GA7) 0.41% Indole 3-Butyric Acid 0.25%	0.0040 lbs/gal. 0.0036 lbs/gal. 0.0220 lbs/gal. 0.5-2.1	Alfalfa, Barley, Bean (dry), Buckwheat, Canola, Clover, Cotton, Grass (includes species in Gramineae/ Poaceae family), Kudzu, Lespedeza, Lupin, Millet, Oats, Onion, Pea, Peanuts, Rice, Rye, Sainfoin, Sorghum, Soybean, Sugar beet, Sunflower, Teosinte, Trefoil, Triticale, Velvet bean, Vetch, Wheat, Wild rice.	Acting through its unique combination of plant growth regulators, Ascend ST3 is a seed treatment that aids in enhancing germination and early season root and top growth. NOTE: An approved dye must be added to this product to distinguish treated seed and prevent inadvertent use for food, feed or oil purposes. If seed has been treated with this product, do not apply any other product containing Cytokinin, Gibberellins or Indole-3-butyric Acid as an in-furrow, band, side dress or mark out application
								Potato, Sweet Potato and Yams	Reference the label	Reference the label for treatment rates and directions specific to Potato, Sweet Potato and Yams.

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2]		On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
			PHI	Grazing/ Forage						
ASCEND WSG	D	N	NR	NR	x	x	Cytokinin 0.76% Gibberellic Acid 0.25% Indole Butyric Acid 0.37%	Alfalfa Barley Beans, dry Canola Corn Cotton Oats Peanuts Peas Rice Rye Sorghum Soybeans Sugarbeets Sunflowers Wheat	0.1-0.6 oz	A plant growth regulator labeled for in-furrow and foliar uses in many crops. See label for crops and use rates.
AVEO EZ	L	N	NR	NR	x	x	*B. amyloliquefaciens* strain PTA-4838 16.5% 5.1 x 10^{10} colony-forming units per gram	Soybeans 0.2 (0.1 fl oz/140,000 seeds)		Biological nematicide. Apply as water-based suspension uniformly over seed surface area.
AVICTA 500 FS	L	N	NR	NR		x	Abamectin 46.3%	Soybeans 2.1-3.1		
AVICTA COMPLETE BEANS 500	L	Y	NR	NR		x	Abamectin 22.2% (2.06) Thiamethoxam 11.1% (1.03) Mefenoxam 1.67% (0.15) Fludioxonil 0.55% (0.05)	Soybeans 6.2		Provides soybean seedlings early-season protection from damage caused by nematodes (including SCN) and the listed insects and diseases. Do not use at a rate that will result in more than 0.008 lb fludioxonil per acre per calendar year (4.0g a.i./A), 0.026 lb mefenoxam per acre per calendar year (11.4g a.i./A), or 0.083 lb thiamethoxam per acre per calendar year (37.8g a.i./A) as a seed treatment application.
AVICTA COMPLETE CORN 250	L	N	NR	30		x	Thiamethoxam 11.7% (1.09) Abamectin 10.3% (0.96) Thiabendazole 2.34% (0.22) Fludioxonil 0.30% (0.03) Mefenoxam 0.23% (0.02) Azoxystrobin 0.102% (0.01)	Corn 11.4-25.8		Combination of Avicta Duo Corn, Cruiser 5FS, Apron XL, Maxim XL and Dynasty.
AVICTA DUO CORN	L	Y	NR	NR		x	Abamectin 12.4% (1.23) Thiamethoxam 28.1% (2.81)	Corn see label		Use only in Syngenta certified facilities.
AVICTA DUO COTTON	L	Y	NR	NR		x	Abamectin 12.4% (1.23) Thiamethoxam 28.1% (2.81)	Cotton see label		Use only in Syngenta certified facilities.

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
AVODIGEN	L	N	NR	NR	x	x	Bacillus licheniformis strain FMCH001 3.50% Bacillus subtilis strain FMCH002, 4.00%	Alfalfa, Forage, and Turf Grasses 1.4 to 13.8 (0.73) Beans and Peas 0.6 to 1.13 Canola 3.5 to 13.8 Barley 0.3 to 0.6 Buckwheat 0.3 to 0.6 Oats 0.3 to 0.6 Pearl and Proso Millet 0.3 to 0.6 Rice 0.3 to 0.6 Rye 0.3 to 0.6 Teosinte 0.3 to 0.6 Triticale 0.3 to 0.6 Wheat 0.3 to 0.6 Corn See Label Cotton Seed See Label Sugarbeet See Label Sunflower See Label		Biological fungicide/ nematicide for seed treatment use for early season protection against Seed rot and seedling blight caused by Rhizoctonia spp. (in all labeled crops), Fusarium spp. (in beans, Peas, Corn, and Soybeans). Suppression of soil nematodes (Root Knot and Lesion nematodes in corn; Root Knot and Soybean Cyst nematodes in Soybeans). Does not contain dye therefore, all seed treated commercially with this product must be colored with an EPA-approved dye or colorant of a suitable color to prevent accidental use as food for humans or feed for animals. Dilute with chlorine-free water at an appropriate to attain a final targeted slurry rate of at least 4 fl oz/cwt. of seed on large seed crops such as corn and soybeans. On smaller size seeds such as grass or canola, a final targeted slurry rate of at least 8 fl oz/cwt. of seed is necessary to ensure adequate and uniform coverage.
BION 500FS	L	N	NR	NR		x	Acibenzolar-S-methyl 42% (4.17)	Triticale Wheat Corn Cotton Seed Sugarbeet Sunflower	Sunflower see label	Early-season protection against downymildew in sunflower and sorghum as well as protection against certain early-season seed and seed-borne diseases and nematodes in cotton.
CRUISER 5FS	L	Y	NR	NR		x	Thiamethoxam 47.6% (5.00)	Barley 0.19-1.33 Beans 1.28 Beans, dry 1.28 Corn see label Cotton see label Flax 10.24 Lentils 1.28 Millet 0.19-1.33 Oats 0.19-1.33 Peanuts see label	Peas 1.28 Rice see label Rye 0.19-1.33 Sorghum 5.1-7.6 Soybeans 1.28 Sugarbeets see label Sunflowers see label Triticale 0.19-1.33 Wheat 0.19-1.33	Systemic seed treatment insecticide for control of certain chewing and sucking insects through contact and ingestion. Rate for cereals varies by pest (see label).

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
CRUISERMAXX	L	Y	NR	NR	x	x	Thiamethoxam 22.61% (2.15) Mefenoxam 1.7% (0.16) Fludioxonil 1.12% (0.11)	Beans 3.0 Beans, dry 3.0	Peas 3.0 Soybeans 2.95	Control of early season insects, soil-borne and seed-borne diseases. Can add additional Apron XL and Maxim 4FS for high pressure applications.
CRUISERMAXX APX	L	N	NR	NR		x	Thiamethoxam 16.3% (1.52) Mefenoxam 2.45% (0.23) Picarbutrazox 0.82% (0.08) Fludioxonil 0.82% (0.08) Sedaxane 0.82% (0.08)	Soybeans 4.18		See label for max. annual a.i. load/A based on seed treatment and other approved uses.
CRUISERMAXX CEREALS	L	Y	NR	45	x	x	Thiamethoxam 2.8% (0.26) Mefenoxam 0.56% (0.05) Difenoconazole 3.36% (0.31)	Barley 5.0 Triticale 5.0	Wheat 5.0	
CRUISERMAXX POTATO	L	N	NR	NR	x	x	Thiamethoxam 28.0% (2.85) Fludioxonil 7.0% (0.73)	Potatoes 0.19-0.27		Premix of Cruiser and Maxim. Provides systemic protection for potatoes against many insects and diseases.
CRUISERMAXX POTATO EXTREME	L	N	NR	NR	x	x	Thiamethoxam 20.83% (2.08) Fludioxonil 5.21% (0.52) Difenoconazole 10.27% (1.03)	Potatoes 0.31		Provides systemic protection for potatoes against many insects and diseases.
CRUISERMAXX RICE	L	N	NR	NR		x	Thiamethoxam 26.4% (2.57) Fludioxonil 0.28% (0.027) Azoxystrobin 1.32% (0.13) Mefenoxam 1.65% (0.16)	Rice 7		Protects against damage from common insects and diseases of rice. See label for lists of insects and disease.
CRUISERMAXX VIBRANCE	L	N	NR	NR		x	Thiamethoxam 20.8% (1.99) Mefenoxam 3.13% (0.3) Fludioxonil 1.04% (0.1) Sedaxane 1.04% (0.1)	Soybeans 3.22		
CRUISERMAXX VIBRANCE CEREALS	L	Y	NR	45	x	x	Sedaxane 0.72% (0.0667) Difenoconazole 3.34% (0.308) Mefenoxam 0.86% (0.079) Thiamethoxam 2.78% (0.256)	Barley 5.0-10.0 Oats 5.0-10.0 Rye 5.0-10.0	Triticale 5.0-10.0 Wheat 5.0-10.0	
CRUISERMAXX VIBRANCE POTATO	L	N	NR	NR	x	x	Thiamethoxam 13.4% (1.28) Fludioxonil 3.34% (0.32) Difenoconazole 6.69% (0.64) Sedaxane 6.69% (0.64)	Potatoes 0.5		No seed potatoes treated with sedaxane may be planted for a 12-month period following planting of seed potatoes treated with sedaxane.
CRUISERMAXX VIBRANCE PULSES	L	N	NR	NR	x	x	Thiamethoxam 8.48% (0.77) Thiabendazole 4.24% (0.39) Sedaxane 1.41% (0.13) Mefenoxam 1.06% (0.10) Fludioxonil 0.71% (0.06)	Beans, dry 5 Lentil, dry 5 Peas, dry 5		Provides early season protection against labeled insects and diseases. See label for important insect and disease resistance management information.

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
CURZATE 60 DF	D	N	NR	NR	x	x	Cymoxanil 60%	Potatoes 0.25-1.0 oz		Not for use in CA. For control of late blight. Must be combined with other fungicides registered for seed treatment in potatoes for resistance management.
DASH PBC	D	N	NR	NR	x		Bacillus licheniformis 6.8 x 109 cfu/g Bacillus composti 6.8 x 109 cfu/g Bacillus azotofixans 6.8 x 109 cfu/g Bacillus ligniniphilus 6.8 x 109 cfu/g Thiobacillus sulfooxidans 6.8 x 109 cfu/g Thiobacillus ferrooxidans 6.8 x 109 cfu/g Azotobacter chroococcum 6.8 x 109 cfu/g Bradyrhizobium denitrificans 6.8 x 109 cfu/g Soybean Meal, Amino Acid 99%	Corn 0.5 oz/unit (at 80K seeds/unit)		Biological planter box treatment and seed lubricant for Corn. Apply by dispersing the powder evenly onto seeds using appropriate equipment. No additional specific markers or distinguishing features of seed coating are needed. Do not use treated seed for food, feed or oil purposes
DASH PBS	D	N	NR	NR	x		Bacillus megaterium 6.8 x 109 cfu/g Bacillus licheniformis 6.8 x 109 cfu/g Bacillus azotofixans 6.8 x 109 cfu/g Azotobacter vinelandii 6.8 x 109 cfu/g Acetobacter diazotrophicus 6.8 x 109 cfu/g Azotobacter chroococcum 6.8 x 109 cfu/g Bradyrhizobium japonicum 6.8 x 109 cfu/g Pseudomonas putida 6.8 x 109 cfu/g Soybean Meal, Amino Acid 99%	Soybeans 0.5 oz/unit (at 140K seeds/unit)		Biological planter box treatment and seed lubricant for Soybeans. Apply by dispersing the powder evenly onto seeds using appropriate equipment. No additional specific markers or distinguishing features of seed coating are needed. Do not use treated seed for food, feed or oil purposes
DITHANE F-45 RAINSHIELD	L	N	see label	DNU	x	x	Mancozeb 37.0% (4.00)	Corn 4.3-8.6 Cotton 4.8-9.6 Flax 5.7-11.3 Peanuts 12.8-25.6 Potatoes* 1.6-2.5	Rice** 3.2-6.4 Safflower 3.2 Sorghum 4.3-7.2 Tomatoes 12.8	*Do not use treated seed potatoes for food or feed purposes. **Apply before, during or after soaking in water.
DIVIDEND EXTREME	L	Y	NR	NR	x	x	Difenoconaole 7.73% (0.77) Mefenoxam 1.93% (0.19)	Barley 2.0-4.0 Corn 2.0-5.0 Cotton 2.0-5.8 Oats 2.0-4.0	Rye 2.0-4.0 Triticale 1.0-4.0 Wheat 1.0-4.0	Dividend Extreme is a mixture of Dividend and Apron XL. Systemic fungicide for seed-borne, soil-borne and fall foliar diseases.

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
DYNASTY	L	N	NR	NR	x	x	Azoxystrobin 9.6% (0.83)	Barley 0.1-3.75 Beans 0.153-0.765 Beans, dry 0.153-0.765 Canola 0.1-3.75 Corn 0.153 Cotton 0.1-3.75 Lentils 0.153-0.765	Potatoes 0.1-3.75 Rice 0.153-1.53 Sorghum 0.308-3.08 Soybeans 0.153-0.459 Triticale 0.153-0.382 Wheat 0.153-0.382	Broad-spectrum fungicide for control of seed and seed-borne diseases.
DYNASTY CST	L	N	NR	NR	x	x	Azoxystrobin 6.64% (0.63) Fludioxonil 1.11% (0.1) Mefenoxam 3.32% (0.31)	Cotton 3.1-3.95		Contains three fungicides for seed-borne and soil-borne seedling diseases of cotton.
DYNASTY PD	D	Y	NR	NR	x	x	Azoxystrobin 3.2% Fludioxonil 2.0% Mefenoxam 0.4%	Peanuts 3.0-4.0		Contains three fungicides for systemic and contact seed-borne and soil-borne early season seedling diseases of peanuts.
EMESTO SILVER	L	Y	NR	NR		x	Penflufen 9.35% (0.83) Prothioconazole 1.68% (0.15)	Potatoes 0.31		Contains two fungicides for suppression of common potato diseases.
EVERGOL ENERGY	L	N	NR	DNU		x	Prothioconazole 7.18% (0.64) Penflufen 3.59% (0.32) Metalaxyl 5.74% (0.51)	Alfalfa 3.0 Barley 1.0 Beans 1.0 Beans, dry 1.0 Corn 0.5-2.0 Lentils 1.0	Oats 1.0 Peas 1.0 Rice 1.0-2.0 Rye 1.0 Triticale 1.0 Wheat 1.0	Contains three fungicides for protection against seed- and soil-borne diseases.
EVERGOL ENERGY SB	L	N	NR	DNU		x	Prothioconazole 7.18% (0.64) Penflufen 3.59% (0.32) Metalaxyl 5.74% (0.51)	Soybeans 1.0		
FORTENZA	L	N	NR	NR		x	Cyantraniliprole 48.8% (5.00)	Canola 7.7 Corn see label Cotton see label	Soybean see label Sunflower see label Rice 3.47	Rice based on avg. 21,000 seeds/lb.
GAUCHO 600/ SENATOR 600 FS	L	N	NR	45		x	Imidacloprid 48.7% (5.00)	Barley 0.8-2.4 Beans 1.6-3.2 Canola 10.24-25.6 Corn see label Flax 25.6 Lentils 12.8 Oats 1.6-3.2 Peas 0.8-2.4	Rye 1.6-3.2 Safflower 0.5-2.4 Sorghum 0.25-0.5 Soybeans 6.4 Sunflowers 2.4-5.0 Triticale 0.8-2.4 Wheat 0.8-2.4	Rates for sweet corn and other crops may vary by pest. 2ee Gaucho 600 (exp. date not given) for reduced rates in wheat, barley, oats, rye and triticale in IL, IN, MD, NC, OH, PA.
HELIX VIBRANCE	L	Y	NR	45		x	Thiamethoxam 20.7% (2.25) Difenoconazole 1.25% (0.14) Mefenoxam 0.4% (0.04) Fludioxonil 0.13% (0.01) Sedaxane 0.26% (0.03)	Canola 23		Provides protection against early season insects and diseases.
HELIX XTRA	L	Y	NR	NR		x	Thiamethoxam 20.7% (2.23) Difenoconazole 1.25% (0.13) Mefenoxam 0.4% (0.04) Fludioxonil 0.13% (0.01)	Canola 23		Mixture of Dividend, Apron XL, Maxim and Cruiser. Provides control of several common seed-borne and damping off diseases of canola, plus flea beetle and wireworm.
ILEVO	L	N	NR	DNU		x	Fluopyram 48.4% (5.00)	Soybeans 1.29-4.22		

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
INTEGO SUITE SOYBEANS	L	Y	NR	DNU		x	Clothianidin 20.06% (1.91) Ethaboxam 2.97% (0.282) Ipconazole 0.99% (0.094) Metalaxyl 0.479% (0.075)	Soybeans 3.4		
LUMISENA	FS	N	NR	NR		x	Oxathiapiprolin 18.7% (1.67)	Soybeans 0.568-1.136	Sunflowers 1.033-2.066	
MANZATE MAX	L	Y	NR		x	x	Mancozeb 37.0% (4.00)	Corn 4.3-8.6 Cotton 4.8 Flax 5.7-11.3 Peanuts 12.8-25.6	Rice 3.2-6.4 Safflower 3.2 Sorghum 4.3-7.2	
MAXIM 025FS	L	Y	NR	30	x	x	Fludioxonil 2.38% (0.21)	Sunflowers 5.5-9.5		For use on sunflower seed FOR EXPORE ONLY.
MAXIM 4FS	L	N	NR	Cereals, Grasses, Nongrasses-30; Others-NR	x	x	Fludioxonil 40.3% (4.00)	Alfalfa 0.08-0.16 Barley 0.08-0.16 Beans 0.08-0.16 Beans, dry 0.08-0.16 Clover 0.08-0.16 Corn 0.08-0.16 Cotton 0.08-0.19 Flax 0.08-0.16 Forage Grasses 0.08-0.16 Forage Legumes 0.08-0.16 Lentils 0.08-0.16 Oats 0.08-0.16	Peanuts 0.08-0.16 Peas 0.08-0.16 Potatoes 0.08-0.16 Rice 0.08-0.16 Rye 0.08-0.16 Safflower 0.08-0.16 Sorghum 0.08-0.16 Soybeans 0.08-0.16 Sugarbeets 0.08-0.16 Sunflowers 0.08-0.16 Triticale 0.08-0.16 Wheat 0.08-0.16	Does not control diseases caused by Pythium spp. or Phytophthora spp. Always recommended in a tank mix with Apron XL with the exception of potato. Application to potato seed pieces must be made only through specific type of equipment. Contact Syngenta seed treatment representative for more information.
MAXIM QUATTRO	L	Y	NR	30		x	Fludioxonil 3.32% (0.31) Mefenoxam 2.65% (0.25) Azoxystrobin 1.33% (0.12) Thiabendazole 26.5% (2.5)	Corn see label		Broad spectrum fungicide.
MAXIM XL	L	N	NR	30	x	x	Fludioxonil 21.0% (1.9) Mefenoxam 8.4% (0.8)	Alfalfa 0.167-0.334 Barley 0.167-0.334 Beans 0.167-0.334 Beans, dry 0.167-0.334 Clover 0.167-0.334 Corn 0.167-0.334 Cotton 0.167-0.334 Forage Grasses 0.167-0.334 Forage Legumes 0.167-0.334	Oats 0.167-0.334 Peanuts 0.167-0.334 Rice 0.167-0.334 Rye 0.167-0.334 Sorghum 0.167-0.334 Soybeans 0.167-0.334 Sunflowers 0.167-0.334 Triticale 0.167-0.334 Wheat 0.167-0.334	Prepack of Maxim 4FS and Apron XL.
MERTECT 340-F	L	N	NR	Forage of peas - DNU; Others - NR	x	x	Thiabendazole 42.3% (4.10)	Alfalfa 5.8 Barley 2.6 Brassicas 3.5 Clover 8.7 Forage Legumes 3.5 Mustard 3.5 Oats 3.4	Peas 1.02 Radish 3.5 Rye 3.2 Soybeans 0.08-0.64 Triticale 2.6 Wheat 0.17-3.9	Protection against seed- and soil-borne pests.
NIPSIT INSIDE	L	N	NR	NR		x	Clothianidin 47.8% (5.00)	Barley 0.25-1.79 Canola 10.23 Oats 0.25-1.79 Rice 1.92 Rye 0.25-1.79	Sorghum 5.1-6.4 Soybeans 1.28 Sugarbeets 3.4 Triticale 0.25-1.79 Wheat 0.25-1.79	Clothianadin for insect control.
NIPSIT SUITE CEREALS OF	L	Y	NR	NR	x	x	Clothianidin 2.93% (0.256) Metalaxyl 0.88% (0.077) Metconazole 0.44 (0.038)			

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
OBVIUS	L	Y	NR	NR	x	x	Fluxapyroxad 1.58% (0.139) Pyraclostrobin 1.58% (0.139) Metalaxyl 1.26 % (0.111)	Beans 4.6 Canola 9.2	Flax 4.6 Peas 4.6	
OBVIUS PLUS	L	Y	NR	Cover crop w/o tolerance - No; Others - NR	x	x	Thiophanate-methyl 8.93% Fluxapyroxad 4.46% Pyraclostrobin 3.57% Metalaxyl 14.73 %	Beans 1.53 Soybean 1.53		For control or suppression of various diseases; see label. Low seed load, multiple MOAs and systemic activity limit potential for development of resistance; however, appropriate resistance management strategies must be followed.
PLENARIS 200FS	L	N	NR	NR		x	Oxathiapiprolin 18.7% (1.67)	Sunflowers 1.033-2.066		
PONCHO BETA	L	N	NR	NR		x	Clothianidin 34.3% (3.33) beta-Cyfluthrin 4.6% (0.44)	Sugarbeets see label		Systemic insecticide for the control of certain insect pests.
PONCHO VOTIVO	L	N	NR	DNU		x	Clothianidin 40.3% (4.17) Bacillus firmus 8.1% (0.84)	Corn see label Cotton see label Sorghum 6.13	Soybeans see label Sugarbeets see label	Systemic insecticide and biological seed treatment for control of insect pests and protection from soil plant pathogenic nematodes. See label for lists of insects and pathogens.
PONCHO XC	L	N	NR	DNU (soybean forage and hay)	x	x	Clothianidin 48% (5.00)	Barley 0.25-1.79 Millet 0.25-1.79 Oats 0.25-1.79 Rye 0.25-1.79	Soybean 0.87 Triticale 0.25-1.79 Wheat 0.25-1.79	On-Farm and Commercial use for cereal grains; Commercial use only for soybeans. See label for pest-dependent rates in cereal grains.
PROSPER EVERGOL	L	Y	NR	NR		x	Clothianidin 22.3% (2.42) Penflufen 0.82% (0.09) Trifloxystrobin 0.55% (0.06) Metalaxyl 0.55% (0.06)	Canola 21.5		Fungicide and insecticide for control of seed rot, damping off, seedling blight, root rot, black leg and flea beetles. Maximum 3 applications/ year.
RANCONA CREST	L	Y	NR	NR	x	x	Ipconazole 0.421% (0.0384) Metalaxyl 0.562% (0.0513) Imidacloprid 14.1% (1.286)	Barley 5.0-8.33 Oats 5.0-8.33 Rye 5.0-8.33	Triticale 5.0-8.33 Wheat 5.0-8.33	Two fungicides and an insecticide.
RANCONA PINNACLE	L	Y	NR	NR	x	x	Ipconazole 0.434% (0.0385) Metalaxyl 0.579% (0.051)	Barley 5.0-8.33 Oats 5.0-8.33 Rye 5.0-8.33	Triticale 5.0-8.33 Wheat 5.0-8.33	Two fungicides.
RANCONA SUMMIT	L	Y			x	x	Ipconazole 0.902% (0.08) Metalaxyl 1.443% (0.128)	Barley 2.5-4.0 Beans, dry 4.0 Oats 2.5-4.0 Peas 4.0	Rye 2.5-4.0 Soybeans 4.0 Triticale 2.5-4.0 Wheat 2.5-4.0	2ee (exp. date not given) for use on dried shelled and succulent/edible podded beans and peas as a seed treatment to control Ascochyta seedling blight in WA, OR, MT, ID, MN, WI, IL.

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
RAXIL PRO MD	L	Y	31	31	x	x	Prothioconazole 1.47% (0.128) Tebuconazole 0.29% (0.025) Metalaxyl 0.59% (0.052)	Barley 5.0-7.5 Oat 5.0-7.5	Triticale 5.0-7.5 Wheat 5.0-7.5	
RAXIL PRO SHIELD	L	Y	NR	45	x	x	Imidacloprid 8.59% (0.768) Prothioconazole 1.47% (1.28) Metalaxyl 0.57% (0.051) Tebuconazole 0.29% (0.025)	Barley 5 Triticale 5	Wheat 5	Combination of fungicides and an insecticide for protection against early season diseases and insects.
RESONATE 480 ST	L	N	NR	45		x	Imidacloprid 40.7% (4.00)	Barley 0.16-3.0 Beans 2.0-4.0 Canola 12.8-32.0 Corn 0.9-7.5 Cotton 16.0 Oats 0.16-3.0 Peas 2.0-4.0	Rye 0.16-3.0 Sorghum 8.0 Soybeans 2.0-4.0 Sugarbeets 3.0-6.25 Triticale 1.0-3.0 Wheat 1.0-3.0	Contains imidacloprid for insect control.
RIZOLEX	L	N	NR	NR	x	x	Tolclofos-methyl 42.0% (4.17)	Alfalfa 0.3 Barley 0.3 Beans 0.3 Beans, dry 0.3 Corn 0.3 Cotton 1.5 Lentils 0.3 Oats 0.3	Peas 0.3 Rye 0.3 Sorghum 0.3 Soybeans 0.3 Sugarbeets 1.5 Triticale 0.3 Wheat 0.3	Protects against Rhizoctonia, Fusarium and other seed decays and seedling blights.
SALTRO	L	N	NR	NO		x	Pydiflumetofen 4.17% (4.17)	Canola 1.23 Soybean 1.52		Max. 2 annual plantings. Do not exceed 0.357 lb a.i./A/year of this or other pydiflumetofen-containing products through any combination of seed or foliar applications. See label for important resistance management information.
STAMINA	L	N	NR	NR	x	x	Pyraclostrobin 18.4% (1.67)	Alfalfa 1.5-3.1 Barley 0.4-0.8 Beans 0.5-1.5 Corn 0.4-1.6 Lentils 0.4-1.5 Oats 0.4-0.8	Peas 0.4-1.5 Rye 0.4-0.8 Sorghum 0.8-1.5 Sugarbeets see label Sunflowers 0.8-2.3	Systemic fungicide; can be mixed with Acquire.
STAMINA F4 CEREALS	L	Y	NR	NR	x	x	Pyraclostrobin 1.57% (0.14) Triticonazole 1.57% (0.14) Metalaxyl 0.93% (0.08) Fluxapyroxad 0.78% (0.071)	Barley 4.6 Oats 4.6 Rye 4.6	Triticale 4.6 Wheat 4.6	
SYSTIVA XS	L	N	NR	NR		x	Fluxapyroxad 28.7% (2.72)	Barley 0.24-2.36 Beans 0.24-0.47 Beans, dry 0.24-0.47 Oats 0.24-0.47	Peas 0.24-0.47 Rye 0.24-0.47 Triticale 0.24-2.36 Wheat 0.24-2.36	Fungicide provides protection against Rhizoctonia and Fusarium.
TERAXXA	L	N	NR	NR	x	x	Broflanilide 25.97% (2.50)	Barley Oats Rye Triticale Wheat	0.26 0.26 0.26 0.26 0.26	Max. 0.0455 lb broflanilide/A/application and/or per year total, including seed treatment and soil application.

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
TERAXXA F4	L	Y	NR	NR	x	x	Broflanilide 1.55% (0.139) Fluxapyroxad 0.78% (0.070) Pyraclostrobin 1.55% (0.139) Triticonazole 1.55% (0.139) Metalaxyl 0.93% (0.083)	Barley Oats Rye Triticale Wheat	4.6 4.6 4.6 4.6 4.6	Max. 0.0455 lb broflanilide/A/application and/or per year total, including seed treatment and soil application.
TREBUSET	L	N	NR	NR		x	Pydiflumetofen 41.7% (4.17)	Barley Corn Beans, dry Oats Peas Peanuts Rye Triticale Wheat	0.31 0.133-2.06 0.31-0.77 0.31 0.15-0.31 0.31-0.61 0.31 0.31 0.31	See label for important resistance management information.
TRUNEMCO	L	N	NR	NR		x	B. amyloliquefaciens strain MBI 600 1.0% cis-Jasmone 0.88% (2 x 10^9 colony-forming units per mL)	Corn 0.31 Cotton 0.31	Soybeans 0.31	
VAYANTIS	FC	N	NR	NR		x	Picarbutrazox 36% (3.30)	Corn Soybean	0.039-0.195	Protects against Pythium spp. (corn, soy) and Phytophthora spp. (soybean).
VIBRANCE	L	N	NR	NR	x	x	Sedaxane 43.7% (4.30)	Barley 0.08-0.16 Beans, dry 0.08-0.16 Canola 0.08-0.16 Corn see label Cotton 0.08-0.6 Lentils 0.08-0.16 Oats 0.08-0.16 Peanuts see label Potatoes see label	Rice see label Rye 0.08-0.16 Sorghum see label Soybeans 0.075-0.16 Sugarbeets* see label Triticale 0.08-0.16 Wheat 0.08-0.16	Controls seed decay, seedling blight and damping off caused by Rhizoctonia. *Not allowed on sugarbeets grown for seed production
VIBRANCE CINCO	FC	N	NR	NR		x	Azoxystrobin 1.13% (0.11) Mefenoxam 2.26% (0.21) Fludioxonil 2.83% (0.27) Sedaxane 5.67% (0.53) Thiabendazole 22.7% (2.14)	Corn see label		Use rates differ for Field, Pop, Seed and Sweet.
VIBRANCE CST	L	N	NR	NR	x	x	Azoxystrobin 6.71% (0.63) Fludioxonil 1.12% (0.1) Mefenoxam 6.71% (0.63) Sedaxane 3.13% (0.29)	Cotton 3.06-4.08		Not approved for On-Farm use in CA.
VIBRANCE EXTREME	L	Y	NR	NR	x	x	Sedaxane 1.22% (0.115) Difenoconazole 5.86% (0.552) Mefenoxam 1.46% (0.138)	Barley 2.8-5.6 Oats 2.8-5.6 Rye 2.8-5.6	Triticale 2.8-5.6 Wheat 2.8-5.6	Systemic fungicide that protects against seed- and soil-borne diseases and early season foliar diseases.
VIBRANCE MAXX	L	N	NR	30	x	x	Sedaxane 4.69% (0.42) Mefenoxam 3.52% (0.31) Fludioxonil 2.35% (0.21)	Beans, dry 1.54 Lentils 1.54 Peas 1.54		See label for specific bean and pea crops.
VIBRANCE MAXX PULSES RTA	L	N	NR	NR	x	x	Thiabendazole 4.30% (0.385) Sedaxane 1.43% (.0128) Mefenoxam 1.07% (0.096) Fludioxonil 0.71% (0.064)	Beans 5 Peas 5		Do not use for at-plant applications (e.g., hopper box, planter box, etc.)

See notes and footnotes at end of table..

Seed Treatment	Formulation[1]	Colorant added	Labeled Intervals (days)[2] PHI	Labeled Intervals (days)[2] Grazing/ Forage	On-farm	Commercial	Active Ingredient % (Pounds per Gallon)	Crop/ Use rates fl oz/cwt		Comments/ Restrictions
VIBRANCE RST	L	N	NR	NR	x	x	Azoxystrobin 6.71% (0.63) Fludioxonil 1.12% (0.1) Mefenoxam 6.71%(0.63) Sedaxane 3.13% (0.29)	Rice 1.7		Not approved for On-Farm use in CA.
VIBRANCE TRIO	FC	Y	NR	NR	x	x	Fludioxonil 2.32% (0.21) Sedaxane 2.32% (0.21) Mefenoxam 13.95% (1.24)	Soybean 1.55		
VIBRANCE ULTRA POTATO	FC	N	NR	NR	x	x	Mandipropamid 14.10% 1.28 Difenoconazole 7.06% 0.64 Sedaxane 7.06% 0.64	Potatoes 0.5		
WARDEN CEREALS II	L	Y	NR	NR	x	x	Sedaxane 1.22% (0.115) Difenoconazole 5.86% (0.552) Mefenoxam 1.46% (0.138)	Barley 2.8-5.6 Oats 2.8-5.6 Rye 2.8-5.6	Triticale 2.8-5.6 Wheat 2.8-5.6	Protects against certain diseases of barley, oats, rye, triticale and wheat
WARDEN CEREALS HR	L	Y	NR	45	x	x	Ipconazole 0.421% (0.0384) Metalaxyl 0.562% (0.0513) Imidacloprid 14.1% (1.286)	Barley 5.0-8.33 Oats 5.0-8.33 Rye 5.0-8.33	Triticale 5.0-8.33 Wheat 5.0-8.33	
WARDEN CEREALS WRII	L	Y	NR	45	x	x	Thiamethoxam 5.75% (0.51) Difenoconazole 3.45% (0.31) Mefenoxam 0.86% (0.08) Fludioxonil 0.72% (0.06) Sedaxane 1.44% (0.13)	Barley 5.0 Oats 5.0 Rye 5.0	Triticale 5.0 Wheat 5.0	
WARDEN CX II	L	Y	NR	45		x	Thiamethoxam 16.3% (1.52) Mefenoxam 4.89% (0.46) Fludioxonil 0.82% (0.08) Sedaxane 0.82% (0.08) Picarbutrazox 0.33 (0.03)	Soybeans 4.2		
WARDEN RTA	L	Y	NR	NR	x	x	Mefenoxam 2.21% (0.197) Fludioxonil 0.72% (0.064)	Beans, dry 5.0 Peas 5.0	Soybeans 5.0	Protects against damage from soil- and seed-borne diseases and seedling diseases of soybeans and other legume crops
ZELTERA	L	N	NR	NR	x	x	Inpyrfluxam (3.20)	Barley 0.04-0.08 Beans 0.2 Beans, dry 0.2 Canola 0.2 Corn 0.1 Lentils 0.2 Millet 0.04-0.08 Oats 0.04-0.08	Peas 0.2 Rice 0.4 Rye 0.04-0.08 Sorghum 0.2 Soybeans 0.2-1.0 Sugarbeets see label Triticale 0.04-0.08 Wheat 0.04-0.08	Use only mechanical, slurry, or mist-type seed treating equipment. Do not use planter or hopper box. See label for important resistance management information. Rice: Only for dry-seeded rice.

[1] L - liquid, D - dry, FC - flowable concentrate, FS - flowable suspension

[2] NR - not restricted, DNU - do not use

STORED GRAIN INSECT CONTROL

Insects frequently cause as much damage to stored grains as they do to the growing crop. Direct feeding by insects damages stored grain by reducing weight, nutritional value, germination and market value. Insects also cause downgrading of grain due to foreign matter such as insects, insect parts, odors, molds and heat damage.

FACTORS AFFECTING DEVELOPMENT OF INSECTS

Some insects feed only on broken kernels and grain dust so starting with high quality, clean grain reduces the potential for stored grain insect problems. Grain temperatures and moisture content are very important factors affecting development of stored grain insect problems. Growth and reproduction of most stored grain insects are greatest at 70-80°F. Insect activity is greatly reduced below 60°F and ceases at 50°F. During the winter, grain should be maintained below 40°F but above freezing. With the advent of warm weather, it should be warmed to about 60°F. In grain less than 12% moisture, insects are not generally a problem; whereas, they multiply rapidly in grain of 12-15% moisture. Insects are capable of creating their own micro-climate. Heat and moisture produced by their body processes raise the temperature and moisture levels in the grain. Thus, insects can survive and increase in numbers during cold months.

INSECT IDENTIFICATION AND DETECTION

For colored pictures of stored grain insects, see Principal Stored Grain Insects on the last two pages of this section. Early detection of insect infestation is important — inspect grain regularly, especially during the summer and fall looking for insects, hot spots, mold growth and any "off odor." Odors can be detected by running the fan for a few minutes. Temperature readings can be taken using either a deep probe with 3-foot extensions or thermocouple cables suspended from the bin roof. Hot spots can occur anywhere but the top center of the bin is a frequent problem area if moisture migration occurs. During cold weather, insects will congregate in the center of the grain mass where the temperature is the highest, so sample the center during winter months. In extremely large bins, samples will have to be taken in several locations, no further apart than every 20 feet around the wall. If bin diameter is more than 40 feet, the center of the bin should be probed more than once. Empty the probe into a sampling tray and sift through a 10-12 mesh screen to search for insects.

CLEANING AND REPAIR OF BINS AND HANDLING EQUIPMENT

Most stored grain infestations start from insects that are present already in the bin, thus thorough cleaning and treatment of bins is essential before putting new grain in storage. At least two weeks before putting grain into a bin, thoroughly clean the bin or storage facility. Never put newly harvested grain on top of old grain or into a dirty bin. Use shovels, brooms and vacuum cleaners to clean out all of the old grain, cracked kernels and other debris from the walls, ceilings, ledges, sill and under floors of the storage facility. Check around and under the bin and clean up any spilled grain. Remove and burn all sweepings and debris. Plug any holes to prevent birds and rodents from entering the storage facility. Inspect the roof and repair as necessary so that rain and snow cannot get in. Wagons, trucks, combines and augers in which grain accumulates can also serve as sources of insects and therefore should be cleaned before harvest. Outside the bin, use a soil sterilant to prevent weeds and other vegetation that can harbor insects and prevent thorough cleanup of grain.

SAFETY

While working around or in grain bins, take proper steps to ensure safety and prevent injuries. For more information:

http://grainsafety.org

https://dev.web.extension.illinois.edu/agsafety/equipment/grainbinsafety.cfm

MANAGEMENT GUIDELINES

Time and money spent on keeping stored grain free of insects is one of the best investments a farmer can make. Today, with only a few "Restricted Use" fumigants remaining, management of grain, even before grain goes into the bin, is important. The following steps are important in preventing damage in stored grain.

1. Thoroughly clean grain residues inside and outside of bins and clean grain handling equipment, including beneath aeration floors.
2. Spray all inside and outside surfaces with one of the insecticides listed in the "bin and building spray" section about two weeks before storing of grain. Be sure to spray removable doors, behind partitions and below false floors as well as any equipment that will be in contact with grain. To prevent reinfestation of the bin, spray outside around any direct openings and apply as a 6-foot barrier to the soil. Use only products which are labeled for the grain crop to be stored.
3. Use a grain protectant as grain is being put into storage.
4. When bin is full, level grain and apply a surface protectant.
5. Monitor grain for insects, moisture and temperature every 2 weeks in the spring and fall when outside temperatures are changing rapidly and on a monthly basis the rest of the year.

GRAIN FUMIGATION REQUIRES SPECIAL EQUIPMENT AND TRAINING TO DO A SAFE AND EFFECTIVE JOB. IT IS RECOMMENDED THAT FUMIGATION BE DONE ONLY BY APPLICATORS CERTIFIED IN GRAIN FUMIGATION.

MAKE SURE TO READ THE PRODUCT LABEL FOR PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS.

C = CONTROL
L = LABELED
NOT LABELED

INSECTICIDE	SPECIFIC INSECTS*																					GENERAL INSECTS				
	Almond Moth	Angoumois Moth	Black Flour Beetle	Cigarette Beetle	Confused Flour Beetle	Corn Sap Beetle	Flat Grain Beetle	Granary Weevil	Hairy Fungus Beetle	Indian Meal Moth	Indian Meal Moth (larvae)	Larger Grain Borer	Lesser Grain Borer	Maize Weevil	Mediterranean Flour Moth	Merchant Grain Beetle	Psocids (book lice)	Red Flour Beetle	Rice Weevil	Rusty Grain Beetle	Saw-toothed Grain Beetle	Beetles**	Centipedes, Millipedes	Mealworms	Moths	Stored Grain Weevils
ACTELLIC 5E	L	L		L	L	L	L	L	L	L				L		L		L	L		L					
CENTYNAL		C			L			L		C		C	C	L				L	L		L					
DIACON IGR or D-IGR***[A]	L				L					L			L			L		L			L					L
DIPEL DF	L									L																
DRYACIDE 100	L	L	L	L	L	L	L	C	L	L	L	L	L	L	L	C	L	C	C	C	C	L	L	L	L	L
PH_3 ALUMINUM PHOSPHIDE[B] ‡	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
SENSAT	L	L			L		L	L[D]		L			L	L[D]				L[D]	L[D]	L[D]	L[D]				L	L[D]
TEMPO SC ULTRA[C]				L	L			L		L			L			L		L	L		L	L		L		

* Insects specifically stated on product labels. These products may also be effective on insects not on the label.
** May include cadelle, drugstore, cigarette, carpet, larder, leather, hide, warehouse, and other dermestid beetles.
*** Diacon is an insect growth regulator that is not an adult insecticide but prevents regeneration (development from larvae to adult).

[A] - Use in combination with Dryacide 100 to improve efficacy.
[B] - Controls all stored grain insect pests.
[C] - Bin spray only.
[D] - Suppression only.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED APPLICATION METHODS, CROPS AND USES

L = LABELED
NOT LABELED

INSECTICIDE	APPLICATION METHODS: Grain Applied[1]								CROPS and USES*: Crop														Other		
	Bin Spray	Admixture	Layered	Top-dress Surface	Top-dress Wagons***	Fumigant	Grain Handling Equip.	Modes of Transport	Barley	Cereal Grains	Corn	Oats	Peanutes	Peas	Rice	Rye	Sorghum, Grain	Soybeans	Stored Grain	Sunflower	Wheat	Birdseed	Seed and Feed	All Stored Grain
ACTELLIC 5E		L	L	L	L						L[fp]						L							
CENTYNAL	L	L							L		L	L			L	L	L				L			
DIACON IGR or D-IGR	L	L		L	L				L	L	L[fp]	L	L		L		L				L	L		L
DIPEL DF		L[2]		L							L[p]							L		L		L		L
DRYACIDE 100	L		L	L			L		L		L	L	L	L	L	L	L		L		L		L	
PH_3 ALUMINUM PHOSPHIDE ‡						L																		L
SENSAT		L		L					L		L[fps]	L			L		L		L		L	L		
TEMPO SC ULTRA	L							L																

* Crops or uses specifically indicated on the product label. A crop may not be specifically stated on the label or checked in this table, but still can be included under a general category of cereal grains or stored grain.
*** Top-dress wagons or trucks prior to bin storage.
f- field, p- popcorn, s- sweet corn.
[1] Bin spray - apply insecticide to walls and floor of bin.

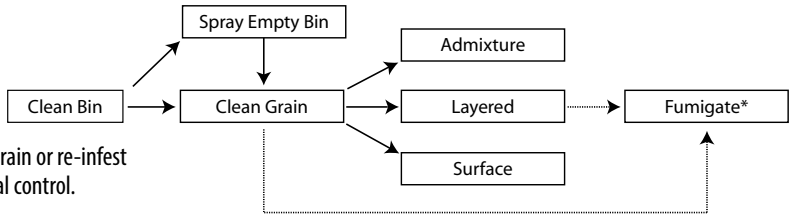
[2] Apply to entire mass prior to bagging grain.
Admixture - mixing insecticide uniformly throughout the entire grain mass.
Layered - treating the bottom and top layers of grain while leaving the middle section untreated.
Top-dress Surface - Applying insecticide to the top surface of grain with shallow incorporation.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

Insecticide	Active Ingredient	Formulation	Mode of Action	Knock-down	Residual	Signal Word	Re-entry	Labeled for Export?
ACTELLIC 5E	pirimiphos-methyl	liquid	nerve	moderate	excellent	warning	no restrictions	yes
CENTYNAL	deltamethrin	liquid	nerve	fast	excellent	caution	no restrictions	yes
DIACON IGR or D-IGR*	methoprene	liquid/dry	IGR	slow	excellent	caution	no restrictions**	yes
DIPEL DF	Bt	dry	microbacterial	slow		caution	4 hr	
DRYACIDE 100	diatomaceous earth	dust	physical	slow	excellent	caution	no restrictions	yes
PH_3 Aluminum Phosphide ‡	aluminum phosphide	pellets/tablets	respiratory	fast	none	danger	see label	yes
SENSAT	spinosad	liquid	nerve	excellent	excellent	caution	no restrictions	yes
TEMPO SC ULTRA	cyfluthrin	liquid	nerve	fast	excellent	caution	when dry	yes***

* Not an adult insecticide. It prevents development of larvae into adults.
** Ventilate before entry when used as a mist or aerosol.
*** As an empty bin treatment.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

APPLICATIONS OPTIONS



*Fumigate only if insects infest untreated grain or re-infest treated grain. Fumigants provide no residual control.

BIN AND BUILDING SPRAY

Insecticide	Rate	Comments and Restrictions
CENTYNAL *(deltamethrin)*	0.25-1.5 fl oz/1 gal water. Apply 1 gal spray/1000 ft^2	Clean bin before application. May be used as a perimeter treatment.
DIACON IGR or D-IGR *(methoprene)*	1 ml/1 gal water: Apply 1 gal spray/1000 ft^2. Or, 1.5 oz/1000 ft^2 Diacon-D	Contains methoprene, an insect growth regulator. Controls immature stages only.
DRYACIDE 100 *(diatomaceous earth)*	Dust: 1-3 lb/1000 ft^2 Slurry: 1.5 lb Dryacide/1 gal water; apply 1.5 gal/1000 ft^2	Clean out residue before applying. Distribute dust evenly or apply as a slurry to just below the point of run-off.
TEMPO SC ULTRA *(cyfluthrin)*	8 ml/gal of water to cover 1000 ft^2	Do not apply directly to grain. Apply to point of runoff. Labeled rates are to cover 1000 ft^2 of surface area. See label for details.

STORED GRAIN PROGRAMS

Options	Bin Spray	Grain Appl.	Options	Bin Spray	Grain Appl.	Options	Bin Spray	Grain Appl.
CORN and SORGHUM			**WHEAT, BARLEY and OATS**			**RICE**		
1	Tempo SC Ultra	Actellic 5E	Long-term Storage: 1	Tempo SC Ultra	Diacon	1	Tempo SC Ultra	Diacon IGR
2	***Dryacide 100***	Actellic 5E	2	Tempo SC Ultra	***Dryacide 100***	2	Tempo SC Ultra	***Dryacide 100***
3	Tempo SC Ultra	Diacon	Short-term Storage: 1	Tempo SC Ultra				
			2	***Dryacide 100***				

GRAIN PROTECTANTS AND TOPDRESS TREATMENTS

Grain that is to be stored in flat storage, emergency storage or will be stored for several months or longer may justify the application of a grain protectant dust or spray as the grain is moved into storage. Power spray applicators such as compressed air or pump sprayers are preferred over gravity drip applicators since uniform coverage is important. Topdress treatments of the bin surface can protect against reinfestation. After the grain has been leveled, work the topdressing into the top 4-6" of the surface. Break up and remove any surface crust before treatment. Each time the surface grain is disturbed, such as probing for samples, the protective barrier is broken and should be retreated. Do not topdress Actellic to grain that was previously treated with the same product. Factors affecting insecticide degradation. Most failures of grain protectants are due to high grain moisture and/or high grain temperatures. Do not apply insecticide to hot grain — malathion is very subject to heat degradation. Malathion will last several months if grain moisture is less than 13%, but only 4-6 weeks if more than 13%. Actellic persistence is somewhat less moisture dependent if moisture levels are below 14%.

PROTECTANTS

Insecticide	Rate	Comments/Restrictions
ACTELLIC 5E *(pirimiphos methyl)*	9.2-12.3 fl oz in 5 gal of water or 3-5 gal of twice refined soybean oil/1071 bu	Apply to grain (after drying) which is going into storage. Do not apply before high temperature drying. Apply spray solution as a coarse, uniform, low pressure spray. When applied at labeled rate, no feeding or use restrictions. 9.2 oz provides 12 mo residual. 12.3 oz for 18 mo. residual.
	12.3 fl oz in 5 gal of water/1071 bu	May also be applied as a layered treatment to insect free grain in the following manner: Apply Actellic 5E to the bottom 3' to 4' portion of the bin as grain is going into storage. Apply again to the top 3' to 4' portion of the bin as bottom 3' to 4' portion of the bin as grain is going into storage. Apply again to the top 3 to 4' portion of the bin as grain is going into storage. It is recommended that a bin spray such as Tempo SC Ultra or 20WP be applied to the bin prior to using this layered technique of applying Actellic 5E to the grain for best results.
	3 fl oz in 2 gal of water to cover 1000 sq ft of surface area	Apply as a topdress treatment to help prevent establishment of migrating insects. Do not apply to grain already been treated with Actellic. Split treatment: apply half of mixture evenly over grain surface and rake into grain to a depth of 4". Apply remaining half to the raked surface. Remove any crust prior to application. If Indian meal moth larvae are present, fumigate prior to treatment.
CENTYNAL *(deltamethrin)*	fl oz/1000 bu Barley: 7.31 Corn: 8.53 Oat: 4.88 Rice: 6.86 Rye: 8.53 Sorghum: 8.53 Wheat: 9.14	Dilute in water to make 5 gallons of solution which is applied to 1000 bu grain.
DIACON-D-IGR *(methoprene)*	8-10 lb/1000 bu	Contains methoprene, an insect growth regulator. Controls immature stages only.
DIACON IGR *(methoprene)*	2-7.7 oz/1000 bu depending on crop. Mix into 5 gal water or food grade oil	Contains methoprene, an insect growth regulator. Controls immature stages only.
DIPEL DF *(Bt)*	0.375 lb/100 bu grain or 0.5 lb/in 5-10 gal water/500 sq ft	For surface treatments, mix into top 4" of grain. Controls larvae stage.
DRYACIDE 100 *(dicatomaceous earth)*	Dust: 1-2 lb/ton of grain Layer: 1-2 lb/ton of grain in top 2-3' Surface: 2-3 lb/1000 sq ft	Treat grain with dust or slurry using top-dress or layered method. Diatomaceous earth is an abrasive dust during handling. It is less effective when grain is wet. It is accepted by buyers of organic foods or feed. Incorporate in the surface as a protectant.
SENSAT *(spinosad)*	5.9-10.5 fl oz/1000 bu; see label for rates for specific crops	Apply 5 gallons spray mixture per 1000 bu of grain for 1 ppm; see label for grain for export and top-dressing rates. Do not treat grain more than once. Apply after grain has cooled. Apply 0.35 fl oz/ton for bird seed.

FUMIGATION OF INFESTED GRAIN
Persons not trained and certified specifically in the use of grain fumigants should not attempt to fumigate stored grain. ALL FUMIGANTS ARE TOXIC TO HUMANS. PLACARDING AND SAFETY EQUIPMENT IS REQUIRED.

BIN PREPARATION FOR FUMIGATION
Level the surface of the grain to get uniform distribution of the fumigant. Break up any caked or crusted areas and remove any surface webbing. Use tape and plastic sheeting to thoroughly seal all cracks and holes in the bin: Seal the side door, unloading auger shaft and fan openings. If the grain surface will not be tarped, seal the eaves and roof hatches. Leave only the access openings to seal after fumigant application. Before applying the fumigant, spray the outside of the bin with a residual spray (such as Tempo) to kill those insects forced out of the bin by the fumigant. Those insects could quickly reinfest the grain after the fumigant disappears.

FUMIGANTS - SEE NEXT PAGE FOR FURTHER RATE AND APPLICATION INFORMATION

Insecticide	Rate	Comments/Restrictions
PH3 PELLETS ‡ *(aluminum phosphide)*	120- 900* pellets/1000 bu	All stored grains - Animal Feeds (Bulk or Bagged) RESTRICTED USE Person supervising must be a certified fumigator. Grain must be aerated for 48 hours prior to the end use by comsumer. Use lower rates only with air- tight bins. Inject into grain with probe or feed into grain stream as it flows into bin. In flat storage, cover grain surface with plastic. Seal all exterior openings. Keep bin sealed for a minimum of 3-10 days. Grain may be fed after aeration. Do not fumigate when grain temperature is below 60°. Maximum rate is recommended for all farm bins, and tablets should be used if grain temperature is above 75° F. See product label and product manual on PH3 for additional information on safety equipment and procedures for application. **POST PLACARDS.**
PH3 TABLETS ‡ *(aluminum phosphide)*	25-180* tablets/1000 bu	All stored grains - Animal Feeds (Bulk or Bagged) RESTRICTED USE Person supervising must be a certified fumigator. Grain must be aerated for 48 hours prior to the end use by consumer. Inject into grain with probe or feed into grain stream as it flows into bin. In flat storage, cover grain surface with plastic. Seal all exterior openings. Keep bin sealed for a minimum of 3-10 days. Grain may be fed after aeration. Do not fumigate when grain temperature is below 60 °F. Maximum rate is recommended for all farm bins and tablets should be used if grain temperature is above 75 °F. See product label and product manual on PH3 for additional information on safety equipment and procedures for application. **POST PLACARDS.**

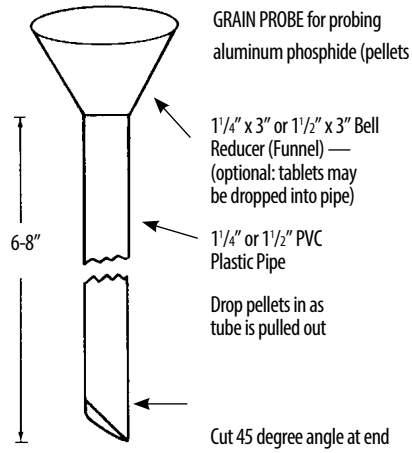
* Higher dosages are recommended in structures that are loose construction and in the fumigation of bulk stored commodities in which diffusion will be slowed and result in poor distribution of phosphine gas.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

ALUMINUM PHOSPHIDE

Aluminum phosphide releases phosphine gas. It has no adverse effect on germination of treated grain but is toxic to humans. The gas is released from dry pellets or tablets. The gas does not normally reach toxic levels above the grain for 1-2 hours but it can in less time in very warm or moist grain. Phosphine is corrosive to heavy metals such as gold and silver found in electrical or computer equipment. PhosFume is not effective if placed on the grain surface — it must be inserted into the grain. For best results, level grain at least 8" below the top of the bin to prevent fumigant from "rolling" over the sides.

APPLICATION METHOD. Aluminum phosphide pellets or tablets can be applied to the grain stream as the bin is filled, or injected into an already filled bin with a probe. (A sketch of a home-made probe is shown below.) Usually a 5-foot section of conduit. For improved distribution, drop pellets into probe as it is being pulled out of the grain. The phosphine gas will penetrate approximately 15 feet below the point of release.



Cover the grain surface with plastic. Hydrogen phosphide (phosphine) is only 20% heavier than air, and is not absorbed by grain. As a result, bins must be airtight and the surface covered to prevent rapid escape of the gas. Keep bin sealed for at least 72 hours before airing out. Do not fumigate if the grain temperature is less than 60 °F as gas will be released too slowly to be effective. Fumigants are most effective when air is calm and grain temperature is 65 °F or above. Do not allow pellets or tablets to become wet.

ALUMINUM PHOSPHIDE RATE FOR SEVERAL TYPES OF FUMIGATION*

Crop Fumigation	Dosage Range* Pellets	Tablets	Unit of Volume
SPACE			
Mills, Warehouses, etc.	100-300	20-60	1,000 cu. ft.
BULK STORED COMMODITIES			
Vertical Storage	150-300 200-375	30-60 40-75	1,000 cu. ft. 1,000 bu.
Flat Storage (loose construction)	250-725 300-900	50-145 60-180	1,000 cu. ft. 1,000 bu.
Farm Bins	350-725 450-900	70-145 90-180	1,000 cu. ft. 1,000 bu.
Rail Cars	150-325 200-400	30-65 40-80	1,000 cu. ft. 1,000 bu.

*Upper rate listed is recommended in structures with loose construction. See label for rates on other storage facilities.

APPLICATION RATE - PELLETS: Rate varies for concrete and on-farm bins. Use the maximum rate for on-farm bins. Each pellet releases 0.2 gram of hydrogen phosphide gas. Do not use pellets if grain temperature is over 75° F (use tablets). Average release rate is 1-2 hours. Tablets: Each tablet releases 1 gram of hydrogen phosphide gas. Do not use if temperature is less than 60° F. Tablets are preferred over pellets for on-farm storage. The release rate of tablets is slower than pellets (about 2-4 hours) thus they are somewhat safer for on-farm use.

FUMIGATION EFFECTIVENESS. Temperature influences the ability of a fumigant to kill insects.

MINIMUM EXPOSURE PERIODS FOR INSECTS TO ALUMINUM PHOSPHIDE

	Pellets	Tablets
Below 40°F	**Do not fumigate**	**Do not fumigate**
40-53°F	8 days (192 hrs.)	10 days (240 hrs.)
54-59°F	4 days (96 hrs.)	5 days (120 hrs.)
60-68°F	3 days (72 hrs.)	4 days (96 hrs.)
Above 68°F	2 days (48 hrs.)	3 days (72 hrs.)

FUMIGATION OF RAILCARS. Railcars can be treated by adding tablets or pellets to the grain as it flows into the car, or placed on the floor of the empty car, or probed into the grain after loading. All hatches or doors must be sealed. Placards must be placed near all openings and the ladders. Notify the consignee.

FEEDING RESTRICTIONS: Treated grain can be fed or offered for sale immediately after proper aeration.

SAFETY

PLACARDING INSTRUCTIONS. Signs should be on all entrances with signs containing at least the signal word DANGER, the skull and crossbones, the words "Area Under Fumigation, do not enter until completely aerated," the date of the fumigation, name of the fumigant used, emergency telephone number for contact, and the name and address of the fumigator. Do not remove warning signs until the fumigant area is completely aerated and safe for entry, as indicated by a suitable detector. Do not move trucks, vans or trailers during fumigation. They must be completely aerated before movement is allowed.

AERATION AND RE-ENTRY. See the label for safety directions as the maximum exposure for any person may not exceed 0.3 ppm phosphine. It is generally recommended to aerate for 48 hours before feeding grain or offering for sale.

GAS MASKS AND CANISTERS Have the proper approved respiratory protective equipment available and in good working condition. Aluminum Phosphide or MSA canister #816009 (olive). Self-contained breathing apparatus, for fumigants, MSA WorkMask II-SCBA.

SYMPTOMS OF HYDROGEN PHOSPHIDE POISONING Small quantity: Fatigue, ringing in the ears, nausea, pressure in the chest, uneasiness — all disappear with fresh air.

GREATER QUANTITY: General fatigue, nausea, stomach-intestine symptoms with vomiting, stomach ache, diarrhea, equilibrium disturbance, pains in the chest and difficulty breathing.

FIRST AID — for any fumigant

1) remove patient to fresh air; 2) make lie down, keep warm; 3) call the doctor; 4) artificial respiration if breathing stops.

POISON CONTROL CENTERS

800-222-1222 or www.aapcc.org

REASONS FOR FUMIGATION FAILURES

INSUFFICIENT FUMIGANT: Because the efficiency of a fumigant depends on the maintenance of a killing concentration in the grain, any factor that affects gas concentration is important. You cannot get satisfactory results by applying less than the recommended dosage (a common problem). Be sure to use the amount of fumigant required for the capacity of the bin, not the amount of grain contained in the bin.

STORAGE STRUCTURE: A loosely constructed, leaky bin may not retain fumigants long enough to kill the insects while a tight concrete or metal bin may hold the fumigant in killing concentrations for several days. The depth of the grain in relation to its surface area also affects the efficiency of a fumigant. In general, the greater the surface area of the grain in proportion to the bulk, the greater the difficulties encountered in fumigation. This is the practical reason (except for leaks) that flat storages require higher dosages than round silo-type bins. Storage structures with a large amount of space over the grain are also difficult to fumigate effectively, as large amounts of gas escape into the head space.

TYPE OF GRAIN AND DOCKAGE: The kind of grain affects the efficiency of a fumigant in accordance with its sorption quality. For example, shelled corn and grain sorghum appear to absorb more fumigant than wheat. Wheat with dockage exceeding 3% requires nearly twice the dosage than wheat with less than 1% dockage requires.

MOISTURE: The moisture content of the grain has a profound effect on the efficiency of a fumigant – the higher the moisture content the higher the dosage required. As the moisture content increases above 12%, a proportionally higher dosage is required. Generally you cannot satisfactorily fumigate grain having a surface moisture content of 15 to 20% because the fumigant vapors will not penetrate the moist layer.

TEMPERATURE: During fumigation the gas quickly assumes the temperature of the grain. An increase in temperature results in greater molecular activity of gases, which facilitates the diffusion and penetration of the fumigant. However, there are limiting factors of both extremes of high or low temperatures. If grain temperature reaches 115 ˚F, the fumigants vaporize very rapidly and may escape from the bin before lethal gas concentrations can be obtained. Most stored grain insects cannot survive in grain at 115 ˚F or above, thus eliminating the need for fumigating. You need not fumigate stored grain with a temperature of 60 ˚F or below as the insects are inactive at this temperature.

PRINCIPAL STORED GRAIN INSECTS

1. GRANARY WEEVIL is never found breeding in the field. It occurs only in places where grain is stored. A polished, chestnut-brown or blackish beetle, it is very similar in size and appearance to the rice weevil. However, it has no yellow markings on the back and has no hind wings, distinguishing it from the rice weevil. Adult beetles live about seven to eight months. The life history is like that of the rice weevil.

2. SAW-TOOTHED GRAIN BEETLE has a thorax with six saw-tooth projections on each side. It is often found in flour mills and warehouses. This species, together with the red flour beetle, causes major damage to stored grains and processed cereals. Adult beetles may live for more than three years, though the average is eight months. Females lay from 45 to 285 eggs, dropping them loosely in grain or in a crack in the kernel itself. The small, white eggs hatch in three to five days, and the larvae move about and feed freely. Larvae mature in about two weeks in the summer and construct "nests" of small grains and fragments stuck together with a sticky secretion. In this cell the larva changes to the pupal stage for about a week, emerging in the adult form.

3. RED FLOUR BEETLE is an important pest of ground cereal products. The last few segments of the antennae are abruptly larger than the preceding ones. Unlike the confused flour beetle, this insect is a strong flier. Feeding and breeding habits of the two are alike and the larvae are very similar. Females may live a year or more and lay about 400 to 500 eggs, dropping them in raw and processed cereals and grains. Larvae are wiry in appearance, about 3/16-inch long, and are whitish, tinged with yellow. Development from egg to adult is about four weeks.

4. CABINET BEETLES belong to a large family which includes insects which attack animal products such as hides and wool rugs and grain products. A generation can be completed in five weeks. Larvae are hairy.

5. LESSER GRAIN BORER is found in flour as well as in stored grain. The beetle is a strong flier, and both adults and larvae cause serious damage, attacking a variety of grains.

6. RICE WEEVIL is the most destructive pest of stored grain in the world. It is a small reddish-brown beetle, about 1/8-inch long, with four lightyellowish spots on the back. Adults fly. Adults live four to five months, females laying 300 to 400 eggs in holes bored in kernels of grain. Larvae hatch inside the kernel and mature there. The period from egg to adult may be as short as 26 days.

7. INDIAN-MEAL MOTH breeds freely in ear corn and other feeds of all kinds around the farm, and flies to bins of shelled corn or other grains where the larvae may completely web over the surface. Female moths lay about 200 eggs singly or in groups on foodstuff. Caterpillars are dirty white with sometimes a greenish or pinkish tint. Moths are about 1/2- inch long. The period from egg to adult is about four weeks.

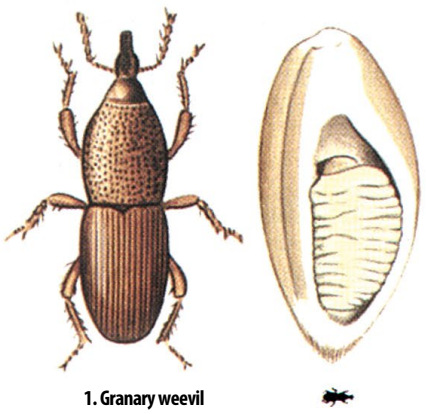
8. CADELLE sometimes burrows into the woodwork of empty bins as larvae and remain dormant until fresh grain is stored. A seemingly clean bin may hold thousands of the insects. The cadelle is one of the longest lived of the insects that attack stored grain; many adults live for more than a year and some for two years. Females lay about 1,000 eggs which hatch in seven to 10 days into white larvae with black heads and two black points at the end of their bodies. Period of development from egg to adult is at least 70 days.

9. FLAT GRAIN BEETLE prefers grain that has been damaged and cannot survive in sound grain. Small white eggs are placed in crevices of the grain or dropped loosely. When fully grown, larvae form cocoons to which food particles stick. Development from egg to adult may be as short as five weeks, but is usually about nine weeks.

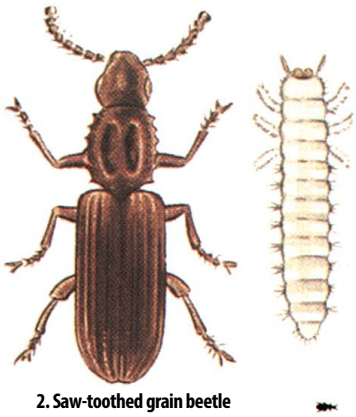
10. ANGOUMOIS GRAIN MOTH flies to fields of ripening corn and wheat as it is nearing maturity and lays eggs on the wheat heads or corn kernels. Between crops the moth breeds in grain in storage. Females lay about 40 eggs, one egg per kernel. Larvae hatching from the eggs bore into the kernels, where they develop..

Source: North Dakota State University.

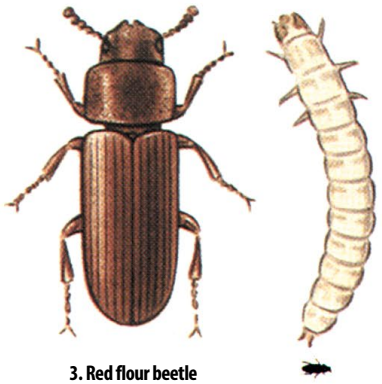
For safe and effective use of insecticides, always identify the problem correctly.



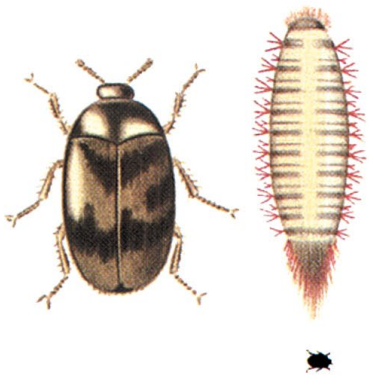
1. Granary weevil



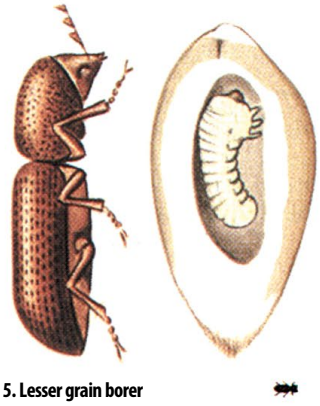
2. Saw-toothed grain beetle



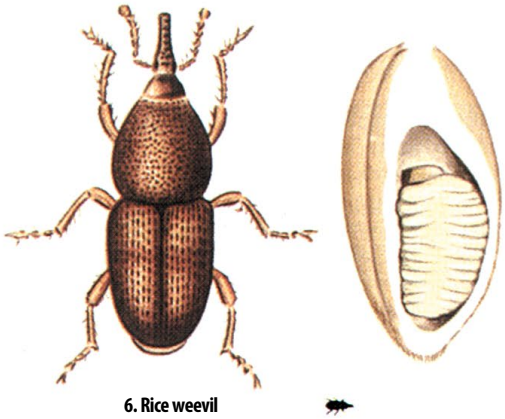
3. Red flour beetle



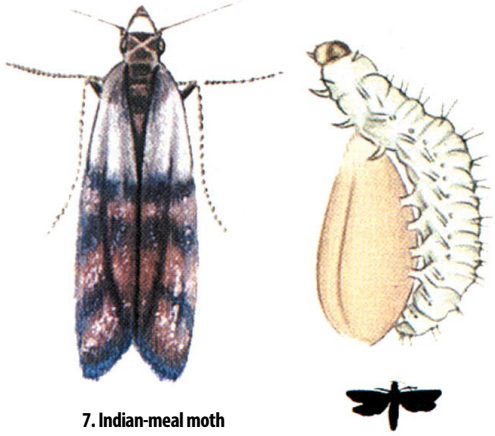
4. Larger cabinet beetle



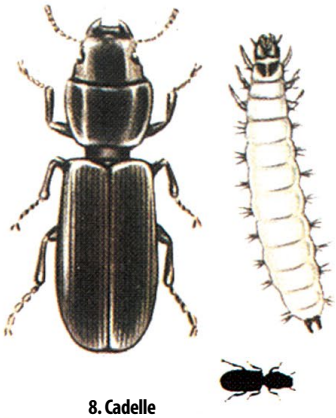
5. Lesser grain borer



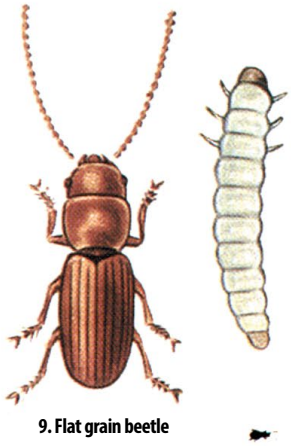
6. Rice weevil



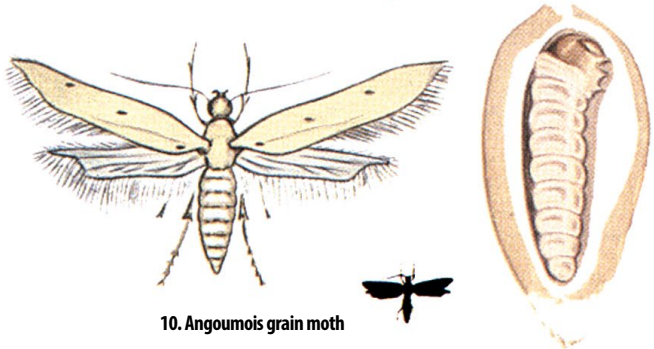
7. Indian-meal moth



8. Cadelle



9. Flat grain beetle



10. Angoumois grain moth

Some of these stored grain insects are also kitchen pests.

The saw-toothed grain beetle, red flour beetle, larger cabinet beetle and Indian-meal moth develop in flour, cake mixes, corn meal, breakfast foods and similar products. The Angoumois grain moth infests popcorn.

Prepared by Extension Entomologists of the North Central States in cooperation with the Federal Extension Service, U.S. Department of Agriculture.

VEGETABLES

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VEGETABLES

GET MAXIMUM WEED CONTROL WITH CLASS ACT® NG® ADJUVANT.

BUILT FOR IT.

Class Act NG adjuvant is a liquid spray tank additive that helps you get aggressive and stay aggressive about weeds. Developed to lessen negative impacts that could reduce herbicide efficacy, Class Act NG works on the leaf surface to drive the herbicide into the plant. By combining CornSorb® humectant technology a larger load of nonionic surfactant and 34 percent ammonium sulfate in a high-performance liquid premix, you can feel confident knowing it will drive herbicide into the plant. With all this behind it, Class Act NG adjuvant is built for better, faster herbicide efficacy. Help unlock the full potential of every field with products that are built for it. Scan the QR code to learn more.

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HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	SITE OF ACTION[A]	GRASSES																
		Barnyardgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Goosegrass	Johnsongrass (Seedling)	Purple nutsedge	Quackgrass	Sandbur	Shattercane	Volunteer grain	Wild oat	Wild proso millet	Wirestem muhly	Woolly cupgrass	Yellow nutsedge
PREPLANT OR PREEMERGENCE*																		
AIM EC/SHARK EW *(carfentrazone)*	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
COMMAND 3ME *(clomazone)*	13	G/E	G/E	G/E	G/E	G/E	G/E	F	N	N	G	F	P/F	F	F	N	F	P
DEVRINOL DF-XT *(napropamide)*	15	E	E	E	E	E	G/E	P	N	P	U	U	U	U	U	U	U	N
DIMETRIC EXT*/*DIMETRIC LIQUID[R] *(metribuzin)*	5	F[R]	F/G	F/G	F/G	F/G	F/G	P	N	P	F	P	P	P	P	P	P	P
DUAL II MAGNUM/***CHARGER MAX*** or DUAL MAGNUM/***CHARGER BASIC*** *(s-metolachlor)*	15	G/E	E	E	E	E	G/E	P	N	N	F	P	P	P	F	N	F	F/G
FRAMEWORK 3.3 EC/PROWL *(pendimethalin)*	3	G/E	E	E	G/E	G/E	G/E	P	N	P	G/E	G	P/F	F	F	P	E	P
GOAL 2XL/GOALTENDER *(oxyfluorfen)*	5	P/F	F	P/F	P/F	P/F	P/F	P	N	P	N	N	U	P	P	P	P	P
KARMEX[R] *(diuron)*	5	G/E[R]	G/E	F/G	F/E	G/E	G	F	N	P	F	U	U	F	U	U	U	P
KERB SC *(pronamide)*	5	G	G	F	F	F	G	U	N	F	F	U	U	G	U	U	U	P
LOROX DF/LINEX 4L[R] *(linuron)*	15	F[R]/G	G	G	G	G	F/G	P	N	N	P	P	P	N	P	N	P	P
NORTRON *(ethofumesate)*	8	P	G	G	F	F	U	U	N	U	P/F	P	U	F/G	U	U	U	U
PREFAR *(bensulide)*	3	E	E	G	E	E	G	F	F	P	F	F	U	U	U	U	U	F
PYRAMIN *(pyrazon)*	5	F	F	F	P/F	P/F	U	P	N	P	P	P	P	P	P	P	P	P
SINBAR WDG[R] *(terbacil)*	5	G[R]	G/E	G	F/G	F/G	G	U	N	P/F	F	F	U	F	U	U	U	P
SOLICAM *(norflurazon)*	12	G	G	G	G	G	G	U	G	F	U	U	U	U	U	U	U	F
SURFLAN *(oryzalin)*	3	E	E	E	E	E	U	U	N	P	G	G	P/F	F	F	U	G	N
TRUST/TREFLAN HFP *(trifluralin)*	3	E	E	E	E	E	G/E	G	N	P	E	G	P/F	F	F	P	E	P
VIDA *(pyraflufen)*	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

*Some products may not be labeled to control rated weeds. See current labels.
[A] Site of action, described in Technical Information section.

[R] No control of herbicide resistant weed biotypes. See the list of known resistant weeds on the second page of the Technical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES *continued*

BROADLEAVES																									
Bindweed, field	Bindweed, hedge	Buffalobur	Burcucumber	Canada thistle	Cocklebur	Hairy galinsoga	Horsenettle	Jerusalem artichoke	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard	Nightshade, black	Pigweed	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Spurge, prostrate	Sunflower	Velvetleaf	Waterhemp spp.	Wild buckwheat	
PREPLANT OR PREEMERGENCE																									
F/G	P	G/E	F	N	F/G	G	P/F	U	G	F/G	E	G/E	G/E	F/G	G	G	G/E	P/F	N	E	G/E	F/G	G/E	E	F/G	G	AIM EC/SHARK EW
P	P	P	P	N	P/F	F	N	P	G	U	G/E	G	P	P	P/G	P	G	G	P	F	G	F	P	G/E	P	P	COMMAND 3ME
U	U	U	U	U	P	P	U	U	N	U	U	F/G	N	P	N	G	G	P	N	U	P	P	U	N	U	U	DEVRINOL DF-XT
P	P	F	P	P	F[R]	G/E	N	P	G[R]	P	G[R]	E[R]	P	G/E	P	E[R]	G/E	E[R]	P/F	G	G[R]/E	G	F	G[R]	G[R]	F	***DIMETRIC EXT*/*DIMETRIC LIQUID***[R]
N	N	P	P	N	P	G	N	N	P	F	P	F	P	P	G	G	F	P	P	P	P	G	P	P	G	P	DUAL II MAGNUM/***CHARGER MAX*** or DUAL MAGNUM/***CHARGER BASIC***
P	P	P	P	N	P	P	N	N	P	P	G	G	P	P	P	G	F/G	P	P	F	P/F	G	P	P	G	P	***FRAMEWORK 3.3 EC***/PROWL
P	P	U	U	P	F	F/G	P	P	G	P/F	P/F	G	F	F	G	G/E	G	G	U	P/F	G	F	P/F	F	G	F	GOAL 2XL/GOALTENDER
P	P	U	U	P	F[R]	G	U	U	F[R]	U	E[R]	E[R]	G	G	F	G[R]	E	G[R]	U	U	G	F	U	F	U	U	KARMEX[R]
P	P	U	U	P	P	P	U	U	U	U	P	F	P	P	F	F	G	F	U	U	P	F	U	P	U	U	KERB SC
P	P	P	P	N	P	G	N	N	G[R]	U	F[R]	E[R]	P	E	F	G/E[R]	G[R]	G[R]	P	U	G	G	P	F[R]	G[R]	G	LOROX DF/LINEX 4L[R]
P	U	G	U	P	P	U	U	U	P	P/F	F/G	P/F	P	P/F	F	G	U	P	U	F	G	U	P	P	U	F	NORTRON
U	U	U	U	U	P	P	U	U	N	U	U	F	N	P	N	F/G	F/G	N	N	U	N	P	U	N	U	U	PREFAR
P	P	U	U	P	P/F	F	U	U	P	P	P/F	G	P	G	G	G	G	F/G	U	P/F	F/G	F	P	F	U	P/F	PYRAMIN
P	P	U	U	P	G	G	U	U	G	U	G[R]	E[R]	F/G	G/E	G/E	G[R]	G	G[R]	U	F	G	F	G	G[R]	G[R]	U	SINBAR WDG[R]
U	U	U	U	U	U	G	U	U	N	U	U	F	N	G	F	F	F	G	G	U	F/G	G	U	F	U	F	SOLICAM
U	U	U	U	U	U	F	U	U	N	U	U	G	F	F	P/F	G	G	P/F	P	U	P/F	F	U	P	F	U	SURFLAN
P	P	P	P	N	P	P	N	N	P	U	G	G	P	P	P	G	G	P	P	F	P	P	P	P	G	P	***TRUST***/TREFLAN HFP
F/G	P	G/E	F	N	F/G	G	P/F	U	G	F/G	E	G/E	G/E	F/G	G	G	G/E	P/F	N	E	G/E	F/G	G/E	E	F/G	G	VIDA

HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES *continued*

KEY
E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
P = POOR (<65%)
N = NONE
U = UNKNOWN

	SITE OF ACTION[A]	GRASSES																
		Barnyardgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Goosegrass	Johnsongrass (Seedling)	Purple nutsedge	Quackgrass	Sandbur	Shattercane	Volunteer grain	Wild oat	Wild proso millet	Wirestem muhly	Woolly cupgrass	Yellow nutsedge
POSTEMERGENCE*																		
AIM EC/SHARK EW *(carfentrazone)*	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ASSURE II/TARGA[R] *(quizalofop)*	1	G/E	G/E[R]	G/E	G/E[R]	G/E	G	E	P	G/E	E	E[R]	E	E[R]	E	G	G/E	P
BASAGRAN *(bentazon)*	6	N	N	N	N	N	N	N	P/F	N	N	N	N	N	N	B	N	G
CORNERSTONE 5 PLUS/GLYPHOSATE[R]** *(glyphosate)*	9	E	E	E	E	E	G	E	P/F	G	E	E	E	E	E	G/E	G/E	F
DIMETRIC EXT/DIMETRIC LIQUID[R] *(metribuzin)*	5	F[R]	F	F	F[R]	F[R]	F/G	P	P	P	P/F	P	P	P	P	P	P	P
FUSILADE DX[R] *(fluazifop)*	1	G/E	G/E[R]	G/E	G/E[R]	G/E	G/E	E	P	G/E	E	E[R]	E	E[R]	E	G	G	P
GOAL 2XL/GOALTENDER *(oxyfluorfen)*	5	P	P	P	P	P	G/E	U	F/G	P	P	U	U	U	U	U	U	N
GRAMOXONE SL 3.0 ‡ *(paraquat)*	22	E	E	E	E	E	G	F/G	N	G	F	F/G	G	G/E	G	P	G	F/G
MAESTRO 2EC *(bromoxynil)*	6	N	N	N	N	N	P	N	G	N	N	N	N	N	N	N	N	N
POAST[R] *(sethoxydim)*	1	E	E[R]	E	E[R]	E	G/E	G	N	F	E	E[R]	E	G/E[R]	E	G	E	P
PURSUIT[R] *(imazethapyr)*	2	F/G	F/G[R]	F/G	G[R]	F/G[R]	P/F	G	G	P	E	E[R]	P	P	P/F	F	P	G
SECTION THREE[R] *(clethodim)*	1	E	G/E[R]	E	E[R]	G/E[R]	G/E	E	P	G	E	E[R]	E	E[R]	E	G/E	E	P
STERLING BLUE/CLARIFIER/CLARITY/***DICAMBA MAX 4*** *(dicamba)*	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
STINGER *(clopyralid)*	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2,4-D *(2,4-D)*	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

* Some products may not be labeled to control rated weeds. See current labels.
**May use other glyphosate herbicides such as Cornerstone brands//Roundup brands/Credit Xtreme/ Honcho K6 or others at labeled rates.

[A] Site of action, described in Technical Information section.
[R] No control of herbicide resistant weed biotypes. See the list of known resistant weeds on the second page of the technical section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES *continued*

BROADLEAVES																									
Bindweed, field	Bindweed, hedge	BUFFALOBUR	Burcucumber	Canada Thistle	Cocklebur	Hairy Galinsoga	Horsenettle	Jerusalem artichoke	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard	Nightshade, black	Pigweed	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Sunflower	Velvetleaf	Waterhemp spp.	Wild buckwheat	
POSTEMERGENCE*																									
F/G	P	G/E	F	N	F/G	G	P/F	U	G	F/G	E	G/E	G/E	F/G	G	G	G/E	P/F	N	E	G/E	G/E	E	F/G	G	AIM EC/SHARK EW
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	ASSURE II/TARGA[R]
P	P/F	P	P	G	E	G	P	F	E	P	F	F	F	G	P	P	G	G	P/F	P	G/E	G/E	G/E	P	F/G	***BASAGRAN***
F/G	G	G	G	G	E	G/E	G	G	E	G	G	G/E	F	G	G	E	E	G/E[R]	G/E	F/G	G/E	G/E	G	G[R]	F	***CORNERSTONE 5 PLUS***/ GLYPHOSATE[R]**
P	P	E	F	P	E[R]	E	G	G	E[R]	E	G[R]	G/E[R]	P/F	G/E	P	G/E[R]	G	G/E[R]	G/E	F	E	E	G[R]	GE	G	***DIMETRIC EXT***/***DIMETRIC LIQUID***/[R]
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	FUSILADE DX[R]
U	U	U	U	U	G	F/G	U	U	G	U	U	F/G	F	F	F/G	G/E	G	F/G	F	P/F	G	P/F	F/G	G	U	GOAL 2XL/GOALTENDER
P	P	P	P	P	F	G	P	P	F	P	F/G	G/E	G	E	F/G	G	G	G	G	G	F/G	P	G	G	F	GRAMOXONE SL 3.0 ‡
P	P	G	F	F	E	P/F	F	P	E	G	G	G/E	G	F/G	G/E	F/G	P	G/E	F	G	G/E	E	G	P	G/E	MAESTRO 2EC
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	POAST[R]
P	P	F	P	P	G/E[R]	U	F	F/G	G	U	G[R]	P/F[R]	F/G	E[R]	E[R]	E[R]	P/F	FE	F[R]	G[R]	G	G[R]	G	P	P/F	PURSUIT[R]
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	B	N	N	N	N	N	N	N	N	***SECTION THREE***[R]
F	F	F	F	G	E	G/E	F	F/G	E	E	G	E	E	F	G	E	E	E	E	G/E	E	E	F/G	E	E	***STERLING BLUE***/***CLARIFIER***/ CLARITY/***DICAMBA MAX 4***
P	P	P	P	E	E	G	F	E	G	F	P	P	P	P	F	P	P	E	E	P	F/G	E	P	P	F/G	STINGER
F	F	P	P	F	E	G	F	F/G	F	P	F	G	E	E	F	G	P	G	G	F	P	F/G	G	G	P	***2,4-D***

HERBICIDES LABELED FOR VEGETABLES

L = LABELED*

	AIM EC/SHARK EW	BEYOND XTRA	CALLISTO/***INCINERATE***	CAPAROL	COMMAND 3ME	***CORNERSTONE*** BRANDS	DEVRINOL DF-XT	***DIMETRIC EXT/DIMETRIC LIQUID***	DIQUAT 2L/REGLONE	DUAL MAGNUM/DUAL II MAGNUM[1]	ENVOKE	EVERPREX	***FRAMEWORK 3.3 EC***/PROWL H2O	FUSILADE DX	GOAL 2XL/GOALTENDER	GRAMOXONE SL 3.0‡	KARMEX DF	KERB SC	LEAGUE	LOROX DF/LINEX 4L	MAESTRO 2EC
Asparagus	L		L		L	L	L	L	L				L[4]	L		L	L			L	
Cole (Brassica) Crop																					
Broccoli	L				L	L	L						L[4]		L	L					
Brussels Sprouts	L					L							L[4]								
Cabbage	L					L	L						L[4]			L					
Cauliflower	L					L	L						L[4]		L	L					
Cucurbits													L[4]								
Cucumber	L				L	L									L	L					
Muskmelon	L				L	L							L[4]			L					
Pumpkin	L				L	L				L		L				L					
Squash	L				L	L										L					
Watermelon	L				L	L							L[4]			L					
Leafy Vegetable (incl. Brassica)																					
Celery	L			L																	
Chicory, red (radicchio)	L	L				L															
Collards	L					L										L					
Endive	L					L										L		L			
Escarole	L															L		L			
Kale	L					L															
Lettuce	L					L								L		L		L			
Fennel, Florence	L			L		L															
Mustard	L					L															
Parsley	L			L		L														L	
Rhubarb	L		L	L	L	L				L		L		L		L		L			
Spinach	L					L															
Onion & Garlic																					
Onion	L					L							L	L	L	L					L
Garlic	L					L							L	L	L	L					L
Root Crop																					
Beet	L					L															
Carrot	L			L		L		L[2]					L[4]	L		L				L	
Horseradish	L					L				L		L			L						
Parsnip	L					L														L	
Potato	L					L		L	L	L		L	L			L				L	
Radish	L					L															
Sweet Potato	L				L	L								L		L					
Turnip	L					L										L					
Solanaceous																					
Eggplant	L					L	L									L					
Pepper	L				L	L	L						L[4]			L			L		
Tomato	L					L	L	L			L	L	L[4]			L			L		

* Label changes may have occurred since printing; see current labels for verification. Also, additional crops, use patterns or rates may be allowed under 24c, 2ee or Supplemental labels.

** May use other glyphosate herbicides: Cornerstone brands/Credit Xtreme/Honcho K6 or others at labeled rates.

[1] Dual II Magnum is not labeled on sugarbeet, horseradish, pumpkin, rhubarb, or tomato. Equivalent products: Charger Basic and Charger Max.

[2] Do not apply to carrots grown for seed.

MATRIX SG	OUTLOOK	POAST	PREFAR 4E	REFLEX	ROUNDUP BRANDS**	***RUGGED***	***SECTION THREE***	SELECT MAX/***CLEANSE***	SEQUENCE	SINBAR WDG	SOLICAM	SPARTAN	SPARTAN CHARGE	***STERLING BLUE***/CLARITY/***CLARIFIER/ DICAMBA MAX 4***	STINGER	TARGA	***TRUST***/TREFLAN HFP	TUSCANY SC	VALOR SX/VALOR EZ/PANTHER SC/ CHATEAU EZ	VIDA	***2,4-D/2,4-D AMINE 4***/RUGGED/WEEDAR 64/WEEDAR XHL
		L			L	L	L	L		L	L			L			L	L			L
		L	L		L		L	L							L		L			L	
		L	L		L		L	L							L		L			L	
		L	L		L		L	L				L[3]	L		L		L			L	
		L	L		L		L	L							L		L			L	
		L	L		L		L	L									L			L	
		L	L		L		L	L									L			L	
		L	L		L		L	L									L			L	
		L	L		L		L	L									L			L	
		L	L		L		L	L		L							L			L	
																				L	
		L			L		L	L									L			L	
		L	L		L		L	L							L		L			L	
		L	L		L		L	L									L			L	
							L	L									L				
		L	L		L		L	L							L		L			L	
		L	L		L		L	L												L	
			L		L		L	L												L	
		L	L		L		L	L							L		L			L	
		L	L		L		L	L										L		L	
		L			L		L	L										L		L	
		L			L		L	L							L	L				L	
	L	L	L		L		L	L								L	L			L	
	L	L	L		L		L	L								L				L	
																		L			
	L	L			L		L	L							L	L		L		L	
		L			L		L	L				L	L					L		L	
		L			L		L	L												L	
	L	L			L		L	L											L		
		L			L		L	L							L		L[5]			L	
		L	L		L		L	L												L	
		L	L		L		L	L									L			L	
L		L			L		L	L	L			L					L				

[3] Processing cabbage only.
[4] Prowl H2O only.
[5] Tops only.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECTICIDES LABELED FOR VEGETABLES

L = LABELED*

	ABAMEX ‡/ABBA ULTRA ‡	ACTARA	ADMIRE PRO	***ADVISE FOUR***/NUPRID 4F MAX	AGRI-MEK SC ‡	***ARCTIC 3.2EC*** ‡	ASANA XL ‡	ASSAIL	AVAUNT/AVAUNT EVO	BACILLUS THURINGIENSIS	BAYTHROID XL ‡	BELAY INSECTICIDE	BELEAF	BESIEGE ‡	BLACKHAWK	***BRACKET 97***/ORTHENE 97	BRIGADE 2EC ‡	CAPTURE LFR ‡/***TUNDRA LFC*** ‡	CERTADOR	CLOSER SC	COMITE ‡	CONFIRM 2F	CORAGEN	DANITOL 2.4 EC ‡	***DELTA GOLD*** ‡	DIBROM 8E ‡	***DIMATE 4E***	DIPEL DF	DURIVO	ELEVEST ‡	ENDIGO ZCX ‡	ENTRUST SC
Asparagus						L				L													L				L	L				L
Cole (Brassica) Crop																																
Broccoli		L	L	L		L	L	L	L	L	L	L	L	L			L	L	L	L		L	L	L		L	L	L	L		L	L
Brussels Sprouts		L	L	L		L		L	L	L	L	L	L	L		L	L	L	L	L		L	L	L		L		L	L		L	L
Cabbage		L	L	L		L	L	L	L	L	L	L	L	L			L	L	L	L		L	L	L		L	L	L	L		L	L
Cauliflower		L	L	L		L	L	L	L	L	L	L	L	L		L	L	L	L	L		L	L	L		L	L	L	L		L	L
Cucurbits																																
Cucumber	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L	L	L				L	L	L			L	L		L	L
Muskmelon	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L	L	L				L	L	L	L	L	L	L		L	L
Pumpkin	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L	L	L				L	L	L				L		L	L
Squash	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L	L	L				L	L	L	L		L	L		L	L
Watermelon	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L	L	L				L	L	L		L		L		L	L
Leafy Vegetable (incl. Brassica)																																
Celery	L	L	L	L	L	L		L	L	L	L	L	L	L		L	L		L	L		L	L				L	L	L			L
Chicory, red (radicchio)	L		L	L	L				L				L		L		L			L		L	L		L						L
Collards	L	L	L	L		L	L		L	L		L	L				L	L		L		L	L			L	L	L	L			L
Endive	L	L	L	L	L	L		L	L	L		L	L						L	L		L	L				L	L	L			L
Escarole	L		L	L		L			L		L	L	L			L				L			L				L		L			L
Kale		L	L	L				L	L	L		L	L				L	L		L		L	L			L	L	L	L			L
Lettuce	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L	L				L	L	L		L	L
Fennel, Florence	L	L	L	L	L	L		L	L	L		L	L	L			L		L	L		L	L						L			L
Mustard		L	L	L			L	L	L	L	L	L	L	L			L	L		L		L	L				L	L	L			L
Parsley	L	L	L	L	L	L		L	L	L		L	L				L		L	L		L	L		L			L				L
Rhubarb	L	L	L	L	L	L		L	L	L	L	L	L	L			L		L			L	L						L			L
Spinach	L	L	L	L	L	L		L	L	L		L	L				L	L	L	L		L	L				L	L	L			L
Onion & Garlic										L	L																					
Onion	L		L	L	L	L		L		L													L		L			L				L
Garlic	L		L	L		L				L	L												L		L			L				L
Root Crop																																
Beet		L	L	L					L	L	L	L	L		L		L			L			L		L			L		L		L
Carrot		L	L	L			L				L	L	L		L		L			L	L[1]		L		L			L		L		L
Horseradish		L	L	L		L				L	L	L	L		L		L						L		L					L		L
Parsnip		L	L	L							L	L	L		L		L						L		L					L		L
Potato	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L	L	L[2]		L		L		L	L		L	L	L
Radish		L	L	L			L			L	L	L	L		L		L						L		L					L		L
Sweet Potato	L	L	L	L	L			L	L	L	L	L	L	L	L		L	L		L			L		L					L	L	L
Turnip		L	L	L		L			L[3]	L	L	L	L		L		L			L		L	L		L		L			L		L
Solanaceous																																
Eggplant	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L	L	L	L		L	L		L	L		L	L		L	L
Pepper	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L	L	L		L	L		L	L	L	L	L		L	L
Tomato	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L	L	L		L	L	L	L		L	L	L		L	L

See notes and footnotes at end of table

ETHOS ELITE ‡	EXCALIA	EXIREL	FASTAC CS ‡	FULFILL	***GRIZZLY TOO*** ‡	HERO ‡	INTREPID 2F	INTREPID EDGE	KNACK	***LAMBDA-CY AG*** ‡	LANNATE LV ‡	LEVERAGE 360 ‡	***MALATHION 5***/5EC	MALATHION 8 FLOWABLE	MICROTHIOL DISPERSS	MINECTO PRO ‡	MOCAP EC/MOCAP 15G ‡	MOVENTO	MOVENTO HL	MUSTANG MAXX ‡	NEALTA	NEEMIX	NURIZMA	OBERON	ONAGER	PLATINUM 75 SG	PROCLAIM	PYGANIC EC 1.4$_{II}$/PYGANIC EC 5.0$_{II}$	PYRETHRUM	RADIANT SC	REQUIEM EC	ROTENONE	SEFINA	SEQUOIA	SIVANTO 200 SL/SIVANTO PRIME	TELONE II ‡
				L						L	L		L		L													L	L	L		L				
	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L			L		L		L		L		L	L	L	L	L	L		L	L	
	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L			L		L		L		L		L	L	L	L	L	L		L	L	
	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L		L	L		L		L		L		L	L	L	L	L			L	L	
	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L			L		L		L		L		L	L	L	L	L	L		L	L	
L		L	L	L	L	L	L	L		L	L	L		L	L	L	L	L[4]			L		L		L		L	L	L	L	L		L	L		L	
L		L	L	L	L	L	L	L		L	L	L		L		L	L				L		L		L		L	L	L	L	L		L	L		L	
L		L	L	L	L	L	L	L		L	L			L		L	L				L		L		L		L	L	L	L	L		L	L		L	
L		L	L	L	L	L	L	L		L	L	L		L	L	L	L				L		L		L		L	L	L	L	L		L	L		L	
L			L	L	L	L	L	L		L	L	L		L		L	L				L		L		L		L	L	L	L	L		L	L		L	
	L	L	L	L	L		L		L		L		L		L	L		L		L		L				L	L	L	L	L	L		L	L		
	L	L	L				L				L	L			L	L		L		L							L	L	L	L			L	L		
	L	L	L	L		L	L		L		L	L	L	L	L			L		L		L				L	L	L	L	L	L	L		L	L	
	L	L	L	L	L		L				L	L	L	L	L	L		L		L		L		L		L	L	L	L	L	L	L		L	L	
	L			L	L		L				L	L			L	L		L		L		L		L			L	L	L	L			L	L		
	L	L	L	L			L		L		L	L	L	L	L			L		L		L		L		L	L	L	L	L	L	L		L	L	
	L	L	L	L	L	L	L			L	L	L	L	L	L	L		L		L		L		L		L	L	L	L	L	L	L		L	L	
	L	L	L	L	L		L							L		L		L		L		L		L			L	L	L	L			L	L		
	L	L	L	L			L		L		L	L	L	L	L			L		L		L		L		L	L	L	L	L	L	L		L	L	
	L	L	L	L	L	L	L				L	L	L	L		L		L		L		L					L	L	L	L			L	L		
	L	L	L	L	L		L									L		L		L		L					L	L	L	L			L	L		
	L	L	L	L	L		L				L	L	L	L	L			L		L		L		L		L	L	L	L	L	L	L		L	L	
		L		L		L	L	L	L		L		L	L	L					L		L				L		L	L	L	L	L		L	L	
	L	L	L	L		L	L	L	L		L	L	L		L			L		L		L				L		L	L	L	L			L	L[2]	
		L	L	L		L	L	L	L		L		L	L	L					L		L				L		L	L	L	L	L		L		
		L	L			L	L	L	L		L		L	L	L					L		L				L		L	L	L	L	L		L	L	
		L	L		L		L	L	L	L			L	L	L					L		L				L		L	L	L	L	L		L	L	
	L	L	L	L	L		L	L	L	L		L	L		L					L		L				L		L	L	L	L	L		L	L[2]	
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L		L		L	L	L	L	L		L	L	
		L	L		L		L	L	L	L			L	L	L					L		L				L		L	L	L	L	L		L	L	
		L	L		L		L	L	L	L			L	L	L					L		L				L		L	L	L				L	L	
	L	L	L	L	L		L			L	L	L	L		L	L	L	L	L	L		L	L	L		L		L	L	L	L	L		L	L	
		L	L		L		L	L	L				L	L	L	L	L	L		L		L	L	L				L	L	L	L	L		L	L	
		L	L		L	L	L	L	L				L	L	L	L	L	L	L	L		L		L				L	L	L	L	L		L	L	
		L	L	L	L		L	L	L			L		L		L				L		L				L	L	L	L	L	L	L		L	L	
	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L	L		L		L		L		L	L	L	L	L	L	L	L	L	L		
		L	L	L	L	L	L	L		L	L	L	L	L	L	L	L		L		L		L		L	L	L	L	L	L	L	L	L	L		
		L	L	L	L	L	L	L		L	L	L	L	L	L	L	L		L		L		L		L	L	L	L	L	L	L	L	L	L		
L	L	L	L	L	L	L	L		L	L	L	L	L	L	L	L		L		L	L	L		L	L	L	L	L	L	L	L	L	L		

INSECTICIDES LABELED FOR VEGETABLES *continued*

L = LABELED*

	TESARIS	THIMET 20-G ‡	THIONEX 3EC[2]	TRANSFORM WG	TRIGARD	***TUNDRA EC*‡/*BIFEN 2 AG GOLD*‡**	VANTACOR	VENOM	VERIMARK	VERSYS	VOLIAM FLEXI	VYDATE L ‡	WARRIOR II ‡	XENTARI	XPEDIENT PLUS V ‡	ZEAL SC
Asparagus																
Cole (Brassica) Crop																
Broccoli	L				L	L		L	L	L	L		L	L	L	
Brussels Sprouts	L		L[2]		L	L		L	L	L	L		L	L	L	
Cabbage	L				L	L		L	L	L	L		L	L	L	
Cauliflower	L		L		L	L		L	L	L	L		L	L	L	
Cucurbits																
Cucumber			L	L	L	L		L	L		L	L	L	L	L	L
Muskmelon			L	L	L	L		L	L		L		L	L	L	L
Pumpkin			L	L	L	L		L	L		L	L	L		L	
Squash			L	L	L	L		L	L		L	L	L	L	L	L
Watermelon			L	L	L	L		L	L		L	L	L	L	L	L
Leafy Vegetable (incl. Brassica)																
Celery	L		L[2]		L			L	L	L	L	L[2]		L		
Chicory, red (radicchio)	L			L		L			L	L						
Collards	L				L	L			L	L	L			L	L	
Endive	L				L			L	L	L	L			L		
Escarole					L	L		L	L	L	L					
Kale	L				L	L			L	L	L			L	L	
Lettuce	L		L		L	L		L	L	L	L		L	L	L	
Fennel, Florence	L				L			L	L	L	L					
Mustard	L				L	L			L	L	L			L	L	
Parsley	L				L	L		L	L	L	L		L	L		
Rhubarb	L				L			L	L	L	L					
Spinach	L				L	L		L	L	L	L			L	L	
Onion & Garlic																
Onion	L			L	L		L		L			L	L	L		
Garlic	L			L	L		L		L			L	L	L		
Root Crop																
Beet	L			L		L	L		L					L		
Carrot	L			L		L	L		L			L	L	L		
Horseradish	L			L		L	L		L							
Parsnip	L			L		L	L		L				L			
Potato	L	L	L	L	L	L	L	L	L		L	L	L	L	L	
Radish	L			L		L	L		L							
Sweet Potato				L		L	L		L		L	L	L		L	
Turnip	L			L		L	L		L					L		
Solanaceous																
Eggplant	L			L		L		L	L		L	L	L	L	L	
Pepper	L		L	L	L	L		L	L		L	L	L	L	L	
Tomato	L		L	L	L	L		L	L		L	L	L	L	L	

* Label changes may have occurred since printing; see current labels for verification. Also, additional crops, use patterns or rates may be allowed under 24c, 2ee or Supplemental labels.

[1] For seed crop only.

[2] In certain states only.

[3] Tops only.

[4] Mocap 15G only.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

L = LABELED*

	ACTIGARD 50WG	ACTINOVATE AG	ALIETTE	APROACH	APROVIA TOP	BADGE SC/BADGE X2	BEXFOND	BIO-TAM 2.0	BLOCKER 4F/BLOCKER 10G	BOTRAN 75W	BRAVO ULTREX/BRAVO WEATHER STIK	CABRIO EG	CANNONBALL WG	CHAMP DRY PRILL/CHAMP FORMULA 2 FLOWABLE/CHAMP WG/CHAMPION++	CONTANS WG	COPPER	CUPROFIX ULTRA 40 DISPERSS	CURZATE 60 DF	DITHANE F-45 RAINSHIELD	ELUMIN	ENABLE 2F	ENDURA	ETHOS ELITE ‡	EVITO 480 SC	FLINT	FLINT EXTRA	FONTELIS	GAVEL 75 DF	INDAR 2F	INSPIRE SUPER	KOCIDE 3000	LUNA EXPERIENCE	LUNA SENSATION
Asparagus		L	L			L		L			L								L						L							
Cole (Brassica) Crop							L																									
Broccoli	L	L	L			L	L	L	L		L	L		L	L	L	L		L	L		L				L	L			L		L
Brussels Sprouts	L	L	L			L	L	L	L		L	L		L	L	L	L			L						L	L			L	L	L
Cabbage	L	L	L			L	L	L	L		L	L		L	L	L	L			L		L				L	L			L		L
Cauliflower	L	L	L			L	L	L	L		L	L		L	L	L	L			L		L				L	L			L	L	L
Cucurbits							L																									
Cucumber	L	L	L		L	L	L	L		L	L	L	L	L	L	L	L	L	L	L		L	L		L	L	L			L	L	L
Muskmelon		L	L		L	L	L	L			L	L	L	L	L	L	L	L	L	L		L	L		L	L	L	L		L	L	L
Pumpkin		L	L			L	L	L			L	L		L	L	L	L	L	L	L		L	L	L	L	L	L	L		L	L	L
Squash	L	L	L		L	L	L	L			L	L		L	L	L	L	L	L	L		L	L	L	L	L	L	L		L		L	L
Watermelon	L	L	L		L	L	L	L			L	L	L	L	L	L	L	L	L	L		L	L		L	L	L	L		L		L	L
Leafy Vegetable (incl. Brassica)																																
Celery		L	L			L	L	L		L	L	L	L	L	L	L	L			L		L		L	L	L	L			L		L
Chicory, red (radicchio)		L					L						L		L					L					L	L	L					
Collards		L	L			L	L	L	L[3]					L	L	L	L			L						L	L			L		L	L
Endive		L	L			L	L	L		L		L	L	L	L					L						L	L				L		L
Escarole		L				L	L						L	L						L						L	L						L
Kale		L	L			L	L	L	L[3]					L	L	L				L						L	L			L	L	L	L
Lettuce	L	L	L			L	L	L		L		L	L	L	L	L		L	L	L		L				L	L			L	L		L
Fennel, Florence		L	L				L	L		L		L	L		L				L	L				L	L	L	L					L
Mustard		L	L			L	L	L	L[3]			L		L	L	L	L			L						L	L			L		L	L
Parsley		L	L			L	L	L				L	L	L	L		L			L					L	L	L	L			L		L
Rhubarb		L	L			L	L					L	L		L					L				L	L	L	L						L
Spinach	L	L	L			L	L	L			L	L	L	L	L	L	L	L		L						L	L			L		L
Onion & Garlic							L																									
Onion	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L			L					L	L		L	L	L	
Garlic		L		L	L	L	L		L[4]	L	L	L	L	L	L	L	L		L			L					L	L		L	L	L	
Root Crop							L																									
Beet		L				L	L	L						L	L	L	L								L	L	L				L		
Carrot		L				L	L	L			L	L		L	L	L	L					L			L	L	L			L	L		
Horseradish		L					L	L							L										L	L	L						
Parsnip		L					L	L			L	L			L										L	L	L						
Potato		L				L	L	L	L	L	L			L	L			L	L	L		L		L		L		L					
Radish		L				L	L	L				L			L										L		L						
Sweet Potato		L		L	L		L			L					L					L				L		L						
Turnip		L				L	L	L				L			L										L	L	L						
Solanaceous																																
Eggplant		L			L	L	L	L			L	L		L	L	L	L			L		L		L	L	L	L			L	L		L
Pepper	L	L			L	L	L	L	L		L	L	L	L	L	L	L		L	L	L	L		L	L	L	L		L	L	L		L
Tomato	L	L	L		L	L	L	L	L[4]	L	L	L	L	L	L	L	L	L	L			L	L	L	L	L	L	L		L			L

See notes and footnotes at end of table.

FUNGICIDES LABELED FOR VEGETABLES *continued*

L = LABELED*

	LUNA TRANQUILITY	MANKOCIDE	MANZATE MAX	MENTOR	MERIVON	METTLE 125 ME	MICROTHIOL DISPERSS	MINUET	MIRAVIS PRIME	MONCUT SC	MURAL	OMEGA 500F	***ONSET 3.6L***	ORONDIS GOLD	ORONDIS GOLD 200	ORONDIS GOLD B	ORONDIS OPTI	ORONDIS ULTRA	PH-D	PHOSTROL	***PRAIZ***	PRESIDIO	PREVICUR FLEX	PREVISTO	PRISTINE	PRIAXOR	PROCURE 480SC	QUADRIS OPTI	QUADRIS TOP	QUASH	QUILT XCEL/AFRAME PLUS	QUINTEC
Asparagus			L				L						L		L					L	L											
Cole (Brassica) Crop								L																								
Broccoli							L	L	L	L		L	L				L	L		L	L		L	L			L	L		L		
Brussels Sprouts								L	L	L		L	L				L	L		L	L		L	L			L	L		L		
Cabbage								L	L	L		L	L				L	L		L	L		L	L			L	L		L		
Cauliflower								L	L	L		L	L				L	L		L	L		L	L			L	L		L		
Cucurbits																																
Cucumber		L	L		L	L	L	L	L		L	L		L	L	L	L	L	L	L	L	L	L	L	L		L	L	L		
Muskmelon		L	L		L	L	L	L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L		
Pumpkin			L		L	L	L	L	L		L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L
Squash		L	L		L	L	L	L	L		L		L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L		L
Watermelon		L	L		L			L	L	L	L		L	L	L	L	L	L	L	L	L	L	L	L	L		L	L	L		L
Leafy Vegetable (incl. Brassica)																																
Celery					L		L	L	L			L				L		L		L	L		L	L					L	L	L
Chicory, red (radicchio)	L				L		L	L	L					L	L	L		L		L			L								
Collards								L				L	L						L	L				L			L	L		L		
Endive					L		L	L	L			L		L	L	L		L		L			L					L			
Escarole								L							L					L												
Kale								L				L	L						L	L							L	L		L		
Lettuce			L		L		L	L	L			L	L	L	L	L		L		L			L	L	L			L				
Fennel, Florence			L		L		L	L				L				L				L			L									
Mustard								L	L			L	L						L	L		L		L			L			L		
Parsley	L				L			L	L					L	L	L		L		L		L		L				L				
Rhubarb					L		L	L	L						L	L				L	L	L										
Spinach					L		L		L					L	L	L		L		L		L		L					L			
Onion & Garlic																																
Onion	L	L	L		L		L		L			L	L				L	L	L	L	L		L	L		L			L	L	L	L
Garlic	L		L		L		L		L			L	L				L	L	L	L	L		L	L		L				L	L	L
Root Crop																																
Beet	L				L			L	L			L							L				L	L								
Carrot	L				L		L	L	L			L	L								L			L		L			L	L	L	L
Horseradish	L				L		L	L	L			L				L					L		L									
Parsnip	L						L	L	L							L					L	L										
Potato	L	L	L				L	L	L			L				L	L	L	L	L	L		L	L				L	L	L[4]		
Radish	L				L		L	L	L			L				L						L										
Sweet Potato	L						L	L	L							L				L		L							L	L[4]		
Turnip	L				L		L	L	L				L			L				L		L	L									
Solanaceous																																
Eggplant					L	L		L	L		L	L	L	L	L	L	L	L		L	L	L	L	L			L			L		
Pepper			L		L	L	L	L	L		L	L		L	L	L	L	L	L	L	L	L	L	L		L			L			L
Tomato	L	L	L	L	L	L	L		L		L			L	L	L	L	L	L	L	L	L	L	L		L		L	L			L

* Label changes may have occurred since printing. See current labels for verification.
[1] Tilt only.
[3] Blocker use on collards, kale and mustard restricted to GA.
[4] Blocker 10G not labeled for garlic or tomato.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

	RALLY 40WSP	RANMAN	REVUS	REVUS TOP	RHYME	RIDOMIL GOLD BRAVO SC	RIDOMIL GOLD COPPER	RIDOMIL GOLD GR	RIDOMIL GOLD MZ WG	RIDOMIL GOLD SL	ROVRAL 4F	SCALA	SCHOLAR SC	SERENADE ASO	SWITCH 62.5WG	TAEGRO 2	TANOS	***TETRABAN***	TOPGUARD	TOPGUARD EQ	***TOPAZ***/TILT	TOPSIN 4.5FL/ TOPSIN M WSB/T-METHYL 4.5 F/T-METHYL 70 WSB	TORINO	TRIVAPRO	ULTRA FLOURISH	UNIFORM	VANGARD WG	VELUM PRIME / VELUM ONE	ZAMPRO	ZING!
	L					L								L				L								L					
			L		L	L				L	L			L				L		L						L			L L	L	
			L		L	L				L				L				L		L						L			L	L	
			L		L	L				L				L				L		L						L			L	L	
			L		L	L				L				L				L		L						L			L	L	
	L	L	L		L	L	L		L	L				L	L	L	L	L	L	L		L	L			L		L	L	L	
	L	L	L		L	L	L		L	L				L	L		L	L		L		L	L			L			L	L	L
	L	L	L		L	L	L			L				L	L		L	L	L	L		L	L			L	L		L	L	L
	L	L	L		L	L	L		L	L				L	L	L	L	L	L	L		L	L			L	L		L	L	L
	L	L	L		L	L	L		L	L				L	L	L	L	L	L	L		L	L			L	L		L	L	L
			L		L			L		L				L		L		L		L	L					L			L	L	
			L		L					L				L	L			L		L						L					
			L		L					L				L	L			L		L	L[1]					L	L		L	L	
			L		L			L		L				L	L	L	L	L		L						L			L		
			L		L									L						L						L			L		
			L		L					L				L	L			L		L						L	L		L	L	
	L	L	L		L			L		L	L			L	L	L	L	L		L						L	L		L	L	
			L		L			L		L				L				L		L	L					L			L	L	
			L		L					L				L	L			L		L						L			L	L	
			L		L	L		L		L				L	L	L	L	L		L	L					L	L		L	L	
			L		L			L		L				L				L		L	L					L	L		L	L	
		L	L		L		L	L		L				L		L	L	L		L						L	L		L	L	
	L	L	L		L	L	L		L	L	L	L		L	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L	L
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FUNGICIDES, NEMATODES AND SOIL TREATMENT

FUMIGANT/NEMATICIDE

METHYL BROMIDE ‡

Primarily a plant bed treatment. Preplant treatment only. Generally applied as gas under gas-proof tarps. Expose soil to fumigation for 24-48 hours. Aerate soil and wait 2-14 days before planting. Follow manufacturer's directions. Approved for vegetable plant beds (production of transplants only) and preplant treatment of tomato acreage. Gives excellent control of severe root-knot nematode infested soil. Label uses have changed. See current labels.

MOCAP EC, MOCAP 15G ‡ (ETHOPROP, NON-FUMIGANT)

Soil treatment only. Registered for use on cabbage, cucumbers, lima beans, potatoes, snap beans, sweet corn and sweet potatoes.

SMDC; SODIUM METHYLDITHIOCARBAMATE (VAPAM ‡, ETC.)

Preplant soil treatment only. Used alone or in water as a soil fumigant. May be applied by soil injection, through sprinkler system, in check or flood irrigation water. Also may be applied uniformally over soil surface with sprinkling can, hose proportioner, or sprayed and then watered in. Apply gas-proof plastic cover or use water seal. Aerate 5-7 days after application and allow an additional 7-14 days before planting; up to 30 days may be required if soil temperature below 60° F. Follow manufacturer's directions. Using 20 gal/A under plastic will give good control of heavily infested root-knot nematode soil.

1,3 DICHLOROPROPENE, CHLOROPICRIN (INLINE ‡, TELONE II ‡)

Soil treatment only. Registered for use on many vegetables. See current label.

FLUAZAINDOLIZINE: SULFONAMIDE NEMATICIDE, (SALIBRO).,

Soil treatment only. Registered for use on many vegetable crops. Thorough soil incorporation to a 2" depth, applied through drip irrigation, preplant incorporated broadcast or at planting banded incorporated applications. See current label for crop specific soil application rates, methods, restrictions and nematode species controlled.

DISEASE AND NEMATODE CONTROL

SOIL TREATMENTS

Seedling diseases, root diseases and vascular wilts caused by soilborne fungi and nematodes can be destructive problems in the field and greenhouse. In many cases, soil applied fumigants or nematicides can help prevent serious losses to soilborne disease when used in conjunction with long-term disease management practices. Soil fumigants have been tested on several Iowa vegetable crops, but unlike Illinois and Indiana, have not been consistently beneficial. For Iowa, crop rotation, particularly with field corn and soybeans, is very effective.

Soil fumigants are chemicals that, when injected into the soil, emit toxic fumes that penetrate air space in soil in sufficient concentration to kill microorganisms. They must be sealed into the soil with water or a plastic tarp to ensure that a lethal concentration and exposure time is reached. Because fumigants are harmful to all living plants, a period of 2 weeks to 2 months must be allowed between treatment and planting in order to avoid crop damage. Several non-fumigant nematicides are available for several vegetable crops. These generally are systemic compounds that also may provide good insect control.

A number of different factors affect the performance of these products, including soil temperature, soil moisture, soil tilth, organic matter, soil type, and time of application. Consult the product label for specific details on safe handling and application rates.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SEEDBED AND EARLY ESTABLISHMENT HERBICIDES

Herbicide	Rate/Acre	Comments/Restrictions
CLEANSE	6-8 fl oz	Add 0.5 gal HSOC-COC/100 gal.* Do not apply more than 8 fl oz/A in a single application. For repeat applications make on a minimum 14-day interval. PHI 1 day.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-11.7 lb AMS/100 gal or WC+NIS.* Apply prior to planting. Do not apply within 1 week before the first spears emerge. Spot treatment during season - apply immediately after cutting but prior to emergence of new spears. Do not treat more than 10% of total field to be harvested. Also labeled for postharvest applications. PHI 5 days.
FUSILADE DX	6-16 fl oz	Add 1 pt HSOC-COC/100 gal.* Apply POST to non-bearing crop only. Provides control of actively growing annual and perennial grass. See label for specific species and rate. Do not apply to grasses that have tillered, formed seed heads, or exceeded recommended growth stages. Do not apply to grasses which are drought stressed. Do not apply more than 48 fl oz/A/year to bearing asparagus. Do not apply more than 24 oz/A in a single application. Allow a minimum of 14 days between applications. Do not harvest asparagus sooner than 1 day after application.
GRAMOXONE SL 3.0 ‡	1.7-2.7 pt	Add 2 pt NIS/100 gal.* Apply for control of annual broadleaf weeds and grasses. Weeds should not exceed 6" in height. Apply before asparagus emerges. Seeding or transplanting should be done with a minimum of soil disturbance. May also be applied postharvest. PHI 6 days.
LOROX DF	2-4 lb: PRE 1-2 lb: POST	Apply PRE to direct seeded or newly planted crowns. Apply after planting seed 0.5 inches deep in coarse soils and 1" deep in fine soils and spraying a 1" band of activated charcoal on the soil surface directly over the row at the rate of 300 lb/A (equivalent to 15 lb/A of crop with 20" row spacing). Weed control may be reduced in soils with high organic matter (greater than 5%). Apply POST at 1-2 lb to 6-18" ferns and ≤4" weeds. For established beds use PRE at 2-4 lb; POST at 1-2 lb to ≤4" weeds. Apply before cutting season or immediately after cutting. Directed POST at 4 lb/A for dudain melon control. See label for details. PHI 1 day.
POAST	0.5-1.25 pt	Add 1 pt HSOC-COC/A.* Apply POST to actively growing annual or perennial grasses. See label for rates for specific weeds. Do not apply to asparagus within one day of harvest.
REGLONE/DIQUAT 2L	1.5-2 pt	Use as POST directed spray. Do not use plants for food for 1 year.
ROUNDUP; POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6**	See label for precise rates associated with weed species and annual per acre maximums	Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply prior to crop emergence for control of emerged weeds. Do not apply within a week before the first spears emerge. See label for perennial rates. Spot treatment during season - apply immediately after cutting but prior to emergence of new spears. Do not treat more than 10% of total field to be harvested. Also postharvest label. PHI 5 days.
SANDEA	0.5-1.5 oz	Apply to nursery or transplanted crowns. Apply no sooner than 6 weeks after fern emergence on first-year transplants. PHI 1 day.
SECTION THREE	4-5.33 fl oz	Add 0.5 gal HSOC-COC/100 gal.* Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 1 day.
SELECT MAX	9-16 fl oz	Add 1 qt NIS/100 gal.* Max. 1 POST application. PHI 1 day.
SOLICAM DF	2.5-5 lb	Rate depends on soil texture; see label. 12 months after planting to 1st allowed application. PRE: Apply in minimum of 20 GPA. See label for tank mixes. PHI 14 days.

ESTABLISHED PLANTING HERBICIDES

Herbicide	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	0.5-1.92 fl oz	POST Apply one to two applications. Rate depends on target weed; see label. Max. 3.8 fl oz/A/season. 20-day application interval. See label for adjuvant recommendations.
CALLISTO/***INCINERATE***	3-7.7 fl oz	Broadcast or band in spring prior to spear emergence or post-harvest. Apply post-harvest as a directed spray to reduce contact with spears or ferns to avoid crop injury. Do not make >2 applications/year, and do not make second application with 14 days of first. Include NIS or COC with UAN/AMS if weeds are emerged.*
CHATEAU EZ	6 fl oz	Apply to dormant asparagus for preemergence control of weeds, no less than 14 days before spears emerge. Or apply PH but prior to fern emergence; see label for rainfall/irrigation requirements. See label for burndown timing and additive requirements. Max. 6 fl oz/A/year Max. 1 application/A/year.
CLEANSE	6-8 fl oz	Add 0.5 gal HSOC-COC/100 gal.* Do not apply more than 8 fl oz/A in a single application. For repeat applications make on a minimum 14-day interval. PHI 1-day.
COMMAND 3ME	42.7 fl oz	Apply in min. 10 GPA water. As broadcast prior to spear emergence or after a clean harvest. Cover exposed plants with soil prior to application. PHI 14 days. Max. 42.7 fl oz/A/year. Max. 1 application/year.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-11.7 lb AMS/100 gal or WC+NIS.* Apply prior to planting. Do not apply within 1 week before the first spears emerge. Spot treatment during season - apply immediately after cutting but prior to emergence of new spears. Do not treat more than 10% of total field to be harvested. Also labeled for postharvest applications. PHI 5 days.
DEVRINOL DF-XT	8 lb	Apply to weed free soil surface. May be applied to established (>1 growing season) crops.

See notes and footnotes at end of table.

ESTABLISHED PLANTING HERBICIDES *(continued)*

Herbicide	Rate/Acre	Comments/Restrictions
DIMETRIC EXT or ***DIMETRIC LIQUID***	1.33-2.67 lb or 2.66-5.33 pt	Apply one time per season or split treatment PRE and Post-harvest. PRE application can be made up to 14 days before harvest. Post application can be made after last harvest, but before emergence. Do not use on newly seeded asparagus nor on young plants during the first growing season after setting crowns. Do not exceed 2.67 lb/A or 5.33 pt/A in one crop season. See label for details.
GRAMOXONE SL 3.0 ‡	1.7-2.7 pt	Add 2 pt NIS/100 gal.* Apply for control of annual broadleaf weeds and grasses. Weeds should not exceed 6" in height. Apply PRE to established asparagus beds at least 2 years old. May also be applied postharvest. PHI 6 days.
KARMEX 80WP/KARMEX DF	1-2 lb: low organic matter soils 2-4 lb: high organic matter soils	Apply either one time within 4 weeks before spear emergence and no later than the early cutting period, or in split application with the second immediately before final harvest. If irrigated in WA, apply a single treatment of 4 lb per acre. Do not exceed 3 lb/A per application with split treatment.
POAST	0.5-1.25 pt	Add 1 pt HSOC-COC/A.* Apply POST to actively growing annual or perennial grasses. See label for specific weeds. PHI 1 day.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6**	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply at least one week before spear emergence or after final harvest and removal of all spears, or until ferns develop and apply as directed or shielded application. Direct contact with the asparagus may result in serious crop injury. For specific rates and instruction for control of annual and perennial weeds, see label.
RUGGED	3-4 pt	Apply in spring on actively growing weeds before spears are present. If spears are present, treat after cutting using drop nozzles to avoid spraying the fern. PHI 3 days.
SANDEA	0.5-1.5 oz	Apply before or during harvest season. Apply post-harvest with NIS or COC *; drop nozzles recommended to reduce crop injury. PHI 1 day.
SECTION THREE	4-5.33 fl oz	Add 0.5 gal HSOC-COC/100 gal.* Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 1 day.
SELECT MAX	9-16 fl oz	Add 1 qt NIS/100 gal.* Max. 1 POST application. PHI 1 day.
SHREDDER E-99	SEE 2,4-D	
SOLICAM	2.5-5 lb	Rate depends on soil texture; see label. PRE: Apply in minimum of 20 GPA as a broadcast treatment. Solicam must be moved into weed seed zone within four weeks of application to be effective. Allow newly planted fields to be established for one season before use. See label for rotational crops. PHI 14 days.
SONIC BOOM	See label for rates associated with Soil Type and organic matter.	Apply as a broadcast treatment to crowns established for one or more years. Do not use on newly seeded asparagus or on young plants during the first growing season after setting crowns. Apply in the spring before the crop and weeds emerge. Apply using 10 to 40 gallons of finished spray per acre. May be applied with other pesticides registered for use on asparagus. PHI 14 days. Do not apply by air. Max. of 1 application per season. Do not apply more than 43 fl oz/A/ 12 month period. Do not use on sands with less then 1% O.M.
STERLING BLUE*/*CLARIFIER/ CLARITY/***DICAMBA MAX 4***	0.5-1 pt	Dicamba Max 4 labeled only in CA, OR and WA. Apply Post to emerged and actively growing weeds in 40-60 GPA immediately after cutting the field, but at least 24 hours before the next cutting. If spray contacts emerged spears, crooking (twisting) of some spears may result. If such crooking occurs, discard affected spears.
TRUST/TREFLAN HFP	2-4 pt	Incorporate within 24 hr. Apply either total amount before first harvest or after final harvest, or use split treatments and apply half before first harvest and half after final harvest. Will provide control of some annual grasses and broadleaves. Use rates depend on soil type and OM. Refer to label for specific application rates.
TUSCANY SC	Up to 6 fl oz	Apply to dormant asparagus for preemergence control of weeds, no less than 14 days before spears emerge. Or apply PH but prior to fern emergence; see label for rainfall/irrigation requirements. See label for burndown timing and additive requirements. Max 6 fl oz/A/application, max. 6 fl oz/A/year, max. 4 applications/year.
WEEDAR 64 OR WEEDAR XHL	3-4 pt or 32-43 fl oz	Apply in the spring on actively growing weeds. Apply in 50 to 60 gallons/A or 12 GPA by air. Drops only for Post harvest applications. If asparagus spears are present, treat immediately after cutting. Spears contacted by the spray may be malformed and off-flavored. If spears are malformed by spray, cut immediately and discard. Max. 4 pts or 43 fl oz/A/year/application. Max. 2 applications per crop cycle. Minimum of 30 days between applications. PHI 30 days.
2,4-D AMINE 4	3-4 pt	Apply to actively growing weeds before, during, or after the harvest season: April or May is preferable. If spears are present, apply after cutting to minimize injury. Use drop nozzles for postharvest spraying to avoid spray contact with ferns. PHI: 3 days for 2,4-D Amine 4. Limit 2 applications per crop.

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates..
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
** May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED INSECTICIDES

INSECT*	INSECTICIDE											
	ARCTIC 3.2 EC ‡	CORAGEN	***DIMATE 4E***	DIPEL DF	ENTRUST SC	FULFILL	LANNATE LV ‡	***LAMBDA-CY AG ‡***	LORSBAN ADVANCED ‡	PYGANIC EC 1.4$_{II}$/ PYGANIC EC 5.0$_{II}$	RADIANT SC	***YUMA 4E ‡***
APHID			●			●		●		●		
ARMYWORM		●		●				●	●	●		●
ASPARAGUS APHID								●	●	●		●
ASPARAGUS BEETLE	●		●		●		●		●	●	●	●
CUTWORM	●						●	●	●			●
DIAMONDBACK MOTH										●		

*Many other insects may be controlled, see label.
See Insecticide Resistance Management in the Technical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECT TREATMENT GUIDELINES

Insecticde	Rate/Acre	PHI[1]	Comments/Restrictions
ARCTIC 3.2 EC ‡	2-4 fl oz	1	Apply by ground equipment in enough water to obtain good coverage. Note 1.
CORAGEN	3.5-7.5 fl oz	1	Make no more than 4 applications/A/crop. 10 GPA by ground. Min. treatment interval 3 days. Do not apply >15.4 fl oz/A/crop.
DIMATE 4E	1 pt	180	Do not use in CA, AZ.
DIPEL DF	0.5-2 lb	0	Bacillus thuringiensis insecticide. Apply in minimum of 20 GPA water by ground or 3 GPA by air. Repeat as necessary. Re-entry - when spray dries.
ENTRUST SC	4-6 fl oz	60	Apply only to ferns in sufficient water to obtain good coverage. Do not apply more than 18 fl oz of Entrust SC per acre per season. 2ee (exp. date not given) in various states for overhead sprinkler chemigation use.
FULFILL	2.75 oz	170	Apply only to ferns. Apply in sufficient water to ensure coverage. Use a penetrating surfactant for optimum results.
LANNATE LV ‡	1.5-3 pt	1	
LAMBDA-CY AG ‡	1.92-3.84	7	When applying by air, apply in a minimum of 2 gal of water/A.
LORSBAN ADVANCED ‡	2 pt	1	Apply in sufficient water to obtain good coverage. Do not make more than one preharvest application per season. Do not make more than 2 post-harvest applications during the fern stage. Labeled in AZ, CA, ID, IN, IL, IA, KS, MI, MN, MO, NE, ND, OH, OR, SD, WA, WI. NOTE: After 2/28/22 this product no longer has tolerances approved by EPA for food uses.
PYGANIC EC 1.4$_{II}$	16-64 fl oz	0	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0$_{II}$	4.5-15.61 fl oz	0	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
RADIANT SC	4-8 fl oz	60	Post-harvest for ferns only.
YUMA 4E ‡	2 pt	1	Apply in sufficient water to obtain good coverage. Do not make more than one preharvest application per season. Do not make more than 2 post-harvest applications during the fern stage. NOTE: After 2/28/22 this product no longer has tolerances approved by EPA for food uses.

[1]PHI – preharvest interval in days.
Note 1: See label for insecticide rate for each insect.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

ASPARAGUS DISEASE CONTROL

LABELED FUNGICIDES

DISEASE*	FUNGICIDE																
	ACTINOVATE AG	ALIETTE WDG	BADGE SC/BADGE X2	BRAVO ULTREX or WEATHER STIK	DITHANE F-45 RAINSHIELD	FLINT	MANZATE MAX/PRO-STICK or PENNCOZEB 75DF	***ONSET 3.6L***	ORONDIS GOLD	ORONDIS GOLD B	PENNCOZEB 75DF	PHOSOTROL	***PRAIZ***	RALLY 40 WSP	RIDOMIL GOLD SL	***TETRABAN***	ULTRA FLOURISH
CERCOSPORA BLIGHT				●									●				
CERCOSPORA LEAF SPOT					●		●				●						
CROWN ROT (Phytophthora sp.)	●	●								So		●			●		So
PURPLE SPOT				●		●							●			●	
RUST			●	●	●		●	●			●		●	●			
SPEAR ROT										So					●		So

So - Soil application.

*Other diseases may be controlled, see label.
See Fungicide Resistance Management in the Technical Information section.

DISEASE TREATMENT GUIDELINES

Fungicide	Rate/Acre	PHI[1]	Comments/Restrictions
ACTINOVATE AG	3-12 oz	0	See label for soil-borne and foliar diseases controlled/suppressed. Soil-applied: At plant, in-furrow in 10-200 GPA; may be applied by drip, overhead or other irrigation systems, and may also be used as seed treatment; see label. Foliar: Apply in 10-150 GPA; reapply every 7-14 days depending on disease pressure and environmental conditions; best to use spreader-sticker (adjuvant); may be applied by air (see label).
ALIETTE WDG	5 lb	110	Apply once per season. Apply to fully expanded ferns. Do not apply to ferns that are beginning to senesce. Thorough coverage is required. CA only. Max. 7 applications/season.
BADGE SC or BADGE X2	1-2.5 pt or 1-2.5 lb	0	Min. retreatment interval 10 days. Add a spreader/sticker. Apply higher rates when conditions favor disease development.
BRAVO ULTREX or WEATHER STIK	1.8-3.6 lb or 2-4 pt	190	Apply on ferns after spears have been harvested. Repeat at 14-28 days. Do not exceed 9 lb a.i./season.
DITHANE F-45 RAINSHIELD	1.6 qt	180	Start applications at first sign of disease and repeat at 10-day intervals. Apply only on asparagus ferns after spears have been harvested. Max. 8 lb a.i/A/season. Do not apply more than 6.4 qt/A/season. PHI 120 days in CA, AZ.
FLINT	3-4 oz	180	Begin application prior to disease development and continue at 14 day intervals. Max. 2 sequential applications. Apply to fern stage. PHI in CA 90 days.
MANZATE MAX or MANZATE PRO-STICK	1.6 qt or 2 lb	180	Start applications when rust threatens. Repeat every 10 days as needed. Apply only on ferns after spears have been harvested. Max. 6.4 qt/A/season or 8 lb/A/season. PHI 120 days in CA and AZ.
ONSET 3.6L	4-6 fl oz	180	Use as a foliar spray on developing ferns after spear harvest is completed. Apply at earliest sign of rust pustules. Repeat on 14 day interval. PHI 100 days in CA. Max. 3 applications or 18 fl oz/A/season.
ORONDIS GOLD	28-55 fl oz	1	For Phytophthora root rot: Use as crown soak prior to planting (see label) or use in established plantings at indicated rate in 20 GPA as soil -directed band at least 14 days prior to harvest (first cutting); make second application on day before the first cutting. Apply 1/4-1/2" water after application (overhead sprinkler irrigation or hose drench on row). See label for drip irrigation directions.
ORONDIS GOLD B	1 pt	1	Soil spray broadcast or band. Cutting beds: apply 30-60 days before 1st cutting, and again just before beginning harvest. New plantings: apply after planting or after covering 1-year old crowns. See label for additional soil-directed application instructions.
PENNCOZEB 75DF	2 lb	180	Begin applications when rust first appears and repeat at 10 day intervals as needed. Use only on ferns after spears have been harvested. Max. 8 lb per acre per season.
PHOSTROL	2.5-5 pt	0	Apply to fully expanded ferns; do not apply to ferns that are beginning to senesce.
PRAIZ	2-4 pt	190	Begin application following the final harvest of spears. Repeat at 14-28 day intervals. Max. 9 lb a.i./A/season. PHI 120 days in CA, AZ.
RALLY 40 WSP	5 oz	180	Do not apply to harvestable spears. Begin application to developing ferns after harvest. Max. 6 applications or 30 oz/A/season. See label for CA PHIs.
RIDOMIL GOLD SL	0.5-1 pt	1	Apply in a minimum of 10 GPA. Cutting Beds: Apply 30-60 days before the first cutting. Apply again just before the beginning of harvest.
TETRABAN	6-15.5 fl oz	100	Apply by ground, air or irrigation prior to disease development, continue on 7-14 day schedule.
ULTRA FLOURISH	2 pt	1	Apply as broadcast or banded spray to soil in min. 10 GPA. Cutting beds: 30-60 days before first cutting; additional application just before harvest if needed. New plantings: After planting seedlings or after covering one-year-old crowns.

[1] PHI – preharvest interval in days.

DIRECT SEEDED OR TRANSPLANTED HERBICIDES

Herbicide	Labeled Crops[1]				Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	B	BS	C	CL	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown 7 days before planting, or POST hooded or shielded sprayers only for broadleaf weeds in row middles. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6. 15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CLEANSE	B	BS	C	CL	6-8 fl oz	Add 0.5 gal HSOC-COC1/100 gal.* POST to actively growing grasses. PHI 30 days.
COMMAND 3ME	B		C		0.67 pt: direct seeded 0.67-1.3 pt: transplant	PPI PRE. Controls annual broadleaves and grasses. Apply before planting and incorporate immediately to 1". 45 day PHI.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	B	BS	C	CL	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP PRE POSTD. Apply prior to planting preemergence at-planting or through directed application postemergence.
DACTHAL W-75 or DACTHAL FLOWABLE	B	BS	C	CL	6-14 lb or 6-14 pt	Apply at seeding or transplanting prior to weed seed germination. Can be incorporated.
DEVRINOL DF-XT	B	BS	C	CL	1-4 lb	Rate and annual maximum/A/year depends on growing region; see label. May be applied to direct seeded and transplanted crop, PPI or as surface spray after planting. Controls annual grasses and some broadleaves. Shallow incorporate (depth depends on growing region) or sprinkler irrigate within 24 hours to soil depth dependent on growing region.
GOAL 2XL	B		C	CL	1-2 pt	PP. Transplanted Only: Controls germinating broadleaves. Apply to soil after final tillage but before transplanting. Do not use on direct seeded cole crops. Use low rate on coarse sandy soil. If plants contact treated soil some foliar burn may occur but plants generally outgrow the symptoms rapidly. Do not use on brussels sprouts. A wider spectrum of weed control will be obtained if used with a PPI application of trifluralin or a post-transplant application of Devrinol DF-XT.
GOALTENDER	B		C	CL	0.5-1 pt	PP. Transplanted Only: Controls germinating broadleaves. Apply to soil after final tillage before transplanting. Do not use on direct seeded cole crops. Use low rate on coarse sandy soil. If plants contact treated soil some foliar burn may occur but plants generally outgrow the symptoms. Do not use on brussels sprouts. GoalTender 24c for Post emergence use in Broccoli, Cabbage, and Cauliflower in the following states AZ, DE, ME, (Broccoli only) MI, NJ, NY, PA, TX, WI. (Exp. dates vary by state). Application rate - 4 to 6 fl.oz./A or 4 to 8 fl.oz./A as a directed spray. Do not mix with adjuvants or oils. Severe crop response may occur following application, refer to the Goaltender 24C label for additional use directions and restrictions.
GRAMOXONE SL 3.0 ‡	B		C	CL	2-4 pt or 1.3-2.7 pt	Add 2 pt NIS/100 gal.* Apply before transplanting or before/after seeding but before crop emergence. Max. 12 pt/A/year or 8 pt/A/year. Max. 3 applications/year. Supplemental label FL, OH - Gramoxone SL 3.0 (exp. date not given) for directed spray in C: In FL 0.8-1.25 pt/A; In OH 1.5 pt/A.
POAST	B	BS	C	CL	1-1.5 pt	Add 1 pt HSOC-COC/A.* POST. Controls emerged grasses. Apply to actively growing grasses. Use high rate on perennial grasses. Max. of 3 pt/A. 30 day PHI.
PREFAR 4E	B	BS	C	CL	5-6 qt	PRE. Controls annual broadleaves and grasses. Apply before seeding and incorporate 1-2 inches. Apply PRE and irrigate with one inch of water.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	B	BS	C	CL	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or WC+NIS.* Controls emerged annuals. Apply PRE to emerged perennials before planting in the spring or after harvest in the fall. Check label for best time of year stage of growth and rate for each problem perennial weed. Allow 7 or more days before tilling.
SELECT MAX	B	BS	C	CL	9-16 fl oz	Add 1 pt NIS/100 gal.* Do not apply >16 fl oz/A in a single application or >64 fl oz/A/ season. For repeat applications make on a min. 14 day interval.
SPARTAN CHARGE			C		2.9-15.2 fl oz	Use in transplanted cabbage only. Apply PP 60 days prior to planting up to planting. May be applied PPI in spring prior to transplanting. Do not incorporate more than 2" deep.
STINGER	B	BS	C	CL	0.25-0.5 pt	POST. For use in most states; check label. Controls wild buckwheat chamomile clover cocklebur dandelion galinsoga prickly lettuce pineappleweed ragweed smartweed; suppresses annual sowthistle and Canada thistle at 0.33-0.5 pt/A. Make 1-2 broadcast applications per crop year not to exceed 0.5 pt/acre per year (max. 0.66 pt/A in NY or CA). PHI 30 days. Refer to label for important crop rotational interval restrictions in sensitive crops.

See notes and footnotes at end of table.

DIRECT SEEDED OR TRANSPLANTED HERBICIDES *continued*

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
TRUST/TREFLAN HFP	B BS C CL	1-2 pt	Apply before seeding or transplanting. Use 1-1.5 pt/A on direct-seeded crops. Incorporate 2-3 inches soon after spraying. Use rates depend on soil type and OM. Refer to label for specific application rates. Not effective on muck soils. Controls annual grasses and some broadleaves. May stunt transplanted crops or delay emergence of seeded crops when soil temperature is below 60° F.
VIDA	B BS C CL	0.5-2 fl oz	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

[1] B – Broccoli BS – Brussels Sprouts C – Cabbage CL – Cauliflower
*** For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
** May use other glyphosate herbicides: Roundup brands/Cornerstone brands at labeled rates
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED INSECTICIDES

INSECT*	ACTARA	ADMIRE PRO	***ADVISE FOUR***/NUPRID 4F MAX	AGREE WG	***ARCTIC 3.2 EC*** ‡	ASANA XL ‡	ASSAIL 70WP/30SG	AVAUNT/AVAUNT EVO	BAYTHROID XL ‡	BELAY INSECTICIDE ‡	BELEAF	BESIEGE ‡	***BRACKET 97***/ORTHENE 97	BRIGADE 2EC ‡	CAPTURE LFR ‡/***TUNDRA LFC*** ‡	CERTADOR	CLOSER SC	CONFIRM 2E	CORAGEN	DANITOL 2.4 EC ‡	DIBROM 8E‡	***DIMATE 4E***	DIPEL DF	DURIVO	ENDIGO ZCX ‡	ENTRUST SC	EXIREL	FASTAC CS ‡	FULFILL	***GRIZZLY TOO*** ‡	HERO ‡	INTREPID 2F
	INSECTICIDE																														
CABBAGE APHID	●	●	●				●			●	●	S		●	●[3]	S	●				●	●		●			●		●	S	●	
CABBAGE LOOPER					●	●		●	●			●	●	●	●[3]			●	●	●	●		●	●	●	●	●	●		●	●	●
CABBAGE MAGGOT															●																
DIAMONDBACK MOTH					●		S	●	●			●	●		●[3]				●		●		●	●	●	●	●			●	●	S
FLEA BEETLE	●	●[3]	●		●[1]	●			●	●		●		●	●[3]	●								●	●	S	●			●	●	
IMPORTED CABBAGEWORM					●	●		●	●			●	●	●	●[3]			●	●	●	●		●	●	●	●	●			●	●	●
STINK BUG									●	●[3]		●		●	●[3]	●									●			●		●	●	
THRIPS	●	●[4]	●		●[2]		●		●	●[4]		S		●	●[3]		S							●	S	●	S	●		S	●	

LABELED INSECTICIDES *continued*

INSECT*	***LAMBDA-CY AG*** ‡	LANNATE LV ‡	LEVERAGE 360 ‡	MALATHION 8 FLOWABLE	MOVENTO	MUSTANG MAXX ‡	OBERON 2SC	PLATINUM 75 SG	PROCLAIM ‡	RADIANT SC	SENSTAR	SEQUOIA	SIVANTO PRIME	***TUNDRA EC*** ‡/***BIFEN 2 AG GOLD*** ‡/BRIGADE 2EC ‡	VENOM	VERIMARK	VERSYS	VOLIAM FLEXI	WARRIOR II ‡	XENTARI	XPEDIENT PLUS V ‡
CABBAGE APHID	S		●	●	●	S		●			●	●	●	●	S	●	●	●	S		
CABBAGE LOOPER	●	●	●	●		●			●	●				●		●		●	●	●	
CABBAGE MAGGOT																					●
DIAMONDBACK MOTH	●	●			S	●			●	●	S			●		●		●	●	●	
FLEA BEETLE	●		●	●		●		●						●	●	●		●	●		
IMPORTED CABBAGEWORM	●	●	●	●		●			●					●		●		●	●	●	
STINK BUG	●		●			●								●	●				●		
THRIPS	S		●		S	●		●		●	S	S		●		S		●	S		

S – Suppression. * Many other insects may be controlled see label.

[1] Cabbage only

[2] Broccoli, Brussels Sprouts and Cauliflower

[3] Foliar only

[4] Soil applied only

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECT MANAGEMENT THRESHOLDS

APHIDS	Broccoli and Cauliflower: Treat if more than 100 aphids/plant before heading or 5/plant after heading. Cabbage: Treat when 1-2% of plants are infested.
NEMATODES	Broccoli, Brussels Sprouts, Cabbage, Cauliflower: Apply Mocap EC/Mocap 15G or comparable products.
THRIPS	Plant resistant cabbage varieties.
CATERPILLARS LOOPERS	See table below.

Crop	Growth Stage	Threshold *(% infestation)*	Crop	Growth Stage	Threshold *(% infestation)*	Crop	Growth Stage	Threshold *(% infestation)*
Cabbage	Seedbed	10%	Broccoli	Seedbed	10%	Cauliflower	Seedbed	10%
	Transplant to cupping	30%		Transplant to first flower	50%		Transplant to first curd	50%
	Cupping to early head	20%						
	Mature head	10%		Flower bud to harvest	10%		Curd present	10%

INSECT TREATMENT GUIDELINES

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ACTARA	B BS C CL	1.5-5.5 oz	0	Note 1.
ADMIRE PRO	B BS C CL	4.4-10.5 fl oz	7,21	See label for soil application instructions. Use 1.3 fl oz/A for foliar. PHI 7 days foliar.
ADVISE FOUR/NUPRID 4F MAX	B BS C CL	5-12 fl oz: soil 1.5 fl oz: foliar	7,21	See label for soil application instructions. PHI 7 days foliar. Max. soil application of 12 fl oz/A/crop season. Max. foliar application of 7.7 fl oz/A/crop season.
AGREE WG	B BS C CL	0.5-2 lb	0	
ARCTIC 3.2 EC ‡	B BS C CL	2-4 fl oz 2-8 fl oz	1	Note 1.
ASANA XL	B C CL	2.9-9.6 fl oz	3	Repeat as needed for control. Do not exceed 0.4 lb a.i./A/season. Note 1.
ASSAIL 70WP or ASSAIL 30SG	B BS C CL	0.8-1.7 oz or 2-4 oz	7	Aphids may differ in susceptibility. Do not exceed 5 applications or 8.5 oz/A or 20 oz/A per crop. Note 1.
AVAUNT/AVAUNT EVO	B BS C CL	2.5-3.5 oz	3	Add a wetting agent to improve coverage. Note 1.
BAYTHROID XL ‡	B BS C CL	0.8-3.2 fl oz	0	Use a min. of 5 GPA by air or 10 GPA by ground. Apply at 7 day intervals. Note 1.
BELAY INSECTICIDE	B BS C CL	9-12 fl oz: soil 3-4 fl oz: foliar	21	See label for soil application instructions.
BELEAF 50SG	B BS C CL	2-2.8 oz	0	Note 1.
BESIEGE ‡	B BS C CL	5-9 fl oz	3	Max. 31 fl oz/A or 0.24 lb a.i./A.year lamda-cyhalothrin-containing products or 0.2 lb/A/year chlorantraniliprole-containing products. 5-day min. application interval.
BRACKET 97/ORTHENE 97	BS CL	0.5-1 lb	14	Do not apply more than 2.125 lb/A per season. Note 1.
BRIGADE 2EC ‡	B BS C CL	2.1-6.4	7	Apply in min. 2 GPA by air (see label for info on additives), 10 GPA by ground. Max. 6.4 fl oz/A/application. Max. 32 fl oz/A/year. Max 5 applications after bloom. Min. 7-day reapplication interval.
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	B BS C CL	3.4-6.8 fl oz: soil 2.8-8.5 fl oz: foliar (Capture LFR only)		See individual labels for specific target insects and rates. Apply either In-Furrow or T-Band at transplanting/setting. May be tankmixed with liquid fertilizers and amendments.
CERTADOR	B BS C CL	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21,1	Use only one application method. Apply as foliar when pests appear as needed but not more than every 7 days. PHI 21 days for soil application, 1 day for foliar. See label for row spacing rates.
CLOSER SC	B BS C CL	1.5-5.75 fl oz	3	Do not make more than 4 applications/crop 2 consecutively or <7 days apart and more than 17 fl oz/A/season. Do not apply anytime 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 feet out from the downwind edge of the field a downwind 12-ft on-field buffer must be observed. Note 1.
CONFIRM 2E	B BS C CL	6-8 fl oz	7	Rate dependent on target pest; see label. 10- to 14-day application interval.
CORAGEN	B BS C CL	3.5-7.5 fl oz	3	At-planting or foliar. Include an adjuvant. Do not exceed 15.4 fl oz/A/crop.
DANITOL 2.4 EC ‡	B BS C CL	10.67-16 fl oz	7	Do not exceed 2.67 pt/A per season.
DIBROM 8E ‡	B BS C CL	1-2 pt	1	Max. 10 pt/A/season. Apply by ground or air. Do not apply if T >90 °F. 7-day min. application interval. Do not make >5 applications/season. Note 1.
DIMATE 4E	B C BS	0.5-1 pt 1-2 pt	7,10	BS in CA only; PHI 10 days.
DIPEL DF	B BS C CL	0.25-2 lb	0	Bt insecticide. Note1.
DURIVO	B BS C CL	10-13 fl oz	30	Apply in-furrow; POST-seeding transplant or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Max. 1 soil application/season.
ENDIGO ZCX	B BS C CL	4-4.5 fl oz	1	Note 1.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ENTRUST SC	B BS C CL	1.5-10 fl oz	1	Do not make applications less than 4 days apart. Do not make more than six application per calendar year. Do not apply more than 29 fl/A/season. 2ee (exp. date not given) in various states for overhead sprinkler chemigation .
EXIREL	B BS C CL	7-20.5 fl oz	1	Apply foliar with an effective adjuvant. 5-day min. application interval. Max. 0.4 lb a.i. cyantraniliprole/A/calendar year. Note 1.
FASTAC CS ‡	B BS C CL	2.2-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply more than 11.4 fl oz/A/season. Min. 15 GPA ground and 5 GPA air.
FULFILL	B BS C CL	2.75 oz	7	Do not exceed 5.5 oz/A/season. Allow ≥7 days between applications.
GRIZZLY TOO ‡	B BS C CL	0.96-1.92 fl oz	1	Do not apply more than 0.96 pt/A/season. Note 1.
HERO ‡	B BS C CL	4-10.3 fl oz	7	Note 1. 2ee in states except Texas where Hero is registered (exp. 12/2027) for cabbage maggot and seedcorn maggot at 8.3-10.3 fl oz/A.
INTREPID 2F	B BS C CL	4-10 fl oz	1	Use 4-8 oz/A for early season applications only and 8-10 oz/A for mid- to late-season applications or for heavy infestations or applications when coverage is difficult. Do not exceed 64 fl oz/A per season. Note 1.
KNACK	B BS C CL	8-10 fl oz	7	Insect Growth Regulator. Controls various whiteflies; see label. Do not make >2 applications/ growing season. 14-day min. application interval. Max. 20 fl oz/A/season. 2ee AZ, CA (exp. 12/2027) for Lepidoptera worms/caterpillars.
LAMBDA-CY AG ‡	B BS C CL	1.92-3.84	1	Apply in a min. of 2 GPA by air.
LANNATE LV ‡	B C CL BS	0.75-3 pt 1.5-3 pt	1,3	PHI is 1 day for C and 3 days for other crops. Note 1.
LEVERAGE 360 ‡	B BS C CL	3 fl oz	7	Max. 12.8 fl oz/A/season. Min. 1 week between applications. 2ee AZ, CA, WA (exp. date not given) for use on cabbage maggot garden symphylan and seed corn maggot.
MALATHION 8 FLOWABLE	B BS C CL	1.25 pt	27,2	Max. number of applications/year is 2 for B, BS, CL 6 for C. PHI 2 days for C.
MOVENTO	B BS C CL	4-5 fl oz	1	Max. 10 fl oz/A/season. Add a spreading/penetrating adjuvant known to be safe to the target crop. Suppression of onion thrips and diamondback moth.
MUSTANG MAXX ‡	B BS C CL	2.24-4 fl oz	1	Note 1.
OBERON 2SC	B BS C CL	7-8.5 fl oz	7	White fly control.
PLATINUM 75 SG	B BS C CL	1.66-3.67 oz	30	Apply in-furrow drench drip or shanked (See label). Do not exceed 3.67 oz/A/season.
PROCLAIM ‡	B BS C CL	2.4-4.8 oz	7	Apply when larvae are first observed and repeat application as necessary to maintain control. See label for other labeled brassica vegetables. Note 1.
PYGANIC EC 1.4$_{II}$	B BS C CL	16-64 fl oz	0	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0$_{II}$	B BS C CL	4.5-15.61 fl oz	0	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
RADIANT SC	B BS C CL	5-10 fl oz	1	Does not include yellow- or western-striped armyworms. Note 1.
REQUIEM EC	B BS C CL	2-4 qt	0	For whiteflies apply before damaging levels and repeat as needed. Note 1.
SENSTAR	B BS C CL	6-10 fl oz	7	Ground application in 10-50 GPA. Only whole fields should be treated. Max. 10 fl oz/A/ application. Max 2 applications/crop season. Max. 20 fl oz/A/crop season. Min. 14-day application interval. See label for adjuvant precautions.
SEQUOIA	B BS C CL	1.5-5.75 fl oz	3	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. Do not apply any time 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 ft out from the downwind edge of the field a downwind 12 ft on field buffer must be observed. Note 1.
SIVANTO PRIME/SIVANTO 200 SL	B BS C CL	7-14 fl oz	1	Foliar: Rate is pest-dependent. 7-day min. application interval. Min. 10 GPA by ground, 2 GPA by air. Max. 28 fl oz/A/season for Sivanto prime, Sivanto 200 SL.
TRIGARD	B BS C CL	2.66 fl oz	7	Leaf miner control. No more than 6 applications/crop. Max. of 1 lb/A/season.
TUNDRA EC ‡***/BIFEN 2 AG GOLD*** ‡/BRIGADE 2EC ‡	B BS C CL	2.1-6.4 fl oz	7	Note 1.
VENOM	B BS C CL	3-4 oz	1,21	PHI 21 days for soil application. May use 5-6 oz/A soil applied. Note 1.
VERIMARK	B BS C CL	5-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting. Do not apply more than 13.5 fl oz at planting. Do not apply more than 0.4 lb ai cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
VERSYS	B BS C CL	1.5 fl oz	0	Apply at first sign of pest presence before population increases to damaging levels. 10 GPA ground 5 GPA air. 7-day min. retreatment interval. Do not make >2 sequential applications before switching to a different mode of action. Do not apply >14 fl oz/A/season. Max. 3 crop seasons/year.
VOLIAM FLEXI	B BS C CL	4-7 oz	3	Max. 14 oz/A/season. 2ee for most states (exp. date not given) label for brown marmorated stink bug at 6-7 oz/A/application.
WARRIOR II ‡	B BS C CL	0.96-1.92 fl oz	1	Do not apply more than 0.96 pt/A per season. Note 1.
XENTARI	B BS C CL	0.5-2 lb	0	Bt insecticide. Note 1.
XPEDIENT PLUS V ‡	B BS C CL	2.56-5.12 fl oz	0	At plant: Apply as 5-7" band over row, 5-7"T-band over open furrow, or in furrow with seed. Cutworm, Armyworms: Apply as broadcast to soil surface. Max. 0.1 lb a.i./A/season/at plant application.

[1] B – Broccoli BS – Brussels Sprouts C – Cabbage CL – Cauliflower
[2] PHI – preharvest interval in days.

NOTE 1: See label for insecticide rate for each insect
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED FUNGICIDES

DISEASE*	FUNGICIDE																																						
	ACTIGARD 50WG	ACTINOVATE AG	ALIETTE WDG	BADGE SC/BADGE X2	BEXFOND	BRAVO ULTREX/WEATHER STIK	BIO-TAM 2.0	BLOCKER 4F	BLOCKER 10G	CABRIO EG	CHAMP DRY PRILL;FORMULA 2 FLOWABLE;WG/CHAMPION++	CONTANS WG	CUPROFIX ULTRA 40 DISPERSS[1]	DITHANE F-45 RAINSHIELD	ENDURA	***EVERLION***/PRIAXOR	FONTELIS	INSPIRE SUPER	KOCIDE 3000	LUNA EXPERIENCE	LUNA SENSATION	MANZATE PRO-STICK	MINUET	MIRAVIS PRIME	MONCUT SC	ORONDIS ULTRA	PHOSTROL	***PRAIZ***	PRESIDIO	PREVISTO	PROCURE 480 SC	QUADRIS TOP	REVUS	RHYME	RIDOMIL GOLD SL	ROVRAL 4F
ALTERNARIA BLIGHT		●													●		●	●		●												●				
ALTERNARIA LEAF SPOT		●		●		●				●	●		●	●		●	●	●	●		●	●		●				●			●	●		●		
ANTHRACNOSE										●						●		●														●				
BASAL STEM ROT																																			So	
BLACK LEG										●						●																				●
BLACK ROT	S			●				●			●		●						●											●						
CERCOSPORA LEAF SPOT										●								●		●	●			●								●				
DAMPING OFF																													●						So	
DOWNY MILDEW	●	●	●	●		●				●	●		●	●	●	S			●		S	●				●	●	●	●	●		●		●	
FUSARIUM		●			So		●																So													
GRAY MOLD															●		●	●		●	●															
PHYTOPHTHORA		●			So		●																So						●							
POWDERY MILDEW		●								●					S	●	●	●		●	●			●							●	●				
PYTHIUM		●					●																So												So	
RHIZOCTONIA		●			So		●																So		●											
RHIZOCTONIA BLIGHT		●								●						●							So													
RHIZOCTONIA BOTTOM ROT		●							●						●					S			So		●											
RUST																																				
SCLEROTINIA STEM ROT		●			So		●					●			●		●			●	●															
WHITE LEAF SPOT										●						●																				
WHITE RUST										●						●								●												

See notes and footnotes at end of table.

LABELED FUNGICIDES

DISEASE*	SERENADE ASO	SWITCH 62.5WG	TESARIS	***TETRABAN***	TILT	TOPGUARD EQ	ULTRA FLOURISH	ZAMPRO
ALTERNARIA BLIGHT		●						
ALTERNARIA LEAF SPOT	●	●	●	●				
ANTHRACNOSE								
BASAL STEM ROT							●	
BLACK LEG								
BLACK ROT								
CERCOSPORA LEAF SPOT		S			●	●		
DAMPING OFF							●	
DOWNY MILDEW	●			●			●	●
FUSARIUM								
GRAY MOLD		●						
PHYTOPHTHORA								
POWDERY MILDEW	●	●	●		●	●		
PYTHIUM								
RHIZOCTONIA	●							
RHIZOCTONIA BLIGHT								
RHIZOCTONIA BOTTOM ROT								
RUST								
SCLEROTINIA STEM ROT			S					
WHITE LEAF SPOT								
WHITE RUST						●		

So- Soil application.
See Fungicide Resistance Management in the Technical Information section.
S - Suppression.

*Other diseases may be controlled see label.
[1] Copper sulfate.

DISEASE MANAGEMENT GUIDELINES

Disease	Comments/Restrictions
ALTERNARIA LEAF SPOT and DOWNY MILDEW	Use fungicides containing chlorothalonil, fluopicolide, maneb, mefenoxam/chlorothalonil or copper.
BLACK ROT and BLACK LEG	Use western grown seed and hot water treatment. Careful handling sanitation crop rotation and resistant varieties are recommended. Use fungicides containing iprodione or chlorothalonil.
CLUBROOT	Apply PCNB in transplant water or as a band or broadcast at planting.
INTERNAL TIPBURN	Plant resistant cultivars and avoid excess N fertilization.
SEED ROT	Maintain disease-free beds and use sanitation measures.
WIRESTEM (RHIZOCTONIA)	See Labeled Fungicides table in this section.

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ACTIGARD 50WG	B BS C CL	0.5-1 oz	7	Apply preventatively up to 4 applications on a 7-day schedule. Begin 7-10 days after thinning. Max. 4 oz/A/year.
ACTINOVATE AG	B BS C CL	3-12 oz	0	See label for soil-borne and foliar diseases controlled/suppressed. Soil-applied: At plant, in-furrow in 10-200 GPA; may be applied by drip, overhead or other irrigation systems, and may also be used as seed treatment; see label. Foliar: Apply in 10-150 GPA; reapply every 7-14 days depending on disease pressure and environmental conditions; best to use spreader-sticker (adjuvant); may be applied by air (see label).
ALIETTE WDG	B BS C CL	2-5 lb	3	Apply when conditions favor disease development and continue on 7-21 day intervals. Max. 7 applications/season.
BADGE SC or BADGE X2	B BS C CL	05-1.8 pt or 0.15-1.8 lb	0	Apply at 7-10 day intervals. Begin after transplants are set in the field or shortly after emergence. The addition of spreader/sticker may enhance spray deposition of liquid formulation. Reddening of older leaves may occur on B and flecking of wrapper leaves may occur on C.
BEXFOND	B BS C CL	7 - 14 fl oz	0	Apply via drench to seedlings prior to planting, at planting, or immediately after planting with an in-furrow soil spray, overhead sprinkler, or drip irrigation. Make the initial application during seedling production. During or following, irrigate well to soak the product into the root zone. Not labeled for aerial application.
BIO-TAM 2.0	B BS C CL	2.5-5 lb	–	Apply at sowing restart of vegetative growth and before infection risk period. If rainfall is not expected irrigate with 0.25-0.5"/A.
BLOCKER 4F	B BS C CL	3 pt/100 gal (transplant) up to 5.62 gal (band broadcast drench)	–	See label for specific crop diseases and associated transplant band broadcast and drench application rates and instructions. Do not exceed 22.5 lb a.i./A in any one season.
BLOCKER 10G	B BS C CL	3.4-5.15 lb/1000' row; 225 lb/A	–	See label for specific crop diseases and associated rates and instructions. Apply and roto-till (pre-translant band) or disc (broadcast) granules to specific depths based on crop and disease. See label. Do not exceed 22.5 lb a.i./A in any one season.
BRAVO ULTREX or WEATHER STIK	B BS C CL	1.4 lb or 1.5 pt	7	Begin after transplants are set or shortly after emergence of field-seeded. Repeat at 7-10 day intervals. Do not apply more than 12 lb a.i./season. See label for ring spot in CA.
CABRIO EG	B BS C CL	12-16 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 applications before rotating mode of action. Max. 2 applications/season.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG or CHAMPION++	B BS C CL	0.33-0.67 lb or 0.33-0.66 pt or 1.0 lb or 0.5-0.75 lb	–	Apply at 7-day intervals after tranplants are set in field or, for ChampION++ after emergence of seeded crop. Max. 7.07 lb or 7.3 pt or 5.3 lb or 8.8 lb/A/year.
CONTANS WG	B BS C CL	1-4 lb	0	Apply prior to disease infection.
CUPROFIX ULTRA 40 DISPERSS	B BS C CL	0.75-1.25 lb	–	Begin after transplants are set or emergence of field-seeded crop and continue on a 7-10 day interval. Broccoli or cabbage may show injury.
DITHANE F-45 RAINSHIELD	B B BS C CL	1.2-1.6 qt see 24c WA,OR	7	Broccoli only: In plant beds or direct-seeded fields apply 7-10 days after planting or earlier if disease is present. In-field applications: apply as soon as needed on 7-10 day schedule.
ELUMIN	B BS C CL	8 fl oz	2	Apply in 20-100 GPA by ground, min. 5 GPA by air. For downy mildew, follow application with a non-FRAC Group 22 fungicide at 7-10 day interval before a second application of Elumin; adjuvant must be tank-mixed (see label). For damping-off, apply as soil drench or by drip irrigation at planting/transplanting, with second application via drip irrigation min. 7 days after initial application. Max. 2 applications/year. Max 16 fl oz/A/year.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ENDURA	B BS C CL	6-9 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 applications before rotating mode of action. Max. 2 applications/season.
EVERLON/PRIAXOR	B BS C CL	6-8.2 fl oz	3	Apply prior to onset of disease and continue on a 7-14 day interval. Do not apply more than 3 times/season or 24.6 fl oz/A/season. Do not make more than two sequential applications before rotating to non group 7 or non group 11 fungicide.
FONTELIS	B BS C CL	14-30 fl oz	0	Begin applications prior to disease development and continue on 7-14 day schedule. Max. 2 sequential applications between switching to different mode of action. Max. 72 fl oz/A/year. Use 16-30 fl oz/A for control of Sclerotinia stem rot.
FLINT EXTRA	B BS C CL	3-3.8 fl oz	0	Apply on a 5-10 day interval if needed. Max. 7.6 fl oz/A/year.
INSPIRE SUPER	B BS C CL	16-20 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 80 fl oz/A/season.
KOCIDE 3000	B BS C CL	0.5-0.75 lb	–	Begin application after transplants have been set in the ground or shortly after emergence of field seeded crops. Apply at 7-10 day intervals or as needed.
LUNA EXPERIENCE	B BS C CL	6-8.6 fl oz	7	Apply using ground aerial or chemigation. Apply on a 7-14 day interval. When disease pressure is severe use the higher rates and/or shorter intervals.
LUNA SENSATION	B BS C CL	5-7.6 fl oz	0	Apply using ground aerial or chemigation. Apply on a 7-14 day interval. When disease pressure is severe use the higher rates and/or shorter intervals. Do not make more than 2 applications per year.
MANZATE PRO-STICK	B C	1.6-2.1 lb	7	Apply prior to disease development and repeat on 7-10 day intervals. Max. 12.8 lb/A/season.
MINUET	B BS C CL	12-24 fl oz	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS PRIME	B BS C CL	11.4 fl oz	7	Max. 11.4 fl oz/application; max. 3 applications at max. rate/year (max. 34.2 fl oz/A/year); max 2 consecutive applications before switching to fungicide not in Group 7 or 12. 7-day min. application interval; max. 2 applications by air.
MONCUT SC	B BS C CL	26 fl oz	45	For transplants apply in narrow band directed at base of plant in 30-50 GPA. Apply to row at planting in-furrow or directed at base of transplants. Min. 4 gallons spray volume/A. Do not make >2 applications/calendar year. Do not apply >52 fl oz/calendar year.
OMEGA 500F	B BS C CL	6.45 fl oz/100 gal (transplant) 2.6 pt (soil)	20,50	For use on club root. Apply transplant soil drench immediately after planting at 3.4 fl oz/plant. Soil incorporation in 9" band to depth of 6 to 8 inches with min. 50 GPA. Do not apply more than 3.85 pt/A/season. PHI 20 days leafy greens and 50 days heading vegetables. Turnip roots may not be used for human or livestock consumption.
ORONDIS OPTI	B BS C CL	1.75-2.5 pt	7	Begin ground (min. 15-20 GPA), air-assisted (min. 10 GPA) or aerial (min. 5 GPA) applications prior to disease development; continue on a 7- to 10-day interval. Max. 2.5 pt/A/application. Max. 10 pt/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
ORONDIS ULTRA	B BS C CL	5.5-8 fl oz	1	Begin ground (min. 15 GPA) or aerial (min. 5 GPA) applications prior to disease development. Min. 7-day application interval. Max. 8 fl oz/A/application. Max. 32 fl oz/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
PHOSTROL	B BS C CL	2.5-5 PT	0	Apply on 7-21 day interval; use higher rates and shorter intervals when disease pressure is moderate to high.
PRAIZ	B BS C CL	1.5 pt	7	Begin after transplants are set or shortly after emergence of field-seeded. Repeat at 7-10 day intervals. See label for ring spot in CA. Do not apply more than 12 lb a.i./season.
PRESIDIO	B BS C CL	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10-day intervals. Max. of 2 sequential applications before alternating mode of action. Max. 4 applications or 12 fl oz/A/season. Supplemental label all states except HI (exp. date not given) for application through drip irrigation systems.
PREVISTO	B BS C CL	0.75-2 qt	0	Apply at 7-10 day intervals. Begin after transplants are set in the field or shortly after emergence. The addition of spreader/sticker may enhance spray deposition. Reddening of older leaves may occur on B and flecking of wrapper leaves may occur on C.
PROCURE 480SC	B BS C CL	6-8 fl oz	1	Begin applications at the first indication of disease. Continue on a 14 day schedule.
QUADRIS TOP	B BS C CL	12-14 fl oz	1	Add 1 pt NIS/100 gal.* Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Max. 1 application before rotating to another mode of action. Max. 56 fl oz/A/year.
REVUS	B BS C CL	8 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 32 fl oz/A/season.
RHYME 2.08 SC	B BS C CL	5-7 fl oz	7	Apply preventively or when conditions favor disease development on a 7-day interval as needed. Do NOT make more than 4 applications per year or apply more than 28 fl oz/A/year.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
RIDOMIL GOLD SL	B BS C CL	0.125-0.25 pt	7	Apply in a tank mix before disease infection continue on a 14 day schedule. See label for soil applications.
ROVRAL 4F	B	2 pt	0	Apply immediately after thinning (2-4 leaf stage) as directed basal spray. Max. 2 applications/crop.
SERENADE ASO	B BS C CL	2-4 qt	0	Begin application soon after emergence or transplant. Repeat on a 3-10 day interval or as needed.
SWITCH 62.5WG	B BS C CL	10-14 fl oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 56 oz/A/season.
TESARIS	B BS C CL	3.4-4.6 fl oz	3	Apply prior to onset of disease development and continue on a 7-14 day interval. Min. 7-day application interval. Max. 4.6 fl oz/A/application. Max. 3 applications/year. Max. 13.8 fl oz/A/year. Do not make >2 sequential applications before switching to a non-Group 7 fungicide.
TETRABAN	B BS C CL	6-15.5 fl oz	0	Apply by ground air or irrigation prior to disease development and continue on 7-14 day schedule.
TILT	C	3-4 fl oz	7	Apply before disease is present.
TOPGUARD EQ	B BS C CL	5-8 fl oz	7	Apply preventatively or when conditions are favorable for disease development.
ULTRA FLOURISH	B BS C CL	0.25-4 pt	7	Damping off: PPI at 0.5-1 pt/A. Basal stem rot: PPI, surface application or irrigation drip at 2-4 pt/A. Downy mildew: Foliar (ground or air) at 0.25-0.5 pt/A at 7-day intervals. See label for additional details.
ZAMPRO	B BS C CL	14 fl oz	7	Begin applications prior to disease development and continue on 7-day interval. Max. 2 applications before rotating to another mode of action. Max. 42 fl oz/A/season.

[1] B – Broccoli BS – Brussels Sprouts C – Cabbage CL – Cauliflower
[2] PHI- preharvest interval in days.
NOTE 1: See label for fungicide rate for each disease.

*** For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where fungicides require NIS and AMS or a water conditioner.

PREPLANT, PREEMERGENCE OR POSTEMERGENCE HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	C M P S W	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown 7 days before planting, or POST hooded or shielded sprayers only for broadleaf weeds in row middles. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6. 15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CLEANSE	C M P S W	6-8 fl oz	Add 0.5 gal HSOC-COC/100 gal.* POST. Controls many emerged grasses. PHI 14 days.
COMMAND 3ME	C W M P S	0.4-1 pt 0.4-0.67 pt 0.67-2 pt: winter squash 0.67-1.33 pt: summer squash	PRE prior to seeding or transplant. May be applied after planting but before crop emergence in cucumber, muskmelon and watermelon. Labeled for use in squash and processing pumpkins. Do not apply to jack-o-lantern pumpkins. Some varieties are sensitive. See label for variety restrictions. May be tank mixed with other labeled herbicides. PHI for C is 30 days.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	C M P S W	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP. Apply at least 3 days before planting.
DACTHAL W75 or DACTHAL FLOWABLE	M W	6-14 lb or 6-14 pt	Apply when plants have 4-5 true leaves and are well-established and favorable growing conditions. Application rate depends on soil type and OM. Refer to label for specific application rates.
EVERPREX	P	1-1.33 pt/A	PRE as inter-row or inter-hill with 1 foot untreated area over row or 6" to each side of planted hill and/or emerged foliage. Lower rate on light texture soils w/ <3% O.M. PHI 30 days.
GRAMOXONE SL 3.0 ‡	C M P S W	1.3-2.7 pt	Add NIS or HSOC-COC.* Apply PP or PRE. Apply to emerged weeds before or after seeding but before crop emerges. Supplemental label Gramoxone SL 3.0 FL, GA, MA, MD, NJ, OH, PA, VA, DE, ME, CA, HI, TN (exp. date not given) for directed spray; see separate Supplemental labels for relevant crops.
POAST	C M P S W	0.5-1.5 pt	Add 1 pt HSOC-COC/A.* POST. Controls emerged grasses. Apply up to 3 pt/A per season. Rate depends on weed species and geographic location. PHI 14 days. Cantaloupe PHI 3 days.
PREFAR 4E	C M P S W	5-6 qt	PPI. Controls annual grasses in flat planted or bedded crops. Apply PP and incorporate 1-2". Apply PRE only when followed by immediate irrigation.
PROWL H2O	M W	2.1 pt	Apply between rows with shielded sprayer in sequential applications of 2.1 pt/A. Do not apply >4.2 pt/A/season. Do not apply <21 days apart. Do not apply within 35 days of melon harvest. Do not feed forage or graze in treated fields.
REFLEX	P S W	8-12 fl oz	See label specific directions.
ROUNDUP POWERMAX 3/ WEATHERMAX/CREDIT XTREME**	C M P S W	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or WC+NIS.* (Apply prior to planting and wait 3 days before planting.) Controls emerged annuals. Rate depends on weed species and size. See label for perennials.
SECTION THREE	C M P S W	4-5.33 fl oz	Add 0.5 gal HSOC-COC/100 gal.* Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a min. 14-day interval. PHI 1 day.
SELECT MAX	C M P S W	9-16 oz	Add 1 qt NIS/100 gal.* Do not apply >16 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a min. 14-day interval. PHI 14 days.
SINBAR WDG	W	2-4 oz	PRE. Direct seeded or transplant. Apply after planting but before crop emerges. See label for plastic mulch instructions. PHI 70 days.
TRUST/TREFLAN HFP	C M P S W	1-1.5 pt: coarse 1.25-1.5 pt: medium 1.5-2 pt: fine	POST inc. Apply after crop emergence when plants are at 3-4 true leaves. Apply between rows to avoid foliage contact and incorporate. Controls grasses and broadleaves. PHI 30 days for cucumbers and muskmelon and 60 days for watermelon. Use rates depends on soil type and OM. Refer to label for specific application rates.
VIDA	C M P S W	0.5-2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

[1] C – Cucumber M – Muskmelon P - Pumpkin S- Squash W – Watermelon

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

** May use other glyphosate herbicides: Roundup brands/Cornerstone brands at labeled rates.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED INSECTICIDES

INSECT*	ABAMEX ‡/ABBA ULTRA ‡	ACTARA	ADMIRE PRO	***ADVISE FOUR***/NUPRID 4F MAX	AGREE WG	AGRI-MEK SC ‡	***ARCTIC 3.2 EC*** ‡	ASANA XL ‡	ASSAIL 30SG	AVAUNT/AVAUNT EVO*	BAYTHROID XL ‡	BELAY INSECTICIDE	BELEAF 50SG	BESIEGE ‡	CAPTURE LFR ‡/TUNDRA LFC ‡	CERTADOR	CORAGEN	DANITOL 2.4 EC ‡	***DELTA GOLD*** ‡	DIBROM 8E ‡	***DIMATE 4E***	DURIVO	ENDIGO ZCX ‡	ETHOS ELITE LFR ‡	EXIREL	FASTAC CS ‡	FULFILL	***GRIZZLY TOO*** ‡	HERO ‡	INTREPID 2F	KNACK	***LAMBDA-CY AG*** ‡
APHID		●	●	●			●		●			●	●	S	●[3]	S				●	●	●	●			●	●	●	●		●	●
CUCUMBER BEETLE		S	●	●			●	●	●		●	●		●	●[3]	●		●	●			S	●			●		●	●			●
CUTWORM							●	●			●			●	●				●				●	●		●		●	●			●
SEED CORN MAGGOT															●						●											
SQUASH BUG							●	●	●			●		●	●[3]	●							●			●		●	●			●
SQUASH VINE BORER							●	●	●					●	●[3]								●			●		●	●			●
WHITEFLY		●	●	●					●		S	S	●	S	●[3]	●	S		S			●	S		●		S		●		●	S
WIREWORM															●													S	●			

LABELED INSECTICIDES *continued*

INSECT*	LANNATE LV ‡	***MALATHION 5***/5EC	MALATHION 8 FLOWABLE	MINECTO PRO ‡	MUSTANG MAXX ‡	OBERON 2SC	PLATINUM 75 SG	PROCLAIM ‡	PYGANIC EC 1.4$_{II}$/ PYGANIC EC 5.0$_{II}$	RADIANT SC	REQUIEM EC	RIDGEBACK	SEFINA	SIVANTO PRIME/SIVANTO 200 SL	TRANSFORM WG	***TUNDRA EC ‡/BIFEN 2 AG GOLD*** ‡/BRIGADE 2EC ‡	VENOM	VERIMARK	VOLIAM FLEXI	VYDATE L ‡	WARRIOR II ‡	XENTARI	XPEDIENT PLUS V ‡	ZEAL SC
APHID	●	●	●				●		●			●	●	●	●	●	S		●	●	●			
CUCUMBER BEETLE	●	●	●		●		S		●			●				●	●	●	S		●		●	
CUTWORM	●		●		●							●				●					●	●	●	
SEED CORN MAGGOT									●									●						
SQUASH BUG					●				●			●		●		●	●				●			
SQUASH VINE BORER		●[1]	●		●							●				●					●			
WHITEFLY				●		●	●		●		●	●	●	●	●	●	●	●	●		S		●	
WIREWORM																								

* Many other insects may be controlled see label.
S – Suppression.
[1] Cucumber pumpkin and squash only.
See Insecticide Resistance Management in the Technical Information section.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECT MANAGEMENT THRESHOLDS

CUCUMBER BEETLE	Treat when there are 4-5 or more beetles per 50 plants.
CUTWORM	Treat when there are 1-2 or more cutworms per 100 plants.
SEED CORN MAGGOT	Treatment is strongly recommended for fields where manure or cover crops have been partially buried by recent tillage. Treated seed is recommended.
SQUASH BUGS	Check underside of leaf for rows of eggs. Treat when bugs are young. Destroy crop residue in fall to reduce over-wintering.
SQUASH VINE BORER	Treat when adults are seen when runners are <2'. Sawdust-like excrement by holes in stems confirms borer presence. Repeat applications every 5-7 days throughout 3 weeks of egg laying.
WIREWORMS	Treatment recommended if bait captures average more than 1 per trap.

INSECT TREATMENT GUIDELINES

Insecticde/ Nematicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ABAMEX ‡ or ABBA ULTRA ‡	C M P S W	8-12 fl oz or 4-6 fl oz	7	For spider mite and leafminers. Use ≥20 GPA. Max. 16 fl oz/A or 8 fl oz/A per application, max. 48 fl oz/A or 24 fl oz/A per year. Allow ≥7 days between applications. No more than 2 sequential applications.
ACTARA	C M P S W	1.5-5.5 oz	0	Note 1.
ADMIRE PRO	C M P S W	7-10.5 fl oz	21	See label for soil application instructions.
ADVISE FOUR/NUPRID 4F MAX	C M P S W	8-12 fl oz	21	Soil application. See label for soil application instructions. Max. 12 fl oz/A/crop season.
AGREE WG	C M P S W	0.5-2 lb	0	Bt insecticide. Controls loopers armyworms diamondback moth melonworms and light brown apple moth. Certified for organic use.
AGRI-MEK SC ‡	C M P S W	1.75-3.5 fl oz	7	For spider mite and leafminers. Use ≥20 GPA. Do not exceed 10.25 fl/oz/A/season. Allow ≥7 days between applications. No more than 2 sequential applications.
ARCTIC 3.2 EC ‡	C M P S W	4-8 fl oz	0	Do not apply more than 48 fl oz/A per year on everything except cantaloupe. Do not apply more than 32 fl oz/A per year on cantaloupe. Apply 8 fl oz/A for control of aphids.
ASANA XL ‡	C M P S W	5.8-9.6 fl oz	3	Repeat as necessary to maintain control. Do not exceed 0.25 lb a.i./A per season.
ASSAIL 30SG	C M P S W	2.5-5.3 fl oz	0	Note 1.
AVAUNT/AVAUNT EVO	C M P S W	2.5-6 oz	3	Controls cabbage looper, melonworm, pickleworm and beet armyworm. Note 1.
BAYTHROID XL ‡	C M P S W	0.8-2.8 fl oz	0	Do not apply >11.2 fl oz/A/season. Note 1.
BELAY INSECTICIDE	C M P S W	9-12 fl oz: soil 3-4 fl oz: foliar	21	See label for soil application instructions.
BELEAF 50SG	C M P S W	2.8-4.28 oz	0	Note 1. Apply 2.8-4.28 oz/A by drip or in greenhouse.
BESIEGE ‡	C M P S W	6-9 fl oz	1	Max. 31 fl oz/A or 0.18 lb a.i./A.year lambda-cyhalothrin-containing products or 0.2 lb/A/ year chlorantraniliprole-containing products. 5-day min. application interval.
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	C M P S W	3.4-8.5 fl oz: soil 3.4-8.5 fl oz: foliar (Capture LFR only)		See individual labels for specific target insects and rates. Apply either In-Furrow or T-Band at transplanting/setting. May be tankmixed with liquid fertilizers and amendments.
CERTADOR	C M P S W	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21,1	Use only one application method. Apply as foliar when pests appear as needed but not more than every 7 days. See label for row spacing rates.
CORAGEN	C M P S W	3.5-7.5 fl oz: soil at planting 2-7.5 fl oz: drip chemigation 2-7 fl oz: foliar	1	Suppression of silverleaf whitefly nymphs. See label for directions for soil application and through drip chemigation. Note 1.
DANITOL 2.4 EC ‡	C M P S W	10.67-16 fl oz	7	Do not apply more than 2.67 pt/A per season. Tank mix with endosulfan for control of aphid silverleaf whitefly sweetpotato whitefly and thrips.
DELTA GOLD ‡	C M P S W	1-2.4 fl oz	3	Do not apply more than 14.4 fl oz/A per season. Note 1.
DIBROM 8E ‡	M	1 pt	1	Max. 2 pt/A/season. Min. 30 GPA by ground, 10 GPA by air. Do not apply if T >90 °F. 7-day min. application interval.
DIMATE 4E	M W	1 pt 0.5-1 pt	3	Do not apply more than 2 pt/A/year.
DURIVO	C M P S W	10-13 fl oz	30	Apply in-furrow; POST-seeding transplant or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Max. 1 soil application/ season.
ENDIGO ZCX ‡	C M P S W	4-4.5 fl oz	1	Note 1.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide/ Nematicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ETHOS ELITE LFR ‡	C M P S W	0.2-0.49 fl oz/1000' row	0	At-plant: Apply as 5-7"T-band over open furrow, or in-furrow with seed. Rate is insect dependent; see label. Max. 0.3 lb bifenthrin a.i./A/season, including all application methods. Product also contains fungicide; see Cucurbit Diseases.
EXIREL	C M P S W	7-20.5 fl oz	1	5-day min. application interval. Max. 0.4 lb a.i. cyantraniliprole/A/crop/season. Whitefly control best with effective adjuvant; see label. Note 1.
FASTAC CS ‡	C M P S W	1.4-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply >11.4 fl oz/A/season. Min. 15 GPA ground and 2 GPA air.
FULFILL	C M P S W	2.75 fl oz	0	Apply when aphids first appear. Suppresses whiteflies. Do not exceed 5.5 oz/A/season.
GRIZZLY TOO ‡	C M P S W	1.28-1.92 fl oz	1	Note 1.
HERO ‡	C M P S W	4-10.3 fl oz	3	Apply in min. of 5 GPA by air and 20 GPA by ground. Do not apply more than 41.2 fl oz/A/ season. Do not make more than 2 applications after bloom. Do not make applications less than 7 days apart. Note 1.
INTREPID 2F	C M P S W	4-10 fl oz	3	Max. 64 fl oz/A/year.
KNACK	C M P S W	8-10 fl oz	7	Insect Growth Regulator. Controls various whiteflies; see label. Do not make >2 applications/ growing season. 14-day min. application interval. Max. 20 fl oz/A/season.
LAMBDA-CY AG ‡	C M P S W	2.56-3.84	1	Apply by ground in min. of 10 GPA water and by air in a min. of 2 GPA water.
LANNATE LV ‡	C M S W	1.5-3 pt	1,3	Do not apply more than 18 pt/A/crop. PHI 1 day for 1.5 pt/A and 3 days if more than 1.5 pt/A. Labeled for use in summer squash. Note 1.
MALATHION 5 or MALATHION 5EC	C M P S W	1.5-2.75 pt or 1.5-2.8 pt 1.6 pt 1.5 pt 1.5-2.75 pt or 1.6-2.8 pt 1.5-2 pt or 1.5-2.5 pt	1	Note 1. S-summer: 1.5-2.75 pt/A or 2-2.8 pt/A. S-winter: 1.5 pt/A or 1.6 pt/A.
MALATHION 8 FLOWABLE	C S	1.75 pt 1-1.75 pt	1	C: Do not exceed 2 applications/year; do not apply unless plants are dry. S-summer: 1.75 pt/A do not exceed 3 applications/year. S-winter: 1 pt/A do not exceed 3 applications/year.
MINECTO PRO ‡	C M P S W	10 fl oz	7	Must be mixed with a spray adjuvant; see label. It is recommended for best results that a minimum of 0.20% horticultural spray oil (not a dormant oil) be used in the spray mixture or not less than 1.0 gal horticultural spray oil/A. Do not use binder or sticker type adjuvants. Foliar application soon after emergence or transplant to control whiteflies and vectored diseases.
MUSTANG MAXX ‡	C M P S W	1.28-4 fl oz	1	Note 1.
OBERON 2SC	C M P S W	7-8.5 fl oz	7	White fly and two-spotted spider mite control.
PLATINUM 75 SG	C M P S W	1.66-3.67 oz	30	Apply in-furrow drench drip or shanked (see label). Do not exceed 3.67 oz/A/season.
PROCLAIM ‡	C M P S W	3.0-4.8 oz	7	Apply when larvae are first observed and repeat to maintain control. By ground in 10 GPA, by air in 5 GPA. Max. 4.8 oz/A/application. Max. 14.4 oz/A/calendar year. Max. 2 sequential applications before rotating to a different MOA. 7-day min. application interval. Note 1.
PYGANIC EC 1.4$_{II}$	C M P S W	16-64 fl oz	0	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0$_{II}$	C M P S W	4.5-15.61 fl oz	0	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
RADIANT SC	C M P S W	5-10 fl oz	1,3	PHI 1 day cucumbers. Note 1.
REQUIEM EC	C M P S W	2-3 qt	0	For thrips apply as soon as seen in crop. For whiteflies apply before damaging levels are reached. Note 1.
RIDGEBACK	C M P S W	5.5-13.8 fl oz	3	Rate is dependent on target pest; see label. Treat in accordance with local economic threshold. Use higher rate for heavy pest populations. 7-day min. application interval. Max. 4 applications/crop. Max. 2 consecutive applications/crop. Max. 2 applications after bloom. Max. 41.3 fl oz/A/year.
SALIBRO	C M P S W	15.3 to 23 fl oz. pre plant 7 fl oz, in season drip irrigate	1	For management of root knot nematodes. Broadcast min. 15 gal/A water, thoroughly incorporate 4 to 6 inches into the soil within 7 days prior to planting. For heavy nematode pressure, use 23 oz per acre at-plant or 15.3 oz per acre at-plant followed by 7.7 oz per acre by in-season drip chemigation. Do not apply more than 23 fl oz per acre per calendar year. 28 day min. retreatment interval.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticde/ Nematicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
SEFINA	C M P S W	3-14 fl oz	0	3 fl oz/A for aphids 14 fl oz/A for whitefly. Apply at first sign of pest presence before population increases to damaging levels. Min. 10 GPA ground 2 GPA air. 7-day min. retreatment interval. Do not make >2 sequential applications before switching to a different mode of action. Do not exceed 28 fl oz/A/season. 2 max. crop seasons/year.
SIVANTO PRIME/ SIVANTO 200 SL	C M P S W	7-28 fl oz	1,21	Foliar: Rate is pest-dependent. 7-day min. application interval; PHI 1 day. Apply by ground or air. Soil: 21-28 fl oz/A for Sivanto prime, Sivanto 200 SL; PHI 21 days.
TRANSFORM WG	C M P S W	0.75-2.25 oz	1	See label for insect-specific application rate. 7-day min. application interval. Max. 4 applications/crop. Max 2 consecutive applications/crop. Max. 8.5 oz/A/year.
TRIGARD	C M P S W	2.66 oz	0	Leafminer control. Do not make >6 applications per season.
TUNDRA EC*/*BIFEN 2 AG GOLD/BRIGADE 2EC	C M P S W	2.6-6.4 fl oz	3	Make applications at least 7 days apart. Do not exceed 19.2 fl oz/A per season. Note 1.
VENOM	C M P S W	1-4 oz: foliar 5-6 oz: soil	1,21	PHI 21 days for soil application. Note 1.
VERIMARK	C M P S W	6.75-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting. Max. 13.5 fl oz/A at planting. Max. 0.4 lb a.i. cyantraniliprole/A/season. A spray application pH of 4-6 is recommended. See label for drip irrigation rates. Note 1.
VOLIAM FLEXI	C M P S W	4-7 oz	1	Max. 14 oz/A/season. 2ee for most states (exp. date not given) for brown marmorated stink bug at 6-7 oz/A/application.
VYDATE L	C M P S W	1-2 gal: soil 2-4 pt: foliar	1	See label for soil foliar and drip chemigation application instructions and geographic restrictions. Soil applications control certain nematodes and foliar treatments control leafminers aphids and thrips. Note 1.
WARRIOR II ‡	C M P S W	1.28-1.92 fl oz	1	Note 1.
XENTARI	C M P S W	0.5-2 lb	0	Bt insecticide. Certified for organic use. Note 1.
XPEDIENT PLUS V ‡	C M P S W	2.56-6.4 fl oz	0	At plant: For Cucumber Beetle larvae apply 5.12-6.4 fl oz/A as 5-7" T-band over open furrow, or in furrow with seed. For Wireworm apply 2.56-5.12 fl oz/A as 5-7" T-band over open furrow or in-furrow with seed or transplant. For Cutworm apply 2.56-5.12 fl oz/A as 5-7" band over row on soil surface, over open furrow, in-furrow with seed, broadcast on soil surface or banded over row. Max. 0.1 lb a.i./A/season/at plant application.
ZEAL SC	C M P S W	4-6 fl oz	7	For certain mites.

[1] C – Cucumber M – Muskmelon P - Pumpkin S - Squash W – Watermelon.
[2] PHI – preharvest interval in days.

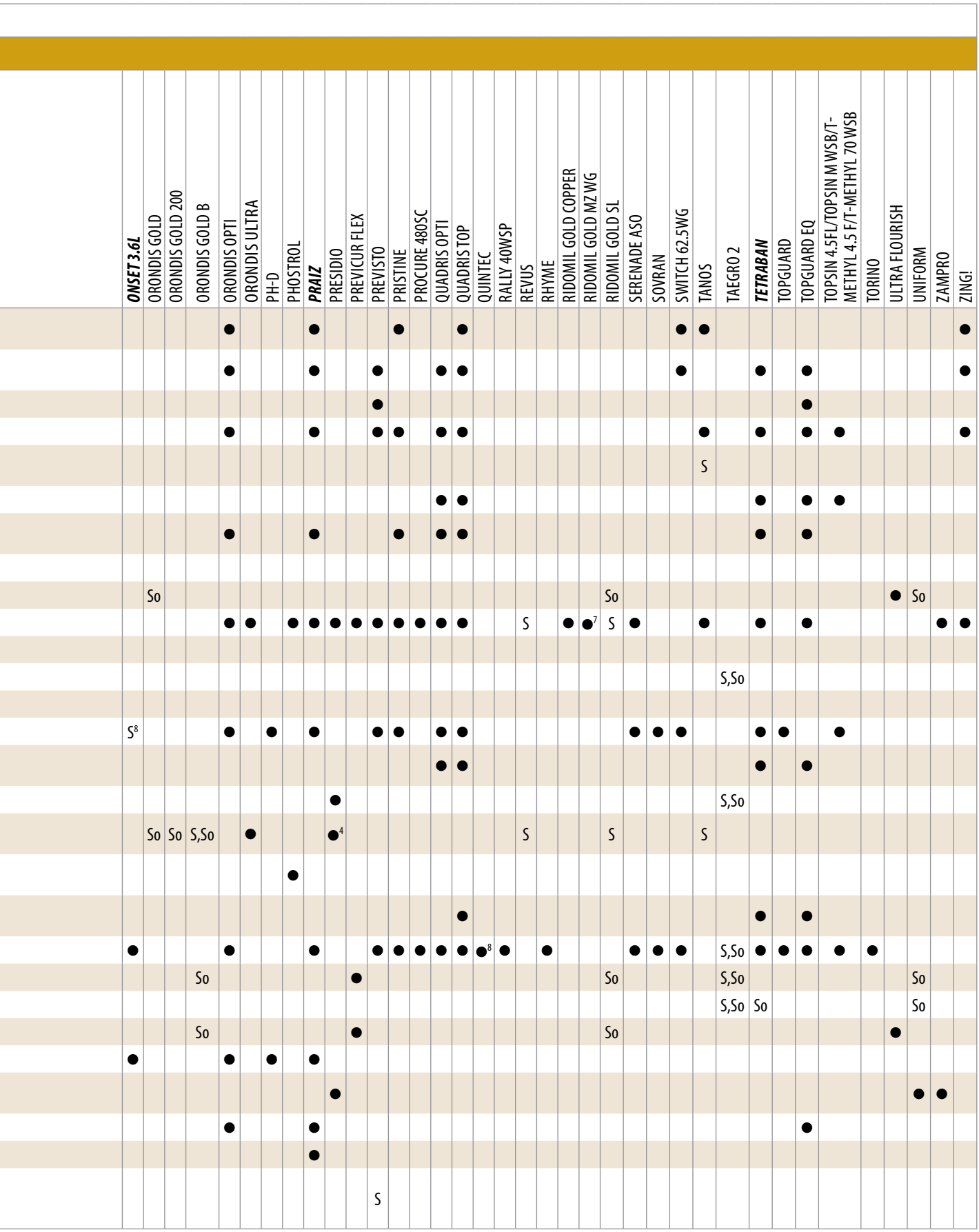
NOTE 1: See label for insecticide rate for each insect.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED FUNGICIDES

DISEASE*	FUNGICIDE																																				
	ACTIGARD 50WG	ACTINOVATE AG	ALIETTE WDG	APROVIA TOP	BADGE SC/ BADGE X2	BEXFOND	BIO-TAM 2.0	BRAVO ULTREX/BRAVO WEATHER STIK	CABRIO EG	CANNONBALL WG	CHAMP DRY PRILL; FORMULA 2 FLOWABLE; WG/CHAMPION++	CUPROFIX ULTRA 40 DISPERSS	CURZATE 60DF	DITHANE F-45 RAINSHIELD	ELUMIN	ENDURA	ETHOS ELITE LFR ‡	EVITO 480 SC	FLINT	FLINT EXTRA	FONTELIS	FORUM	GAVEL 75 DF	INSPIRE SUPER	KOCIDE 3000	LUNA EXPERIENCE	LUNA SENSATION	MANKOCIDE	MANZATE MAX	MANZATE PRO-STICK/PENNCOZEB 75DF	METTLE 125 ME	MERIVON	MINUET	MIRAVIS PRIME	MURAL	OMEGA 500F
ALTERNARIA LEAF / BLIGHT		●		●				●	●							●		●			●			●						●	●		●	●		
ALTERNARIA LEAF SPOT		●		●	●			●			●	●		●								●	●	●	●	●	●	●	●	●			●	●	●[1]
ANGULAR LEAF SPOT	S				●						●	●												●			●								
ANTHRACOSE				●	●			●	●		●	●		●				●					●	●	●	●	●	●	●		●			●	
BACTERIAL FRUIT BLOTCH	S				S																														
BELLY ROT				●														●							●										
CERCOSPORA LEAF SPOT				●				●	●					●				●					●	●			●	●	●	●	●		●	●	
CHARCOAL ROT																																				
DAMPING OFF																	●																		
DOWNY MILDEW	S	●	●		●			●	●		●	●	●	●	●			●	S			●	●		●			●	●	●		S		●	●
FRUIT and STEM ROT																																				
FUSARIUM		●				So	●			●[2]							●																			
FUSARIUM WILT		●															●																		
GUMMY STEM BLIGHT				●	●			●	●		●	●		●				●			●			●	●	●	S	●	●	●	S	●		●	●	●
MYROTHECIUM CANKER																		●																	●	
PHYTOPHTHORA		●				So	●								●		●																		
PHYTOPHTHORA BLIGHT or CROWN ROT		●													●		●					●	●												●
PHYTOPHTHORA ROOT and FRUIT ROT		●	●														●																		
PLECTOSORIUM BLIGHT (microdochium)									●					●[7]				●	●					●										●	
POWDERY MILDEW	S	●		●	●			●	●			●				S		●	●		●			●	●	●	●	●			●	●		●	●	
PYTHIUM		●					●										●																So			
RHIZOCTONIA		●				So	●										●																So			
ROOT ROT (Pythium)		●																																		
SCAB	S			●				●						●													●	●	●				●		
SEED ROT and DAMPING OFF																																				
TARGET SPOT				●				●	●									●													●		●		
VINE DECLINE								●		S[1]																										
WATERMELON BACTERIAL FRUIT BLOTCH					●						S	S												S			●								

S – Suppression. So - soil application.
*Other diseases may be controlled see label.

[1] Melons only.
[2] Cucumber only.
[4] Phytopthora blight only.
[7] Not labeled for control in pumpkin.
[8] Not labeled for cucumber.


ONSET 3.6L
ORONDIS GOLD
ORONDIS GOLD 200
ORONDIS GOLD B
ORONDIS OPTI
ORONDIS ULTRA
PH-D
PHOSTROL
PRAIZ
PRESIDIO
PREVICUR FLEX
PREVISTO
PRISTINE
PROCURE 480SC
QUADRIS OPTI
QUADRIS TOP
QUINTEC
RALLY 40WSP
REVUS
RHYME
RIDOMIL GOLD COPPER
RIDOMIL GOLD MZ WG
RIDOMIL GOLD SL
SERENADE ASO
SOVRAN
SWITCH 62.5WG
TANOS
TAEGRO 2
TETRABAN
TOPGUARD
TOPGUARD EQ
TOPSIN 4.5FL/TOPSIN M WSB/T-METHYL 4.5 F/T-METHYL 70 WSB
TORINO
ULTRA FLOURISH
UNIFORM
ZAMPRO
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DISEASE MANAGEMENT GUIDELINES

Disease	Comments/Restrictions
ALTERNARIA LEAF SPOT	Use products containing chlorothalonil, coppers, famoxadone + cymoxanil, fenamidone, maneb, mancozeb or pyraclostrobin.
ANGULAR LEAF SPOT	Use crop rotation and disease-free seeds. Apply fixed coppers.
ANTHRACNOSE	Apply products containing azoxystrobin chlorothalonil, coppers, famoxadone + cymoxanil, maneb, mancozeb, pyraclostrobin or thiophanate-methyl.
BACTERIAL WILT	Control cucumber beetles that carry the disease.
BLACK ROT	Use disease-free seed and destroy infected crop residue. Use long crop rotations without cucurbits. Apply products containing fixed copper, benomyl, chlorothalonil, maneb, mancozeb or thophanate-methyl.
DOWNY MILDEW	Use crop rotation and disease-free seed. Apply products containing azoxystrobin, coppers, cyazofamid, famoxadone + cymoxanil, fenamidone, fluopicolide, fosetyl-aluminum, mancoze,b mefenoxam, pyraclostrobin, trifloxystrobin or fixed copper.
FUSARIUM CROWN and ROOT ROT	Use long crop rotations without melons and clean seed. Do not precede pumpkin or squash with grain crop.
FUSARIUM WILT	Use long crop rotations without melons and use resistant varieties.
GUMMY STEM BLIGHT	Use products containing azoxystrobin, coppers, mancozeb, chlorothalonil, chlorothalonil + mefenoxam, pyraclostrobin or thiophanate methyl.
MOSAIC	Use resistant varieties and isolate from alternate host plants. Control aphids that carry the disease.
POWDERY MILDEW	Use products containing azoxystrobin, coppers, myclobutanil, pyraclostrobin, sulfurs, trifloxystrobin, triflumizole or thiophanate methyl.
SCAB	Use products containing chlorothalonil or mefenoxam.
SEED ROT AND DAMPING-OFF	Use seed treatments containing captan or thiram. Plant into disease-free soil and water in the morning.

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ACTIGARD 50WG	C M S W	0.5-1 oz	0	Suppression of labeled diseases. Apply preventatively. Max. 8 oz/A/year.
ACTINOVATE AG	C M P S W	3-12 oz	0	See label for soil-borne and foliar diseases controlled/suppressed. Soil-applied: At plant, in-furrow in 10-200 GPA; may be applied by drip, overhead or other irrigation systems, and may also be used as seed treatment; see label. Foliar: Apply in 10-150 GPA; reapply every 7-14 days depending on disease pressure and environmental conditions; best to use spreader-sticker (adjuvant); may be applied by air (see label).
ALIETTE WDG	C M P S W	2-5 lb	0	Apply when conditions favor disease development and continue on 7-14 day intervals. Max. 7 applications/season.
APROVIA TOP	C M P W	10.5-13.5 fl oz	0	Begin applications prior to disease onset when conditions are conducive for disease on a 7-14 day schedule. No more than two applications in a 7 day interval with remaining applications no closer than a 14 day interval. See label for annual maximums resistance management and belly rot control.
BADGE SC or BADGE X2	C M P S W	0.5-2.5 pt or 0.5-2.5 lb	0	Repeat sprays at 5-7 day intervals. Crop injury may occur from application at higher rates and shorter intervals. Use higher rates when conditions favor disease development.
BEXFOND	C M P S W	7-28 fl oz	0	Apply via drench to seedlings prior to planting, at planting, or immediately after planting with an in-furrow soil spray, overhead sprinkler, or drip irrigation. Make the initial application during seedling production. During or following, irrigate well to soak the product into the root zone. Not labeled for aerial application.
BIO-TAM 2.0	C M P S W	2.5-5 lb	–	Apply at sowing restart of vegetative growth and before infection risk period. If rainfall is not expected irrigate with 0.25-0.5"/A.
BRAVO ULTREX OR BRAVO WEATHER STIK	C M P S W	1.4-2.7 lb or 1.5-3 pt	0	Begin applications at first true leaf stage or when conditions are favorable for disease and continue at 7-day intervals. Max. 15.75 lb a.i./A/season. Note 1.
CABRIO EG	C M P S W	8-16 oz	0	Use 8-12 oz/A for downy mildew and 12-16 oz/A for other diseases. Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >1 applications before rotating mode of action. Max. 4 applications/season. Note 1.
CANNONBALL WG	C M W	C: 1 oz/100 gal water M,W: 4-8 oz	14	C: Greenhouse production only; 1.0 oz/100 gal water; max. 5-8 fl oz solution by drip or drench application/treatment; max 1 application/crop; do not apply to foliage. M,W: Apply prior to planting or transplanting; see label for specific application methods; max. 24 oz/year.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG or CHAMPION++	C M P S W	1.33 lb or 1.33 pt or 1.5-2.0 lb or 0.5-1.25 lb	–	Apply at 5-7 day intervals. Max. 14 lb or 14.4 pt or 10.5 lb or 17.5 lb/A/year.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
CUPROFIX ULTRA 40 DISPERSS	C M P S W	1-2 lb	–	Begin when conditions are favorable for disease and continue on a 5-7 day interval. Crop injury may show with short intervals.
CURZATE 60DF	C M P S W	3.2-5 oz	3	Tank mix with a protectant fungicide. Apply on a 5-7 day schedule. Max. 30 oz/A/year.
DITHANE F-45 RAINSHIELD	C M P S W	1.6-2.4 qt	5	Start when plants are 2 leaf and continue on a 7-10 day interval. Max. 19.2 qt/A/crop.
ENDURA	C M P S	6.5 oz	0	Max. of 4 applications/season; 1 application before alternating MOA.
ETHOS ELITE LFR ‡	C M P S W	0.2-0.49 fl oz/1000' row	0	At-plant: Apply as 5-7"T-band over open furrow, or in-furrow with seed. Max. 0.3 lb bifenthrin a.i./A/season, including all application methods. Product also contains insecticide; see Cucurbit Insects.
ELUMIN	C M P S W	8 fl oz	2	Max 8 fl oz/A/application. Max 2 applications/year. Max. 16 fl oz/A/year. Apply by ground in min. 20-100 GPA, by air in min. 5 GPA. Do not apply sequentially; alternate with a non-FRAC Gropu 22 fungicide of resistance management. 14-day min. application interval. See label for disease-specific application instructions.
EVITO 480 SC	C P S	3-5.7 oz	1	Apply prior to disease development and continue on a 7-14 day schedule. For Rhizoctonia root rot control apply 0.16-0.24 fl oz/1000 ft row to the soil. Note 1.
FLINT	C P S W	1.5-2 oz	0	Begin applications preventatively when conditions favor disease development and continue on a 7-14 day schedule. Use 4 fl oz/A for downy mildew suppression. Alternate with at least 1 application of another mode of action. Max. 4 applications and 16 oz/A/season. Note 1.
FONTELIS	C M P S W	12-16 fl oz	1	Begin applications prior to disease development and continue on 5-14 day schedule. Labeled for use in greenhouse production. Max. 2 sequential applications before switching to a different mode of action. Max. 67 fl oz/A/year.
FORUM	C M P S W	6 oz	0	Apply in a tank mix with a fungicide with a different mode of action. Begin when conditions favor disease development and continue on a 5+ day schedule. Max. 2 sequential applications before rotating to another mode of action. Max. 30 oz/A/season.
GAVEL 75 DF	C M P S W	1.5-2 lb	5	Start applications when plants are in 2-leaf stage and continue on 7-10 day interval. Some cantaloupe varieties are sensitive: consult state extension guides. Do not make more than 8 applications or apply more than 16 lb/A/season.
INSPIRE SUPER	C M P S W	16-20 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 80 fl oz/A/season.
KOCIDE 3000	C M P S W	0.5-1.25 lb	–	Apply prior to disease development and continue on a 5-7 day schedule or as needed.
LUNA EXPERIENCE	W	6-17 fl oz	7	Begin applications preventatively and continue on 10-14 day schedule. Max. 34 fl oz/A/season. 2ee various states (exp. date not given) for reduced rates for gummy stem blight belly rot and anthracnose.
LUNA SENSATION	W	4-7.6 fl oz	0	Begin applications preventatively on 7-14 day schedule. Max. 27.1 fl oz/A/season. Max. 4 applications/season.
MANZATE MAX or MANZATE PRO-STICK/ PENNCOZEB 75DF	C M P S W	1.6-2.4 qt or 2-3 lb	5	Begin applications when plants are in the two-leaf stage; repeat at 7-10 day intervals. Max. 19.2 qt/A/yr for Manzate Max; 24 lb/A/yr (cucumber) and 22.5/A/yr (other cucurbits) for Manzate Pro-Stick/ Penncozeb 75DF. Some melon varieties are sensitive; consult Extension.
MANKOCIDE	C M P S W	2-3 lb	5	Start when plants are 2 leaf (melons) and repeat at 7-10 day intervals. Max. 24 lb/A/season.
MERIVON	C M P S W	4-5.5 fl oz	0	Apply prior to disease development.
METTLE 125 ME	C M P S W	8 fl oz	0	Min. 7-day retreatment interval. Do not make >5 applications/A/year. For powdery mildew apply on a 7-10 day protectant schedule making no more than 2 sequential applications before alternating to another fungicide with a different mode of action. 2ee FL (exp. date not given) 6-8 fl oz/A.
MINUET	C M P S W	12-24 fl oz	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS PRIME	C M P S W	9.2-11.4 fl oz	1	Max. 22.8 fl oz/A/year. Max. 2 applications at max. rate/year. Continue applications on 7-10 day interval. May be applied by ground, air (10 GPA; max. 2 applications), or sprinkler irrigation. An adjuvant may be used. Do not make >2 applications of this or other Group 7, 12 fungicides before rotating to different MOA.
MURAL	C M P S W	5.23-6.97 oz	0	Apply prior to disease development.
OMEGA 500F	C M P S	0.75-1.5 pt	30	Apply on 7-10 day schedule. Do not apply more than 9 pt/A/year. REI 12 hours.
ONSET 3.6L	C M P S W	4-8 fl oz	7	Use 4-6 fl oz/A for powdery mildew and 8 fl oz/A for gummy stem blight. Apply as protective spray. Repeat on 10-14 day intervals. Max. 24 fl oz/A/season. Note 1.
ORONDIS GOLD	C M P S W	28-55 fl oz	0	Apply at planting in furrow by drip or in transplant water. Max. 2 sequential applications before rotating to different MOA. No more than 4 applications per crop, or <33% of total soil fungicide applications using Orondis Gold or other FRAC 49-containing product, whichever is fewer. 20-day min. application interval. See label for resistance management information and restrictions.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ORONDIS GOLD 200	C M P S W	4.8-9.6 fl oz	0	Apply at planting in furrow by drip or in transplant water. Max. 2 applications/year at max. rate. No more than 4 applications per crop; do not use for >33% of total soil fungicide applications. 7-day min. application interval. Max. 19.2 fl oz/A/year. See label for resistance management information and restrictions.
ORONDIS GOLD B	C M P S W	1-2 pt 0.25-0.4 pt (soil directed)	5	PPI (broadcast or band) apply with liquid fertilizer incorporate in top 2" of soils; Soil spray (broadcast or band) in water or liquid fertilizer at planting; Injection (drip irrigation). For banded applications use a 7" band. See label for additional soil-directed application instructions.
ORONDIS OPTI	C M P S W	1.75-2.5 pt	7	Begin ground (min. 15-20 GPA), air-assisted (min. 10 GPA) or aerial (min. 5 GPA) applications prior to disease development; continue on a 7-14 day interval. Max. 2.5 pt/A/application. Max. 10 pt/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
ORONDIS ULTRA	C M P S W	5.5-8.0 fl oz	7	Begin ground (min. 15 GPA) or aerial (min. 5 GPA) applications prior to disease development. Min. 7-day application interval. Max. 8 fl oz/A/application. Max. 32 fl oz/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
PH-D	C M P S W	6.2 oz	0	Apply preventatively and continue on a 10-14 day interval. Alternate with different modes of action. Max. 5 applications.
PHOSTROL	C M P S W	2.5-5 pt	0	Apply in min. 8 GPA water when conditions favore disease development. Min. 7-14 day interval as needed. Max. 7 applications/season.
PRAIZ	C M P S W	1.5-3 pt	0	Begin applications at first true leaf stage or when conditions are favorable for disease and continue at 7-day intervals. Max. 15.75 lb a.i./season. Note 1.
PRESIDIO	C M P S W	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10 day intervals. Max. of 2 sequential applications before alternating mode of action. Max. 4 applications or 12 fl oz/A/season. Supplemental label all states except HI (exp. date not given) for application through drip irrigation systems.
PREVICUR FLEX	C M P S W	1.2 pt	2	Apply as a preventative. See label forr pythium control. Max. of 6 pt/A/season.
PREVISTO	C M P S W	0.75-2 qt	0	Repeat sprays at 5-7 day intervals. Crop injury may occur from application at higher rates and shorter intervals. Use higher rates when conditions favor disease development.
PRISTINE	C M P S W	12.5-18.5 oz	0	Begin applications prior to disease and continue on a 7-14 day interval. Max. of 1 application before alternating mode of action. Max. 4 applications or 74 oz/A/season. Note 1.
PROCURE 480SC	C M P S W	4-8 fl oz	0	Apply at the start of vining or first indication of disease.
QUADRIS OPTI	C M P S W	3.2 pt	1	Apply prior to disease development and continue on a 7-14 day schedule for most diseases. See label for belly rot. Max. 1 application before rotating to another mode of action. Max. 1 lb a.i/A/season.
QUADRIS TOP	C M P S W	12-14 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule for most diseases. See label for belly rot. Max. 1 application before rotating to another mode of action. Max. 56 fl oz/A/year.
QUINTEC	M P S W	4-6 fl oz	3	Apply before symptoms appear.
RALLY 40WSP	C M P S W	2.5-5 oz	0	Begin at the first sign of disease and continue on a 7-10 day interval. Max. 1.5 lb/A/season. Observe 30 day plant back for all new crops at site.
REVUS	C M P S W	8 fl oz	0	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 1 application before rotating to another mode of action. Max. 32 fl oz/A/season.
RHYME	M	5-7 fl oz	7	Apply preventively or when conditions favor disease development on a 7-day interval as needed. Do not make more than 4 applications per year or apply more than 28 fl oz/A/year.
RIDOMIL GOLD MZ WG	C M S W	2.5 lb	5	Apply when conditions favor disease development and continue on 14-day intervals. Max. 2.5 lb/A/application. Max. 10 lb/A/year. Max. 4 applications/year before switching to other product for downy mildew control. S = summer squash only.
RIDOMIL GOLD SL or RIDOMIL GOLD COPPER	C M P S W	0.25-2 pt or 1 pack/2.5 A	5	Ridomil Gold SL use directed spray at plant base and incorporate or drip irrigation or see label for use in transplant water. Apply 1-2 pt/A Ridomil Gold SL for control of damping off. Ridomil Gold Copper as foliar spray controls downy mildew. See label for soil applications of Ridomil Gold SL. See label for max. amount of a.i.s from all sources.
SERENADE ASO	C M P S W	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Can be applied as soil drench, shanked-in, side-dress, injected and in-furrow.
SOVRAN	C M P S W	3.2-4.8 fl oz	0	Do not apply more than 4.8 fl oz product/A/application. Do not apply more than 19.2 fl oz/A/season.
SWITCH 62.5WG	C M P S W	11-14 oz	1	Begin prior to or at the onset of disease and repeat applications on 7-10 day intervals.
TAEGRO 2	C S W	2.6-5.2 oz		See label.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
TANOS	C M P S W	8 oz	3	Tank mix with a contact fungicide with a different mode of action. Use 8-10 oz/A for fruit blotch and phytophthora suppression. Apply prior to disease development and continue on a 5-7 day schedule. Max. 1 application before rotating to another mode of action. Max. 4 applications and 32 oz/A/croping cycle.
TETRABAN	C M P S W	6-15.5 fl oz	1	Apply by ground air or irrigation. For downy and powdery mildews apply on a 5-7 day schedule. For belly rot control make first application at 1- to 3-leaf crop state with 2nd application just prior to vine tip over or 10-14 days later whichever comes first. For all other applications apply prior to disease development and continue on 7-14 day schedule. See label tank mixes restrictions. See label for application instructions and in-furrow or banded rates for soilborne diseases.
TOPGUARD	C P S W	10-14 fl oz	0	Do not apply more than 14 fl oz product/A/application. Do not apply more than 56 fl oz/A/year. Do not make more than 4 applications per year.
TOPGUARD EQ	C M P S	5-8 fl oz	1	Apply preventatively or when conditions are favorabel for disease development. See label for disease specific application directions. An adjuvant like NIS Interlock or Masterlock may be applied.* Do NOT apply a COC, MSO or silicone-based adjuvant.
TOPSIN 4.5FL/T-METHYL 4.5 F or TOPSIN M WSB/T-METHYL 70 WSB	C M P S W	10 fl oz or 0.5 lb	1	Application method and timing depend on specific disease; see label.
TORINO	C M P S W	3.4 fl oz	0	No more than 2 applications/year. Do not apply more than once every 7 days.
ULTRA FLOURISH	C M P S W	0.5-4 pt	5	Damping off: PPI, surface application or irrigation drip at 2-4 pt/A. Downy mildew: Soil directed spray at 0.5-0.8 pt/A at 20-30 day interval at base of plants and cover 6-8" soil on either side of plant, or irrigation drip at 0.5-0.8 pt/A. See label for additional details.
UNIFORM	C P S W	0.34 fl oz/1000' row	–	Apply in-furrow.
ZAMPRO	C M P S W	14 fl oz	0	Begin application prior to disease development and continue on 5-7 day interval. Max. 2 sequential applications before switching to a different mode of action. Max. 42 fl oz/A/season.
ZING!	C M P S W	36 fl oz	0	Begin applications at two leaf stage and repeat at 7-10 day intervals or when conditions favor disease. Min. re-treatment interval is 7 days. See label for watermelon treatment.

[1] C – Cucumber M – Muskmelon P - Pumpkin S - Squash W – Watermelon
[2] PHI – preharvest interval in days.
NOTE 1: See label for fungicide rate for each disease.
* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where fungicides require NIS and AMS or a water conditioner.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PREEMERGENCE HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	C E L M P S	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown 7 days before planting, or POST hooded or shielded sprayers only for broadleaf weeds in row middles. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6.15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CAPAROL 4L	P	1 pt	PRE. Apply up to 14 days after planting.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	C E L M P S	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP, PRE. Apply prior to planting, preemergence, or at-planting. May use other glyphosate herbicides: Roundup brands/Credit Xtreme/Honcho K6 or others at labeled rates.
DACTHAL W-75 or DACTHAL FLOWABLE	C M	6-14 lb or 6-14 pt	Apply at seeding or transplanting prior to weed seed germination. Can be incorporated.
GRAMOXONE SL 3.0 ‡	C E L	1.3-2.7 pt	Add 2 pt NIS/100 gal.* PP or PRE. Max. 12 pt/A/year or 8 pt/A/year. Max. 3 applications/year. Min. 7-day application interval.
KERB SC	E L	2.5-5 pt	2.5-5 pt/A on coarse or medium soils, 3.5-5 pt/A on fine soils. Apply before or after seeding and before weeds germinate. Do not apply POST to lettuce. Must be incorporated or irrigated into soil. Do not exceed 5 pt/A. PHI 55 days. Supplemental label AZ, CA (exp. date not given) for aerial in head lettuce at 1.2-2.4 qt/A. See label for all restrictions and uses.
LOROX DF	P	1-3 lb	PRE. Apply east of Mississippi river and in TX (mineral soils only). May apply POST on muck soils at 1 lb/A after crop has three true leaves. PHI 30 days.
PREFAR 4-E	C E L M P S	5-6 qt	Apply before seeding and incorporate lightly.
TRUST/TREFLAN HFP or TREFLAN TR-10	C M	1-1.5 pt or 5-7.5 lb	1 pt/A on light colored soils- less than 2% organic matter, 1.5 pt/A on darker colored soils, 2 lb/A on light colored soils to 4 lb/A on dark colored soils with 4% or less organic matter. Apply before planting and incorporate immediately into soil by double discing or with other equipment, to give thorough mixing 3-4 inches deep. Not effective on muck and other high organic soils.
VIDA	C E L M P S	0.5-2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

POSTEMERGENCE HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	C E L M P S	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown 7 days before planting, or POST hooded or shielded sprayers only for broadleaf weeds in row middles. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6.15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CAPAROL 4L	P	1 pt	Apply up to 30 days prior to harvest. Another application can be made to regrowth up to 30 days prior to second cutting. Max. 3 applications/year. PHI 30 days.
CLEANSE	C E L M S	6-8 fl oz	Add 0.5 gal HSOC-COC/100 gal.* Apply to actively growing grasses. PHI 14 days.
CORNERSTONE 5 PLUS	C E L M P S	Up to 24 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* POSTD. Apply through directed application postemergence.
FUSILADE DX	L S	6-24 fl oz	Add 1-2 qt HSOC-COC/100 gal.* Do not apply >16 fl oz/A/application or >32 fl oz/A/year. Min. 14 days between applications. PHI 14 days.
POAST 1.5E	C L M P S	1-1.5 pt	Add 1 pt HSOC-COC/A.* Apply to actively growing grasses. Do not apply more than 3 pt/A per season. 15 day PHI for leaf lettuce and spinach; 30 day PHI for mustard, collards, kale and head lettuce.
SELECT MAX	C E L M P S	9-16 fl oz	Add 1 qt NIS/100 gal.* Apply POST once per season. PHI 14 days.
STINGER	C M S	0.17-0.33 pt	Applications to S in all states except CA, FL. Apply in 2-5 leaf stage of crop growth. PHI 21 days. Applications to C,M for use and distribution only in AZ, AR, CA, CO, CT, DE, GA, ME, MA, MI, MO, NH, NJ, NM, NY, NC, OH, OK, PA, RI, SC, TX, VT, VA, WV, WI. PHI 30 days. See label for state-specific maximums.
TARGA	S	4-12 fl oz	S grown under contract as non-food/non-feed crop for seed production in ID, MT, OR, WA, WY. Controls annual and perennial grasses. Ground application only. See label for other important restrictions.
UPBEET	E	0.5 oz	Apply when 80% of plants have at least 1 true leaf developed. Max. 1.5 oz/A/season. PHI 60 days.

STALE SEEDBED HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
GRAMOXONE SL 3.0 ‡	C E L	1.3-2.7 pt	Add 2 pt NIS/100 gal.* Apply to emerged weeds before or after seeding but before crop emerges.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	C E L M P S	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply to emerged weeds before or after planting but before crop emerges. Check label for specific weeds controlled and rates for perennials.

[1] C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

** May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LEAFY VEGETABLE INSECT CONTROL

LABELED INSECTICIDES

INSECT*	ABAMEX ‡/ABBA ULTRA ‡	ACTARA	ADMIRE PRO	***ADVISE FOUR***/NUPRID 4F MAX	AGRI-MEK SC ‡	***ARCTIC 3.2 EC*** ‡	ASANA XL ‡	AVAUNT/AVAUNT EVO	BAYTHROID XL ‡	BELAY INSECTICIDE ‡	BELEAF 50SSG	BESIEGE ‡	***BRACKET 97***/ORTHENE 97	CAPTURE LFR ‡/***TUNDRA LFC*** ‡	CERTADOR	CLOSER SC	CONFIRM 2F	CORAGEN	DIBROM 8E ‡	***DIMATE 4E***	DIPEL DF	DURIVO	ENDIGO ZCX ‡	ENTRUST SC	EXIREL	FASTAC CS ‡	FULFILL	***GRIZZLY TOO*** ‡	HERO ‡	INTREPID 2F	***LAMBDA-CY AG*** ‡	LANNATE LV ‡
	INSECTICIDE																															
Aphid		●	●	●						●	●	S[1]	●[1]	●[16]	S[7]	●			●[4]	●		●	●[1]	●	S		●	S[1]	●[5]		●[1]	●
Caterpillar						●[11]			●			●[1]		●[16]					●[4]					●				●[1]		●	●[1]	
Flea Beetle		●	●[6]				●[4]		●	●		●[1]		●[16]	●[7]							●	●[1]			●		●[1]	●[5]		●[1]	
Leafhopper		●	●	●					●	●		●[1]	●[1]	●[16]	●[7]					●		●	●[1]			●		●[1]	●[5]		●[1]	
Looper						●[11]	●[3]	●	●			●[1]	●[1]	●[16]			●	●			●	●		●	●	●		●[1]	●[5]		●[1]	●[5]

LABELED INSECTICIDES *continued*

INSECT*	LEVERAGE 360 ‡	***MALATHION 5/5EC***	MALATHION 8 FLOWABLE	MINNECTO PRO ‡	MOVENTO	MUSTANG MAXX ‡	NEEMIX	OBERON 2SC	PLATINUM 75 SG	PROCLAIM ‡	PYGANIC EC 1.4II/PYGANIC EC 5.0II	RADIANT SC	SENSTAR	SEQUOIA	SIVANTO PRIME/SIVANTO 200 SL	***TUNDRA EC ‡/BIFEN 2 AG GOLD ‡/ BRIGADE 2EC*** ‡	VENOM 70SG	VERIMARK	VERSYS	VOLIAM FLEXI	WARRIOR/II ‡	XENTARI	XPEDIENT PLUS V ‡
Aphid	●		●	●[10]	●		●		●		●		●	●	●		S	S	●	●	S[1]		●[3]
Caterpillar	●					●					●										●[1]	●	
Flea Beetle	●	●[2]	●[14]			●	●		●		●					●[16]	●			●	●[1]		
Leafhopper	●	●[1]	●[13]			●	●		●		●				●	●[3]	●			●	●[1]		
Looper	●	●	●[9]	●[10]			●			●	●	●				●[16]		●		●	●[1]	●	

S – Suppression.
* Many other insects may be controlled, see label.
[1] Lettuce. [2] Mustard. [3] Collard, lettuce and mustard. [4] Collard. [5] All but endive. [6] Foliar only. [7] All but collards and mustard.
[9] Collard, endive and lettuce. [10] Endive, lettuce and parsley. [11] All but mustard. [13] Endive and lettuce. [14] Collard and mustard. [15] All but endive and spinach. [16] All but endive and parsley..
See Insecticide Resistance Management in the Technical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECT MANAGEMENT THRESHOLDS

APHIDS	One per plant on seedlings and 10 per plant on established plants.
CATERPILLARS, LOOPERS	5% of plants infested.
FLEA BEETLE	>50% of plants infested and >30% defoliation.

INSECT TREATMENT GUIDELINES

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ABAMEX ‡ or ABBA ULTRA ‡	C E L M P S	10-15 fl oz or 4-8 fl oz	7	For spider mite and leafminers. Use ≥20 GPA. Max. 16 fl/oz/A or 8 fl oz/A per application, max. 48 fl oz/A or 24 fl oz/A per year. Allow ≥7 days between applications. No more than 2 sequential applications.
ACTARA	C E L M P S	1.5-5.5 oz	7	1.5-3.0 oz/A. For whiteflies: 3.0-5.5 oz/A. Max. 11 oz/A/growing season. 7-day min. application interval. Note 1.
ADMIRE PRO	C E L M P S	4.4-10.5 fl oz	7,21	See label for soil application instructions. Use 1.3 fl oz for foliar. PHI 7 days foliar.
ADVISE FOUR/NUPRID 4F MAX	C E L M P S	5-12 fl oz: soil 1.5 fl oz: foliar	7,21	See label for soil application instructions. PHI 7 days foliar. Max. soil application of 12 fl oz/A/crop season. Max. foliar application of 7.7 fl oz/A/crop season.
AGRI-MEK SC ‡	C E L M P S	1.75-3.5 fl oz	7	For spider mite and leafminers. Use ≥20 GPA. No more than 2 applications. Allow ≥7 days between. Do not exceed 10.25 oz/A/season. Note 1.
ARCTIC 3.2 EC ‡	C E L P S	2-4 fl oz 2-8 fl oz		Labeled in AR, AZ, GA, IL, NC, OK, SC and TX. Note1.
ASANA XL ‡	M C L	9.6 fl oz 5.8-9.6 fl oz 4.8-9.6 fl oz	7	For head lettuce in AZ, CA, CO, FL, NM and TX.
AVAUNT or AVAUNT EVO	C M E L P S	3.5 oz or 3.5-6 oz 2.5-3.5 oz or 2.5-6 oz 2.5-3.5 oz or same 3.5 oz or same	3	Note 1.
BAYTHROID XL ‡	C E L M P S	0.8-3.2 fl oz	0	Note 1.
BELAY INSECTICIDE	C E L M P S	9-12 fl oz: soil 3-4 fl oz: foliar	21,7	For foliar, do not apply treatments <10 days apart; do not apply during bloom or when bees are foraging. PHI 7 days foliar.
BELEAF 50SG	C E L M P S	2.8-4.28 oz	0	Note 1.
BESIEGE ‡	L	5-9 fl oz	1	Max. 31 fl oz/A or 0.3 lb a.i./A. year lambda-cyhalothrin-containing products or 0.2 lb/A/year chlorantraniliprole-containing products. 5-day min. application interval.
BRACKET 97/ORTHENE 97	L	0.5-1 lb	21	Do not apply more than 2.125 lb a.i./A per season. Crisp head lettuce only. Note 1.
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	C L M S	3.4-8.5 fl oz: soil 2.8-8.5 fl oz: foliar	7,40	See individual labels for specific target insects and rates. Apply directed to furrow or seed bed, PPI and PRE, or as foliar (see individual labels for allowed foliar applications to specific leafy vegetables). 7-day min. application interval. PHI: C,L,M 7 days; S 40 days.
CERTADOR	E L P S	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21,1	Use only one application method. Apply as foliar when pests appear, as needed but not more than every 7 days. See label for row spacing rates.
CLOSER SC	C E L M P S	1.5-5.75 fl oz	3	Do not make >4 applications/crop, 2 consecutively, or <7 days apart, and >17 fl oz/A/season. Do not apply anytime 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 feet out from the downwind edge of the field, a downwind 12-ft on-field buffer must be observed. Note 1.
CONFIRM 2F	C E L M P S	6-8 fl oz	7	Rate dependent on target pest; see label. 10- to 14-day application interval.
CORAGEN	C E L M P S	3.5-7.5 fl oz	1,3	At-planting, drip irrigation or foliar. PHI 3 days for collard and mustard. Note 1.
DIBROM 8E ‡	C	1 pt	1	Max. 2 pt/A/season. Min. 30 GPA by ground, 10 GPA by air. Do not apply if T >90 °F. 7-day min. application interval.
DIMATE 4E	C E L M P S	0.5 pt	14	Leaf lettuce only.
DIPEL DF	C E L M P S	0.25-2 lb	0	Bt insecticide. Note 1.
DURIVO	C E L M P S	10-13 fl oz	30	Apply in-furrow; POST-seeding, transplant, or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Max. 1 soil application/season.
ENDIGO ZCX ‡	L	4-4.5 fl oz	7	Note 1.
ENTRUST SC	C E L M P S	1.5-10 fl oz	1	Do not make applications less than 4 days apart. Do not make more than 6 applications per calendar year. Do not apply more than 29 fl oz/A/year. 2ee various states (exp. date not given) for overhead sprinkler chemigation use. Looper: Cabbage looper only. Note 1.
EXIREL	C E L M P S	7-20.5 fl oz	1	Apply foliar with an effective adjuvant, except on spinach. 5-day min. application interval. Max. 0.4 lb a.i. cyantraniliprole/A/crop/season. Note 1.
FASTAC CS ‡	C E L M P S	2.2-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply >11.4 fl oz/A/season. Min. 10 GPA ground and 5 GPA air.
FULFILL	C E L M P S	2.75 oz	7	Do not exceed 5.5 oz/A/season. Allow ≥ 7 days between applications.
GRIZZLY TOO ‡	L	0.96-1.92 fl oz	1	Do not exceed 0.64 pt/A/season. Note 1.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
HERO ‡	C L M P S	4-10.3 fl oz	7	Note 1.
INTREPID 2F	C E L M P S	4-10 fl oz	1	Use 4-8 oz/A for early season applications only and 8-10 oz/A for mid- to late-season applications or for heavy infestations or applications when coverage is difficult. Do not exceed 64 fl oz/A/year. Note 1.
LAMBDA-CY AG ‡	L	1.92-3.84 fl oz	1	When applying by air apply in a min. of 2 gal of water/A
LANNATE LV ‡	C E M P S L	1.5-3 pt 0.75-3 pt	7,10	Fresh market collards only. PHI 7 for up to 1.5 pt/A on L; 10 day PHI for >1.5 pt/A. 7 day PHI for S. 10 day PHI for C, E, M, P. Note 1.
LEVERAGE 360 ‡	C E L M P S	3 fl oz	7	7-day min. application interval. Max. 2.8 fl oz/A/crop/season. Not for use in crops grown for seed unless allowed by state-specific labeling.
MALATHION 5 or MALATHION 5EC	C E L M P S	1-1.6 pt or 1.5 pt 1.5-2 pt 2-3 pt 1-1.6 pt or 1.6 pt 1-2 pt or 1.5-2.4 1.6 pt	7,14,21	14 day PHI for leaf lettuce. Note 1.
MALATHION 8 FLOWABLE	C M S E L P	1 pt 1.25 pt 1.88 pt 1.5 pt	7 7 14 7	C,M: Max. of 3 applications/year. E, L, P, S: Max. of 2 applications/year.
MINECTO PRO ‡	E L P	7.5-10 fl oz	7	Must be mixed with a spray adjuvant; see label. Best control achieved with ground application. Do not make more than 2 sequential applications. Cabbage looper: 7.5-10 fl oz/A. Green peach aphid: 10 fl oz/A.
MOVENTO	C E L M P S	4-5 fl oz	3	Max. 10 fl oz/A/season.
MUSTANG MAXX ‡	C E L M P S	2.24-4 fl oz	1	Note 1.
NEEMIX 4.5	C E L M P S	4-16 fl oz	0	Note 1.
OBERON 2SC	E L P S	7-8.5 fl oz	7	White fly control.
PLATINUM 75 SG	C E L M P S	1.66-3.67 oz	30	Apply in-furrow, drench, drip, or shanked (See label). Do not exceed 3.67 oz/A/season.
PROCLAIM ‡	C E L M P S	2.4-4.8 oz	7,14	PHI 7 days for E, L, P, S and 14 days for C, M. Note 1.
PYGANIC EC 1.4$_{II}$	C E L M P S	16-64 fl oz	0	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0$_{II}$	C E L M P S	4.5-15.61 fl oz	0	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
RADIANT SC	C E L M P S	5-10 fl oz	1	Note 1.
REQUIEM EC	C L M P S	2-4 qt	0	For whiteflies (2-3 qt/A), apply before damaging levels and repeat as needed. For leafminer suppression (3-4 qt/A), apply before thresholds have been -reached. Note 1.
SENSTAR	C E L M P S	8-10 fl oz	14	Ground application in 10-50 GPA. Only whole fields should be treated. Max. 10 fl oz/A/application. Max 2 applications/crop season. Max. 20 fl oz/A/crop season. Min. 14-day application interval.
SEQUOIA	C E L M P S	1.5-5.75 fl oz	3	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. Do not apply any time 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 ft out from the downwind edge of the field, a downwind 12 ft on field buffer must be observed. Note 1.
SIVANTO PRIME/SIVANTO 200 SL	C E L M P S	7-14 fl oz	1	Foliar: Rate is pest-dependent. 7-day min. application interval. PHI 1 day. Apply by ground or air.
TRIGARD	C E L M P S	2.66 oz	7	Leafminer control. Up to 6 applications for celery, mustard, and lettuce and 5 for other leafy vegetable.
TUNDRA EC ‡/***BIFEN 2 AG GOLD*** ‡/BRIGADE 2EC ‡	C L M S	2.1-6.4 fl oz	7,40	Head lettuce only. PHI 7 days for lettuce and 40 days for spinach. Note 1.
VENOM	C E L M P S	1-3 oz	7,21	Use 5-6 oz soil applied. PHI 21 days for soil application. Note 1.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
VERIMARK	C E L M P S	5-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting, or via drip irrigation. Max. 13.5 fl oz/A at planting. Max. 0.4 lb a.i. cyantraniliprole/A/season. A spray application pH of 4-6 is recommended. Whitefly suppression only. Note 1.
VERSYS	C E L M P S	1.5 fl oz	0	Apply at first sign of pest presence, before population increases to damaging levels. 10 GPA ground, 5 GPA air. 7-day min. retreatment interval. Do not make >2 sequential applications before switching to a different mode of action. Do not apply >14 fl oz/A/season. 3 max. crop seasons/year.
VOLIAM FLEXI	C E L M P S	4-7 oz	7	Max. 14 oz/A/season. 2ee for most states (exp. date not given) for brown marmorated stink bug at 6-7 oz/A/application.
WARRIOR II ‡	L P	0.96-1.92 fl oz 1.28-1.92 fl oz	1 NL	Do not exceed 1.2 pt/A/season. Note 1.
XENTARI	C E L M P S	0.5-2 lb	0	Bt insecticide. Note 1.
XPEDIENT PLUS V	C L M S	2.56-6.4 fl oz	0	Note 1.

[1] C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach
[2] PHI – preharvest interval in days.
NOTE 1: See label for insecticide rate for each insect.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED FUNGICIDES

DISEASE*	ACTIGARD 50WG	ACTINOVATE AG	ALIETTE WDG	BADGE SC OR BADGER X2	BEXFOND	BIO-TAM 2.0	CABRIO EG[3]	CANNONBALL WG	CHAMP DRAY PRILL; FORMULA 2 FLOWABLE/CHAMPION++	CHAMP WG	CONTANS WG	CUPROFIX ULTRA 40 DISPERSS	CURZATE 60 DF[4]	DITHANE F-45 RAINSHIELD[4]	ENDURA	***EVERLON***/PRIAXOR	FLINT	FLINT EXTRA	FONTELIS	FORUM	KOCIDE 3000	LUNA SENSATION	MANZATE MAX	MANZATE PRO-STICK/PENNCOZEB 75DF	MERIVON	MINUET	MIRAVIS PRIME
ALTERNARIA LEAF BLIGHT		●														●	●										●[17]
ALTERNARIA LEAF SPOT		●		●			●		●[2]	●[2]		●[2]						●	●			●			●		●[18]
ANTHRACNOSE				●[11]			●		●[1]	●[1]						●		●[3]						●	●		
ASCOCHYTA LEAF SPOT							●																		●		
BLACK ROT				●					●[2]	●[2]		●[2]										●					
BLACK SPOT									●[2]	●[2]					●[2]				●[2]								●[16]
BLUE MOLD				●[1]					●[1]	●[1]		●[1]															
BOTRYTIS ROT		●													●[4]										●		
BOTTOM ROT																											
CERCOSPORA LEAF SPOT				●[1]			●		●[1]	●[1]		●[1]				●	●		●[3]			●			●		●[16]
DAMPING OFF																											
DOWNY MILDEW	●[1]	●	●	●			●		●[19]	●[20]		●[2]	●	●		S				●	●[9]	S	●	●	●		
FUSARIUM		●			So	●																				So	
GRAY MOLD								●							●[2]				●			●					●
LETTUCE DROP															●[4]				●[3]			●			●		
PHOMA BASAL ROT								●							●[4]										●		●
PHYTOPHTHORA		●			So	●																				So	
POWDERY MILDEW		●		●[12]			●								S	●	●	●	●			●			●		●
PYTHIUM		●				●																				So	
RHIZOCTONIA		●			So	●										●										So	
RHIZOCTONIA BOTTOM ROT		●													S							S				So	
SCLEROTINIA STEM ROT		●			So			●			●				●[2]				●[2]			●					●
SEPTORIA LEAF SPOT				●[12]			●										●[3]		●[3]	●[3]					●		●
WHITE RUST	●[1]		●[1]	●[1]			●		●[1]	●[1]		●[1]				●									●		●[16]

So- Soil application. S - Suppression.
See Fungicide Resistance Management in the Technical Information section.
*Other diseases may be controlled, see label.
[1] Spinach only. [2] Collard and mustard only. [3] Endive, lettuce, parsley and spinach only. [4] Lettuce only
[5] Endive, lettuce and parsley only. [6] All but mustard. [8] All but spinach. [11] Spinach, lettuce and endive.
[12] Lettuce and endive. [13] Collard, lettuce and mustard. [16] Collard only for Miravis Prime and Tilt.
[17] Mustard only. [18] All but collard. [19] All but parsley. [20] Collard, mustard and spinach.

	FUNGICIDE *(continued)*																										
	ONSET 3.6L	ORONDIS GOLD	ORONDIS GOLD 200	ORONDIS GOLD B	PHOSTROL	PRECIVUR FLEX	PRESIDIO[3]	PREVISTO	PROCURE 480SC[8]	QUINTEC[4]	RALLY 40WSP	REVUS	RHYME	RIDOMIL GOLD COPPER	RIDOMIL GOLD SL	ROVRAL 4F	SERENADE ASO	SWITCH 62.5WG	TANOS[6]	TAEGRO 2	***TESARIS***	***TETRABAN***	***TOPAZ***/TILT	TOPGUARD EQ	ULTRA FLOURISH	UNIFORM	ZAMPRO
																		●[2]				●					
	●							●[2]					●				●	●[5]			●		●	●			
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							●	●[1]						●	So[1]				●			●		●	●[1]		

DISEASE MANAGEMENT GUIDELINES

Disease	Comments/Restrictions
BOTTOM ROT and DROP	Avoid wet fields with a history of disease.
DAMPING OFF	Plant only western-grown, hot-water treated seed with thiram or captan for S, C and M. Treat with captan or thiram for L.
DOWNY MILDEW	Plant downy mildew resistant S.
SEED ROT	Treat L seed with captan or thiram.

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ACTIGARD 50WG	L S	0.5-0.75 oz	7	Apply preventatively, begin applications at first to second true leaf or after thinning. Continue on a 7-10 day schedule. Max. 2.25 oz/A/year for B and 4 oz/A/year for L.
ACTINOVATE AG	C E L M P S	3-12 oz	0	See label for soil-borne and foliar diseases controlled/suppressed. Soil-applied: At plant, in-furrow in 10-200 GPA; may be applied by drip, overhead or other irrigation systems, and may also be used as seed treatment; see label. Foliar: Apply in 10-150 GPA; reapply every 7-14 days depending on disease pressure and environmental conditions; best to use spreader-sticker (adjuvant); may be applied by air (see label).
ALIETTE WDG	E L P S C M	2-3 lb 2-5 lb	7 3	Apply when conditions favor disease and continue at 7-14 day intervals. Do not mix with coppe fungicides. Max. 7 applications/season. Apply when conditions favor disease development and continue on 7-21 day intervals. Max. 7 applications/season.
BADGE SC or BADGE X2	C E L M P S	0.5-2.5 pt or 0.5-2.5 lb	0	0.75-1.5 pt/A or 0.75-1.5 lb/A for L,E; 1-2.25 pt/A or 1-2.25 lb for S. Application intervals: 7-10-days on C, M, P, S; Badge SC 5-10 days or Badge X2 7-10 days on L,E. Flecking may occur on S leaves, on other crops injury may occur from application at higher rates and shorter intervals. Use higher rates when conditions favor disease development.
BEXFOND	C E L M P S	7-14 fl oz	0	Apply via drench to seedlings prior to planting, at planting, or immediately after planting with an in-furrow soil spray, overhead sprinkler, or drip irrigation. Make the initial application during seedling production. During or following application, irrigate well to soak the product into the root zone. Not labeled for aerial application.
BIO-TAM 2.0	C E L M P S	2.5-5 lb	–	Apply at sowing, restart of vegetative growth, and before infection risk period. If rainfall is not expected, irrigate with 0.25-0.5"/A.
CABRIO EG	E L P S	8-16 oz	0	Use 8-12 oz/A for white rust, 16 oz/A for L downy mildew, and 12-16 oz/A for other label diseases.
CANNONBALL WG	E L P S	7 oz	0	Begin prior to onset of disease. Min. 7-day application interval. Apply by ground or air (max. 2 applications by air). Max. 4 applications/year at max. rate. Max. 28 oz/A/season. Max. 0.9 lb ai/A/season fludioxonil products.
CHAMP DRY PRILL	C M E L P S	0.33-0.67 lb 0.67-1.33 lb 2.0 lb 1.33-2.1 lb	–	Apply at 7-10 day intervals, depending on crop; see label. C, M: Max. 7.07 lb/A/year. E, L: Max. 21.3 lb/A/year. P: Max. 5.33 lb/A/year. S: Max. 10.5 lb/A/year.
CHAMP FORMULA 2 FLOWABLE	C M E L P S	0.33-0.66 pt 0.66-1.33 pt 2.0 pt 1.33-2.66 pt	–	Apply at 7-10 day intervals, depending on crop; see label. C, M: Max. 7.3 pt/A/year. E, L: Max. 22 pt/A/year. P: Max. 5.5 pt/A/year. S: Max. 10.9 pt/A/year.
CHAMP WG	C M P S	1 lb or 2.0 lb 1.0-1.58 lb	–	Apply at 7-10 day intervals, depending on crop; see label. C, M: Max. 5.3 lb/A/year. P: Max. 4.0 lb/A/year. S: Max. 7.9 lb/A/year.
CHAMPION++	C M E L P S	0.5-0.75 lb 0.75-1.5 lb 1.25-2 lb 0.75-1.25 lb	–	Apply at 7-10 day intervals, depending on crop; see label. C, M: Max. 8.8 lb/A/year. E, L: Max. 26.6 lb/A/year. P: Max. 6.7 lb/A/year. S: Max. 13.2 lb/A/year.
CONTANS WG	C E M P S L	1-4 lb 2 lb	0	Apply prior to disease infection.
CURZATE 60 DF	L S	3.2-5 oz	3	Head lettuce 3.2-5 oz/A; leafy lettuce and spinach 5 oz/A. Tank mix with a protectant fungicide. Apply on a 5- to 7-day schedule. Max. 30 oz/year.
CUPROFIX ULTRA 40 DISPERSS	C M S	0.75-1.25 lb 1.25-2 lb		Begin prior to disease development and continue on a 7-10 day interval. Leaf flecking may occur.
DITHANE F-45 RAINSHIELD	L E M P S	1.2-1.6 qt see 24c OR	10,14	Begin applications when disease appears and reapply on a 7-10 day schedule. Do not apply PHI 10 for head L. PHI 14 for leaf L. See label for PHIs specific to CA.
ENDURA	L C M	8-11 oz 6-9 oz	14	For direct seeded lettuce, apply immediately after emergence or prior to disease development. For transplanted, apply immediately after tranplanting or prior to disease development. NIS at 0.25% v/v may improve performance. Max. 2 applications/season. Note 1.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
EVERLON/PRIAXOR	C M	6-8.2 fl oz	3	Apply prior to onset of disease and continue on a 7-14 day interval. Do not apply more than 3 times/season or 24.6 fl oz/A/season. Do not make more than two sequential applications before rotating to non group 7 or non group 11 fungicide.
FLINT	P	2-3 oz		Begin preventatively and continue on a 14-day interval.
FLINT EXTRA	C E L M P S	3-3.8 fl oz	0	Apply on a 5-10 day interval if needed. Max. 7.6 fl oz/A/year.
FONTELIS	E L P S C M	14-24 fl oz 14-30 fl oz	3 0	See label for disease-specific rates. Begin applications prior to disease development and continue on a 7-14 day schedule. Max. 2 sequential applications before switching to a different mode of action. Max. 72 fl oz/A/year. Apply 14-30 fl oz/A for collards and mustard.
FORUM	C E L M P S	6 fl oz	7,0	Begin applications prior to disease development and continue on a 7-day schedule, but rotate to non-Group 40 fungicide at least once. Do not make more than 3 applications/season or exceed 18 fl oz/A/season. Do not use less than 20 GPA by ground or 5 GPA by air. Use of spreading/penetrating adjuvant recommended. PHI 7 for C, M; PHI 0 for E, L, P, S.
KOCIDE 3000	E L	0.75-1.5 lb	0	Begin when disease symptoms first appear or when conditions favor disease development. Continue at 5-10 day intervals if needed. Max. 26.6 lb/A per season. Supplemental label all states except AZ, CA (exp. date not given) for downy mildew control on L.
LUNA SENSATION	C E L M P S	5-7.6 fl oz	0	Apply using ground, aerial or chemigation. Apply at 7-14 day interval. Do not make more than 2 sequential applications.
MANZATE MAX or MANZATE PRO-STICK/ PENNCOZEB 75DF	L	1.2-1/6 qt or 1.6-2.1 lb	10	Apply prior to disease development and continue on 7-10 day interval. Max. 6.4 qt/A/yr for Manzate Max, 12.8 lb/A/crop for Manzate Pro-Stick/ Penncozeb 75DF. PHI 14 days CA.
MERIVON	E L P S	4-11 fl oz	1	Apply before disease is present.
MINUET	C E L M P S	12-24 fl oz	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS PRIME	C E L M P S	9.2-13.4 fl oz	0	E, L, P, S: 13.4 fl oz/A for gray mold, basal rot and Sclerotinia rot; 9.2 fl oz for other diseases; see label for soilborne disease application timing; max. 36.5 fl oz/A/year; max. 2 applications at max. rate/year; continue applications on 7-10 day interval; max. 2 applications by air; max. 2 consecutive applications before switching to fungicide not in Group 7 or 12. C: 11.4 fl oz/A; max. 11.4 fl oz/application; max. 3 applications at max. rate/year (max. 34.2 fl oz/A/year); max 2 consecutive applications before switching to fungicide not in Group 7 or 12. 7-day min. application interval; max. 2 applications by air. M: 10.3-13.4 fl oz/A (see label); max. 11.4 fl oz/application; max. 3 applications at max. rate/year (max. 34.2 fl oz/A/year); max 2 consecutive applications before switching to fungicide not in Group 7 or 12. 7-day min. application interval; max. 2 applications by air. An adjuvant may be used.
OMEGA 500F	C M S	6.45 fl oz/100 gal (transplant) 2.6 pt (soil)	20,50	For use on club root. Apply transplant soil drench immediately after planting at 3.4 fl oz/plant. Soil incorporation in 9 inch band to depth of 6-8 inches with min. 50 GPA. Do not apply >3.85 pt/A/season. PHI 20 days leafy greens and 50 days heading vegetables.
ONSET 3.6L	C M	3-4 fl oz	7	Apply as protective spray. Max. 16 fl oz/A/season.
ORONDIS GOLD	E L P S	13.9-27.8 fl oz	7,21,3	Apply at planting, in furrow, by drip, or in transplant water. See label for resistance management information and restrictions. Max. one at-plant soil application/crop. Max. 2 applications/A/year. PHI for S is 21 days or 3 days if soil application does not exceed 1.0 lb mefenoxam a.i./A/year and foliar application does not exceed 0.25 lb mefenoxam a.i./A/year.
ORONDIS GOLD 200	E L P S	4.8-9.6 fl oz	0	Apply at planting, in furrow, by drip, or in transplant water. See label for resistance management information and restrictions. No more than 4 applications per crop; do not use for >33% of total soil fungicide applications. 7-day min. application interval.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ORONDIS GOLD B	E L P S	1-2 pt	7,21,3	PPI (broadcast or band), apply with liquid fertilizer, incorporate in top 2" of soils; Soil spray (broadcast or band) in water or liquid fertilizer at planting. Max. 1 soil application/year. PHI for S is 21 days or 3 days if soil application does not exceed 1.0 lb mefenoxam a.i./A/year and foliar application does not exceed 0.25 lb mefenoxam a.i./A/year. See label for vegetable-specific max. a.i./year.
PHOSTROL	C E L M P S	2.5-5 pt	0	Apply in min. 10 GPA water, continue on 7-21 day interval; use higher rates and shorter intervals when disease pressure is moderate to high. Max. 7 applications/season.
PRESIDIO	E L P S	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10 day intervals. Max. of 2 sequential applications before alternating mode of action. Max. 4 applications or 12 fl oz/A/season. Supplemental label all states except HI (exp. date not given) for application through drip irrigation systems.
PREVICUR FLEX	L	2 pt	2	Apply when conditions favor disease development.
PREVISTO	C L M P S	0.75-2 qt	0	C, L, M, S: 0.75-2 qt, 7-10 day application interval. P: 1-3 qt, 10-14 day application interval under light disease pressure, 7-day interval under heavy disease pressure.
PROCURE 480SC	C E L M P	6-8 fl oz	0,1	PHI 1 day for collards, 0 for the rest. Begin applications at the first indication of disease. Continue on a 14 day schedule.
RALLY 40WSP	L	5 oz	3	Begin applications when disease first appears or when conditions favor development. Reapply at 14-day intervals. No more than 5 oz/A/application. No more than 1.25 lb/A/season. No more than 4 applications per season.
REVUS	C E L M P S	8 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 32 fl oz/A/season.
RHYME	C E L M P S	5-7 fl oz	7	Apply preventively or when conditions favor disease development on a 7-day interval as needed. Do not make more than 4 applications per year or apply more than 28 fl oz/A/year.
RIDOMIL GOLD SL or RIDOMIL GOLD COPPER	C L M S	0.125-2 pt or 1 pack/2.5 A	7,3	Ridomil Gold SL: Apply in a tank mix before disease infection, continue on a 14-day schedule. See label for soil applications. For control of damping off in L, S, apply 1-2 pt/A. PHI 7 days. For control of white rust and downy mildew in S, apply 0.25 pt/A. Ridomil Gold Copper: Controls white rust and downy mildew on S. For optimal results, see label for sequence of Ridomil Gold SL applications followed by foliar applications of Ridomil Gold Copper. 1 or 2 applications at 14-day intervals. PHI 3 days. See label for max. amount of a.i.s from all sources.
ROVRAL 4F	L	1.5-2 pt	14	Apply from planting to just after thinning. Repeat in 10 days. A third application may be needed if disease-favorable conditions persist. Max. 3 applications/crop. 2ee AZ, CA (exp. date not given) for preplant control of Sclerotinia spp.
SERENADE ASO	C L M P S	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Sup. label for soil drench, shanked-in, injected and in-furrow.
SWITCH 62.5WG	C M E L P S	10-14 fl oz 11-14 oz	7,0	Apply prior to disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. PHI 7 days C, M. Max. 56 oz/A/ season.
TANOS	E L M P S	8-10 oz	3	Apply prior to disease development and continue on a 5-7 day schedule. Max. 1 application before rotating to another mode of action. Max. 48 oz/A/ cropping season. Tank mix with a contact fungicide with a different mode of action.
TAEGRO 2	E L	2.6-5.2 oz		See label.
TESARIS	C E L M P S	3.4-9.1 fl oz	1	Apply prior to onset of disease development and continue on a 7-14 day interval. Min. 7-day application interval. Do not apply to spinach as a tank mix with anything but water. For other leafy vegetables, see label for important sensitivity information. Max. 9.1 fl oz/A/application. Max. 3 applications/year. Max. 27.3 fl oz/A/year. Do not make >2 sequential applications before switching to a non-Group 7 fungicide.
TETRABAN	C E L M P S	6-15.5 fl oz	0	Apply by ground, air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soilborne diseases.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
TOPAZ/TILT	C M P	3-4 fl oz	14	Tilt labeled for C, PHI 3 days; Topaz/Tilt labeled for M, P, PHI 14 days. Begin applications at first sign of disease and repeat on 14 day interval. Max. 2 applications before switching to a fungicide with a different mode of action. Max. 16 fl oz/A/year.
TOPGUARD EQ	C E L M P S	5-8 fl oz	7	Apply preventatively or when conditions are favorable for disease development. Specific application directions apply to certain diseases, refer to the label for directions. Reapplication a min. of 7 day intervals.
ULTRA FLOURISH	C E L M P S L S	2.5-5 pt 0.25-0.5 pt 0.5 pt	7 7 3,21	Damping off for C, E, L, M, P, S: PPI or surface apply at 2-4 pt/A. Downy mildew in L (head and leaf): Foliar (ground or air) at 0.25-0.5 pt/A at 14-day intervals; use onlyl in tank mix with other fungicides registered for downy mildew control. White rust and downy mildew in S: Shank application at 0.5 pt/A at 21 days after planting or at first cutting, with second shanked application at second cutting; PHI 3 days if soil applications are <4 pt/A, otherwise 21 days; see label for additional details regarding white rust control and at-plant applications.
UNIFORM	C E L P S	0.34 fl oz/1000' row		Apply in-furrow.
ZAMPRO	C E L M P S	14 fl oz	0	Begin applications prior to disease development and continue on 7 day interval. Max. 2 sequential applications before rotating to another mode of action. Max. 42 fl oz/A/season.

[1] C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach
[2] PHI – preharvest interval in days.
NOTE 1: See label for fungicide rate for each disease.

NOTES

PREPLANT OR PREEMERGENCE HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	O G	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown 30 days before planting. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6. 15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	O G	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP, PRE. Apply prior to planting, preemergence. Apply at least 3 days before planting in garlic.
DACTHAL W-75 or DACTHAL FLOWABLE	O G	6-14 lb or 6-14 pt	Apply at seeding or transplanting and/or at layby. Consult the label for specific rates based on soil type. In sand loam soils, do not exceed 10 lb/A. Apply after planting to soil surface before weed seeds germinate and onions have emerged. In the Pacific Northwest, under dry conditions, should not be applied until just prior to the initial sprinkler irrigation.
GRAMOXONE SL 3.0 ‡	O G	1.3-2.7 pt	Add 2 pt NIS/100 gal.* Apply to seeded onions PP or PRE for green or dry bulb harvest. Weeds and grasses emerging after treatment will not be controlled. PHI 60 days.
NORTRON	O	16-32 fl oz	Apply PRE at or after planting but before weeds emerge. Use 16 fl oz /Aon coarse soils, and 32 fl oz/A on medium and fine soils.
PREFAR 4-E	O G	5-6 qt	Apply PP or PRE. Incorporation depth of 1-2". May be applied PRE shortly after planting if followed by immediate irrigation. Chemigation is possible with correct system. See label for further instructions. ID, OR (do not apply in Willamette Valley): Apply in the fall in 10-50 GPA in a 10-12 in. bank and bed-up by throwing soil from furrows over the sprayed band. In spring, drag-off bed tops with a spike-tooth harrow, being careful not to expose soil beneath the treated layer. Plant in center of beds.
PROWL H2O	O	2 pt	Apply 2 pt/A as a broadcast spray to soil surface PRE. Do not apply >4 pt/A/season. Do not apply within 30 days of harvest. Do not feed forage or graze in treated fields.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	O G	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply prior to the emergence of onions for the control of emerged annual weeds. For specific rates on specific weeds, and perennials refer to the label.
VIDA	O G	0.5-2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

POSTEMERGENCE HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	O G	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* POST hooded or shielded sprayers only for broadleaf weeds in row middles. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6. 15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CHATEAU EZ	O G	Up to 2 fl oz Microrate: 0.5-1 fl oz	Apply to dry bulb O only, and only in MI,NY,ND,WI. No geographic restrictions for G. Apply to weed-free O or G (within 3 days of planting G) for preemergence control of weeds. Max. 2 fl oz/A/application, max. 3 fl oz/A/year, max 6 applications/year. Max. 1 fl oz/A/year on soils with >90% sand plus gravel. Do not make sequential application within 14 days of first application. PHI 45 days for O. Do not use adjuvant. Microrate application between 2-lf and 6-lf stage at 0.5-1 fl oz/A on a 7-day interval.
CLEANSE	O G	6-8 fl oz: annuals 8-16 oz: perennials	Add 0.5 gal HSOC-COC/100 gal.* For selective control of annual and perennial grasses. Use a min. of 5 GPA and a min. of 30 lb pressure by ground. By air, apply a min. of 3 GPA. 45-day PHI. 14-day min. application interval.
CORNERSTONE 5 PLUS/ CORNERSTONE 5 PLUS*	O	Up to 24 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* POSTD. Apply through directed application postemergence in onion only.

See notes and footnotes at end of table.

ONION/GARLIC WEED CONTROL *continued*

POSTEMERGENCE HERBICIDES *continued*

Herbicide	Labeled Crops[1]		Rate/Acre	Comments/Restrictions
FRAMEWORK 3.3 EC or PROWL H2O	O	G	1.8-3.6 pt or 1.5-3 pt	Apply as a broadcast treatment when onions have 2-9 true leaves. First treatment can be applied at the loop stage and the second when onions have 2-6 true leaves. Do not mechanically incorporate. Apply PRE or POST from 1-5 leaf garlic. See label for higher rates in muck soils. Treatments are most effective where rainfall or overhead irrigation is received within 7 days of application. PHI 45 days (60 in CA). See label for additional directions and uses in CA, CO, KS, NE, TX, ID, OR, and WA.
FUSILADE DX	O	G	6-24 oz	Add 0.5 pt NIS/25 gal by ground or 1 pt NIS/25 gal by air.* Apply POST to actively growing grasses. Check the label for specific rates by weed species. Cultivation is not recommended 7 days before or after application. Do not apply more than 48 oz/A/year. PHI 45 days.
GOAL 2XL	O	G	See label.	Apply POST to onions that have at least 2 true leaves. For best broadleaf weed control, multiple applications are necessary. Do not apply more than 2 pt/A in one season. See label for further directions. PHI 45 days.
GOALTENDER	O	G	See label	Direct or seeded or transplanted. Application timing and region influence rate. See label for restrictions. 24c AZ, CA, NM, TX (exp. date not given) for dry bulb onions at first true leaf growth stage.
GRAMOXONE SL 3.0 ‡	O		1.3 pt	Add 2 pt NIS/100 gal.* Directed spray to dry bulb onion. PHI 60 days.
MAESTRO 2EC	O	G	1-1.5 pt	Apply to onions in the 2-5 true leaf stage using a min. of 50 GPA spray volume. Apply before weeds exceed the 4-leaf stage or 2" in height, whichever comes first. Do not apply to onions until the dew has completely dried. Applications should not be made 24 hours before or after cultivation, rainfall or irrigation. Best to apply on a sunny day. See label for PRE applications.
NORTRON	O		16 fl oz	See label for precautions on crop injury.
OUTLOOK	O	G	12-21 fl oz	Apply after bulb vegetables have reached the 2 true leaf stage and up to a min. of 30 days before harvest. For transplanted vegetables, do not apply until transplants are in the ground and soil has settled around the transplants with several days to recover.
POAST	O	G	0.5-1.5 pt	Add 1 pt HSOC-COC/A.* Apply to actively growing grasses. See label for rate for individual grass species and sizes. Do not cultivate 7 days before or after application. PHI 30 days.
SECTION THREE	O	G	4-10.67 fl oz	Add 0.5 gal HSOC-COC/100 gal.* Apply in min. 20 GPA. Do not apply more than 10.67 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a min. 14-day interval. PHI 45 days.
SELECT MAX	O	G	9-32 fl oz	Add 1 qt NIS/100 gal.* Do not apply >32 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a min. 14 day interval. Min. 20 GPA ground or 10 GPA air (20 in CA). PHI 45 days.
TARGA	O	G	4-12 fl oz	O, G grown under contract as non-food/non-feed crop for seed production in ID, MT, OR, WA, WY. Controls annual and perennial grasses. Ground application only. See label for other important restrictions.
TRUST/TREFLAN HFP	O		0.75-1.25 pt	Apply at layby as a directed spray to the soil between rows and incorporate immediately with sweeps or rolling cultivator. Do not apply PP or PRE or within 60 days of harvest. Remove emerged weeds before applications. Use rates depend on soil type and OM. Refer to label for specific application rates.
TUSCANY SC	O	G	Up to 2 fl oz Microrate: 0.5-1 fl oz	Apply to weed-free O or G (within 3 days of planting G) for preemergence control of weeds. Max. 2 fl oz/A/application, max. 3 fl oz/A/year, max 6 applications/year. Do not make sequential application within 14 days of first application. PHI 45 days for O. Do not use adjuvant. Microrate application between 2-lf and 6-lf stage at 0.5-1 fl oz/A on a 7-day interval.

[1] O – Onion, G – Garlic

*** For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
** May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

GROWTH RETARDANT

Product	Rate/Acre	Use	Comments/Restrictions
ROYAL MH-30 XTRA or ROYAL MH-30 SG	7 pt or 3.33 lb	Growth Retardant	Apply in 30 gal of water by ground or 10 gal by air. West of the Rockies, use 1 qt/100 gal of nonionic surfactant. Apply when bulbs are fully mature, have at least 5-8 green leaves and necks are soft enough for the tops to fall, if not already fallen. Spray is often applied when 50% of tops have fallen, but all tops are green, 10-14 days before harvest.

LABELED INSECTICIDES

INSECT*	INSECTICIDE																													
	ABAMEX ‡/ABBA ULTRA ‡	ADMIRE PRO	***ADVISE FOUR***/NUPRID 4F MAX	AGREE WG	***ARCTIC 3.2 EC*** ‡	AGRI-MEK SC ‡	ASSAIL 30SG	CORAGEN/VANTACOR	***DELTA GOLD*** ‡	DIPEL DF	ENTRUST SC	EXIREL	***GRIZZLY TOO*** ‡	INTREPID 2F	KNACK	***LAMBDA-CY AG*** ‡	LANNATE LV ‡	***MALATHION 5***/MALATHION 5EC	MALATHION 8 FLOWABLE	MINECTO PRO ‡	MOVENTO/MOVENTO HL/ MOVENTO MPC	MUSTANG MAXX ‡	PYGANIC EC 1.4$_{II}$/PYGANIC EC 5.0$_{II}$	RADIANT SC	REQUIEM EC	SENSTAR	TELONE II ‡	TRANSFORM WG	TRIGARD	VYDATE L ‡	WARRIOR II ‡	XENTARI
APHID													S			S		●[1]	●			●	●							S	
ARMYWORM				●	●			●		●	●		●	●[2]		●	●					●	●	●						●	●
CUTWORM					●				●	●			●			●	●[2]					●								●	●
DIAMONDBACK MOTH				●						●													●								●
FLOWER THRIPS													S			●							●							S	
GREEN CLOVERWORM										●																					●
HORNWORM				●						●													●								●
IMPORTED CABBAGEWORM				●						●													●								●
LEAFMINER	●				●	●					●	●	●			●				●		●	●	●				●		●	
LOOPER				●						●	●			●[2]									●	●							●
OMNIVOROUS LEAFROLLER										●													●							●	
ONION MAGGOT					●								●			●			●[2]			●	●							●	
ONION THRIPS					●						●		●		S	●			●		●	●	●	●				S		●	
PETROBIA MITE																							●								
PLANT BUG													●			●							●							●	
SALTMARSH CATERPILLAR										●													●								●
SEED CORN MAGGOT													●			●							●							●	
STINKBUG					●				●				●			●							●								●
THRIPS	●	●	●			●	●		●		S	S				●	●[2]	●	●	●	●		●	●	●[3]	●					
TOBACCO THRIPS													●			●			●				●							●	
WIREWORM																							●				●				
WEBWORM										●													●								●
WESTERN FLOWER THRIPS											●		S			S							●	●		S				S	

S – Suppression. [1]Garlic only. [2]Onion only. [3]Onion, western flower, and tobacco thrips only.
*Many other insects may be controlled, see label.
See Insecticide Resistance Management in the Technical Information section.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

ONION/GARLIC INSECT CONTROL *continued*

INSECT TREATMENT GUIDELINES

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ABAMEX ‡ or ABBA ULTRA ‡	O G	8-12 fl oz or 4-6 fl oz	30	For spider mite and leafminers. Use ≥20 GPA. Max. 16 fl oz/A or 8 fl oz/A per application, max. 48 fl oz/A or 24 fl oz/A per year. Allow ≥7 days between applications. No more than 2 sequential applications.
ADMIRE PRO	O G	14 fl oz	21	See label for soil application instructions.
ADVISE FOUR/NUPRID 4F MAX	O G	16 fl oz	21	Max. 16 fl oz/A per season. See label for soil application instructions.
AGREE WG	O G	1-2 lb	0	Apply in a min. of 20 GPA by ground or 2-10 GPA by air.
AGRI-MEK SC ‡	O G	1.75-3.5 fl oz	30	Use ≥20 GPA ground, ≥5 GPA air. Do not exceed 10.25 fl oz/A/season. Allow ≥7 days between applications. No more than 2 sequential applications. Note 1.
ARCTIC 3.2 EC ‡	O G	6-12 fl oz	1	Apply in min. 20 GPA by ground or 5 GPA by air. Note 1.
ASSAIL 30SG	O G	5-8 oz	7	Begin applications as soon as thrips treatment thresholds are reached. Thrips species may differ in susceptibility. Use of adjuvants may enhance coverage and control; see label.
CORAGEN	O G	3.5-5 fl oz	1	Max. 4 applications/A/season. Re-entry interval is 4 hours. Min. 7-day application interval.
DELTA GOLD ‡	O G	1-2.4 fl oz	1	Do not apply more than 9.6 fl oz/A per season. Note 1.
DIPEL DF	O G	0.25-2 lb	0	Bt insecticide. Note 1.
ENTRUST SC	O G	3-8 fl oz	1	Apply as foliar spray. Use higher rate for larger larvae or heavier infestations. Note 1.
EXIREL	O G	13.5-20.5 fl oz	1	Apply foliar with an effective adjuvant. 5-day min. application interval. Max 0.4 lb a.i. cyantraniliprole/A/crop/season. Thrips suppression only. Note 1.
GRIZZLY TOO ‡	O G	0.96-1.92 fl oz	14	Use higher label rates for thrips population increases and avoid rescue situations. Apply by ground or air. Use a min. of 2 GPA by air. Labeled for sprinkler irrigation application. Do not apply >0.96 pt/A/year. Note 1.
INTREPID 2F	O	4-12 fl oz	1	Green onions only: Use 4-8 fl oz/A early, and 8-12 fl oz/A mid to late season.
KNACK	O G	8 fl oz	3	Insect Growth Regulator. Thrips suppression. Do not make >2 applications/growing season. 14-day min. application interval. Max. 16 fl oz/A/season.
LAMBDA-CY AG ‡	O G	1.92-3.84	14	When applying by air use a min. of 2 GPA water. The addition of HSOC-COC at 0.5% or NIS at 0.25% v/v may increase plant coverage.*
LANNATE LV ‡	O G	1.5-3 pt 1.5 pt	7	For green and dry bulb onion and garlic. May be applied to control thrips by overhead drip irrigation only in ID, NV, OR, UT, WA beginning before populations reach 3-5 thrips/plant; see label for drip irrigation rates and recommendations. Note 1.
MALATHION 5 or MALATHION 5EC	O G	1.5-2.5 pt 1.5-2 pt or 1.5-2.5 pt	3	Note 1.
MALATHION 8 FLOWABLE	O G	1.5-1.56 fl oz 1.56 fl oz	3	O: Max. of 2 applications/year. G: Max. of 3 applications/year. Note 1.
MINECTO PRO ‡	O G	7-10 fl oz	30	Must be mixed with a spray adjuvant; see label. Do not make more than 2 sequential applications. For leafminer control, apply when adults are first observed. For foliar feeding thrips control, apply as part of management program and use 10 fl oz/A; may be applied by sprinkler irrigation for thrips control. Do not use as a rescue treatment for thrips.
MOVENTO or MOVENTO HL	O G	5 fl oz or 2.5 fl oz	3,7	3 days PHI for garlic and 3 or 7 days for onion, depending on type; see label.
MUSTANG MAXX ‡	O G	2.24-4 fl oz	7	Apply in a min. of 20 GPA by ground, 3 GPA by air. Note 1.
PYGANIC EC 1.4$_{II}$	O G	16-64 fl oz	0	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0$_{II}$	O G	4.5-15.61 fl oz	0	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
RADIANT SC	O G	5-10 fl oz	1	Does not include yellow- or western-striped armyworms. Note 1.
REQUIEM EC	O G	1.5-3 qt	0	Begin applications as soon as thrips are seen in crop.
SENSTAR	O G	10 fl oz	3,7	Ground application in 20-50 GPA. Only whole fields should be treated. Max. 10 fl oz/A/application. Max 2 applications/crop season. Max. 20 fl oz/A/crop season. Min. 14-day application interval. PHI 3 days for bulb; 7 days for green. If grown for seed production, do not apply <4 months prior to bloom, during bloom or until after petal fall.
TELONE II ‡	O	9-25 gal	–	2ee several states (exp. dates not given): for standalone or sequential/simultaneous application with other fumigants to suppress/control wireworm and certain nematodes. 2ee several states (exp. dates not given) for simultaneous or sequential application with other fumigants for suppression of V. dahliae and nematodes.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
TRANSFORM WG	O G	2.75 oz	7	7-day min. application interval. Max. 4 applications/crop. Max. 2 consecutive applications/crop. Max. 8.5 oz/A/year. Do not apply at any time between 3 days prior to bloom until after petal fall.
TRIGARD	O G	2.66 fl oz	7	Leafminer control. No more than 6 applications to 1 crop of bulb vegetables. Repeat as needed, at 7-day intervals to maintain control.
VANTACOR	O G	1.2-2.5 fl oz	1	Max. 4 applications/A/season. Re-entry interval is 4 hours. Min. 7-day application interval.
VYDATE L ‡	O	1-4 pt: foliar 0.5-1 gal: in furrow	14	See label for state-specific rates and restrictions for thrips and nematode suppression/control. 24c 2-4 pt/A: CO (exp. not given) for stem and bulb nematode in G.
WARRIOR II ‡	O G	0.96-1.92 fl oz	14	Note 1.
XENTARI	O G	0.5-2 lb	0	Bt insecticide. Note 1.

[1] O – Onion, G – Garlic
[2] PHI – preharvest interval in days.
* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where insecticides require NIS and AMS or a water conditioner.

NOTE 1: See label for insecticide rate for each pest.
See Fungicide Resistance Management in the Technical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

ONION/GARLIC DISEASE CONTROL

LABELED FUNGICIDES

DISEASE*	FUNGICIDE																												
	ACTIGARD 50WG3	ALIETTE WDG	APROACH	APROVIA TOP	BADGE SC/BADGE X2	BEXFOND	BIO-TAM 2.0	BOTRAN 75W	BRAVO ULTREX/BRAVO WEATHER STIK	CABRIO EG	CANNONBALL WG	CHAMP DRY PRIL; FORMULA 2 FLOWABLE; WG/CHAMPION++	CUPROFIX ULTRA 40 DISPERSS	DITHANE F-45 RAINSHIELD	ENDURA	FONTELIS	FORUM	GAVEL 75DF	INSPIRE SUPER	KOCIDE 3000	LUNA EXPERIENCE	LUNA FLEX	LUNA TRANQUILITY	MANKOCIDE	MERIVON	MIRAVIS PRIME	OMEGA 500F	***ONSET 3.6L***	ORDONIS OPTI	
BACTERIAL BLIGHT					●							●	●							●				●					
BLACK MOLD																			S			●							
BOTRYTIS LEAF BLIGHT			●						●	S				●	●	●		●	●		●	●	●	●	●	●	●		●	
BOTRYTIS NECK ROT			●						S					●		●					●		●		●		●			
BOTRYTIS ROT																														
CLADOSPORIUM LEAF BLOTCH				●																	●	●	●			●				
DAMPING OFF																														
DOWNY MILDEW	S	●[1]			●				S	●		●	●	●			●	●		●				●	●		●		●	
FUSARIUM						So	●																							
LATE BLIGHT																														
LEAF BLIGHT	S									●															●					
NECK ROT														●				●												
PHYTOPHTHORA							●																							
PINK ROOT																						●								
POWDERY MILDEW				●						●						●			●			●			●					
PURPLE BLOTCH		●[1]	●	●	●				●	●		●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	
PYTHIUM								●																						
RHIZOCTONIA				S		So		●								So														
RUST				●	●					●				●		●		●			●	●						●		
STEMPHYLIUM LEAF BLIGHT and STALK ROT				●												●			●		●	●	●		●					
WHITE ROT								●			So					●					●	●	●			●		●		

So- soil application. S - suppression.
*Other diseases may be controlled, see label.
[1] Onion only.
[2] Garlic and dry bulb onion.
[3] Dry bulb onion only.
[4] Garlic only.

ONION/GARLIC DISEASE CONTROL *continued*

ORONDIS ULTRA	PHOSTROL	PRAIZO	PREVISTO	PRISTINE	QUADRIS OPTI	QUADRIS TOP	QUILT XCEL/AFRAME PLUS	REVUS	RIDOMIL GOLD COPPER	RIDOMIL GOLD MZ WG	RIDOMIL GOLD SL	ROVRAL 4F	SCALA	SERENADE ASO	SERENADE OPTI	SWITCH 62.5WG	TANOS	***TESARIS***	***TETRABAN***	***TOPAZ***/TILT	TOPSIN 4.5FL/TOPSIN M WSB/ T-METHYL 4.5 F/T-METHYL 70 WSB	TRIVAPRO	ULTRA FLOURISH	UNIFORM	VANGARD WG	VELUM PRIME/VELUM ONE	ZAMPRO	ZING!	**DISEASE***
			●														S												BACTERIAL BLIGHT
																●													BLACK MOLD
		●		●	●	●	S						●[3]	●	●	●			●	S					●		●	●	BOTRYTIS LEAF BLIGHT
		S			●[2]							●[3]	●	●	●	S													BOTRYTIS NECK ROT
																													BOTRYTIS ROT
					●	●	●												●			●							CLADOSPORIUM LEAF BLOTCH
											So								So				●	So					DAMPING OFF
●	●	S	●	S		●	●	●	●		●			●			●		●	●							●	●	DOWNY MILDEW
																													FUSARIUM
										●																			LATE BLIGHT
				●														●											LEAF BLIGHT
																									S				NECK ROT
																													PHYTOPHTHORA
														So												●			PINK ROOT
						●								●				●				●							POWDERY MILDEW
		●	●	●	●	●	●				●[3]	●		●		●	●	●	●	●		●			●	●		●	PURPLE BLOTCH
																								So					PYTHIUM
																													RHIZOCTONIA
					●		●							●					●			●							RUST
				●		●						●[3]										●							STEMPHYLIUM LEAF BLIGHT and STALK ROT
					●[2]		●					●[4]			●	S					●					●			WHITE ROT

ONION/GARLIC DISEASE CONTROL

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ACTIGARD 50WG	O	0.75-1 oz	7	Dry bulb onion only for disease suppression. Max. 4 oz/A/year.
ALIETTE WDG	O	2-3 lb	7	Should be used in a preventive disease control program. Begin applications when conditions favor disease development and continue on a 7-14 day interval as needed. If disease is already present, apply at 3 lb/A rate on a 7-day interval. Max. 7 applications/season.
APROACH	O G	6-12 fl oz	0	Apply prior to disease development. 5-14 day min. application interval. Max. 36 fl oz/A/year. Max. 3 applications/year. Do not make >2 sequential applications before switching to different MOA.
APROVIA TOP	O G	10.5 fl oz	7	Includes green onion crop group. Apply in 10 GPA ground, 5 GPA air (except NY) or 0.1-0.25"/A by sprinkler irrigation. No more than 2 applications may be made on a 7-day interval, all others no closer than a 14-day interval. No more than 2 sequential applications before switching to non-Group 7 fungicide. Addition of adjuvant with NIS or COC is recommended (see label). Do not exceed 4 applications/year or 13.5 fl oz/application.
BADGE SC or BADGE X2	O G	0.75-2.75 pt or 0.75-2.75 lb	0	Begin when plants are 4-6 inches high. Repeat applications at 7-10 day intervals. Applications can cause phytoxicity to leaves. Apply higher rates when conditions favor disease development.
BEXFOND	O G	7 - 28 fl oz	0	Apply via drench to seedlings prior to planting, at planting, or immediately after planting with an in-furrow soil spray, overhead sprinkler, or drip irrigation. Make the initial application during seedling production. During or following, irrigate well to soak the product into the root zone. Not labeled for aerial application.
BIO-TAM 2.0	O G	2.5-3 lb	–	Apply banded. See label for rate based on band and row width.
BOTRAN 75W	O G	1.5-2.67 lb	14	Direct-seeding for white rot, use 5.33 lb in 5" band and incorporate in top 1.5" of soil 1-2 weeks before onions are seeded only in eastern OR, WA and western ID. May also be used in planting sets or bulbs in furrow or broadcast. Use 1.5-2.67 lb/A for leaf blight and botrytis rot. Use 2.67 lb/A in CA.
BRAVO ULTREX or BRAVO WEATHER STIK	O G	0.9-2.7 lb or 1-3 pt	7	Use 1.4-2.7 lb/A or 1.5-3 pt/A for green O and G grown for seed. Do not apply more than 15 lb a.i./A/season for dry bulb onion or garlic and 6.75 lb a.i./Afor green onion or seed garlic.
CABRIO EG	O G	8-12 oz	7	Use 12 oz/A for downy mildew. Begin application prior to disease development. Do not make more than 1 application before rotating to a different mode of action. Max. of 6 applications/ season. Note 1.
CANNONBALL WG	O G	7 oz/1000' row	7	Apply in-furrow. Do not apply >32 oz/A/season.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG or CHAMPION++	O G	0.67-1.33 lb or 0.66-1.33 pt or 1.0-2.0 lb or 0.75-1.5 lb	–	Apply at 7-10 day intervals depending on disease; see label. Max. 16 lb or 16.5 pt or 12 lb or 20 lb/A/year.
CHLORONIL 720/***PRAIZ***	O G	1-3 pt	7	Use 1.5-3 pt/A for green O and G grown for seed. Do not apply more than 15 lb a.i./A/season for dry bulb onion or garlic and 6.75 lb a.i./A for green onion or seed garlic.
CUPROFIX ULTRA 40 DISPERSS	O G	1.25-3 lb	–	Begin application when plants are 4-6 inches tall and continue on a 7-10 day interval. May cause phytotoxicity to leaves.
DITHANE F-45 RAINSHIELD	O G O G	2.4 qt see 24c OR	7	Apply as a protective and repeat on 7-day intervals. For dry bulb onions only. Also labeled for furrow drench in onions. Max. 24 qt/A/crop.
ENDURA	O G	6.8 oz	7	Apply prior to disease development and continue on a 7-14 day interval. Do not make >2 applications before rotating mode of action. Max. 2 applications/season.
FONTELIS	O G	16-24 fl oz 1.2-1.6 fl oz/1000' row	3	Max. 72 fl oz/A/year. Begin applications prior to disease development and continue on 7-14 day schedule. Max. 2 sequential applications before switching to a different mode of action. Soil: At-plant, pre-plant incorporated, in-furrow, transplant drench or drip; max. 24 fl oz/A/ application; 16-24 fl oz/a in 4- to 6-inch band in furrow at planting for white rot control.
FORUM	O G	6 oz	0	Apply in a tank mix. Foliar: Begin when conditions favor disease development and continue on a 5-7 day schedule. Max. 2 sequential applications before rotating to another mode of action. Max. 30 oz/A/season.
GAVEL 75 DF	O G	1.5-2 lb	7	Apply on preventative basis at the onset of disease on 7-day intervals. Do not allow to contact bulbs after lifting. Do not make more than 8 applications or apply >16 lb/A/season. Do not apply to exposed bulb.
INSPIRE SUPER	O G	16-20 fl oz	7,14	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 80 fl oz/A/season for dry bulb onions and max. 60 fl oz/A/season for green onions. PHI 14 days for green onions.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
KOCIDE 3000	O	0.75-1.5 lb	–	Begin when plants are 4-6" in height and repeat at 7-10 day intervals as needed.
LUNA EXPERIENCE	O G	8-12.8 fl oz	7	Apply in ground, aerial or chemigation. Apply on 10-14 day interval when disease pressure is severe. Do not apply more than 2 sequential applications.
LUNA FLEX	O G	10.0-13.6 fl oz		Maximum single application rate: 13.6 fl oz/A. Apply using ground, aerial, or chemigation equipment. PHI: 7 days. Apply on 10-14 day interval when disease pressure is severe. Do not apply more than 2 sequential applications.
LUNA TRANQUILITY	O G	16-27 fl oz	7	Apply in ground, aerial or chemigation. Apply on 7-14 day interval when disease pressure is severe. Do not apply more than 2 sequential applications.
MANKOCIDE	O	1.5-2.5 lb	7	Dry bulb onion only. Begin when disease threatens and continue on a 7-10 day interval. Max. 9.6 qt/A/season. Do not apply to exposed bulbs. Max. 160 lb/A/season.
MANZATE MAX or MANZATE PRO-STICK/ PENNCOZEB 75DF	O G	1.6-2.4 qt or 3 lb	7	Apply when diseases are first reported in the area and repeat at 7-day intervals. Max. 24 qt/A/ crop for Manzate Max; 30 lb/A/crop for Manzate Pro-Stick/Penncozeb 75DF.
MIRAVIS PRIME	O G	10.3-11.4 fl oz	7	Max. 11.4 fl oz/application; max. 3 applications at max. rate/year (max. 34.2 fl oz/A/year); max 2 consecutive applications before switching to fungicide not in Group 7 or 12. 7-day min. application interval; max. 2 applications by air.
MERIVON	O G	4-11 fl oz	7	Apply before disease is present.
OMEGA 500F	O G	1 pt	7	Begin applications when conditions favor disease development and continue on a 7-10 day interval or when first disease symptoms appear.
ONSET 3.6L	O G	4-6 fl oz	7	Use 20.5 fl oz/A for white rot in 4-6" band over/into furrow for dry bulb onion and garlic. For others, apply as protective spray. Repeat on 10-14 day intervals. Max. 12 fl oz/A/season as foliar in dry bulb onion and garlic and 24 fl oz/A/season in green onion.
ORONDIS OPTI	O G	1.75-2.5 pt	7	Begin ground (min. 15-20 GPA), air-assisted (min. 10 GPA) or aerial (min. 5 GPA) applications prior to disease development; continue on a 7-14 day interval. Max. 2.5 pt/A/application. Max. 10 pt/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
ORONDIS ULTRA	O G	5.5-8.0 fl oz	7	Begin ground (min. 15 GPA) or aerial (min. 5 GPA) applications prior to disease development. Min. 7-day application interval. Max. 8 fl oz/A/application. Max. 32 fl oz/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
PHOSTROL	O G	2.5-3.75 pt	0	Use in preventative control program. Apply by ground, air or sprinkler irrigation when conditions favor disease development. Min. 7-14 day interval. Max. 7 applications/crop season.
PREVISTO	O G	0.75-2 qt	0	Begin when plants are 4-6 inches high. Repeat applications at 7-10 day intervals. Applications can cause phytoxicity to leaves. Apply higher rates when conditions favor disease development.
PRISTINE	O G	10.5-18.5 oz	7	Begin applications prior to disease and continue on a 14-day interval. Max. of 2 sequential applications before alternating mode of action. Max. 6 applications or 111 oz/A/season. Note 1.
QUADRIS OPTI	O G	1.6-3.6 pt	7	Apply prior to disease development and continue on a 7-14 day (5-7 day for downy mildew) schedule. Max. 1 application before rotating to another mode of action. Max. 1.5 lb a.i/A/ season. Note 1.
QUADRIS TOP	O G	12-14 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Max. 1 application before rotating to another mode of action. Max. 56 fl oz/A/year for dry onions, 42 fl oz/A for green onion/A/year.
QUILT XCEL/AFRAME PLUS	O G	14-26 fl oz	0,14	See label for rates and specific diseases controlled or suppressed. Apply prior to disease development and continue on a 7-10 day schedule. Max. 1 application before rotating to another mode of action. PHI 0 days for green O. Max. 56 fl oz/A/season/crop. Note 1.
REVUS	O G	8 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 32 fl oz (24 fl oz for green onion) /A/season.
RIDOMIL GOLD MZ WG	O G	2.5 lb	7	Apply when conditions favor disease development and continue on 14-day intervals. Max. 2.5 lb/A/application. Max. 10 lb/A/year. Max. 4 applications/year before switching to other product for downy mildew control.

See notes and footnotes at end of table.

ONION/GARLIC DISEASE CONTROL *continued*

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
RIDOMIL GOLD SL or RIDOMIL GOLD COPPER	O G	0.5-1 pt or 1 pack/2.5 A	0,10	Ridomil Gold SL: Apply PP incorporated or as a soil surface spray after planting. May be used on dry bulb, green and onions grown for seed. PHI 0 days. If banding, use a 7" band. Ridomil Gold Copper: Controls downy mildew when applied foliarly in a peventive disease control program. Apply at 14-day intervals until threat of disease is over. PHI 10 days for bulb onion, 7 days for green onion. See label for max. amount of a.i.s from all sources.
ROVRAL 4F	O G	1.5 pt 4 pt	7	Apply as a foliar spray as soon as conditions become favorable for disease. Repeat at 14-day intervals. Up to 5 applications can be made per season. May be used on dry bulb onions.
SCALA SC	O G	18 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Max. 2 application before rotating to another mode of action. Max. 54 fl oz/A/season.
SERENADE ASO	O G	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Can be applied as soil drench, shanked in, injected and in-furrow.
SERENADE OPTI	O G	14 - 20 oz	0	Apply sufficient water to provide complete coverage of plants. When conditions are conducive to rapid disease development, use SERENADE OPTI in a rotational program with other registered fungicides.
SWITCH 62.5WG	O G	11-14 oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. See label for soil application and white rot control. Max. 56 oz/A/season. Apply by ground only.
TANOS	O G	8-10 oz	3	8 oz/A for control of downy mildew and purple blotch. 8-10 oz/A suppression of soft rot and bacterial blight. Apply preventatively on a 5-7 day schedule. Must be tank-mixed with a contact fungicide with a different MOA; see label.
TESARIS	O G	3.4-9.1 fl oz	7	Apply prior to onset of disease development and continue on a 7-14 day interval. Min. 7-day application interval. Do not apply to spinach as a tank mix with anything but water. For other leafy vegetables, see label for important sensitivity information. Max. 9.1 fl oz/A/application. Max. 3 applications/year. Max. 27.3 fl oz/A/year. Do not make >2 sequential applications before switching to a non-Group 7 fungicide.
TETRABAN	O G	6-15.5 fl oz	0	Apply by ground, air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soil borne diseases.
TOPAZ/TILT	O G	4-8 fl oz	0,14	Begin when conditions favor disease and continue on a 7-10 day interval. Max. 16 fl oz/A/year. PHI 0 days is for green onion.
TOPSIN 4.5FL/T-METHYL 4.5 F or TOPSIN M WSB/T-METHYL 70 WSB	O G	40 fl oz or 2 lb	–	Spray directly into open furrow at the time of seed, sets or bulbs.
TRIVAPRO	O G	16-27.7 fl oz	7,14	Apply prior to disease development; continue through season on 7-14 day interval, but not >2 applications on a 7-day interval. Do not make >2 applications of Group 7 or 11 fungicides before alternating with fungicide from other group(s). Max. 27.7 fl oz/A/application, 55.4 fl oz/A/year. PHI 7 days green onion group, 14 days dry bulb group. May be applied by air (except NY) or sprinkler irrigation.
ULTRA FLOURISH	O G	1-2 pt	0	PPI (broadcast or band) or surface (broadcast or band) apply. Max. 4 pt/A. See label for additional details.
UNIFORM	O G	0.34 fl oz/1000' row	0	Apply in-furrow.
VANGARD WG	O G	10 oz	7	Apply prior to disease development and continue on a 7-10 day interval if conditions are favorable for disease development. May be applied by ground, air, or chemigation. Do not exceed more than 2 aerial applications. Use at least 5 GPA for aerial applications. For chemigation, apply in 0.1-0.25 inches/A. Max. 28 fl oz/A/year.
VELUM PRIME / VELUM ONE	O G	6.5 to 6.84 fl oz. Soil application	30	Soil Application, Max 13.7 fl oz per season in two applications. Apply via overhead irrigation, in-furrow spray during planting directed on or below seed and drench applications. Check the label for various methods of soil application including suppression of nematodes. Velum One is labeled for use in AZ, CA, HI. Velum Prime is label for use in all states **except** AZ, CA, HI.
ZAMPRO	O G	14 fl oz	0	Begin application prior to disease development and continue on 5-7 day interval. Max. 2 sequential applications before switching to a different mode of action. Max. 42 fl oz/A/year.
ZING!	O G	30 fl oz	7	Start spray schedule when disease is first reported in area, repeat at 7-day interval throughout season.

[1] O – Onion, G – Garlic
[2] PHI – preharvest interval in days.
NOTE 1: See label for fungicide rate for each disease.

PREPLANT, PREEMERGENCE OR POSTEMERGENCE HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	B C P R T	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown 7 days before planting, or POST hooded or shielded sprayers only for broadleaf weeds in row middles. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6. 15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CAPAROL 4L	C	2-4 pt	PRE or POST. Apply PRE or POST up to 6-leaf carrot. Include NIS or HSOC-COC for emerged weeds.* Do not exceed more than 8 pt/A per cropping cycle. PHI 30 days.
CLEANSE	B C R T	6-8 fl oz	Add 0.5 gal HSOC-COC/100 gal.* POST to actively growing grasses. Radish PHI 15 days; other PHIs 30 days.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	B C P R T	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP PRE POST Directed. Apply prior to planting preemergence at-planting or through directed application postemergence.
DIMETRIC EXT or ***DIMETRIC LIQUID***	C	0.33 lb or 0.66 pt	POST. Controls certain broadleaves. Apply after carrots have 5-6 true leaves. A second application may be made at least 3 weeks later. Do not apply within 3 days of another chemical or if cool wet cloudy weather. Do not exceed 0.67 lb/A or 1.33 pt/A. User assumes risk of crop injury. PHI 60 days.
FUSILADE DX	B C	6-16 fl oz	Add 1-2 qt NIS or 0.5 gal HSOC-COC/100 gal.* POST. Carrots: Controls emerged annual and perennial grasses. Max. 48 fl oz/A/year. Min. 14-day application interval. PHI 45 days.
GOAL 2XL	R	2 pt	PRE. Controls annual broadleaves. Apply after planting but before emergence of crop. Do not use on stressed crop.
GRAMOXONE SL 3.0 ‡	C T	1.3-2.7 pt	Add 2 pt NIS/100 gal.* Apply PP or PRE. Controls emerged annual broadleaves and grasses. Max. 12 pt/A/year or 8 pt/A/year. Max. 3 applications/year. Min. 7-day application interval. Use at least 10 GPA by ground. Apply to emerged weeds before or after seeding but before crop emerges.
LOROX DF	C P	1-3 lb 1.5-3 lb	PRE. Controls annual grasses and broadleaves. Apply after planting but before emergence of crop. Seeds should be planted at least 0.5" deep. Apply PRE to C only in CA, CO, MI, MN, NJ, ND, OH,OR, WA, WI, FL. Use 1-3 lb/A in CO, MI, NJ, OH, WI. Use 1-2 lb/A in CA, FL, MN, ND, OR, WA. POST applications in entire U.S. to C at 1.5-3 lb/A can be done when carrots are at least 3 inches. PHI 14 days for C.
NORTRON SC	B	60 fl oz: PP PRE 5.25 fl oz: 2-4 lf POST 10.5 fl oz: 6-8 lf POST	PRE. Apply at planting or after but before weeds germinate. PP, PRE: apply as in-furrow irrigation. POST rate depends on beet size.
POAST	B C P R T	1-2.5 pt	Add 0.5 gal HSOC-COC/100 gal.* POST. Controls emerged grasses. Rate depends on weed species and geographic region. Do not apply more than 2.5 pt/A/application or more than 5 pt/A/season. PHI 60 days B; 30 days C, P, R, T.
PROWL H2O	C	2 pt: PRE 1-4 pt: Layby for seed	PRE 2 days after planting as single broadcast application by ground, air or sprinkler irrigation. Layby applications as directed spray between rows. C grown for seed: 1-4 pt/A as layby application. PHI 60 days.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	B C P R T	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or WC+NIS.* Apply prior to crop emergence or transplanting. Controls emerged annual broadleaves and grasses. Use rates depend on weed species and weed size. See label for perennial rates.
SECTION THREE	B C P R T	4-5.33 fl oz	Add 0.5 gal HSOC-COC/100 gal.* POST to actively growing grasses. Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 14 days.
SELECT MAX	B C R T	9-16 oz	Add 1 qt NIS/100 gal.* POST. Do not apply >16 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a minimum 14-day interval. See label for PHI.
TARGA	B C R	4-12 fl oz	B,C, R grown under contract as non-food/non-feed crop for seed production in ID, MT, OR, WA, WY. Controls annual and perennial grasses. Ground application only. See label for other important restrictions.
STINGER	B T R	0.33-0.5 pt 0.25-0.5 pt	POST. Controls specific broadleaf weeds. See label for list and weed size for applications. Apply to garden beet (0.25-0.5 pt/A) in the 2- to 8-leaf stage. Apply to turnip in the 1- to 5-leaf stage (1/3-1/2 pt/A). Use ≥10 GPA spray volume. Max. of 1 application per season for turnip and 2 applications per season for garden beet. Max. of 0.5 pt/A per season. 15 day PHI for turnip tops harvest. 30 day PHI for turnip roots and garden beet.
TRUST/TREFLAN HFP	C R	1-1.5 pt: coarse soil 1.25-1.5 pt: med. soil 1.5-2 pt: fine soil	PPI. Controls annual grasses and broadleaves. Incorporate 2-3" within 24 hours. Use lower rates in areas with <20" rainfall or irrigation. For R apply 1 pt/A on coarse soils or 1.5 pt/A for medium and fine soils.
UPBEET	B	0.5 oz	Add 2 pt NIS or 1 pt HSOC-COC/100 gal.* POST. Apply at 2- to 4-leaf stage. Additional applications may be made at 4- to 6- and 6- to 8-leaf stages. Max. 1.5 oz/A/season. PHI 30 days.

See notes and footnotes at end of table.

PREPLANT PREEMERGENCE OR POSTEMERGENCE HERBICIDES *continued*

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
VIDA	B C P R T	0.5-2 fl oz	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

[1] B – Beet C – Carrot P – Parsnip R – Radish T – Turnip

* **FOR MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.

FOR NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

** May use other glyphosate herbicides: Cornerstone brands or others at labeled rates.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

ROOT CROP INSECT CONTROL

LABELED INSECTICIDES

INSECT*	ACTARA	ADMIRE PRO	***ADVISE FOUR***/ NUPRID 4F MAX	AGREE WG*	***ARCTIC 3.2 EC*** ‡	ASANA XL ‡	AVAUNT/AVAUNT EVO*	BAYTHROID XL ‡	CLOSER SC	CORAGEN/VANTACOR*	***DELTA GOLD*** ‡	***DIMATE 4E***	DIPEL DF	ELEVEST ‡	ENTRUST SC	EXIREL	FASTAC CS ‡	HERO ‡	INTREPID 2F	INTREPID EDGE	LANNATE LV ‡	LEVERAGE 360 ‡	***MALATHION 5***/MALATHION SEC	MALATHION 8 FLOWABLE	MOVENTO/MOVENTO HL	MUSTANG MAXX ‡
	INSECTICIDE																									
APHID	●	●	●		S				●		●	●		●		●	●	●				●	●	●	●	S
CARROT WEEVIL						●[1]		●								●						●				
CUTWORM						●[1]		●			●	●	●	●		●	●	●	S	S		●				●
FLEA BEETLE	●	●	●			●[2]		●			●			●	●	●	●	●				●		●		●
LEAFHOPPER	●	●	●		●	●[1]		●	●		●	●					●	●			●	●	●[4]			●
LEAFMINER					●	●						●			●		●									
ROOT MAGGOT																					●					

LABELED INSECTICIDES *continued*

INSECT*	NEEMIX	PLATINUM 75 SG	PYGANIC EC 1.4$_{II}$/PYGANIC EC 5.0$_{II}$	RADIANT SC	SENSTAR	SEQUOIA	SIVANTO PRIME/SIVANTO 200 SL	TRANSFORM WG	***TUNDRA EC*** ‡/***BIFEN 2 AG GOLD*** ‡/BRIGADE 2EC ‡ *	VYDATE L ‡	XENTARI
APHID	●	●	●		●	●	●	●			
CARROT WEEVIL			●							●	
CUTWORM											●
FLEA BEETLE		●	●	S[3]							
LEAFHOPPER	●	●	●			●	●	●			
LEAFMINER	●		●	●							
ROOT MAGGOT			●								

* Many other insects may be controlled see label.
S – Suppression.
[1] Carrot only.
[2] Radish and turnip only.
[3] Not in beet.
[4] Not in turnip.

See Insecticide Resistance Management in the Technical Information section.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

INSECT MANAGEMENT THRESHOLD

APHID	Treat when 25% of carrot plants are infested.
BLACK CUTWORM	Spot treat when numbers exceed 2 larvae per foot of row in carrot.
CARROT WEEVIL	Spray every 3-5 days for 2 weeks once eggs are found in carrot.
CUTWORM	Treat when 25% of carrot plants are infested.
FLEA BEETLE	Treat when flea beetles are so numerous that stand reduction in beets is evident.
LEAFMINER	Beets past 8-leaf stage can compensate for damage of average leafminer populations.
ROOT-KNOT NEMATODES	Growing corn on sod for 3 years prior to carrots will reduce larvae. Soil fumigation using products containing metam-sodium.

INSECT TREATMENT GUIDELINES

Insecticide/Nematicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ACTARA	B C P R T	1.5-4 oz	7	Max. 4 oz/A/season for radish 8 oz/A for the rest. Allow ≥7 days between applications. Note 1.
ADMIRE PRO	B C P R T	4.4-10.5 fl oz	7,21	Soil application. Use 1.2 fl oz/A foliar. PHI 7 days foliar.
ADVISE FOUR/NUPRID 4F MAX	B C P R T	5-12 fl oz: soil 1.4 fl oz: foliar	7,21	See label for soil application instructions. PHI 7 days foliar.
AGREE WG	B C P R T	0.5-2 lb	0	Radish and other root crops.
ARCTIC 3.2 EC ‡	T	2-4 fl oz	1	Labeled in FL, GA, IL, IN, OK, SC, TX, WA. Note 1.
ASANA XL ‡	C R T	5.8-9.6 fl oz	7	Apply in a minimum of 5 GPA. Do not exceed 0.5 lb. a.i./A/season - for C, 0.1 lb a.i./A/season for R, and 0.4 lb a.i./A/season for T.
AVAUNT/AVAUNT EVO	B	3.5-6 oz	7	Max. 4 applications/A/crop. Max. 24 oz/A/crop; 3-day min. application interval; Do not use adjuvants.
BAYTHROID XL ‡	B C P R T	1.6-2.8 fl oz	0	Do not apply >14 fl oz/A/season. Note 1.
CLOSER SC	B C P R T	1.5-5.75 fl oz	7	Do not make >4 applications/crop 2 consecutively or <7 days apart and >17 fl oz/A/season. Do not apply anytime 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 feet out from the downwind edge of the field a downwind 12-ft on-field buffer must be observed. Note 1.
CORAGEN	B C P R T	3.5-7.5 fl oz	1	Max. 4 applications/A/season. Re-entry interval is 4 hours. Min. 3-day application interval.
DELTA GOLD ‡	B C P R T	1-2.4 fl oz	3	Note 1.
DIMATE 4E	T	0.5 pt	14	
DIPEL DF	B C	0.25-2 lb	0	Bt insecticide. Note 1.
ELEVEST ‡	B C P R T	5.6-9.6 fl oz	21	Max. 28.8 fl oz/A/year. Min. 7-day retreatment interval. See label for timing notes. Min. 5 GPA by air. See label for insect-specific rates. Coverage is essential for control of mites.
ENTRUST SC	B C P R T	4.5-10 fl oz 3-6 fl oz	3	Foliar application. Use higher rate for larger larvae or heavier infestations. Also 2ee many states (exp. date not given) for overhead sprinkler chemigation use. Note 1.
EXIREL	B C P R T	10-20.5 fl oz	1	5-day min. application interval. Max. 0.4 lb a.i. cyantraniliprole/A/calendar year. Aphids respond best with an effective adjuvant; see label. Note 1.
FASTAC CS ‡	C P R T	1.3-3.8 fl oz	1	Do not make applications <4 days apart. Do not apply >11.4 fl oz/A/season. Leaves of root and tuber vegetables cannot be used for food or feed. Min. 10 GPA ground and 2 GPA air.
HERO ‡	B C P T	2.6-10.3 fl oz	21	Note 1.
INTREPID 2F	B C P R T	8-16 fl oz	14	PHI 1 day.
INTREPID EDGE	B C P R T	4.5-12 fl oz	7,3	Do not apply >12 fl oz/A/application; >48 fl oz/A/year for B, C, P, T; >25.5 fl oz/A/year for R Do not make >4 applications/year. Min. application interval 14 days. PHI 7 days for B; 3 days for C, P, R, T.
LANNATE LV ‡	B C R	1.5-3 pt 0.75-1.5 pt	0,14 1	Use 1.5 pt/A for cucumber beetle in B. PHI 0 for roots and 14 for tops. Max. application is 3.6 lb a.i./A per crop for B and 6.3 lb/A for C.
LEVERAGE 360 ‡	C R	2.4-2.8 fl oz	7	
MALATHION 5/ MALATHION 5EC	B C T	1.5-2 pt 1-2 pt	7 1,7	C: Malathion 5EC only. PHI 1 day for T using Malathion 5EC. Note 1.
MALATHION 8 FLOWABLE	B P R	1.25 pt 1 pt	7	Max. of 3 applications/year.
MOVENTO	C	5 fl oz	1	Min. 7-day application interval.
MOVENTO HL	C	2.5 fl oz	1	Max. 5 fl oz/A/season.
MUSTANG MAXX ‡	B C P R T	1.28-4 fl oz	1	Note 1.
NEEMIX 4.5	B C P R T	4-16 fl oz	0	May use other botanical insecticides as labeled. Note 1.
PLATINUM 75 SG	B C P T R	1.7-4.01 oz 1.7-2.17 oz	30 30	Apply in-furrow after seeding or drip (see label). Do not exceed 2.17 oz/A/season in radish and 4.01 oz/A/season in B, C, P, T.
PYGANIC EC 1.4$_{II}$	B C P R T	16-64 fl oz	0	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0$_{II}$	B C P R T	4.5-15.61 fl oz	0	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
RADIANT SC	B C P R T	6-8 fl oz	1,7	PHI 7 days B.
REQUIEM EC	B C P R T	2-3 qts	0	For Potato psyllid begin treatments when thresholds have been reached.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
SALIBRO	C	30.7 to 61.4 fl oz: Preplant, 15.4 to 30.7 fl oz: in season drip irrigation	65	Pre-plant soil application: Broadcast with a minimum of 15 gal per acre of water and thoroughly incorporate 4 to 6 inches into the soil within 7 days prior to planting. Max. 61.4 fl oz/A/Yr. No more than 2 applications per calendar year. Refer to the product label for additional application details and restrictions.
SENSTAR	C	10 fl oz	7	Ground application in 10-50 GPA. Only whole fields should be treated. Max. 10 fl oz/A/application. Max 2 applications/crop season. Max. 20 fl oz/A/crop season. Min. 14-day application interval. Do not allow livestock to graze treated areas.
SEQUOIA	B C P R T	1.5-5.75 fl oz	7	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. Do not apply any time 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 ft out from the downwind edge of the field a downwind 12 ft on field buffer must be observed. Note 1.
SIVANTO PRIME/SIVANTO 200 SL	B C P R T	7-14 fl oz	1	Foliar: Rate is pest-dependent. 7-day minimum application interval. PHI 1 day. Apply by ground or air.
TELONE II ‡	C	11-19 gal	–	2ee in several states (exp. date not given): standalone or sequential/ simultaneous application with other fumigants to suppress nematode and/or wireworm.
TRANSFORM WG	B C P R T	0.75-2.75 oz	7	Min. 7-day interval between applications. Max. 4 applications/crop. Max. 2 consecutive applications/crop. Do not apply from 3 days prior to bloom until after petal fall. 2ee ID, OR, WA (exp. date not given) for control of plant bug (Lygus spp.)
TUNDRA EC ‡/***BIFEN 2 AG GOLD*** ‡/BRIGADE 2EC ‡	B C P R T	5.12-6.4 fl oz	7,1	PHI 1 day for B.
VANTACOR	B C P R T	1.2-2.5 fl oz	1	Max. 4 applications/A/season. Re-entry interval is 4 hours. Min. 3-day application interval.
VERIMARK	B C P R T	10-13.5 fl oz	NA	For suppression of cabbage maggot. Apply to soil at planting no earlier than 72 hours prior to planting. Max. 13.5 fl oz/A at planting. Max. 0.4 lb a.i. cyantraniliprole/A/season. A spray application pH of 4-6 is recommended. Note 1.
VYDATE L	C	1-2 gal: soil 2-4 pt: foliar	14 1	See label for the 1-2 gal rate soil treatments and nematode information. Note 1. Foliar rates for carrot weevil.
XENTARI	B C T	0.5-2 lb	0	Bt insecticide. Note 1.

[1] B – Beet C – Carrot P – Parsnip R – Radish T – Turnip
[2] PHI – preharvest interval in days.

NOTE 1: See label for insecticide rate for each insect.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED FUNGICIDES

DISEASE*	FUNGICIDE																					
	BADGE SC/BADGE X2	BEXFOND	BIO-TAM 2.0	BRAVO ULTREX/BRAVO WEATHER STIK	CABRIO EG	CHAMP DRY PRILL/CHAMP FORMULA 2 FLOWABLE	CHAMP WG	CHAMPION++	CUPROFIX ULTRA 40 DISPERSS	DITHANE F-45 RAINSHIELD	ENDURA	FLINT	FLINT EXTRA	FONTELIS	INSPIRE SUPER	KOCIDE 3000	LUNA TRANQUILITY	MANZATE MAX	MANZATE PRO-STICK/ PENNCOZEB 75DF	MERIVON	MINUET	
ALTERNARIA LEAF BLIGHT				●[1]				●[1]		●[1]		●	●	●	●[1]					●		
ALTERNARIA LEAF SPOT	●[14]			●[2]	●	●[1]			●[1]	●	●[1]			●		●[1]				●		
ANTHRACNOSE	●[15]			●[2]																		
ASCOCHYTA LEAF SPOT													●				●					
BLACK CROWN ROT	●[15]																					
BLIGHT EARLY and LATE																	●					
BOTRYTIS BLIGHT (Gray Mold)				●[2]													●					
BOTTOM ROT				●[2]																		
CAVITY SPOT																						
CERCOSPORA LEAF SPOT	●			●[1]	●	●[6]	●[16]	●[6]	●[16]	●[6]		●	●	●[13]	●[1]	●		●	●	●		
CEROSPORA LEAF BLIGHT						●[1]		●[1]												●		
DAMPING OFF																						
DOWNY MILDEW	●									●[6]												
FUSARIUM		So	●																		So[1]	
PHYTOPHTHORA		So	●																		So[1]	
PINK ROOT																						
POWDERY MILDEW					●						●[1]	●	●	●	●[1]		●			●		
PYTHIUM			●																		So[1]	
RHIZOCTONIA DRY ROOT and SEED ROT		So	●																		So[1]	
ROOT DIEBACK																						
RUST										●[16]		●	●	●				●				
SOUTHERN ROOT ROT																						
WHITE RUST	●[15]				●																	

So - Soil application. S - suppression.
*Other diseases may be controlled see label.
[1] Carrot only.
[2] Parsnip only.
[3] Beet and radish only.
[6] Beet only.
[11] Radish only.
[14] Carrot, radish and turnip only.
[15] Radish and turnip only.
[16] Beet and carrot only.
[18] Parsnip, radish and turnip only.
See Fungicide Resistance Management in the Technical Information section.

	FUNGICIDE *(continued)*																					
	MIRAVIS PRIME	OMEGA 500F	***ONSET 3.6L***	ORONDIS GOLD B[18]	***PRAIZ***	PRESIDIO	PREVISTO	PRISTINE	QUADRIS OPTI	QUADRIS TOP	QUILT XCEL/AFRAME PLUS[1]	RIDOMIL GOLD COPPER	RIDOMIL GOLD SL	ROVRAL 4F[1]	SERENADE ASO	SWITCH 62.5WDG	TESARIS	***TETRABAN***	TILT	***TOPAZ***	ULTRA FLOURISH	UNIFORM
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DISEASE MANAGEMENT GUIDELINES

Disease	Comments/Restrictions
ALTERNARIA LEAF BLIGHT OR CERCOSPORA LEAF BLIGHT	Use 3-4 year crop rotation. Apply products containing azoxystrobin, chlorothalonil, iprodione, copper sulfate, copper hydroxide or pyraclostrobin.
APHANOMYCES ROOT ROT	Plant crop in well-drained soils minimize compaction and rotate crops. Apply products containing azoxystrobin.
ASTER YELLOWS	Control leafhoppers which transmit this disease.
BACTERIAL BLIGHT	Use hot water treatment of seed.
BLACK SPOT	May be a problem on calcareous high pH soils during dry weather. Apply borax at planting.
CERCOSPORA LEAF SPOT	Use 3 or more year crop rotation. Use copper hydroxide copper sulfate azoxystrobin or pyraclostrobin.
CROWN ROT AND COTTONY SOFT ROT	Use benomyl at first sign of infection. Apply products containing azoxystrobin for crown rot.
PYTHIUM DAMPING-OFF	Apply products with mefenoxam or metalaxyl.
RHIZOCTONIA DRY ROT AND SEED ROT	Control black spot. Chop and incorporate plant residue after harvest. Use seed protectants containing thiram or captan.

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
BADGE SC or BADGE X2	B C R T	0.75-4 pt or 0.75-4 lb 1-4 pt or 0.75-3.578 lb 1-2.25 pt or 1-2.25 lb	0	Repeat applicatons on 10-14 day intervals for B; 7-14 day intervals for C; 10-day interval for R and T. Use higher rates when conditions favor disease development.
BEXFOND	B C P R T	7-14 fl oz	0	Apply via drench to seedlings prior to planting, at planting, or immediately after planting with an in-furrow soil spray, overhead sprinkler, or drip irrigation. Make the initial application during seedling production during or following, irrigate well to soak the product into the root zone. Not labeled for aerial application.
BIO-TAM 2.0	B C P R T	2.5-5 lb	–	Apply at sowing restart of vegetative growth and before infection risk period. If rainfall is not expected irrigate with 0.25-0.5"/A.
BRAVO ULTREX or BRAVO WEATHER STIK	C P	1.375-1.8 lb or 1.5-2 pt	10,0	Begin applications at first sign of disease and continue at 7-10 day intervals. Max. 6 lb a.i./A/season P and 15 lb a.i./A C. PHI 0 days C.
CABRIO EG	B C P R T	8-16 oz	0	Use 8-16 oz/A for white rust and 8-12 oz/A for other diseases. Begin applications prior to disease development and continue on a 7- to 14-day schedule. Do not make >2 applications before rotating mode of action. Max. 3 applications/season. Note 1.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE OR CHAMP WG OR CHAMPION++	B C	1.33-2.67 lb or 1.33-2.66 pt or 2.0-2.5 lb or 0.75-2 lb 1.33 lb or 1.33 pt or 2.0 lb or 0.75-1.5 lb	–	Apply at 10-14 day intervals. B: Max. 21 lb or 21.6 pt or 15.7 or 26.2 lb/A/year. Apply at 7-14 day intervals. C: Max. 13.3 lb or 13.7 pt or 10 lb or 16.7 lb/A/year.
CUPROFIX ULTRA 40 DISPERSS	B C	1.25-3 lb 1.25 lb	–	Begin prior to disease development and continue on a 7-10 day interval for C; 10-14 day interval for B.
ENDURA	C	4.5-7.8 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 applications before rotating mode of action. Max. 5 (low rate) or 3 (high rate) applications/season and 23.4 oz/A/season. Do not use on garden/sugar beets, radishes or turnips.
FLINT	B C P R T	2-3 oz	7	Begin applications preventatively when conditions favor disease development and continue on a 14-day schedule. Alternate with at least 1 application of another mode of action. Max. 4 applications and 16 oz/A/season.
FLINT EXTRA	B C P T	2-2.9 fl oz	7	Begin applications preventatively and continue on a 14-day schedule. Do not make >1 application before rotating to another mode of action. Max. 4 applications and 11.5 fl oz/A/season.
FONTELIS	B C P R T	16-30 fl oz	0	Begin applications prior to disease development and continue on 7-14 day schedule. Max. 61 fl oz/A/year. Max. 2 sequential applications before switching to another mode of action. 2ee several states (exp. date not given) for pink root suppression at 24 fl oz/A pre-plant broadcast or band over seedbed prior to planting (see label for incorporation methods), or post-plant before seedling onions are >3 leaf stage.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
INSPIRE SUPER	C	16-20 fl oz	7	Begin applications prior to disease onset when conditions are conducive to disease. 7-10 day application schedule; no more than 2 sequential applications before alternating to fungicide with different mode of action. Min. 15 GPA by ground 5 GPA by air. Max. 80 fl oz/A/year. Do not allow cattle or livestock to feed on leaves.
KOCIDE 3000	B C	0.75-2 lb 0.75-1.5 lb	– –	Apply prior to disease development and continue on a ≥10- to 14-day schedule for B; ≥7- to 14-day schedule for C.
LUNA TRANQUILITY	B C P R T	11.2 fl oz	7	Apply in ground aerial or chemigation. Apply on 7-14 day interval when disease pressure is severe. Do not apply more than 2 sequential application.
MANZATE MAX or MANZATE PRO-STICK/ PENNCOZEB 75DF	B	1.6 qt or 1.5-2 lb	14	Begin when disease first threatens; repeat at 7-10 day intervals. Max. 11.2 qt/A/crop/season for Manzate Max; 14 lb/A/crop for Manzate Pro-Stick/Penncozeb 75DF.
MERIVON	B C P R T	4-5.5	7	Apply before disease is present.
MINUET	C	6-12 fl oz	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS PRIME	B C P R T	6.8 fl oz	7	Max. 6.8 fl oz/application; max. 4 applications at max. rate/year (max. 27.2 fl oz/A/year); max 2 consecutive applications before switching to fungicide not in Group 7 or 12. 7-day min. application interval; max. 2 applications by air. Do not allow cattle or other livestock to feed on leaves of root and tuber vegetables.
OMEGA 500F	C	1 pt	7	See label for disease specific treatment instructions. Do not make >4 applications/crop/season or apply >4 pt/A/season.
ONSET 3.6L	B T	3-7.2 fl oz 4-7.2 fl oz	7	Apply as protective spray. Repeat on 14-day intervals. For T east of Rockies only. Max. 28.8 fl oz/A/ season. Include NIS.
ORONDIS GOLD B	P R T	1-2 pt	NR	PPI (broadcast or band) in water or liquid fertilizer; incorporate in top 2". Soil spray (broadcast or 7" band) in water or liquid fertilizer at planting. No more than 3 applications/crop.
PRAIZ	C P	1.5-2 pt	10,0	Begin applications at first sign of disease and continue at 7-10 day intervals. Max. 6 lb a.i./A/season P and 15 lb a.i./A C. PHI 0 days C.
PRESIDIO	B C P R T	3-4 fl oz	7	Tank mix with another mode of action is required. Spray at 10-day intervals. Max. of 2 sequential applications before alternating mode of action. Max. 4 applications or 12 fl oz/A/season. Control of cavity spot and root dieback in B, P, R, T at 3-4 fl oz/A.
PREVISTO	B C	1-2 qt	0	Application interval of 10 to 14 days for B; 7 to 14 days for C.
PRISTINE	C	8-10.5 oz	0	Begin applications prior to disease and continue on a 7-14 day interval. Max. of 2 sequential applications before alternating mode of action. Max. 6 applications or 63 oz/A/season.
QUADRIS OPTI	C	2.4 pt	0	Apply prior to disease development and continue on a 7-14 day schedule. Max. 1 application before rotating to another mode of action. Max. 1.5 lb a.i/A/season.
QUADRIS TOP	C	12-14 fl oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Use 14 fl oz/A for southern blight (white mold). Do not apply more than 56 fl oz/A/year.
QUILT XCEL/AFRAME PLUS	C	14 fl oz	14	See individual labels for rates and specific diseases controlled or suppressed. Apply when conditions favor disease development and continue on a 7-10 day interval. May be applied by chemigation.
RIDOMIL GOLD COPPER	C R	1 pack/2.5 A	7	For season-long control see label for sequence of Ridomil Gold SL applications followed by foliar development. Max. 4 applications per crop. See label for max. amount of a.i.s from all sources.
RIDOMIL GOLD SL	B P R T C	1-2 pt 0.25-2 pt	7	Begin 28-50 days after planting continue on a 14-21 day schedule. Max. 1 Post-planting spray and 4 directed sprays. See label for soil applications to C and other crops. See label for max. amount of a.i.s from all sources.
ROVRAL 4F	C	1-2 pt	0	Begin when conditions are favorable for disease and continue on a 7-14 day interval. Max. 4 applications/crop.
SERENADE ASO	B C P R T	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. May be applied by soil drench, shanked-in, injected or in-furrow.
SWITCH 62.5WG	B C P T	11-14 fl oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 56 oz/A/season. Do not allow cattle/livestock grazing of leaves.
TESARIS	B C P R T	3.4-4.6 fl oz	7	Apply prior to onset of disease development and continue on a 7-14 day interval. Min. 7-day application interval. Do not apply to spinach as a tank mix with anything but water. For other leafy vegetables, see label for important sensitivity information. Max. 4.6 fl oz/A/application. Max. 3 applications/year. Max. 13.8 fl oz/A/year. Do not make >2 sequential applications before switching to a non-Group 7 fungicide.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
TETRABAN	B C P R T	6-20 fl oz	0	Apply by ground air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soilborne diseases.
TOPAZ/TILT	B R C	3-4 fl oz 4 fl oz	14	Topaz B, C only. Tilt B, C, R. Begin when conditions favor disease and continue on a 7-10 day interval for C, R; 14-day interval for B. Max. 16 fl oz/A/year. Tilt may be applied to C, R through chemigation.
ULTRA FLOURISH	B C P R T C	2-4 pt 0.5-2.6 pt	7	Pythium root rot and Phytophthora root rot for B, C, P, R, T: PPI or surface apply at 2-4 pt/A. Cavity spot, damping-off and root dieback for C: PPI and surface (broadcast or band) at 1-2.6 pt/A and POST (28-50 days after planting by air, ground or sprinkler irrigation) or directed spray (broadcast or band; 40-60 days after planting) at 0.5-2 pt/A; min. 14-21 day intervals; see label for additional details.
UNIFORM	B P R T	0.34 fl oz/1000′ row		Apply in-furrow.

[1] B – Beet C – Carrot P – Parsnip R – Radish T – Turnip
[2] PHI – preharvest interval in days.

NOTE 1: See label for fungicide rate for each disease.

PREPLANT, PREEMERGENCE OR POSTEMERGENCE HERBICIDES

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	E P T	Up to 2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown 7 days before planting, or POST hooded or shielded sprayers only for broadleaf weeds in row middles. Rate depends on target weed; see label. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. Max. 6.1 fl oz/A/season AIM EC or 6.15 fl oz/A/season Shark EW. 0 day PHI when Aim EC/Shark EW are used alone. See label for tank mix recommendations.
CLEANSE	E P T	6-8 fl oz	Add 0.5 gal HSOC-COC/100 gal.* POST. Rate depends on weed species and size. PHI 20 days.
COMMAND 3ME	P	0.67-2.67 pt	PRE. Controls annual broadleaves and some grasses. Rate depends on soil texture. Use on all peppers except banana type.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS	E P T	Up to 24 fl oz or Up to 32 fl oz	Add 8.5-17 lb AMS/100 gal or WC+NIS.* PP. Apply at least 3 days prior to planting.
DACTHAL W-75 or DACTHAL FLOWABLE	E P T	6-14 lb or 6-14 pt	PPI or PRE incorporate to 2". Control annual grasses and some broadleaves. Rate depends on soil type and texture.
DEVRINOL DF-XT	E P T	2-4 lb	May be applied to weed free soil on direct seeded and transplanted crop, before laying of plastic mulch, or to weed free soil between rows of plastic. Controls annual grasses and some broadleaves. See label for mechanical incoroporation, watering or sprinkler irrigation instructions.
DIMETRIC EXT or ***DIMETRIC LIQUID***	T	0.33-0.66 lb or 0.66-1.33 pt	PPI. Controls annual broadleaves and grasses. Apply PPI before transplanting. May tank mix with trifluralin. Apply to established plants before weeds are 2" and when plants have reached 5-6 leaves. May apply up to 1.33 lb/A or 2.66 pt/A for certain weeds. Allow 14 days between if using a split application. Do not tank mix or apply within 1 day of other pesticides. PHI 7 days.
DUAL MAGNUM/CHARGER BASIC	T P	1-2 pt 24c for T	PPI or PRE before transplanting or POST directed after first settling rain or irrigation. For direct-seeded, apply post-directed after 4"T. Rates depend on soil type, see label. PHI in T 90 days if >1.33 pt/A/year, and 30 days at ≤1.33 pt/A/year. Dual Magnum: 24c FL (exp. date not given) for T, PHI 90 days at 1.68-2 pt/A/year, 60 days at ≤1.67 pt/A/year.
DUAL II MAGNUM	T	**Coarse soil:** <3% O.M. 1-1.33 pt ≥3% O.M. 1.33 pt **Medium soil:** 1.33-1.67 pt **Fine soil:** <3% O.M. 1.33-1.67 pt ≥3% O.M. 1.67-2 pt	PP, PPI, or POSTD. Apply PPI or PP to transplanted T only. Apply POSTD to seeded or transplanted T at least 4" tall. Min. 20 GPA for POSTD applications. PHI 90 days when >1.33 pt/A applied. PHI 30 days when <1.33 pt/A applied.
ENVOKE	T	0.1-0.2 oz	Add 1 qt NIS/100 gal.* POST-directed to transplanted T in AL, FL, GA, NC, SC, and TN. PHI 45 days. 24c MS (exp. date note given) for transplanted T.
EVERPREX	T	**Coarse soil:** <3% O.M. 1-1.33 pt ≥3% O.M. 1.33 pt **Medium soil:** 1.33-1.67 pt **Fine soil:** <3% O.M. 1.33-1.67 pt ≥3% O.M. 1.67-2 pt	PPI or PP before transplanting. POST-directed in min. 20 GPA to transplants after first rain or irrigation. Apply post-directed to direct-seeded tomatoes at least 4" tall in min. 20 GPA. PHI 90 days if application is >1.33 pt/A, 30 days if application is <1.33 pt/A. See label for additional precautions based on timing, soils and application rate.
GRAMOXONE SL 3.0 ‡	E P T	PP/PRE Soil applied: 1.3-2.7 pt POST Directed spray: 1.3 pt	Add NIS or HSOC-COC.* Apply PP or PRE to the crop to control emerged weeds. Emerged crops will be killed. Do not allow grazing. Use a min. of 10 GPA by ground. Max. of 3 applications per year. May be applied postharvest in tomatoes at 2.4-3.75 pt/A or 1.6-2.5 pt/A.
LEAGUE	P T	4-6.4 oz	POST directed to well established peppers at least 10 inches tall. See label for PRE broadcast or directed and POST applications to tomatoes. 21 day PHI.
MATRIX SG	T	2-4 oz: PRE 1-2 oz: POST	PRE or POST. Controls annual broadleaves and grasses. Apply PRE with NIS if weeds are present. If rainfall is not applied within 5 days, activate irrigation. Apply POST after the crop reaches cotyledon stage. Add 1-2 qt NIS/100 gal.* Apply up to 4 oz/A max. per year. PHI 45 days.
POAST	E P T	1-1.5 pt	Add 1 pt HSOC-COC/A.* Apply POST to actively growing grasses. Do not apply more than 4.5 pt/A per season. Applications to bell peppers under high humidity and temperature may cause injury. PHI 20 days. May be tank mixed with Dimetric EXT in tomato.
PREFAR 4-E	E P	5-6 qt	Apply PP or PRE. Controls some annual broadleaves and grasses. Incorporate 1-2". If applied to soil surface, irrigate within 36 hours.

See notes and footnotes at end of table.

PREPLANT, PREEMERGENCE OR POSTEMERGENCE HERBICIDES *continued*

Herbicide	Labeled Crops[1]	Rate/Acre	Comments/Restrictions
PROWL H2O	P T	1-3 pt	PPI, PP surface prior to transplant, or POST directed to transplanted or direct seeded crop.
REGLONE	T	1.5 pt	24c FL (exp. date not given): for burndown of vines after final harvest, apply in 60-120 GPA + 1-2 pt. nonionic spreader/100 gal.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/HONCHO K6	E P T	See label for precise rates associated with weed species and annual per acre maximums.	Add 8.5-17 lb AMS/100 gal or NIS+WC.* Apply prior to planting and wait 3 days before planting. Controls emerged annuals. Rate depends on weed species and size. See label for perennial rates.
SECTION THREE	E P T	4-5.33 fl oz 4-10.67 fl oz	POST. E, P: Do not apply >5.33 fl oz/A/application; add 0.5 gal HSOC-COC/100 gal.* T: Do not apply >10.67 fl oz/A/application or 21.33 fl oz/A/season; add 5 gal HSOC-COC/100 gal.* For repeat applications make on a min. 14-day interval. PHI 20 days.
SELECT MAX	E P T	9-16 oz	Add 1 qt NIS/100 gal.* POST. Do not apply >16 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a min. 14-day interval. PHI 20 days.
SEQUENCE	T	2.5-5 pt	Add 8.5-17 lb AMS/100 gal.* Apply PRE transplant to varieties known to be tolerant. See label for soil and texture rates. PHI 90 days. Apply only by ground. Do not feed or graze on forage.
SPARTAN 4F	T	2.25-8 fl oz	PRE broadcast or banded prior to transplant. Rate depends on O.M. and soil texture.
TRUST/TREFLAN HFP	P T	1-2 pt	PPI. Controls grasses and broadleaves. Use lower rates on coarse soils and in areas of <20" rainfall. For transplants, apply and incorporate before transplanting. On direct-seeded, apply as a directed spray at blocking or thinning and incorporate immediately.
VIDA	E P T	0.5-2 fl oz	Add 1 pt NIS or 0.5 gal HSOC-COC/100 gal.* PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

[1] E – Eggplant, P – Pepper, T – Tomato

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

** May use other glyphosate herbicides: Cornerstone brands or others at labeled rates..

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED INSECTICIDES

INSECT*	ABAMEX ‡/ABBA ULTRA ‡	ACTARA	ADMIRE PRO	***ADVISE FOUR***/ NUPRID 4F MAX	AGREE WG	AGRI-MEK SC ‡	***ARCTIC 3.2 EC*** ‡	ASANA XL	ASSAIL 70 WP/30SG	AVAUNT/AVAUNT EVO	BAYTHROID XL ‡	BELAY INSECTICIDE	BELEAF 50SG	BESIEGE ‡	***BRACKET 97***/ORTHENE 97	CAPTURE LFR/***TUNDRA LFC*** ‡	CLOSER SC	CONFIRM 2F	CORAGEN	DANITOL 2.4 EC ‡	***DELTA GOLD*** ‡	DIBROM 8E ‡	***DIMATE 4E***	DIPEL DF	DURIVO	ENDIGO ZCX ‡	ENTRUST SC	ETHOS ELITE LFR ‡	EXIREL	FASTAC CS ‡	FULFILL	***GRIZZLY TOO*** ‡	HERO	INTREPID 2F	KNACK	***LAMBDA CY AG*** ‡
APHID		●	●	●					●		●	●	●	S	●[5]		●				●	●	●		●	●			S	●	●	S			●	S
ARMYWORM					●			●[1]		●	●			●				●	●	●	●			●	●	●	●	●[2]	●	●		●	●	●		●
COLORADO POTATO BEETLE	●	●	●	●		●	●	●	●		●	●		●					●		●				●	●	●		●	●		●	●			●
CUTWORM								●[2]			●					●		●			●			●		●		●[2]		●		●	●			●
EUROPEAN CORN BORER								●[3]		●[4]	●			●	●	●		●	●		●					●	●		●	●		●	●	●		●
FLEA BEETLE		●	●	●[6]			●	●			●	●		●		●					●	●		●	●	●	S		●	●	S	●	●			●
FRUITWORM					●			●[2]		●	●			●		●			●	●	●			●	●	●	●		●	●		●	●	S		●
HORNWORM					●			●[2]		●	●				●	●		●	●	●	●			●	●	●	●		●	●		●	●	●	●	●
LEAFHOPPER		●	●	●							●	●		●		●					●		●	●	●				●		●	●			●
SPIDER MITE	●					●										●				●		●			S						S	●			S
STINK BUG		●	●				●				●			●		●				●					●										●
THRIPS	●		●	●		●			●					S		●	S				●			●	●	●			●		●	●			●

LABELED INSECTICIDES *continued*

INSECT*	LANNATE LV ‡	LEVERAGE 360 ‡	***MALATHION 5***/5EC	MALATHION 8 FLOWABLE	MINECTO PRO ‡	MOVENTO	MUSTANG MAXX ‡	NEALTA	OBERON 2SC	ONAGER	PLATINUM 75 SG	PROCLAIM ‡	PYGANIC EC 1.4II; EC 5.0 II	RADIANT SC	REQUIEM EC	RIDGEBACK	SEFINA	SENSTAR	SEQUOIA	SIVANTO PRIME; SIVANTO 200 SL	TRANSFORM WG	TRIGARD	***TUNDRA EC*** ‡/ ***BIFEN 2 AG GOLD*** ‡/BRIGADE 2EC ‡	VENOM 70SG	VERIMARK	VOLIAM FLEXI	VYDATE L ‡	WARRIOR II ‡	XENTARI	XPEDIENT PLUS V ‡
APHID	●	●	●	●	●	●	●				●		●			●	●	●	●	●	●				S	●	●	S		
ARMYWORM	●	●	●[2]		●		●					●	●	●		●							●		●	●		●	●	●
COLORADO POTATO BEETLE		●			●		●				●		●	●		●				●		S	●	●	●	●	●[1]	●			
CUTWORM	●[2,4]	●		●												●							●					●	●	●
EUROPEAN CORN BORER	●[4]	●			●		●							●		●							●		●	●		●		
FLEA BEETLE		●					●				●		●			●							●	●	●	●		●		
FRUITWORM	●[2]	●			●		●					●	●	●											●	●		●	●	
HORNWORM	●[2]	●			●		●					●	●	●											●	●		●	●	
LEAFHOPPER		●					●				●		●			●				●				●		●		●		
SPIDER MITE			●[1]	●[1]	●			●	●	●			●			●							●					S		
STINK BUG	●						●						●			●								●				●		
THRIPS		●			●		S				●		●	●	●[7]	●		S	S		S		●	●			S	●		

S – Suppression.
* Many other insects may be controlled, see label.
[1] Eggplant and tomato only.
[2] Tomato only.
[3] Eggplant and pepper only.
[4] Pepper only.
[5] Non-bell for aphids; bell for green peach aphid; State, regional restrictions.
[6] Soil application only.
[7] Western flower, chili, melon, Florida flower, and eastern flower only.
See Insecticide Resistance Management in the Technical Information section.

INSECT MANAGEMENT THRESHOLDS

COLORADO POTATO BEETLE (EGGPLANT)	<6" plants - 2 small larvae or 1 large larvae or 1 adult per plant. >6" plants - 4 small larvae or 2 large larvae or 2 adult per plant.
COLORADO POTATO BEETLE (TOMATO)	Apply to borders or entire field to protect new transplants or if defoliation is occuring.
CUTWORM (TOMATO)	Treat when larvae exceed 1 per 10 plants.
EUROPEAN CORN BORER	Regularly check 15 to 20 randomly selected plants from each of five locations in the field for aphids. If you notice European corn borer (ECB) eggs or larvae or if the catch of female ECB moths in nearby black light traps equals 4 per night for 3 consecutive nights when peppers are forming, insecticide treatments are necessary to protect the crop. For adequate protection against ECB, subsequent sprays will be needed at 5- to 7-day intervals (depending on insecticide and weather) while moth flights continue or until harvest, unless crop is side-dressed with granular insecticide. NOTE: The amount of sweet corn, in the tassel/silking stage, adjacent to pepper, should attract significant numbers of ECB moths for egg-lay. This preference for sweet corn may help to minimize ECB egg-lay on peppers.
FLEA BEETLE (EGGPLANT) (PEPPER)	<3" plants - 2 beetles per plant 3-6" plants - 4 beetles per plant >6" plants - 8 beetles per plant
FLEA BEETLE (TOMATO)	Treat when beetles exceed 2 per 10 leaves.
FRUIT FLY (TOMATO)	Dust or spray tomatoes to cover lightly, but thoroughly, with synergized pyrethrins (Pyrenone, Pyrocide).
HORNWORM and FRUITWORM (TOMATO)	Treat when >2 per plant.
LEAFHOPPER (TOMATO)	Occasional early season problem. Treat as needed.

INSECT TREATMENT GUIDELINES

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ABAMEX ‡ or ABBA ULTRA ‡	E P T	8-12 fl oz or 4-6 fl oz	7	Use ≥20 GPA. Max. 16 fl oz/A or 8 fl oz/A per application, max. 48 fl oz/A or 24 fl oz/A per year. Allow ≥7 days between applications. No more than 2 sequential applications.
ACTARA	E P T	2-5.5 oz	0	Note 1.
ADMIRE PRO	E T P	7-10.5 fl oz 7-14 fl oz	0,21	See label for soil application instructions. Use 1.3-2.2 fl oz/A foliar. PHI 0 days foliar. Note 1.
ADVISE FOUR/NUPRID 4F MAX	E P T P E T	8-12 fl oz: soil 8-16 fl oz: soil 1.5-2.4 fl oz: foliar	0,21	See label for soil application instructions. PHI 0 days foliar.
AGRI-MEK SC ‡	E P T	1.75-3.5 fl oz	7	Use ≥20 GPA. Do not exceed 10.25 fl oz/A/season. Allow ≥ 7 days between applications. No more than 2 sequential applications. Includes commercially grown greenhouse tomatoes (except NY). Note 1.
ARCTIC 3.2 EC ‡	E P T	6 fl oz 4-8 fl oz 2-8 fl oz	0,3	PHI 0 days in T, 3 days in E and P. Do not apply more than 0.8 lb a.i./A season in T, 0.8 lb a.i./A in P and 0.6 lb a.i./A in E. Note 1.
ASANA XL ‡	E P T	5.8-9.6 fl oz 2.9-9.6 fl oz	1,7	PHI 1 day for T. Do not exceed 0.35 lb a.i./A/season for E or P and 0.5 lb a.i./A/season for T. Note 1.
ASSAIL 70 WP or ASSAIL 30SG	E P T	0.8-1.7 oz or 2-4 oz	7	Aphids vary in susceptibility. Do not apply more than 5 times or 8.5 oz/A or 16 oz/A per crop. Note 1.
AVAUNT or AVAUNT EVO	E P T	2.5-3.5 oz or 2.5-6 oz	3	Max. 4 applications/A/crop. Do not apply more than 14 oz/A/crop Avaunt or 24 oz/A/crop Avaunt eVo. 5-day min. application interval. Note 1.
BAYTHROID XL ‡	E P T	1.6-2.8 fl oz	0,7	PHI 0 days for tomato. Do not exceed 16.8 fl oz/A/crop season. Note 1.
BELAY INSECTICIDE	E P T	9-12 fl oz: soil 3-4 fl oz: foliar	21	See label for soil application instructions.
BELEAF 50SG	E P T	2.8-4.28 oz	0	Note 1.
BESIEGE ‡	E P T	5-9 fl oz	5	Max. 31 fl oz/A or 0.36 lb a.i./A.year lambda-cyhalothrin-containing products or 0.2 lb/A/year chlorantraniliprole-containing products. 5-day min. application interval.
BRACKET 97/ ORTHENE 97	P	0.25-1 lb	7	For bell peppers. For aphid in non-bell peppers, use 0.5 lb/A. Do not use more than 2.125 lb/A per crop cycle. Non-bell pepper in Midwest and East only.
CAPTURE LFR ‡/ ***TUNDRA LFC*** ‡	E P T	3.4-8.5 fl oz: soil 2.8-8.5 fl oz: foliar	7,1,7	See individual labels for specific target insects and rates. Apply directed to furrow or seed bed, PPI and PRE, or as foliar (see individual labels for allowed foliar applications to specific leafy vegetables). Min. application interval E,P 7 days; T 10 days. PHI E,P 7 days; T 1 day.
CERTADOR	E P T	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21,1	Use only one application method. Apply as foliar when pests appear, as needed but not more than every 7 days. See label for row spacing rates. PHI 7 days foliar.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
CLOSER SC	E P T	1.5-4.5 fl oz	1	Do not make >4 applications/crop, 2 consecutively, or <7 days apart, and >17 fl oz/A/season. If blooming vegetation is present 12 feet out from the downwind edge of the field, a downwind 12-ft on-field buffer must be observed. Note 1.
CONFIRM 2F	E P T	6-8 fl oz	7	Rate dependent on target pest; see label. 10- to 14-day application interval.
CORAGEN	E P T	2-7.5 fl oz	1	Foliar rates. Also labeled for at-planting and drip chemigation uses. See label for rates. Note 1.
DANITOL 2.4 EC ‡	T	10.67 fl oz	3	Do not apply more than 2.7 pt/A per season.
DELTA GOLD ‡	E P T	1-2.4 fl oz	1	Do not apply more than 14.4 fl oz/A per season. Note 1.
DIBROM 8E ‡	E P	1-2 pt	1	Max. 6 pt/A/season. Min. 20 GPA by ground, 10 GPA by air. Do not apply if T >90 °F. 7-day min. application interval.
DIMATE 4E	P T	0.5-0.67 pt 0.5-1 pt	0,7	P: PHI 0 days (may be harvested day of application). Max. single application rate is 0.66 pt/A and max. rate per year is 3.33 pt/A. Reapplication interval is 7 days. REI is 48 hours. Max. rate per year is 3.33 pt/A. T: PHI 7 days. Max. single application rate is 1 pt/A and max. total rate per year is 2 pt/A. Reapplication interval is 6 days. REI is 48 hours.
DIPEL DF	E P T	0.25-2 lb	0	Bt insecticide. Note 1.
DURIVO	E P T	10-13 fl oz	30	Apply in-furrow; POST-seeding, transplant, or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Max. 1 soil application/season.
ENDIGO ZCX ‡	E P T	4-4.5 fl oz	5	Note 1.
ENTRUST SC	E P T	1.5-10 fl oz	1	A Naturalyte insecticide. Do not apply less than 4 days apart and do not make more than 6 applications per calendar year. Do not apply more than 29 fl oz per acre per season. 2ee various states (exp. date not given) for overhead sprinkler chemigation use. Note 1.
ETHOS ELITE LFR ‡	T	0.2-0.39 fl oz/1000' row	0	At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed; see label for guidance. Max. 0.4 lb bifenthrin a.i./A/season, including all application methods. Product also contains fungicide; see Solanaceous Diseases.
EXIREL	E P T	7-20.5 fl oz	1	Apply foliar with an effective adjuvant. 5-day min. application interval. Max. 0.4 lb a.i. cyantraniliprole/A season. Note 1.
FASTAC CS ‡	E P T	2.2-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply >11.4 fl oz/A/season. Min. 10 GPA ground and 2 GPA air.
FULFILL	E P T	2.75 oz	0	Do not apply by air. Do not exceed 5.5 oz/A/season. Allow min. of 7 days between applications.
GRIZZLY TOO ‡	E P T	0.96-1.92 fl oz	5	Do not apply ≥1.44 pt/A/season.
HERO ‡	E P T	4-10.3 fl oz	1,7	PHI 1 day for T.
INTREPID 2F	E P T	4-16 fl oz	1	Use 4-8 fl oz/A for early season applications only and 8-10 fl oz/A for mid- to late-season applications or for heavy infestations or applications when coverage is difficult. Do not exceed 64 fl oz/A. Use 10-16 fl oz/A for tomato fruitworm (suppression only). Supplemental label all states except NY (exp. date not given) for control of Lepidoptera larvae. Note 1.
KNACK	E P T	8-10 fl oz	1	Insect Growth Regulator. Controls various whiteflies; see label. Do not make >2 applications/growing season. 14-day min. application interval. Max. 20 fl oz/A/season. For control of other listed insect pests in addition to whiteflies, use 6-8 fl oz/A + Bracket 97 or Orthene 97 at 0.5-1 lb/A.
LAMBDA CY AG ‡	E P T	1.92-3.84 fl oz	5	When applying by air, apply in a min. of 2 gal of water/A. Use sufficient water to obtain full coverage of foliage.
LANNATE LV ‡	E P T	0.75-3 pt 1.5-3 pt	1,3,5	Do not make more than 10 applications per crop in E or P and 16 applications in T. PHI 5 days for E, 3 for P, 1 for T.
LEVERAGE 360 ‡	E P T	3.8-4.1 fl oz	0	Note 1.
MALATHION 5 or MALATHION 5EC	E P T	1-2.5 pt or 1.5-2.5 pt 1-2.5 pt 1-2.5 pt or 1.5-2.5 pt	3,1	PHI 3 days for E or P; PHI 1 day for T. Note 1.
MALATHION 8 FLOWABLE	E P T	1.56 pt 1.5 pt	1,3	E, T: Max. of 4 applications/year. P: Max. of 2 applications/year. PHI for T is 1 day.
MINECTO PRO	E P T	5.5-10 fl oz	7	Rate is dependent on target pest; see label. Best control achieved with ground applications.
MICROTHIOL DISPERSS	P T	3-10 lb 5-10 lb	–	Rate is dependent on target pest; see label. Best control achieved with ground applications.
MOVENTO	E P T	4-5 fl oz	1	Max. of 10 fl oz/A/season. Note 1.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
MUSTANG MAXX ‡	E P T	2.24-4 fl oz	1	Do not make applications <7 days apart. Do not apply >24 fl oz/A/season. See label for imporant resistance management of specific insects. Note 1.
NEALTA	T	13.7 fl oz	3	Apply at first sign of mites and continue on local threshold needs, but do not apply sooner than 14-day intervals. Apply in min. 50 GPA. Do not apply more than 27.4 fl oz/A/year. Do not apply more than once without rotating MOA.
OBERON 2SC	E P T	7-8.5 fl oz	1	Max. 8.5 fl oz/A allowed per 7-day interval. Max. 25.5 fl oz/A per crop season. Max 3 applications/crop/season. Min. 10 GPA by ground, 5 GPA by air.
ONAGER	E P T	12-24 fl oz	1	Do not apply >24 fl oz/A/year or make >1 application/year. Labeled for greenhouse tomatoes only.
PLATINUM 75 SG	E P T	1.66-3.67 oz	30	Apply in-furrow, drench, drip, or shanked (see label). Do not exceed 3.67 oz/A/season.
PROCLAIM ‡	E P T	2.4-4.8 oz	7	Up to 28.8 oz/A/season. Note 1.
PYGANIC EC 1.4 II	E P T	16-64 fl oz	0	OMRI listed. Apply by ground, or in min. 5 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
PYGANIC EC 5.0 II	E P T	4.5-15.61 fl oz	0	OMRI listed. Max. 15.61 fl oz/A/application. Apply by ground, or in min. 2 GPA by air. Repeat as required. May be applied by sprinkler irrigation; see label. Do not reapply within 3 days, except under extreme pest pressure. Do not apply >10 times/season.
RADIANT SC	E P T	5-10 fl oz	1	Use 6-10 fl oz/A for thrips. Not for yellow- or western-striped armyworms. Note 1.
REQUIEM EC	E P T	2-4 qt	0	For thrips (2-3 qt/A), apply as soon as seen in crop. For whiteflies (3-4 qt/A), apply before damaging levels are reached. For leafminer suppression, begin treatments before thresholds have been met. Note 1.
RIDGEBACK	E P T	4.5-13.8 fl oz	7	Rate is dependent on target pest; see label. Treat in accordance with local economic threshold. Use higher rate for heavy pest populations. 7-day min. application interval. Max. 4 applications/crop. Max. 2 consecutive applications/crop. Max. 27.6 fl oz/A/year.
SALIBRO	E P T	30.7- 61.4 fl oz., PPI or Drip irrigation 15.4 - 30.7 fl oz., In-season drip	1	For management of Root Knot Nematode. 14 days min. retreatment interval. Max 2 application and 61.4 fl oz/A/Yr. Broadcast with a minimum of 15 gal per acre of water and thoroughly incorporate 4 to 6 inches into the soil within 7 days of planting. For drip irrigation applications, apply with sufficient water to move the product to the root zone of the crop. Refer to the product label for additional directions and restrictions.
SEFINA	E P T	3 fl oz; 14 fl oz	0	3 fl oz/A for aphids; 14 fl oz/A for whitefly. Apply at first sign of pest presence, before population increases to damaging levels. Min. 10 GPA ground, 2 GPA air. 7-day min. retreatment interval. Do not make >2 sequential applications before switching to a different mode of action. Do not exceed 28 fl oz/A/season. Max. of 3 crop seasons/year.
SENSTAR	E P T	8-10 fl oz	1	Ground application in 10-50 GPA; aerial application in 3-10 GPA. Only whole fields should be treated. Max. 10 fl oz/A/application. Max 2 applications/crop season. Max. 20 fl oz/A/crop season. Min. 14-day application interval. Do not allow livestock to graze treated areas.
SEQUOIA	E P T	1.5-4.5 fl oz	1	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. If blooming vegetation is present 12 ft out from the downwind edge of the field, a downwind 12 ft on field buffer must be observed. Note 1.
SIVANTO PRIME; 200 SL	E P T	7-28 fl oz	1,45	Foliar: 7-14 fl oz/A (pest-dependent), 7 day min. application interval; PHI 1 day. Apply by ground or air. Soil: 21-28 fl oz/A for Sivanto prime/Sivanto 200 SL; PHI 45 days.
TRANSFORM WG	E P T	0.75-2.25 oz	1	See label for insect-specific application rate. 7-day min. application interval. Max. 4 applications/crop. Max. 2 consecutive applications/crop. Max. 8.5 oz/A/year.
TRIGARD	P T	2.66 fl oz	0	Leafminer control.
TUNDRA EC ‡/ ***BIFEN 2 AG GOLD*** ‡/ BRIGADE 2EC ‡	E P T	2.1-6.4 fl oz 2.1-5.2 fl oz	7,1	PHI 7 days for E and P; 1 day for T. Note 1.
VENOM	E P T	1-4 oz	1,21	May use 5-6 oz/A soil applied. PHI 21 days soil applied. Note 1.
VERIMARK	E P T	5-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting. May drip chemigate or soil inject. Max. 13.5 fl oz/A at planting. Max. 0.4 lb a.i. cyantraniliprole/A/season. A spray application pH of 4-6 is recommended. Note 1.
VOLIAM FLEXI	E P T	4-7 oz	1	Max. 14 oz/A/season.
VYDATE L ‡	E P T	2-4 pt	1,3,7	Foliar applications. See label for soil applications and nematode control. Not registered in some states; see label. PHI 1-7 days for E (depending on insect pest managed), 7 days for P, 3 day for T. Note 1.
WARRIOR II ‡	E P T	0.96-1.92 fl oz	5	Do not apply ≥1.44 pt/A/season.

See notes and footnotes at end of table.

INSECT TREATMENT GUIDELINES *continued*

Insecticide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
XENTARI	E P T	0.5-2 lb	0	Bt insecticide. Note 1.
XPEDIENT PLUS V ‡	E P T	2.56-5.12 fl oz	0	At plant: Apply as 5-7" band over row, 5-7"T-band over open furrow, or in furrow with seed. Cutworm, Armyworms: Apply as broadcast to soil surface. Max. 0.1 lb a.i./A/season/at plant application.
ZEAL SC	E P	4-6 oz	7	Two-spotted spider mite.

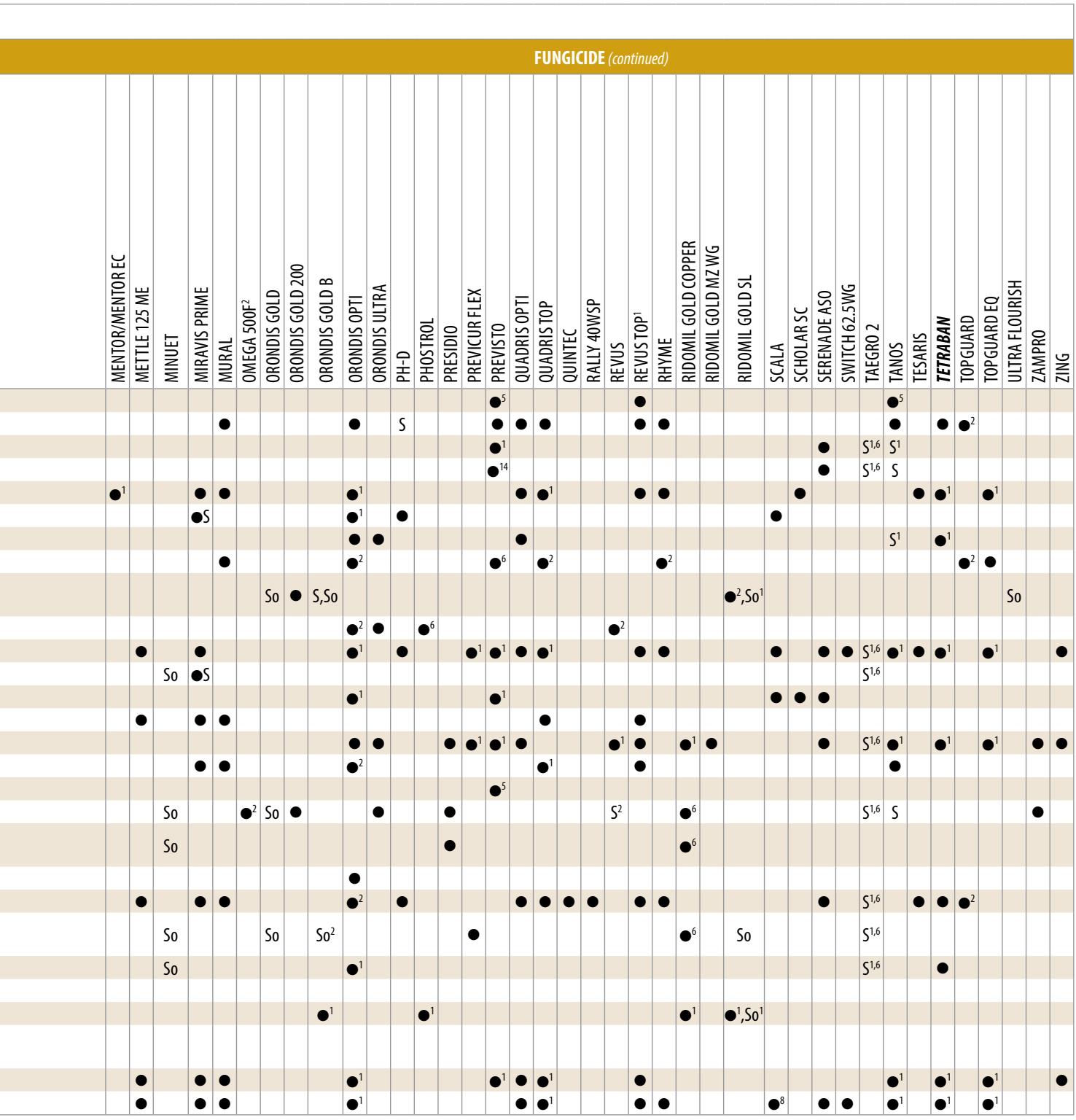
[1] E – Eggplant, P – Pepper, T – Tomato
[2] PHI – preharvest interval in days.

NOTE 1: See label for insecticide rate for each insect.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LABELED FUNGICIDES

DISEASE*	FUNGICIDE																																	
	ACTIGARD 50WG	ACTINOVATE AG	ALIETTE WDG	APROVIA TOP	BADGE SC/BADGE X[2]	BEXFOND[3]	BIO-TAM 2.0	BLOCKER 10G	BRAVO ULTREX/WEATHER STIK[3]	BRAVO ZN	CABRIO EG	CANNONBALL WG	CHAMP DRY PRILL; FORMULA 2 FLOWABLE; WG	CHAMPION++	CHLORONIL 720[3]/PRAIZ	CUPROFIX ULTRA 40 DISPERSS	CURZATE 60 DF1	DITHANE F-45 RAINSHIELD	ELUMIN	ENABLE 2F	ENDURA	ETHOS ELITE LFR ‡	***EVERLON***/PRIAXOR	FLINT	FLINT EXTRA	FONTELIS	FORUM	GAVEL 75 DF	INDAR 2F	INSPIRE SUPER	KOCIDE 3000	LUNA SENSATION	MANKOCIDE[1]	MANZATE MAX	MANZATE PRO-STICK/PENNCOZEB 75DF
ALTERNARIA BLIGHT		●			●[2]								●[5]	●[5]		●[5]										●				●[5]				
ANTHRACNOSE				●	●				●[3]	●	●		●[13]	●	●[3]	●		●					●		S	S			●	●	●	●	●	●
BACTERIAL SPECK	●[1]												●[1]	●[1]		●[1]		●									●			●[1]		●	●[1]	●[1]
BACTERIAL SPOT	●	●			●[14]								●[14]	●[14]		●[1,6]		●									●			●[1,6]		●	●[1]	●
BLACK MOLD				●[1]					●[3]	●	●				●[3]								●			●			●		●			
BOTRYTIS (Gray Mold)										●	S										●[1]		S											
BUCKEYE ROT																										●								
CERCOSPORA LEAF SPOT				●	●[6]									●[16]		●[6]				●									●[6]				●[6]
CROWN ROT and DAMPING OFF																																		
DOWNY MILDEW		●			●[2]																													
EARLY BLIGHT				●[1]	●[14]				●[1]	●	●		●[1]	●[1]	●[1]	●[1]		●			●		●	●	●	●		●		●	●[1]	●	●	●	●[1]
FUSARIUM		●				●	●					●										●												
GRAY LEAF MOLD					●[1]				●[1]	●			●[1]	●[1]	●[1]	●[1]									●				●	●[1]	●		●[1]	
GRAY LEAF SPOT				●					●[1]	●					●[1]			●						●	●			●			●	●	●[1]	●[1]
LATE BLIGHT					●[14]				●[1]	●	●		●[1]	●[1]	●[1]	●[1]	●	●					S	●			●[1]	●		●[1]		●	●[1]	●[1]
LEAF MOLD				●[1]														●										●		●		●		●[1]
PHOMOPSIS					●[5]								●[5]	●[5]		●[1]		●[6]												●[5]			●[6]	
PHYTOPHTHORA BLIGHT		●			●[2]	●													●[2]			●				S[2]								●[6]
PHYTOPHTHORA SPP. (Root Rot)		●	●[1]				●												●[2]			●												
PINK ROT																																		
POWDERY MILDEW		●		●							●									●			●	●[6]	●[4]	●			●	●		●		
PYTHIUM SPP. (Damping off)		●	●[1]				●															●												
RHIZOCTONIA		●		●		●	●			●												●	S											
RIPE ROT																																		●[6]
ROOT and FRUIT ROT								●																										
SEED ROT and DAMPING OFF																						●			●									
SEPTORIA LEAF SPOT				●[1]	●[1]				●[1]	●	●		●[1]	●[1]	●[1]	●[1]		●					●		●	●		●		●	●[1]	●	●	●[1]	●
TARGET SPOT							●[1]		●[1]	●	●				●[1]						●		●			●			●		●			

So - Soil application.
S - Suppression.
*Other diseases may be controlled, see label.
[1] Tomato only.
[2] Eggplant and pepper only.
[3] Fruit diseases of tomato; other diseases are labeled also.
[4] Control in pepper, suppression in tomato.
[5] Eggplant only.
[6] Pepper only.



[8] Florida only.
[13] Eggplant, pepper, tomato only.
[14] Pepper and tomato only

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

DISEASE MANAGEMENT GUIDELINES

Disease	Comments/Restrictions
ALTERNARIA BLIGHT, ANTHRACNOSE OR PHOMOPSIS FRUIT ROT	Rotate with crops other than tomato or pepper. Use disease-free seed and resistant varieties. Apply fixed coppers for control.
ALTERNARIA LEAF SPOT	Use fungicides containing copper.
ANTHRACNOSE	Use fungicides containing copper, pyraclostrobin, or famoxadone + cymoxanil.
ANTHRACNOSE	Use fungicides containing coppers, chlorothalonil, famoxadone + cymoxanil, mancozeb, maneb or azoxystrobin.
ASTER YELLOW	Controls leafhoppers.
BACTERIAL SPECK AND CANKER	Use fungicides with copper or famoxadone + cymoxanil (suppression).
BACTERIAL SPOT	Use resistant cultivars, hot water seed treatments and fungicides containing copper, copper sulfate or streptomycin sulfate or famoxadone + cymoxanil (suppression).
BACTERIAL SPOT	Use hot water seed treatments and seed at higher rates. Fungicides include coppers, streptomycin sulfate and mancozeb or famoxadone + cymoxanil (suppression).
BLOSSOM-END ROT	Maintain uniform soil moisture and avoid excess N and soluble K salt. Avoid close cultivation.
BOTRYTIS (GRAY MOLD)	Reduce relative humidity in green houses. Use fungicides containing benomyl, coppers, or Scala.
CERCOSPORA LEAF SPOT	Use fungicides containing copper.
CROWN ROT AND DAMPING-OFF	Use fungicides containing mefenoxam at the time of planting or other seed treatments.
EARLY AND LATE BLIGHTS	Use fungicides containing azoxystrobin, famoxadone + cymoxanil, fenamidone, fluoxastrobin, mancozeb, pyraclostrobin or coppers. Scala: early blight only.
FUSARIUM AND VERTICILLIUM WILTS	Plant resistant varieties and rotate crops. Soil fumigants may also be used.
PHYTOPHTHORA BLIGHT AND RIPE ROT	Use fungicides containing maneb or famoxadone + cymoxanil (suppression).
POWDERY MILDEW	Use Rally 40W SP.
SEED ROT and DAMPING-OFF	Use disease-free seed and sterile soil. Apply products containing mefenoxam.
SEED ROT and DAMPING-OFF	Use seed treated with captan or thiram.
SEPTORIA LEAF BLIGHT	Use fungicides containing azoxystrobin, chlorothalonil, famoxadone + cymoxanil, fenamidone, maneb, mancozeb or pyraclostrobin.
SOIL ROT	Stake or mulch plants.
VERTICILLIUM WILT	Control weeds and use long crop rotations with non-susceptible crops. Plant into well-drained soils. Apply metam-sodium for control.
VIRAL DISEASES - MOSAICS, POTATO VIRUS X AND Y	Use transplants free of infection and plant as far as possible from other solanaceous crops, melons, and alfalfa. Plant resistant varieties when possible and eliminate weed host plants near fields.
WALNUT WILT	Avoid planting tomatoes within the distance of the tree that equals the tree height.

DISEASE TREATMENT GUIDELINES

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ACTIGARD 50WG	P T	0.75 oz	14	Begin applications within 1 week of transplanting or emergence, and continue up to 8 weekly applications. Max. 6 oz/A/year.
ALIETTE WDG	T	2-5 lb	14	Apply at 2-4 leaf for direct seeded and immediately after transplanting to the field. Continue on 7-14 day intervals. Max. 20 lb/season.
APROVIA TOP	E P T	10.5-13.5 fl oz	0	E,P: Begin applications prior to disease onset when conditions are conducive for disease, on a 7-14 day schedule. No more than two applications on a 7 day interval, with remaining applications no closer than a 14 day interval. See label for tomato-specific directions, annual max. and resistance management.
BADGE SC or BADGE X2	E P T	0.75-2.25 pt or 0.75-2.25 lb	0	0.75-1.5 pt/A or 0.75-1.5 lb/A for E, 0.75-2.25 pt/A or 0.75-2.25 lb/A for P and 0.75-1.8 pt/A or 0.75-1.8 lb/A for T. Application intervals: 7- to 10-day interval for E; 3- to 10-day Badge SC for T, P; 5- to 10-day Badge X2 for T and 7- to 10-day Badge X2 for P. Use higher rates when conditions favor disease development. See label for greenhouse and shadehouse diseases and rates.
BEXFOND	E P T	7-28 fl oz	0	Apply via drench to seedlings prior to planting, at planting, or immediately after planting with an in-furrow soil spray, overhead sprinkler, or drip irrigation. Make the initial application during seedling production. During or following, irrigate well to soak the product into the root zone. Not labeled for aerial application.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
BIO-TAM 2.0	E P T	2.5-5 lb	–	Apply at sowing, restart of vegetative growth, and before infection risk period. If rainfall is not expected, irrigate with 0.25-0.5"/A.
BLOCKER 10G	P	0.75-1 lb/1000' row	–	Apply in furrow at planting time to the soil around seed and to the covering soil as it fills the furrow.
BRAVO ULTREX or BRAVO WEATHER STIK	T	1.3-1.8 lb or 1.5-2 pt	0	Begin applications when disease threatens and continue at 7-10 day intervals for foliage. Start at fruit set and continue at 7-14 day interval. Max. 15 lb a.i./season. Note 1.
CABRIO EG	E P T	8-16 oz	0	Use 8-12 oz for downy mildew and 12-16 oz/A for other diseases. Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 (1 for late blight) applications before rotating mode of action. Max. 6 applications/season. Note 1.
CANNONBALL WG	P T	1 oz/100 gal water	1	Supplemental label: Greenhouse production only; 1.0 oz/100 gal water; max. 5-8 fl oz solution by drip or drench application/treatment; max 1 application/crop; do not apply to foliage.
CHAMP DRY PRILL or CHAMP FORMULA 2 FLOWABLE or CHAMP WG or CHAMPION++	E	1.33 lb or 1.33 pt or 1.5 lb or 0.75-1.5	–	E: Apply at 7-10 day intervals. Max. 21.1 lb or 21.7 pt or 15.8 lb or 26.3 lb/A/year.
	P	1.33-2.0 lb or 1.33-2.0 pt or 1.5 lb or 0.75-1.25 lb		P: Apply at 3-10 day intervals. C: Max. 31.6 lb or 32.6 pt or 23.7 lb or 39.5 lb/A/year.
	T	1.33-2.67 lb or 1.33 pt or 1.0-34.8 lb or 0.75-1.75 lb		T: See label for rates and timing intervals specific to diseases and, for Champ Dry Prill, Champ WG and ChampIOIN++ rates and maximums specific for fresh market or processing tomatoes.
CUPROFIX ULTRA 40 DISPERSS	E P T	1.25 lb 0.75-2 lb 0.75-3 lb	–	Begin prior to disease development and continue on a 7-10 day interval for E, or 5-10 day interval for T, P. Max. 19.75 lb/A/year for E. Max. 29.5 lb/A/year for P. Apply at 0.75-3 lb/A for fresh market T (max. 20 lb/A year); 0.75-1.33 lb/A for processing T (max. 43.5 lb/A/year).
CURZATE 60 DF	T	3.2-5 oz	3	Begin applications as foliage, flower and fruit spray when disease is expected. Repeat at 7-10 day intervals as needed. Tank mix with a protectant fungicide. Apply on a 5-7 day schedule. Max. 30 oz/A/year.
DITHANE F-45 RAINSHIELD	P T	1.2-2.4 qt	5,7	Start when seedlings emerge or transplants are set and repeat at 7-10 day intervals. Use 1.2-1.6 qt/A west of Mississippi river and 1.2-2.4 qt/A east of river. Max. of 6.4 qt/A west and 16.8 qt east of river/A/crop.
ELUMIN	E P	8 fl oz	2	Max 8 fl oz/A/application. Max 2 applications/year. Max. 16 fl oz/A/year. Apply by ground in min. 20-100 GPA, by air in min. 5 GPA. Do not apply sequentially; alternate with a non-FRAC Gropu 22 fungicide of resistance management. 14-day min. application interval. See label for disease-specific application instructions.
ENABLE 2F	P	6-12 fl oz	7	Apply in min. 30 gal/A. Add NIS for optimum performance. Min. 10-14 day application interval. Max. 12 fl oz/A/application. Max. 48 fl oz/A/crop. Do make >2 consecutive applications (alternate with different mode of action within 14 days). Do not apply via irrigation.
ENDURA	E P T	2.5-3.5 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Use 9-12.5 oz/A for botrytis gray mold in tomato. Do not make >2 applications before rotating mode of action. Max. 6 (2 at high rate in T) applications/season. Note 1.
ETHOS ELITE LFR ‡	T	0.2-0.39 fl oz/1000' row	0	At-plant: Appy as 5-7" band over row, over open furrow (T-band), or in-furrow with seed; see label for guidance. Max. 0.4 lb bifenthrin a.i./A/season, including all application methods. Product also contains insecticide; see Solanaceous Insects.
EVERLON/PRIAXOR	E P T	4-8 fl oz	7	Apply prior to when conditions favor disease development and continue on 7-14 day schedule. Max. 24 fl oz/A/season. Max. 3 applications before rotating to another mode of action. Apply 6-8 fl oz/A for powdery mildew and 8 fl oz/A for late blight. Use with NIS at 0.125% v/v.
FLINT	E P T	1.5-4 oz	0	Begin applications preventatively when conditions favor disease development and continue on a 7-10 day schedule. Use a tank mixture for late blight. Alternate with at least 1 application of another mode of action. Max. 5 applications and 16 oz/A/season. Note 1.
FLINT EXTRA	E P T	2.5-3.8 fl oz		Rate dependent on specific disease; see label. Late blight controlled with tank mixed with protectant fungicide. Apply on a 7-10 day interval as needed. Max. 16 fl oz/A/year. No more than 5 applications/A/year.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
FONTELIS	E P T	16-24 fl oz	0	Begin application prior to disease development and continue on 7-14 day schedule. Labeled for greenhouse production. Max. 2 sequential applications before switching to a different mode of action. Max. 72 fl oz/A/year. See label for use against soil-borne diseases in tomato at 1-1.6 fl oz/1000′ row.
FORUM	E P T	6 oz	0	Apply in a tank mix. Begin when plants are 4-6″ tall or prior to disease and continue on a 5-7 or 7-10 day schedule. Max. 2 sequential applications before rotating to another mode of action. Max. 30 oz/A/season.
GAVEL 75 DF	T	1.5-2 lb	5	Start applications when seedlings emerge or transplants are set and repeat on 7-10 day intervals. Use a full rate of fixed Cu in tank mix with 2 lb rate. West of Mississippi: do not make more than 4 applications or apply more than 8 lb/A/season. East of Mississippi: do not make more than 8 applications or apply more than 16 lb/A/season.
INDAR 2F	P	6-12 fl oz	7	Min. re-treatment interval is 10 days. Do not apply through chemigation. Do not make >2 consecutive applications. Max. 48 fl oz/A/crop.
INSPIRE SUPER	E P T	16-20 fl oz	0	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 47 fl oz/A/season.
KOCIDE 3000	E P T	0.75-1.5 lb 0.75-1.25 lb 0.75-1.75 lb	–	Apply prior to disease development and continue on a 7-10 day (5-7 day for T) schedule or as needed.
LUNA SENSATION	E P T	5-7.6 fl oz	3	Apply in ground, aerial or chemigation. Apply on 7-14 day interval when disease pressure is severe. Do not apply more than 2 sequential application.
MANZATE MAX or MANZATE PRO-STICK/ PENNCOZEB 75DF	P T	0.6-2.4 qt or 0.75-3 lb 1.2-2.4 qt or 1.6-3.2 lb	5	Begin applications when seedlings emerge or transplants are set; repeat at 7-10 day intervals. Rate/ Acre and max. rate dependent on geography and/or disease; see label.
MENTOR or MENTOR EC	T	see comment		Post-harvest dip, drench (4-8 oz/100 gal or 16-32 fl oz/100 gal) or high-volume spray (4-8 oz/50,000 lb. of fruit or 16-32 fl oz/250,000 lb of fruit). Dip for ~30 seconds and allow to drain. Must be used in a tank mixture with fludioxonil. May be used with food grade adjuvant. Do not make more than one application. Mentor not for use on processed tomato.
METTLE 125 ME	E P T	6-8 fl oz	0	7-14 day reapplication interval. Make no more than 2 sequential applications before alternating to another fungicide with a different mode of action. Do not apply >5 applications/A/year.
MINUET	E P T	12-24 fl oz	0	B. subtilis. OMRI listed. May be applied as surface drench, shanked-in, side-dress, injected and in-furrow at any time. May be applied by irrigation.
MIRAVIS PRIME	E P T	9.2-11.4 fl oz	0	Do not apply to vegatables grown in greenhouse. Max. 22.8 fl oz/A/year. Max. 2 applications at max. rate/year. 7-day min. application interval. May be applied by ground, air (10 GPA; max. 2 applications), or sprinkler irrigation. An adjuvant may be used. Do not make >2 applications of this or other Group 7, 12 fungicides before rotating to different MOA. Gray mold and Fusarium wilt suppression: 11.4 fl oz/A.
MURAL	E P T	5.23-6.97 fl oz	0	Apply prior to disease development.
OMEGA 500F	E P T	1-1.5 pt	30	Apply on 7-14 day schedule. Initial application may be soil drench after transplanting at 1.5 pt/A. Do not apply more than 9 pt/A/year. REI 12 hours.
ORONDIS GOLD	E P T	28-55 fl oz	7	Apply at planting, in furrow, by drip, or in transplant water. See label for resistance management information and restrictions. Max. one at-plant soil application/crop. Min. application interval 30 days except 28 days for T.
ORONDIS GOLD 200	E P T	2.4-9.6 fl oz	0	Apply at planting, in furrow, by drip, or in transplant water. See label for resistance management information and restrictions. No more than 4 applications per crop; do not use for >33% of total soil fungicide applications. 7-day min. application interval.
ORONDIS GOLD B	E P T	1 pt 1-2 pt	7	E,P: Apply before plants are infected (if already infected, cannot be cured). Soil spray (broadcast or band) in water or liquid fertilizer PP or at planting. For P, apply PP or PRE. Injection (drip irrigation) at planting with two additional applications on 30-day schedule. For banded applications use a 12″- to 16″ band. See label for additional soil-directed application instructions. T: Soil spray (broadcast or band) in water or liquid fertilizer at planting. For banded applications use a 7″ band. Injection (drip irrigation) for applications subsequent to soil spray, with first at 4-6 weeks after planting, then as needed up to 4 weeks before harvest and before last irrigation. See label for additional soil-directed application instructions. Also see Orondis Gold 200 2ee recommendations.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
ORONDIS OPTI	T E P	1.75-2.5 pt	0 3	Begin ground (min. 15-20 GPA), air-assisted (min. 10 GPA) or aerial (min. 5 GPA) applications prior to disease development; continue on a 7-10 day interval for E, P, T foliar diseases, 7-14 day interval for T fruit diseases. Max. 2.5 pt/A/application. Max. 10 pt/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
ORONDIS ULTRA	E P T	5.5-8.0 fl oz	1	Begin ground (min. 15 GPA) or aerial (min. 5 GPA) applications prior to disease development. Min. 7-day application interval. Max. 8 fl oz/A/application. Max. 32 fl oz/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
PH-D	E P T	6.2 oz	0	Apply by preventatively and continue on a 10-14 day interval. Alternate with different modes of action. Max. 5 applications.
PHOSTROL	T	2-5 pt	0	Apply in min. 10 GPA at 2- 4 leaf stage for direct seeded, or immediately after transplanting. Min. 7-14 day interval; see label.
PRAIZ	T	1.375-2.75 pt	3,0	E,P: Begin applications as foliage, flower and fruit spray when disease is expected. Repeat at 7-10 day intervals as needed. Max. 9 lb a.i./A/season. PHI 3 days. Note 1. T: Begin applications when disease threatens and continue at 7-10 day intervals for foliage. Start at fruit set and continue at 7-14 day interval. Max. 15 lb a.i./A/season. PHI 0 days. Note 1.
PRESIDIO	E P T	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10 day intervals. Max. of 2 sequential applications before alternating mode of action. Max. 4 applications or 12 fl oz/A/season.
PREVICUR FLEX	P T	1.2 pt 0.75-1.5 pt	5	See label for application instructions.
QUADRIS OPTI	T	1.6 pt	0	Begin ground (min. 15-20 GPA), air-assisted (min. 10 GPA) or aerial (min. 5 GPA) applications prior to disease development; continue on a 7-10 day interval for E, P, T foliar diseases, 7-14 day interval for T fruit diseases. Max. 2.5 pt/A/application. Max. 10 pt/A/year. Maximum 2 sequential applications before rotating to a different mode of action; see label for additional resistance management restrictions.
QUADRIS TOP	E P T	8-14 fl oz 8 fl oz	0	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 applications before rotating to another mode of action. Max. 55.3 fl oz/A/year for E, P and 47 fl oz/A/year for T. Do not use an adjuvant or NIS in T.
QUINTEC	T	4-6 fl oz	3	Apply before symptoms appear. Use 6 fl oz/A in ≥30 GPA water. No more than two consecutive applications; apply alternate spray within 14 days of Quintec application.
RALLY 40WSP	E P T	2.5-5 oz 2.5-4 oz	1	Begin application at the first sign of disease and on 10-14 day interval (E, P) and <21 days between applications (T). See label for crop specific directions and restrictions.
REVUS	E P T	8 fl oz	1	See label for crop-specific diseases. May be applied by ground, air or sprinkler irrigation. Max. 2 applications before rotating to another mode of action. Max. 32 fl oz/A/year. Include NIS or COC.* For Downy mildew control in E, P: Begin applications prior to disease development and continue on a 7-10 day schedule. For Phytophthora blight suppression in E, P: Apply as foliar spray in mixture with copper-based fungicide at first sign of disease or based on local recommendations; see label for additional recommendations. For Late blight control in T: Begin applications prior to disease development and continue on a 7-10 day schedule; may be used in field and greenhouse production; do not use in greenhouse for transplant production.
REVUS TOP	T	5.5-7 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Max. 2 application before rotating to another mode of action. Max. 28 fl oz/A/season.
RHYME	E P T	5-7 fl oz	0	Apply preventatively or when conditions favor disease development on a 7-day interval as needed. Max. 4 applications/year. Max. 28 fl oz/A/year. Rates vary based on disease present. Rate for E,P is 7 fl oz/A.
RIDOMIL GOLD COPPER	P T	1 pack/2.5-3.7 A	7,14	See label for differing pepper, processing tomato, and fresh tomato application instructions and seasonal max.s. PHI 7 days for P, 14 days for T. See label for max. amount of a.i.s from all sources.
RIDOMIL GOLD MZ WG	T	2.5 lb	5	Apply when conditions favor disease development and continue on 14-day intervals. Max. 2.5 lb/A/application. Max. 7.5 lb/A/year. Max. 3 applications/year before switching to other product for downy mildew control.
RIDOMIL GOLD SL	E P T	1 pt	7	Directed spray at plant base and incorporate or shank application for E, P. Broadcast, band or soil injection for T. See label for soil applications. See label for use in transplant water. See label for max. amount of a.i.s from all sources.
SCALA SC	T	7 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Max. 2 applications before rotating to another mode of action. Max. 35 fl oz/A/season. See label for max. amount of a.i.s from all sources. 2ee FL (exp. date not given) 7 fl oz/A for target spot.

See notes and footnotes at end of table.

DISEASE TREATMENT GUIDELINES *continued*

Fungicide	Labeled Crops[1]	Rate/Acre	PHI[2]	Comments/Restrictions
SCHOLAR SC	T	16-32 fl oz/100 gal	–	Apply post-harvest dip, drench, or high volume spray (16 fl oz/50,000 lb of fruit). Dip for at least 30 seconds and allow to drain. Must be used in a tank mixture with propiconazole. Not for processed tomato. 2ee several states (exp. date not given) for tank mix on postharvest diseases.
SERENADE ASO	E T	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. May be applied as soil drench, shanked-in, injected or in-furrow.
SWITCH 62.5WG	E P T	11-14 oz	0	Apply prior to or at the onset of diseases. Apply by ground only. Do not apply >56 oz/A/year. Do not apply to small tomatoes such as cherry/grape type in greenhouse.
TAEGRO 2	P T	2.6-5.2 oz		See label.
TANOS	P T	8-10 oz 6-8 oz	3	Tank mix with a contact fungicide. Apply prior to disease development and continue on a 5-7 day schedule. Max. 1 application before rotating to another mode of action. Max. 72 oz/A/crop. Note 1.
TESARIS	E P T	4.6 fl oz	7	Apply as 4.6 fl oz/A or as 4.6 fl oz/100 gallons spary volume (dilute); see label. Apply prior to onset of disease development and continue on a 7-14 day interval. Min. 7-day application interval. Do not apply to spinach as a tank mix with anything but water. For other leafy vegetables, see label for important sensitivity information. Max. 4.6 fl oz/A/application. Max. 3 applications/year. Max. 13.8 fl oz/A/year. Do not make >2 sequential applications before switching to a non-Group 7 fungicide. See label for important tank mix restrictions. Do not mix with COC, MSO or other adjuvant products; see label.
TETRABAN	E P T	5-15.5 fl oz	0	Apply by ground, air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soilborne diseases.
TOPGUARD	E P	14 fl oz	0	Do not exceed 14 fl oz/application. Do not apply more than 56 fl oz/A/year.
TOPGUARD EQ	E P T	4-8 fl oz	0	Apply preventatively or when conditions are favorable for disease development. Specific application directions apply to certain diseases, refer to the label for directions. Reapplication on 7-21 day intervals.
ULTRA FLOURISH	E P T	2-5 pt	7	Damping off and crown rot: 2 pt/A as soil spray (broadcast or band) in water or liquid fertilizer PP or at plant; for direct seeded P, apply PP or PRE; for banded use 12-16"" band; or apply by irrigation drip at 2 pt/A at planting, with up to two additional applications on 30-day schedule. Crown rot: 2 pt/A as banded spray; 2 post-directed application at base of plant adn 6-8""soil cover on either side of plant at 30-day interval after transplanting; or apply as shank applicaiton in liquid fertilizer in banded treatment to either side of plant. Max. 6 pt/A/crop.
ZAMPRO	E P T	14 fl oz	4	Begin application prior to disease development and continue on 5-7 day interval. Max. 2 sequential applications before switching to a different mode of action. Max. 42 fl oz/A/season.
ZING!	T	36 fl oz	5	Start applications when seedlings emerge or transplants are set. Repeat at 7-day intervals or when conditions favor disease. For fruit diseases, begin applications at fruit set and apply at 7-14 day intervals. Min. 7-day re-treatment interval.

[1] E – Eggplant, P – Pepper, T – Tomato
[2] PHI – preharvest interval in days.
NOTE 1: See label for fungicide rate for each disease.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

NON-CROP

- Aquatic 641
- Brush/Woody Plants 648
- CRP and Buffer Strips 655
- Lawn/Turf 660
- Non-Cropland 671
- Shelterbelt and Christmas Trees 676
- Weed Competitive Index 680
- Common Weed Names 681

AQUATIC VEGETATION MANAGEMENT

Preventive control is achieved through nutrient management or habitat manipulation. **Mechanical control** physically removes the vegetation. **Cultural control** includes the use of dyes, plastics or aeration techniques. **Biological control** using triploid carp has been extremely successful in some instances. After all these control measures have been exhausted, **chemical methods** can be used to control weeds.

When choosing a herbicide, the weed or **weeds must be properly identified**. Most aquatic herbicides will control only certain plant types indicated on the pesticide label.

Consider the uses of the water that is to be treated. Most aquatic herbicides **restrict use of the water** until the herbicide has been degraded, inactivated or dissipated. Check the pesticide label for use restrictions and length of restricted use.

Timing of the treatment is also important when determining which herbicide to use. Most aquatic herbicides should be applied in mid-to-late spring or early summer, when plants are young, actively growing and most susceptible to herbicides. If you wait until late summer to treat, you run a serious risk of killing fish. By that time, the vegetation is usually extensive and thick, and the water is warm and still. Under these conditions, **killing all vegetation at once could seriously deplete the water of all its oxygen** and cause a fish kill.

Herbicides are not effective on aquatic weeds when the water is too cold. The **water temperature** should be in the upper 60s (°F); this usually occurs from late April to early June.

You should apply herbicide as soon as the plants are up and actively growing and the temperature is right. Follow label recommendations.

Method of application may affect your choice if a certain type of equipment is needed for treatment to be effective. Consult labels for specific instructions on how to treat the area.

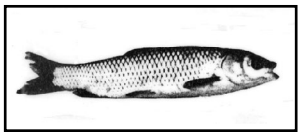
Before treating, consider the **probability of having to retreat** (even within the same year); a herbicide's toxicity to fish; the potential for damage to shoreline vegetation; and the cost of an appropriate herbicide for a specific management program.

Most aquatic herbicide labels give **dosages on the basis of acre-feet** (volume measurement). Acre-feet measurements are calculated by multiplying the surface area by the average depth. For example, a pond with a surface acreage of 1/2 acre and average depth of 4 feet contains 2 acre-feet (4 feet times 1/2 acre).

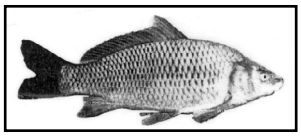
CULTURAL MANAGEMENT TIPS FOR CONTROL OF AQUATIC WEEDS

Cultural practices to reduce weed growth include:

1. **Elimination of shallow water** that encourages weed growth. The number one cause of weedy ponds is shallow water. This allows sunlight to strike the bottom and permits rooted plants to sprout and grow. Water deeper than 3 feet reduces the amount of light reaching submersed plants and algae. Average water depth should be at least 10 ft. with 1:3 shoreline slope.
2. **Reducing nutrient (N,P) levels**. Livestock manure in particular encourages growth of algae and duckweed which obtain nutrients from the water. Consider watering animals from a tank below the pond.
3. **Reducing sedimentation** which contributes nutrients, reduces water depth and binds with many chemical treatments. Maintain sod filter strips around ponds and practice other soil conserving practices.
4. **Drawdown water** to expose plants and bottom sediments around the pond boundaries to drying conditions.
5. **Grass carp** can provide longer control than chemicals in most cases. Grass carp are strictly vegetarian and are allowed in most areas (contact the Division of Fish and Wildlife for details - some states allow only sterile triploid carp.) Stocked at the rate of 5-20/acre, grass carp eat submersed plants. It may take 2-3 years to reduce aquatic weeds to observable levels. Note: Carp smaller than 12" can be eaten by large bass and other fish. Regular grass carp (diploids) are as effective and are less expensive than triploid grass carp. Grass carp do not reproduce in ponds. Do not stock where they may escape into public waters. Recreational fishing areas with less than 25% weed coverage should generally not be stocked with grass carp. Spot treat with herbicides.



Grass Carp



Common Carp

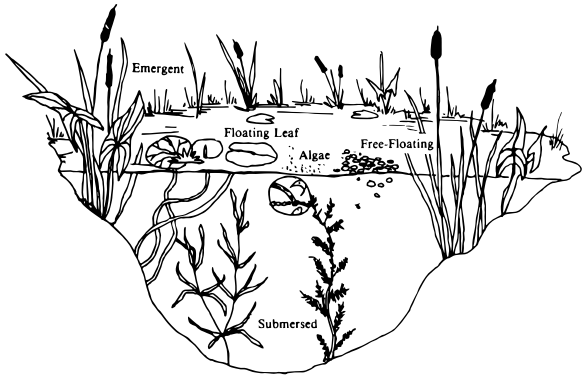
HERBICIDE MANAGEMENT TIPS FOR CONTROL OF AQUATIC WEEDS

1. Water temperature should be about 60˚F for effective treatment.
2. The selection of herbicides available for aquatic weed control is limited. Effective control often requires multiple herbicide treatments unless pond management is designed to reduce weed growth.
3. No chemical control is permanent. Usually the safest and most effective time to apply herbicides is in early spring.
4. Muddy ponds are difficult to treat because many herbicides bind with clay particles.
5. If weed growth is heavy, treat no more than one-fourth of the pond and wait two weeks before treating a subsequent section. To do otherwise invites fish kill due to lack of oxygen as weeds decay.

MEASURING POND VOLUME

If herbicide rate is given per acre foot, then volume of pond must be measured exactly. To calculate pond volume, first determine average depth by dropping a weighted line to the bottom in several locations. Pace off perimeter of pond to determine surface acres.

ALWAYS FOLLOW THE RESTRICTIONS ON WATER USE.



AQUATIC WEED CONTROL

Herbicide	Rate/Acre**	Comments/Restrictions
AQUASHADE	1 gal/SA	Acid Blue 9 + Yellow 23. Turns water blue. Acts as a light filter to inhibit filimentous algae and some types of submerged plants. Apply as a preventative before weeds are present. An initial application and a midseason treatment are suggested for best control in water to a maximum depth of 4 feet. Use in ponds, fountains and commercial fish ponds that have little dilution from outflow. Do not apply to water to be used for human consumption. Swimming and livestock consumption is allowed.
AQUATHOL SUPER K or AQUATHOL K	2.2-22 lb/AF or 0.3-3.2 gal/AF	Endothall. Controls most rooted species. Distribute evenly over water surface when water has warmed and weeds are actively growing. Do not use treated water for irrigation, agricultural sprays, livestock or domestic purposes within 7-25 days of treatment. Handle concentrated product with extreme caution-very irritating.
CLEARCAST	See label	For emergent, submerged or floating vegetation. Apply up to 500 ppb. Do not exceed 2 qt/A for emergent or floating weeds. May be used in draw down. Include NIS or MSO for emerged or floating species.*
CLIPPER	6-12 oz surface 100-400 ppb subsurface	Flumioxazin. Treat up to half the water body and wait 10-14 days before treating the remaining. Clipper may be mixed with other herbicides. See the label for subsurface application rates and weeds controlled.
COPPER SULFATE CRYSTALS	If total alkalinity of water is (ppm): 0- 40: do not treat 40- 60: 0.9 lb/AF 60- 90: 1.4 lb/AF 90-200: 2.7 lb/AF over 200: 5.4 lb/AF	Copper Sulfate. Algae (pond scum). Several treatments per year may be required. Apply under water or on the surface as algae appears but before formation of matted growth. For most uniform application, dissolve crystals in water and spray over water. Or, place crystals in burlap bag and drag around shoreline with a boat. Work toward the center of the lake. Repeat as needed. If algae is abundant, treat one-third body of water at a time with 10 days between treatments. Catfish and trout are not very tolerant of copper. Leave untreated areas for fish to move into. No restrictions on water treated except do not allow sheep to drink. Some states discourage the use of copper if water enters water treatment plants. Use chelated copper in high pH water. Total alkalinity is determined by lab analysis. Copper is more active in soft water and can be ineffective in very hard water. Most pond water is alkaline requiring 2.7-5.4 lb/AF. In general, water in western states with alkaline soils requires the 5.4 lb/AF rate. Some softer water in eastern states will require lower rates to avoid fish kill.
COPPER SULFATE CRYSTALS	Dissolve 1 oz copper sulfate in one pt water in a glass jar. Use 7.5 tbsp/1000 gal	Copper Sulfate. Moss and algae in **stock and nurse tanks.** Add 7.5 tablespoons of the prepared solution to each 1,000 gallons of water. Mix thoroughly. Increase rate if water is extra hard. Painting tanks black also reduces algae growth. Water can be used for crop spraying and livestock watering. Do not treat water intended for sheep with copper sulfate.
COPPER SULFATE CRYSTALS	1/2 cup to 2 lb/300 gal	Copper Sulfate. **Sewer lines.** To prevent invasion of tree roots into sewer lines, add 1/2 cup copper sulfate 2-3 times per year. Pour crystals into toilet stool and flush several times. Do not add crystals to sinks (can corrode lightweight metal traps). To remove existing roots in sewer lines, add small amounts of copper sulfate crystals daily for up to 2 weeks. Treatment of septic tanks requires 2 pounds of copper sulfate/300 gallon.
COPPER SULFATE CRYSTALS	Apply copper sulfate at 2-3 oz/1000 sq ft	Copper Sulfate. Algae/moss control in **turfgrass.** Factors favoring growth of moss include: wet, shady conditions; acidic, infertile, poorly drained, waterlogged soil; or excessive thatch. Algae grows in full-sun, humid locations; on compacted, waterlogged soils and thin turf. Neither moss nor algae are parasitic on turf but they form a scum that can cause plants to turn chlorotic and die. Control includes good soil fertility and soil pH (lime if needed), improved drainage, aeration, light penetration and air circulation (trim tree branches). Chemical control is effective only if turf growing conditions are improved.
CUTRINE PLUS or CUTRINE PLUS GRANULES or KOMEEN OR K-TEA	0.6-1.2 gal/SA/foot depth or 60 lb/SA or 1.67-3.34 gal/AF or 0.7-3.4 gal/AF	Elemental copper. Algaecide/herbicide. Use as a preventative early in the spring before weeds are present. More effective than copper sulfate in high pH water. Corrosive to eyes, skin and equipment. See label regarding use. Do not allow sheep to drink treated water. (Applied Biochemicals)
HABITAT	1-6 pt	Imazapyr. Controls emergent and floating weeds. See label for specific rates and weed species. Add 1 qt NIS/100 gal or 0.75-1 pt HSOC-MSO*
HYDROTHOL 191 or HYDROTHOL 191 G	Algae: 0.6-18 pt or 3-81 lb/AF Submersed: 0.7-4 gal or 27-162 lb/AF	Endothall. Do not treat over one-tenth of the body of water at one time with concentrations above 1 ppm. Fish may be killed by dosages in excess of 0.3 ppm. Commercial application suggested.
NAVIGATE	100-200 lb/SA	2,4-D. Apply granules at first growth. More effective on coontail, and watermilfoil than liquid formulation.

See notes and footnotes at end of table.

Herbicide	Rate/Acre**	Comments/Restrictions
RENOVATE	2-8 qt 0.75-2.5 ppm	Triclopyr. Recommended for control of emersed, submersed and floating aquatic plants in aquatic sites such as ponds, lakes, reservoirs, non-irrigation canals, and ditches which have little or no continuous outflow, marshes and wetlands, including broadleaf and woody vegetation on banks and shores within or adjacent to these and other aquatic sites. See label for specific set back distances for potable water intakes.
REWARD	Submersed: 1-2 gal/SA Emerged: 0.5-0.75 gal/SA	Diquat. Add 1 pt NIS/100 gal.* Controls submersed and floating weeds. In early season, for submersed weeds, pour into water from boat in 40 foot strips. Later, for emerged weeds, spray foliage using 50-150 GPA spray. Do not apply to muddy water. Persists in water 4-12 days. Safe to fish, but leave an untreated area for fish to move to. See label and 24c for TX (exp. date not given), for weeds controlled and specific application directions and restrictions.
RODEO (or other labeled glyphosate)	Spray solution: 0.75% to 8%	Glyphosate. Controls emerged weeds. Apply to actively growing weeds. Do not apply within 0.5 mile of potable water uptakes. Rates vary depending on weed species. Apply to cattails when at or beyond early to full-bloom stage. For tree and brush use a 5 to 8% spray solution. Add 2 qt NIS/100 gal (WC+NIS are also labeled for aquatic use).* NOTE: Roundup is not labeled for aquatic use.
RUGGED	Surface: 2-4.2 qt Aerial: 1 gal Submerged: 2.5-2.75 gal	Apply in 50-100 GPA water. Spray to wet foliage thoroughly. Apply when leaves are fully developed, above water line and plants are actively growing. By air, apply in 5-15 GPA. Use drift control agents. Do not apply more than 1/3 to 1/2 of the water area. For submerged aquatic weeds, apply in spring or early summer when weeds start to grow. A second application may be needed when weeds show signs of recovery, but no later than mid August in most areas. See label for application methods.
TRADEWIND	Surface: 1-2 oz Subsurface: 20-45 ppb	Bispyribac-sodium. See the label for subsurface application rates and weeds controlled.
2, 4-D AMINE 4	2.5-4.25 qt	2,4-D. Controls emerged broadleaf weeds. Spray actively growing weeds when in full leaf stage. Do not use water for human or animal consumption, or spraying or irrigation for 14 days. Use a surfactant or 1:20 oil/water emulsion. Apply in 50-100 GPA water. Safe to fish at labeled rates. See label for submerged weeds rates, aerial rates, concentration, and restrictions. Note: Not all brands of 2,4-D are labeled for aquatic use.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
**AF = Acre Feet (SA x average depth of treated water in feet); SA = Surface Acre (43,560 sq ft/A)

AQUATIC HERBICIDE USE RESTRICTIONS

AQUATIC HERBICIDE USE RESTRICTIONS (DAYS)					
	HUMAN			ANIMAL	IRRIGATION
HERBICIDE	Drinking	Swimming	Fish consumption	Drinking	Turf, forage and food crops
AQUATHOL (granular)	7-25	0	0	7-25	7-25
AQUATHOL K (liquid)	7-25	0	0	7-25	7-25
CLEARCAST	[B]	0	0	0	[B]
CLIPPER	0	0	0	0	5
COPPER CHELATE/SULFATE	0	0	0	0	0
HABITAT[D]	2	0	0	0	120[E]
HYDROTHOL	7-25	0	0	7-25	7-25
NAVIGATE	7	1	0	0	0
RENOVATE	[B]	0	0	0	120[E]
REWARD	3	0	0	1	5
RODEO[D] or AQUANEAT	0	0	0	[B]	0
RUGGED	[F]	0	0	0	[A]
TRADEWIND	0	0	0	0	[G]
2, 4-D	[A]	[B]	[B]	[A]	[A]

[A] - Do not use treated water for domestic purposes, livestock watering or irrigation.
[B] - In cases where restrictions are not given, consult the chemical label or the manufacturer for specific restrictions.
[C] - Do not apply this product within ¼ mile of potable water intake.
[D] - Do not apply within ½ mile of potable water intake.
[E] - 120 days or until non-detectable by lab analysis. No restriction for use on established grasses for Renovate.
[F] - 7-21 days or ≤ 70 ppb by assay. See label for setbacks.
[G] - Do not use for irrigation until ≤1 ppb concentration.

STOCK AND NURSE TANK ALGAE CONTROL

- 1 oz copper sulfate in 1 pt of water
- Add 7.5 tablespoons (3.75 oz) of prepared solution per 1000 gallons of water. Mix well.

See copper sulfate comments on previous page. Do not treat water that will be used by sheep.

KEY
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P = POOR
NL = NOT LABELED FOR CONTROL
L = LABELED BUT NO RATING
C = CHECK LABELS

Common Name	Scientific Name	Product									
		AQUATHOL	CLEARCAST	COPPERS	HABITAT	HYDROTHOL	RENOVATE	REWARD	RODEO**	*2, 4-D*	GRASS CARP
ALGAE											
Muskgrass	*Chara*	P	P	**G**	P	**E**	P	**G***	P*	P*	**E**
Filamentous algae ("moss")	*many*	P	P	**G**	P	**E**	P	**G**	P*	P*	P
Microscopic algae ("scum")	*many*	P	P	**E**	P	**E***	P	P*	P*	P*	P
Stonewort	*Nitella*	P	P	**G**	P	**E**	P	**G**	P	P	**E**
Plankton (microscopic "scum")	*many*	P	P	**E**	P	**E**	P	P	P	P	P
FLOWERING PLANTS											
SUBMERSED – rooted in the pond bottom that do not emerge											
American elodea	*Elodea canadensis*	NL	NL	P*	P	P	NL	**E**	P*	P*	**E**
Brittle naiad	*Najas minor*	**E**	NL	P*	P	**E**	NL	**E**	P*	P*	**E**
Broadleaf watermilfoil	*Myriophyllum heterophyllum*	**E**	**G**	P	P	**E**	**E**	**E**	P	P	**E**
Buttercup	*Ranunculus spp.*	NL	NL	NL	P	NL	NL	NL	L	C	–
Cabomba	*Cabomba caroliniana*	NL	NL	NL	P	NL	NL	NL	NL	NL	F
Clasping-leaf pondweed	*Potamogeton richarsonii*	**E***	NL	P*	P	**E**	NL	**G**	P*	P*	**E**
Coontail	*Ceratophyllum demersum*	**G**	P	P*	P	**E**	NL	**G**	P*	C(**G**)	**G**
Curly-leaf pondweed	*Potamogeton crispus*	**E**	**E**	P*	P	**E**	NL	**G**	P*	P*	**E**
Eel grass	*Vallisneria americana*	NL	P	NL	P	L	P	NL	NL	NL	–
Eurasian watermilfoil	*Myriophyllum spicatum*	**E**	**G**	P	P	**E**	**E**	**E**	P	**E**	**G**
Fanwart	*Cabomba spp.*	NL	P	P	P	NL	NL	F	P	P	**E**
Flat-stemmed pondweed	*Potamogeton zosteriformis*	**E**	**G**	P*	P	**E**	NL	**G**	P*	P*	**E**
Horned pondweed	*Zannichellis palustris*	**E**	NL	P*	P	**E**	NL	**G**	P*	P*	**E**
Hydrilla	*Hydrilla verticillata*	**E**	**G**	P[3]	P	**E**	P	**G**	P	P	**E**
Leafy pondweed	*Potamogeton foliosus*	**E***	**G**	P*	P	**E**	NL	**G**	P*	P*	**E**
Parrot feather	*Myriophyllum brasiliense*	**E**	NL	P	**E*****	**E**	F	**E**	P	**E**	P
Sago pondweed	*Potamogeton pectinatus*	**E**	**E**	P*	P	**E**	NL	**G**	P*	P*	**E**
Small pondweed	*Potamogeton pusillus*	**E**	**G**	P*	P	**E**	NL	**G**	P*	P*	**E**
Southern naiad	*Najas guadalupensis*	**E**	NL	P*	P	**E**	NL	**E**	P*	P*	**E**
Water milfoil	*Myriophyllum spp.*	**E**	**G**	P*	P	**E**	**E**	**E**	P*	P	**E**
Waterstargrass	*Heteranthera dubia*	F	**E**	NL	P	**G**	P	NL	NL	C	–
Widgeongrass	*Ruppia maritima*	F*	**G**	P*	P	F*	P	**G***	P*	P*	**E**
FREE-FLOATING – on water surface											
Bladderwort	*Utricularia vulgaris*	P	**G**	P*	P	P*	NL	**G**	P*	C(**G**)[2]	**G**
Common duckweed	*Lemna minor*	P*	P	P*	F/P[5]	P*	NL	**G**	P*	F[1]	P
Star duckweed	*Lemna trisulca*	P*	P	P*	F/P[5]	P*	NL	**G**	P*	F[1]	P
Water hyacinth	*Eichhornia crassipes*	P*	**E**	P	**E**	P	**G**	**G**	**G**	**E**	P
Water pennywort	*Hydrocotyle spp.*	**G***	**E*****	P*	**E**	P*	**G**	**G**	**G***	C(P)	P
Watermeal	*Wolffia spp.*	P*	P	P*	P	P*	NL	F	P*	**G***	P*

See notes and footnotes at end of table.

HERBICIDES FOR AQUATIC WEEDS *continued*

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P = POOR
NL = NOT LABELED FOR CONTROL
L = LABELED BUT NO RATING
C = CHECK LABELS

Common Name	Scientific Name	Product: AQUATHOL	CLEARCAST	COPPERS	HABITAT	HYDROTHOL	RENOVATE	REWARD	RODEO**	*2, 4-D*	GRASS CARP
ROOT-FLOATING – ROOTED IN POND BOTTOM WITH STEMS, LEAVES, AND FLOWERS ABOVE WATER SURFACE											
Alligator weed	*Alternanthera philoxeroides*	P	**G**	P	**E**	P	**G**	P	**G**	**G**	**G**
American lotus	*Nelumbo lutea*	F*	**G**	P*	**E**	P*	**G**	P*	**G**	C(**E**)	P
American pondweed	*Potamogeton nodosus*	**E**	**G**	P*	P	**E**	NL	**G**	P*	P*	**E**
Floating pondweed	*Potamogeton natans*	**E**	**G**	P*	P	**E**	NL	**G**	P*	P*	**E**
Frog bit	*Limnobium spongia*	P	**E**	P	**E**	P	**G**	**E**	**G**	**E**	P
Illinois pondweed	*Potamogeton illinoensis*	**E***	**G**	P*	P	C(**E**)	NL	**G**	P*	P*	**E**
Largeleaf pondweed	*Potamogeton amplifolius*	**E***	**G**	P	P	**E**	NL	**G**	P*	P*	**E**
Spatterdock	*Nuphar advena*	P*	**G**	P*	**E**	P*	**G**	P*	**G**	C(**G**)	P
Water lily	*Nymphaea spp.*	F*	**E**	P*	**E**	P*	**G**	P*	**G***	C(**G**)	P
Waterpurslane	*Ludwigia palustris*	NL	**E**	NL	P	NL	NL	NL	NL	NL	–
Watershield	*Brasenia schreberi*	**G***	**E**	P*	P	P*	NL	P*	F*	C(**E**)	**G**
Waterthread pondweed	*Potamogeton diversifolius*	**E**	NL	P*	P	**E**	NL	**G**	P*	P*	**E**
EMERGENT – PLANTS THAT GROW ABOVE WATER SURFACE, BUT NOT SUPPORTED BY WATER											
Arrowhead	*Sagittaria spp.*	**G***	**E**	P*	**E**	P*	NL	**G***	**E***	C(**E**)	P
Bulrush	*Scirpus spp.*	P*	NL	P*	**E**	P*	P	F*	**E**	C(**G**)	P
Bur reed	*Sparganium spp.*	L	NL	NL	**E**	NL	P	NL	NL	C	–
Button bush	*Cephalanthus occidentalis*	P	NL	P	**E**[2]	P	**G**	F	**G**	**E**	P
Cattail	*Typha spp.*	P*	**E**	P*	**E**	P*	P	**G**	**G**	C(**G**)	P
Creeping water primrose	*Jussiaea repens*	P*	**E**	P*	**E**	P*	**G**	P*	**E**	C(**E**)	**G**
Pickerelweed	*Pontederia spp.*	P*	**E**	P*	**E**	P*	**G**	P*	**G***	C(**G**)	P
Purple loosestrife	*Lythrum salicaria*	NL	**G**	NL	**E**	NL	**E**	NL	L	NL	–
Spikerush	*Eleocharis spp.*	P*	F/**G**	P*	F/**G**	P*	P	**G***	P*	P*	P
Water smartweed	*Polygonum spp.*	F*	**E**	P*	**E**	P*	NL	F	C(**G**)	**E**	P
Willow	*Salix spp.*	P*	NL	P*	**E**	P*	F	F	**E***	**E**	P

* Not on label – university control rating.
** May use other aquatic labeled glyphosate herbicides at labeled rates.
*** Spray after emergence above water.
Source: Information has been collected from chemical manufacturer's labels. Although some products could control more species, only the species listed on the label are included.
[1] Control with ester formulation only.
[2] Control with granular 2, 4-D (fair).
[3] Copper complexes only.
[5] Coverage is essential. Incomplete coverage will result in regrowth.

Adjuvants Labeled For Aquatic Use

Class Act NG or Flex, Destiny HC, Fast Break, InterLock, MasterLock, Preference, PowerLock, and Superb HC.

BRUSH/WOODY WEEDS HERBICIDE PERFORMANCE

Range of Plant Susceptibility

	% CONTROL
G = GOOD	75-100%
F = FAIR	50-75%
P = POOR	<50%

Application Method
B = BASAL SPRAY
F = FOLIAR SPRAY[3]
S = SOIL TREATMENT

	HERBICIDES																			
	2,4-D ESTER		ARSENAL (imazapyr)	***BRASH***/WEEDMASTER (XHL) (dicamba + 2,4-D)	BRUSHMASTER (2,4-D + dicamba + 2,4-DP)	CIMARRON MAX (metsulfuron + dicamba + 2,4-D)	CROSSBOW (triclopyr + 2,4-D)	ESCORT XP/PATRIOT (metsulfuron methyl)	GLYPHOSATE** (glyphosate)	KRENITE S (fosamine)	PASTUREGARD HL (triclopyr + fluoroxypyr)		PATHFINDER II RTU (triclopyr)	REMEDY ULTRA/GARLON (triclopyr)		SPIKE 20P (tebuthiuron)	***STERLING BLUE/CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** *(dicamba)*	STREAMLINE (aminocyclopyrachlor + mestsulfuron methyl)	SURMOUNT ‡ (picloram + fluroxypyr)	VELPAR L or L VU (hexazinone)	VIEWPOINT (imazapyr + aminocyclopyrachlor + metsulfuron methyl)
Application Method	B	F	F	F	F	F	F	B	F	F	F	B	B	F	B	S	F	F	F	S	F
Acacia, twisted	–	P	P/F	–	–	**G**	–	–	–	–	**G**	F	–	**G**	F	**G**	–	–	**G**	–	–
Ash, prickly	P	–	–	–	–	–	F/**G**	–	–	–	**G**	**G**	**G**	**G**	**G**	F/**G**	–	–	**G**	–	**G**
Ash, white	P/F	P/F	**G**	F	F/**G**	–	F/**G**	**G**	F/**G**	F	**G**	**G**	**G**	**G**	F/**G**	F/**G**	F/**G**	**G**	**G**	F/**G**	–
Aspen	F/**G**	F/**G**	F	–	–	–	**G**	**G**	**G**	–	**G**	**G**	**G**	**G**	**G**	–	**G**	**G**	**G**	F	**G**
Birch spp.	**G**	F/**G**	P	F/**G**	**G**	–	F/**G**	P	F/**G**	F	**G**	**G**	**G**	**G**	F/**G**	**G**	**G**	P	**G**	F/**G**	–
Blackberry *(brambles)*	P/F	P	P/F	F	F	**G**	**G**	F	F/**G**	F/**G**	**G**	**G**	–	**G**	**G**	F	F	F	**G**	F	–
Blackbrush *(acacia)*	–	P	P/F	–	–	P/F	–	–	–	–	**G**	**G**	–	**G**	**G**	**G**	–	–	**G**	P/F	–
Box elder	**G**	F/**G**	F	F	**G**	**G**	F/**G**	P	**G**	P/F	P	P	**G**	P	P	**G**	**G**	**G**	P	F/**G**	**G**
Buckbrush *(coralberry-red berries)*[4]	F	**G**	P	**G**	–	**G**	**G**	**G**	P/F	P	P	P	–	P	P	F/**G**	P	**G**	P	F	–
Buckthorn	–	–	–	–	–	–	**G**	–	–	–	**G**	**G**	**G**	**G**	**G**	–	–	–	**G**	–	–
Cedar, eastern red[1]	P	P	P	**G**	P/F	F	P	F/**G**	P/F	P	P/F	P	–	P/F	P	F	F/**G**	–	F	F/**G**	–
Cherry, black	P/F	P/F	**G**	P	F	**G**	F	**G**	**G**	F	**G**	**G**	**G**	**G**	F/**G**	**G**	**G**	**G**	**G**	F/**G**	**G**
Chokecherry	F/**G**	P/F	**G**	P	F	**G**	F/**G**	**G**	**G**	F	**G**	**G**	–	**G**	**G**	F/**G**	**G**	–	**G**	F/**G**	–
Cottonwood, eastern	**G**	**G**	**G**	P	**G**	**G**	F/**G**	P	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**
Crabapple	F/**G**	F	**G**	**G**	**G**	–	F/**G**	–	F	–	**G**	**G**	–	F/**G**	F/**G**	–	–	–	**G**	F	–
Dogwood[1]	F	F	**G**	**G**	**G**	**G**	F	–	P	–	**G**/**E**	**G**/**E**	**G**	F/**G**	**G**	**G**	–	–	F/**G**	F	–
Elderberry	F/**G**	F/**G**	**G**	**G**	**G**	**G**	F/**G**	P	**G**	F/**G**	**G**	**G**	–	**G**	**G**	F	**G**	**G**	**G**	**G**	**G**
Elm, American or slippery	F/**G**	F	P/F	F	F/**G**	**G**	F/**G**	**G**	F/**G**	**G**	**G**	**G**	**G**	F/**G**	F/**G**	**G**	**G**	**G**	F/**G**	F/**G**	**G**
Elm, winged	F/**G**	P	F	–	–	–	P	**G**	**G**	–	P/F	**G**	**G**	P/F	**G**	**G**	P/F	**G**	F/**G**	–	**G**
Fir, balsam	F	P	P	–	–	P	–	F	–	–	–	–	–	–	–	–	–	–	–	**G**	–
Grape, wild	F/**G**	F/**G**	**G**	F	F/**G**	F/**G**	**G**	F	**G**	F/**G**	**G**	**G**	–	F/**G**	**G**	**G**	F	F	**G**	F/**G**	**G**
Greasewood	–	**G**	–	–	–	–	–	**G**	–	–	–	–	–	–	–	–	–	–	–	–	–
Greenbrier	F	P	F/**G**	F	F	–	F	P	P	P	P	**G**	–	F	P	P/F	P	–	P	P	–
Hackberry	**G**	P/F	P	F	F	F	**G**	P	F/**G**	P/F	**G**	F	**G**	F/**G**	F/**G**	**G**	F	**G**	**G**	**G**	–
Hawthorn	F	P/F	**G**	F	F	**G**	F	P	**G**	F	**G**	**G**	–	F/**G**	**G**	F	F/**G**	**G**	**G**	**G**	**G**
Hickory spp.	P/F	P/F	**G**	**G**	**G**	F/**G**	F	–	F	F	F/**G**	**G**	**G**	F/**G**	**G**	F	F/**G**	–	F/**G**	**G**	–
Honeylocust	F	P/F	F	F	F/**G**	**G**	F/**G**	P	P/F	F	**G**	**G**	**G**	**G**	**G**	F/**G**	**G**	–	**G**	**G**	–
Honeysuckle	**G**	F	**G**	F	F/**G**	**G**	F	P	F/**G**	F	**G**	**G**	–	F	**G**	**G**	**G**	**G**	**G**	**G**	**G**
Juniper spp.	P	P	P	–	–	**G**	P	–	**G**	–	F	F	–	F	F/**G**	**G**	**G**	–	F/**G**	F/**G**	–
Kudzu	P	P	**G**	F	**G**	**G**	P/F	**G**	F	**G**	F/**G**	F/**G**	–	F/**G**	–	P	F/**G**	**G**	**G**	P	**G**
Locust, black	F	F/**G**	P	**G**	**G**	F/**G**	**G**	P	F	**G**	**G**	**G**	**G**	**G**	**G**	**G**	**G**	–	**G**	**G**	–
Maple, red	P	P	**G**	P/F	P	**G**	F/**G**	F	F/**G**	F	**G**	**G**	**G**	F/**G**	F/**G**	F	**G**	**G**	**G**	F/**G**	–
Maple, silver or sugar	P/F	P/F	**G**	F	F	F	**G**	F/**G**	F/**G**	F	–	**G**	**G**	**G**	**G**	F/**G**	F	**G**	–	**G**	–
Mesquite	F	P/F	**G**	–	–	F	P	–	–	–	F	F/**G**	F	F	F/**G**	**G**	F/**G**	**G**	F	F	**G**
Mesquite, honey	–	F/**G**	P	–	–	F	–	–	–	–	F	F/**G**	F	F	F/**G**	**G**	–	–	F	–	–
Mulberry, red	P	P/F	**G**	F	F	**G**	F	P	F	F	**G**	F	–	**G**	F	**G**	**G**	**G**	**G**	F/**G**	**G**
Oaks	P/F	F	**G**	F	F	**G**	F/**G**	**G**	F/**G**	F/**G**	**G**	**G**	**G**	F/**G**	**G**	**G**	**G**	F	F/**G**	F/**G**	–
Osage orange *(hedge apple)*	F	P/F	P/F	P	P	P/F	F/**G**	P	P	P	**G**	**G**	–	**G**	P/F	P	P	**G**	**G**	F/**G**	**G**
Persimmon, eastern	P/F	F	**G**	F	F	F/**G**	P	P	F	F	F/**G**	**G**	**G**	P	F/**G**	F	**G**	**G**	**G**	F/**G**	**G**
Pine spp.	F	P	P	F	F	F/**G**	F	**G**	**G**	**G**	F	F/**G**	**G**	F	F/**G**	**G**	**G**	–	F/**G**	P	–
Plum, wild	F/**G**	F/**G**	**G**	F	F/**G**	**G**	F/**G**	P	**G**	F/**G**	F/**G**	**G**	–	P	F/**G**	**G**	**G**	–	**G**	F/**G**	–
Poison ivy	F	F	**G**	**G**	**G**	F/**G**	**G**	P	**G**	P	**G**	**G**	**G**	**G**	**G**	P/F	f/**G**	–	**G**	F/**G**	–
Poplar	F	F	**G**	F	**G**	–	F	–	F	–	F/**G**	F/**G**	**G**	F	F/**G**	F	–	–	**G**	F	–
Rabbit brush	–	F/**G**	–	–	–	P	F/**G**	–	–	F	F/**G**	–	–	F	–	F/**G**	P	–	**G**	**G**	–

See notes and footnotes at end of table.

Range of Plant Susceptibility

	% CONTROL
G = GOOD	75-100%
F = FAIR	50-75%
P = POOR	<50%

Application Method
B = BASAL SPRAY
F = FOLIAR SPRAY[3]
S = SOIL TREATMENT

	HERBICIDES *(continued)*																			
	2,4-D ESTER		ARSENAL (imazapyr)	***BRASH***/WEEDMASTER (dicamba + 2,4-D)	BRUSHMASTER (2,4-D + dicamba + 2,4-DP)	CIMARRON MAX (metsulfuron + dicamba + 2,4-D)	CROSSBOW (triclopyr + 2,4-D)	ESCORT XP/PATRIOT (metsulfuron methyl)	GLYPHOSATE[2] (glyphosate)	KRENITE S (fosamine)	PASTUREGARD HL (triclopyr + fluoroxypyr)		PATHFINDER II RTU (triclopyr)	REMEDY ULTRA/GARLON (triclopyr)		SPIKE 20P (tebuthiuron)	***STERLING BLUE/CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** *(dicamba)*	STREAMLINE (aminocyclopyrachlor + mestsulfuron methyl)	SURMOUNT ‡ (picloram + fluroxypyr)	VELPAR L or L VU (hexazinone)	VIEWPOINT (imazapyr + aminocyclopyrachlor + metsulfuron methyl)
Application Method	B	F	F	F	F	F	F	B	F	F	F	B	B	F	B	S	F	F	F	S	F
Raspberry	P/F	P/F	P	–	–	P/F	**G**	–	**G**	–	**G**	–	–	**G**	–	–	–	–	**G**	–	–
Rose, Arkansas	**G**	F/**G**	**G**	P	–	F	**G**	–	**G**	–	**G**	–	–	F	–	**G**	P/F	–	**G**	F/**G**	–
Rose, multiflora	F	P/F	**G**	F	**G**	F/**G**	**G**	**G**	**G**	F/**G**	**G**	**G**	–	F	F/**G**	**G**	P/F	**G**	**G**	**G**	**G**
Russian olive	F	F/**G**	**G**	F	–	F/**G**	F	–	F	F	F/**G**	F/**G**	–	F/**G**	F/**G**	**G**	F	–	**G**	**G**	–
Sagebrush, sand	–	**G**	–	–	–	F	–	–	–	–	–	–	–	–	–	F	P	–	–	–	–
Salt cedar	**G**	F/**G**	**G**	–	–	F	P	–	–	–	**G**	**G**	–	F/**G**	**G**	F/**G**	P	–	**G**	F	–
Sassafras	F/**G**	F/**G**	**G**	F	F	**G**	**G**	P	F	F	**G**	**G**	**G**	F/**G**	F/**G**	P/F	**G**	–	**G**	P/F	–
Serviceberry	–	F/**G**	**G**	–	–	F/**G**	F/**G**	–	–	–	–	–	–	–	–	–	–	–	F/**G**	F/**G**	–
Snakeweed, Broom	–	F/**G**	P	–	–	**G**	F	**G**	–	–	–	–	–	–	–	F	F	–	F/**G**	P	–
Snowberry, western *(white berries)*	F/**G**	**G**	–	–	–	F/**G**	F/**G**	**E**	–	–	–	–	–	–	–	F	P/F	**G**	F/**G**	–	**G**
Spruce spp.	P	P/F	P	–	–	–	P	**G**	–	–	–	–	–	–	–	–	–	–	–	–	–
Sumac spp.	F	**G**	**G**	**G**	**G**	**G**	**G**	P	F	F/**G**	**G**	**G**	**G**	**G**	**G**	F/**G**	**G**	–	**G**	F	–
Tarbush	–	F/**G**	–-	–	–	–	P	–	–	–	–	–	–	–	–	**G**	–	–	–	–	–
Tree of Heaven	P/F	F	F/**G**	F/**G**	F	**G**	F/**G**	P	F	F/**G**	F/**G**	**G**	–	**G**	**G**	**G**	**G**	**G**	**G**	F	**G**
Trumpet creeper	P	P	**G**	F	P/F	P/F	P/F	P	F/**G**	F	P/F	–	P	P/F	P/F	F/**G**	F/**G**	–	P/F	P	–
Virginia creeper	P	F	F	F	**G**	F	**G**	P	F	P	P	**G**	–	P	**G**	F/**G**	F	–	F	F	–
Walnut spp.	**G**	**G**	F	–	–	–	**G**	–	–	–	–	–	**G**	–	–	–	–	–	–	–	–
Whitebrush	–	F	–	–	–	–	–	–	–	–	–	–	–	–	–	**G**	F/**G**	–	**G**	–	–
Willow spp.	**G**	**G**	**G**	**G**	**G**	**G**	F/**G**	P	F/**G**	F	**G**	**G**	**G**	F/**G**	**G**	**G**	F/**G**	**G**	**G**	F/**G**	**G**
Yucca *(soapweed)*	–	P	–	–	–	F	P	–	P	–	P	P	–	P	P	P	–	–	–	–	–

Ratings of herbicides vary considerably geographically, due to genetic variations in weeds or varying climatic conditions and soil properties.
Information adapted from U.S. Department of Agriculture and State Universities.
[1] Burning can be effective.
[2] Glyphosate herbicides such as Cornerstone and Roundup brands/Credit Xtreme/Honcho K6 or others at labeled rates.
[3] Foliar sprays are most effective in late spring – early summer on actively growing foliage.
[4] Buckbrush is also called western snowberry.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BRUSH/WOODY WEEDS CONTROL

THERE ARE FOUR MAJOR CONSIDERATIONS INVOLVED IN CHEMICAL SELECTION FOR BRUSH CONTROL:

1) Brush regrowth potential
2) Labeled uses
3) Application method
4) Grazing restrictions

BRUSH REGROWTH

Nearly all deciduous trees will resprout from roots or from the trunk after they are cut. Conifers, however, will not resprout. Prescribed burning can effectively control non-resprouting brush such as red cedar. Oaks, maples, chestnut, mulberry, black locust and boxelder are the most vigorous stump resprouters. Ash, hickory, sycamore, cottonwood, alder, willow and elm stumps resprout vigorously when young, but lose much of their ability to resprout as they age. Root resprouting occurs from aspen, black locust, box elder, buckthorn, multiflora rose, osage orange, sumac, and willow; and to a limited extent with old hickory, hard maple and elm.

The season of the year when trees are cut down determines sprout vigor. Food reserves stored in the root system are highest during the dormant season from November to early May and lowest just after full leaf expansion. Sprout growth will be 2.5 to 3.5 times more vigorous if trees are cut in the winter. To retard growth of unwanted trees, they should be cut after leaf expansion or late in the summer. Also, the new sprouts will have less time to harden off before winter.

LABELED USES

Pesticides may be used only on sites for which they are approved or labeled. When brush control is considered, commonly the use site will be one of the following:

Cropland – any land on which a crop is raised for the purpose of harvest or grazing. Cropland includes pastures and rangeland. **Non-cropland** is any land that is not pastured or cropped – includes fence rows, wasteland, storage areas, industrial plant sites, around farm buildings, utilities, drainage or irrigation ditch banks, and right-of-way such as pipelines, communications or electrical power lines, highways and railroads. Some herbicides exclude application on some of these non-crop areas.

Check the product label to make sure the product is labeled for the given use site. If the use site is a row-crop, you may only use products labeled for use in that crop. For example, if you want to control a woody plant such as trumpet creeper in a cornfield after harvest, you must use a herbicide that is labeled for corn. The same goes for pastures: the product label must specify pastures. This is very important because residues of unlabeled herbicides must not be detected in row crops, hay, or livestock.

HAND SPRAYER	1 qt/acre = ¾ fl oz or 1 ½ tbsp/gal water applied to 1,000 sq ft
	1% solution = 1.28 fl oz/gal water

APPLICATION METHOD

Foliar Sprays – sprays applied to foliage and stem. For best results apply when leaves are fully expanded in the spring or early summer. Most herbicides can be applied throughout the growing season but translocation may be restricted by hot, dry conditions. Good foliar coverage is necessary for control, and some herbicides should drench the stem. Treat any green leaves 2-3 weeks after spraying. Sprays are least effective on species that resprout vigorously. Rainfall on the day of treatment can reduce control. Foliar treatments should be applied only to small trees or to regrowth. Large trees should be treated by the cut-stump method.

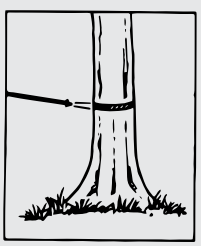
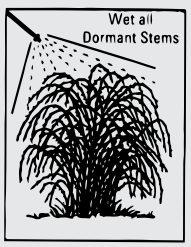
Basal Bark Spray – application of an oil-soluble herbicide in a carrier of diesel/fuel oil or kerosene to the lower 12-18 inches of stem that is less than 5-6 inches in diameter. With high-volume applications of 1-5% herbicide, the spray should thoroughly drench the stem, the ground line and all exposed roots. With low-volume applications of 20-30% herbicide, wet the stem to the point of glistening but not runoff. Basal bark treatments can be made all year, but applications during the dormant season are less likely to result in drift. Do not apply when snow prevents treating bark to the ground line.

Clipping – Clip brush below the lowest branch as close to the ground as possible. Effective control of red cedar, dogwood, and certain other species.

Cut Surface Treatments – herbicide applied to the stump of freshly cut plants or to notches cut to a depth of at least 1/2 inch into the sapwood. More effective than basal bark treatments on thick-barked species and plants that are greater than 5 inches in diameter. Apply herbicide to the freshly cut surface before the exposed tissue dries. Thoroughly drench the cambium area under the bark. Stump Height – Trees with a stump diameter of less than 5 inches should be cut off at ground level. Stumps cut leaving 6-8 inches, encourage excessive regrowth due to the food storage left in the trunk. On larger trees, it is best to leave a stump height greater than 12 inches and cut notches in the bark for greater absorption of the herbicide.

Soil Treatment – application of sprays, granules or pellets to the soil surface within the dripline of the plant. Use herbicides that move through the soil to the root zone and then translocate upward in the plant. On slopes, apply on uphill side of brush. Any sensitive trees that root into the treated area can also be injured. Do not apply to frozen ground or where they may run off into water or leach into groundwater.

Spray Concentration			
Mix Size	**0.5% v/v**	**1% v/v**	**2% v/v**
1 gal	0.64 fl oz, 19 ml	1.28 fl oz, 38 ml	2.56 fl oz, 76 ml
2 gal	1.28 fl oz, 38 ml	2.56 fl oz, 76 ml	5.12 fl oz, 151 ml
3 gal	1.92 fl oz, 57 ml	3.84 fl oz, 114 ml	7.68 fl oz, 227 ml




GRAZING RESTRICTIONS

If the use sites listed on the product label do not include language such as "pasture," "range land," or "grazed areas," that product may not be used on lands grazed by livestock, including cattle. Most products that are legal for use on grazed areas have some sort of grazing restriction. The grazing restriction is the length of time livestock must be held out of the treated area before grazing can be resumed.

Herbicide	Use	Rate/Acre	Comments/Restrictions
ARSENAL	Foliar Stump/Cut Surface	0.5-5% solution 5-20 GPA spray, 1-6 pt high volume spray 8-12 oz/1 gal water	Most low volume applications to hardwoods use 1-1.5% v/v. Include 1 qt Preference/100 gal for brush or 0.75-1 pt HSOC-MSO1/A for perenials. May add 28%N or AMS.*
ARSENAL POWERLINE	Foliar Cut Stump	0.5-5% v/v: low volume 2-6 pt/A: high volume 8-12 fl oz/1 gal water	Injection and girdle treatments may be used. Include Preference, or HSOC-MSO.* UAN may be added.
BRASH/ WEEDMASTER	Foliar Cut Stump	3-4 pt Undiluted	Spray in water; or in a water, oil mix for spot treatment. Apply undiluted for cut stump treatment.
BRUSHMASTER	Foliar Basal/Cut Surface	1-2% solution in water 10 oz/gal diesel or kerosene	Apply to foliage to runoff, covering all leaves and stems. Drench bark, cut surface or frill.
CHAPARRAL	Foliar	3.3 oz/100 gal	Add 1-2 qt NIS/100 gal.* Especially effective on buckbrush, multiflora rose and blackberry. See label for all species and timings.
CHEETAH	SEE TOTAL 2.3		
CHOPPER GEN2	Stump/Cut	8-12 fl oz/1 gal water	Do not apply during periods of heavy sap flow in the spring. Tree-injection and girdle treatments may be used.
CIMARRON MAX	Foliar	See label	Brush control in pasture, range and CRP.
CORNERSTONE 5 PLUS or ***CORNERSTONE PLUS***	Foliar Cut Stump Handheld	Up to 5 qt or 7.5 pt 50-100% v/v Up to 10% or 5% v/v	Cut stump - apply immediately after cutting. Treat entire cambium. Little or no absorption by mature bark. Root grafting can injure desirable trees. Also see Roundup comments.
CROSSBOW	Foliar Basal	1-1.5 gal/100 gal water (6 oz to 3 gal) 1 gal/25 gal diesel/kerosene/fuel oil	For high volume or spot treatment of brush and broadleaf weeds. Safe on grasses at use rate. Wet foliage thoroughly.
DUPLOSAN	Foliar Basal, Cut Surface	see comments	Broadcast mixture of 24 fl oz + 48 fl oz of 2,4-D ester 4#/100 gal water; use 100-300 gal mixture/acre; may use up to 5 gal oil/100 gal mixture. Spot apply mixture of 1-2 fl oz + 3-4 fl oz of 2,4-D ester 4#/5 gal water; use up to 15 gal/1000 sq ft. Basal bark treatment with mixture of 0.5 gal + 1 gal 2,4-D ester 4#/100 gal oil; max. 1 basal spray/cut surface application/year; see label for modified basal treatment and for dormant stem treatment rates and application instructions.
DURACOR	Foliar	12-20 fl oz	See label for broadleaf weed-specific rates. Difficult-to-control weeds and brush may require tank-mixing. Not for use in CT, ME, MA, NH, NY, RI, VT. See label for complete restrictions.
ESCORT XP/PATRIOT	Foliar Basal	0.5-3 oz 0.5-3 oz/100 gal: high Volume Rate 1 oz/gal water	Apply from full leaf expansion to full fall color on deciduous species and to conifers anytime during growing season. Apply 4 mL/2 ft of canopy diameter on multiflora rose.
GARLON 3A	Foliar Cut Stump, Cut Surface	1-3 gal/100 gal 1:1 ratio in water	Treat particularly the outer edge (cambium).
GRASLAN L/ GRAZONPD3	Foliar Basal, Cut Surface, Stubble Injection	1.25-5 pt Up to 5 pt in 100 gal 10 pt/100 gal	Rate depends on weed or brush species, stage of growth and geographical region: see label. Up to 2 mL of formulation per injection site; limit of 1 injection/year.
GRAZON P+D ‡	Foliar	1-2 gal/100 gal	Apply to actively growing plants. See label for addition of surfactant.
KRENITE S	Foliar	1.5-6 gal	Add 1 gal/100 gal of an oil-based surfactant. Certain brush species will be only partially controlled or suppressed.
NATIVEKLEAN	Foliar	19-34 fl oz	Apply as a coarse low-pressure spray to control broadleaf weeds, including invasive and noxious weeds and certain woody plants in areas not regularly mowed or maintained. Max. 34 fl oz/A/use season. Max. 34 fl oz/A/year. Do not apply to home lawns, turf, athletic fields, sod operations. Max. 2 applicaitons/year. Do not apply w/in 30 days of previous application. Do not use w/in 250 ft of residential properties. Do not graze or produce hay from treated areas. Higher spray volumes (>10 GPA) generally provide better coverage and control. See label for important resistance management information.
METHOD 240SL	Foliar Cut Stump/Stem/Stubble Basal Bark Spot	4-18 fl oz 5-10 gal/100 gal 10-20 gal/100 gal 0.3-3 gal/1000 sq ft	For cut stump and stem treatments: on larger trees treat only the outer 2-3 inches of the stump, on trees 3 inches or less treat the entire cut surface. For basal bark: make applications with stems less than 6 inches and wet the lower 12-18 inches of the trunk or stem.
OPENSIGHT	Foliar	Up to 3.3 oz	See label for rate and timing on woody plants and other broadleaves. Include HSOC-COC, HSOC-MSO or NIS + UAN or AMS.*

See notes and footnotes at end of table.

BRUSH/WOODY WEEDS HERBICIDE APPLICATION RATES *continued*

Herbicide	Use	Rate/Acre	Comments/Restrictions
PASTUREGARD HL	Foliar Stump/Cut Surface Basal	1.5-4 pt or 0.5-1% solution 25% PastureGard HL + 75% Oil 25% PastureGard HL+ 75% Oil	For general brush control with selectivity to most grasses. Use on fence rows, around buildings or in rangelands and permanent grass pastures. No soil residual control. For foliar applications, add 1 pt NIS/100 gal.*
PATHFINDER II	Basal Cut Stump	Undiluted Undiluted	Spray lower 12-15" of stem, including root collar, but not to the point of runoff. Wet the area adjacent to cambium and bark around the entire circumference and the sides of the cut stump.
PERSPECTIVE	Foliar	1.75-8 oz	PRE or POST to weeds, vines and brush. Include MSO adjuvant.* Apply POST to perennial weeds. Can be used as high volume or spot spray applications. Rainfast in 4 hours. May be applied to water's edge, but do not apply directly to water. Do not graze. Maximum amount is 11 oz/A/ season.
REMEDY ULTRA/ GARLON 4 ULTRA	Basal Cut Stump	Undiluted	Spray lower 12-15" of stem, including root collar, but not to the pont of runoff. Wet the area adjacent to cambium and bark around the entire circumference and the sides of the cut stump.
ROUNDUP PRO / ROUNDUP PRO CONCENTRATE/ ROUNDUP PROMAX**	Foliar	1-2% solution	Apply after full leaf expansion, unless otherwise directed. Use higher rates for larger plants and/or dense growth. On vines, use higher rate for plants that have reached the woody of growth. Best resultsare obtained when applied in late summer or fall after fruit formation.
RUGGED	Foliar	3 qt	Use 1 gallon for southern wild rose and use 2-4 qt for woody plants by air. Include NIS, COC, or HSOC for improved control.*
SADDLE-UP or SPITFIRE	Foliar Stump/Cut Surface Basal	5.33-8 pt or 5.2-10.4 pt	Max. 1 application/year (8 pt/A or 10.4 pt/A) for woody plants; 2 applications/year (5.33 pt/A or 5.5 pt/A each, 30 days between applications) for annual and perennial weeds. Foliar applications when leaves have reached full size; for larger stems, wet stem at soil surface as well as foliage. Basal dormant basal applications in late winter/early spring before dormancy break; spray bottom 24"" of stem on all sides. Cut surface applications use undiluted product on girdle or stump treatments.
SCORCH	Foliar Stump/Cut Surface Basal	0.5-5 pt Undiluted 2.5 gallons/100 gallons intended solution	Foliar: When leaves reach full size but have not hardened; for stems up to 3 inches diameter, direct spray to base of stem at soil surface. Stump/Cut Surface: Treat within 6 hrs of cutting. Basal: Spray in late winder/early spring before dormancy breaks; spray bottom 24 inches of stem on all sides; for stems up to 3 inches direct spray to base of stem at soil line.
SENDERO	Foliar	1.75 pt	PRE or POST to weeds, brush, and mesquite. May be applied by air.
SPIKE 20P	Soil Treatment	0.5 oz/45 sq ft soil or 0.25 oz/1-2" stem diameter	Apply just prior to resumption of spring growth. Must be absorbed byroots. Remains active 1-2 years. Use no more than 20 lb/A (>20" rain) or 10 lb/A (≤20" rain) for areas used for haying. Wait one year before haying. No grazing restrictions for labeled rates.
STALKER	Cut Stump Basal Cut Surface	8-16 oz/gal water, diesel or penetrating oil 8-12 oz/gal diesel or penetrating oil 8-12 oz/gal water, diesel or penetrating oil	Apply to cambium layer next to bark of freshly cut stump surface. Apply to lower 12-18" of stem. 1 ml/cut with no more than 2" intervals between cuts.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	Stump Treatment Foliar or Basal	1 part herbicide to 2 parts water; see labels	Can also be applied as a spot concentrate to soil, during plant dormancy.
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** + ***2,4-D***	Foliar	1-1.75 pt + 1-2 qt LV4 or Amine 4	Apply to actively growing plants.
STREAMLINE	Foliar Brush	1.75-11.5 oz	PRE or POST to weeds, vines and brush. Include MSO adjuvant.* Apply POST to perennial weeds. Can be used as high volume or spot spray applications. Rainfast in 4 hours. May be applied to water's edge, but do not apply directly to water. Do not apply in areas where there are roots of trees and shrubs or injury can occur. Do not graze. Maximum amount is 11.5 oz/A/season.

See notes and footnotes at end of table.

Herbicide	Use	Rate/Acre	Comments/Restrictions
SURMOUNT ‡	Foliar	3-6 pt or 1-2% solution	Add 1-2 qt NIS/100 gal.* For broadcast brush control with residual broadleaf weed control in rangeland and permanent grass pastures. Safe to most grasses.
TOTAL 2.3 or CHEETAH	Foliar	2-6 qt or 1-3 qt	See labels for brush and woody weed species controlled or suppressed, and for product maximums/A/year.
TORDON 22K ‡	Foliar Cut Stubble	See labels for foliar rates 8-64 fl oz	Tordon 22K will kill most woody plants and broadleaf weeds, but is safe on grass. Very soluble – may move in surface or ground water. Do not exceed 2 qt/A/season for pasture, non-crop or rights of way.
TORDON RTU ‡	Cut Stump	Spray or paint surface with undiluted material	Tordon RTU (picloram) + 2,4-D + a dye for cut stump, frill and injection. Treat particularly outer edge (cambium). Remains active 1-2 years.
VASTLAN	Foliar, Brush, Cut Surface	2-9 qt	Apply to actively growing plants. See label for addition of surfactant, MSO or COC.*
VELPAR L or VELPAR L VU	Soil Treatment	2-4 mL/inch of trunk or 2-4 gal/A	Control of red cedar and many other woody species. Apply with spot gun to soil near plant base. Do not graze for 30 days.
VIEWPOINT	Foliar Brush	13-20 oz 16-20 oz	PRE or POST to weeds, vines and brush. Include an adjuvant. Apply POST to perennial weeds. Can be used as high volume and low volume application equipment; ground or helicopter. Rainfast in 4 hours. May be applied to water's edge, but do not apply directly to water. Do not apply in areas where there are roots of trees and shrubs or injury can occur. Do not graze. Maximum amount is 20 oz/A/season.
WEEDMASTER XHL	Foliar Stump/Cut Surface Basal	4.2 pts/A Undiluted Undiluted + 15% V/V Basal oil	Refer to the product label, Table 5 for Woody Brush and Vine species controlled. Spray in water; or in a water, oil mix for spot treatment. Apply undiluted for cut stump treatment.
2,4-D	Foliar	LV4: 1-1.5 qt by air; 1.5 qt by ground Amine 4: 2-4 qt by air; 3 qt by ground Weedar 64: 2-8 pt broadcast	LV4 and Amine 4: Use 20-100 GPA by ground. Include NIS.* Use 3-12 GPA by air; may include 2-4 qt fuel oil. Weedar 64: Use ≥2 GPA by air; ≥10 GPA by ground.

***For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates..
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
** May use other glyphosate herbicides: Roundup brands/Credit Xtreme/Honcho K6 or others at labeled rates.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

BRUSH/WOODY WEEDS LABELED USES FOR COMMON HERBICIDES

	USE AREA						APPLICATION METHOD			
HERBICIDE	**Pasture**	**Forest**	**Ditch Bank**	**Fence Row**	**Right of Way**	**Non-Crop**	**Foliar**	**Cut Surface or Injection**	**Basal Bark**	**Soil**
ARSENAL	YES	YES[d]	YES[d]	YES	YES	YES	YES	YES	NO	YES
ARSENAL POWERLINE	YES	NO	YES	YES	YES	YES	YES	YES	NO	NO
BRUSHMASTER	NO	NO	YES[b]	YES	YES	YES	YES	YES	YES	NO
BRASH/WEEDMASTER	YES	NO	YES	YES	YES	YES	YES	YES	NO	NO
CAPSTONE	YES	YES	YES[b]	YES	YES	YES	YES	YES	NO	NO
CHAPARRAL	YES	NO	NO	YES	NO	YES	YES	NO	NO	NO
CIMARRON MAX	YES	NO	NO	NO	YES	YES	YES	NO	NO	YES
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***[l]	YES	YES	YES	YES	YES[k]	YES	YES	YES	NO	NO
CROSSBOW	YES	NO	YES[b]	YES	YES	YES	YES	YES	YES	YES
DUPLOSAN	NO	NO	YES	YES	YES	YES	YES	YES	YES	NO
ESCORT XP/PATRIOT	YES	NO	NO	YES	YES	YES	YES	NO	NO	YES
GARLON 3A	NO	YES	YES[b]	YES	YES	YES	YES	YES	NO	NO
GARLON 4 ULTRA	NO	YES	YES[b]	YES	YES	YES	YES	YES	YES[e]	NO
GRAZON P+D ‡	YES	—	NO	NO	NO	NO	YES	NO	NO	NO
KARMEX	NO	—	YES	YES	YES	YES	YES	NO	NO	YES
KRENITE S	NO	NO	NO	NO	YES	YES	YES	NO	NO	NO
OPENSIGHT	NO	NO	YES	NO	YES	YES	YES	NO	NO	NO
PASTUREGARD HL	YES	NO	YES[b]	YES	NO	YES	YES	YES	YES	NO
PATHFINDER II	YES	YES	YES[b]	NO	YES	YES	NO	YES	YES	NO
PERSPECTIVE	NO	NO	NO	YES	YES	YES	YES	NO	NO	YES
REMEDY ULTRA	YES	NO	YES[b]	YES	YES	YES	YES	YES	YES	NO
ROUNDUP PRO/ROUNDUP PRO CONCENTRATE/ ROUNDUP PROMAX[l]	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO
SADDLE-UP/SPITFIRE	YES	YES	YES[b]	YES	YES	YES	YES	YES	YES	NO
SCORCH	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
SPIKE 20P	YES[d]	NO	NO	YES	YES	YES	NO	NO	NO	YES
STALKER	NO	YES[d]	YES[d]	YES	YES	YES	NO	YES	YES	NO
STERLING BLUE/ ***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4***	YES	YES	YES[b]	YES	YES	YES	YES	YES	YES[a]	YES
STREAMLINE	NO	NO	NO	YES	YES	YES	YES	NO	NO	YES
SURMOUNT ‡	YES	NO	YES[b]	YES	NO	YES	YES	NO	NO	NO
TOTAL 2.3/CHEETAH	NO	NO	YES	YES	YES[m]	YES	YES	NO	NO	NO
TORDON RTU	NO	YES	NO	NO	YES	YES	NO	YES	NO	NO
TORDON 22K	YES	YES	NO	NO	YES	YES	YES	YES[i]	NO	NO
VASTLAN	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
VELPAR L or L VU	YES	YES	NO	NO	YES	YES	YES	NO	NO	YES
VIEWPOINT	NO	NO	NO	YES	YES	YES	YES	YES	NO	YES
WEEDMASTER XHL	YES	NO	YES	YES	YES	YES	YES	YES	YES	NO
2,4-D	YES	YES	YES	YES	YES	YES	YES	YES	YES[f]	NO

[a] Not for pasture use.
[b] Non-irrigation ditch banks only.
[c] Soil application only.
[d] See label.
[e] Can be tank mixed with Tordon products in most states.
[f] Ester formulations only.
[i] Labeled for broadcast cut stubble treatment. See label.
[k] Cornerstone 5 Plus.
[l] May use other glyphosate herbicides: Roundup brands/Cornerstone brands/Credit Xtreme/Honcho K6 or others at labeled rates.
[m] Cheetah only.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

PREPLANT OR PREEMERGENCE HERBICIDES

Herbicide	Rate/Acre	Application Time	Comments/Restrictions
AATREX 4L ‡/ ***ATRAZINE 4L*** ‡ or AATREX NINE-O ‡/ ***ATRAZINE 90DF*** ‡	0.5-2 qt or 0.6-2.2 lb	For establishment or renovation of warm-season grasses	Atrazine 4L or 90DF and Aatrex 4L or Nine-O are labeled in NE, OK, OR, TX. Establishment: Use 2 qt/A or 2.2 lb/A for big bluestem, eastern gamagrass, and switchgrass. Apply PPI or PRE on medium or fine soils with at least 1% O.M. Renovation: Use 1-2 qt/A or 1.1-2.2 lb/A on big bluestem and switchgrass prior to emergence of weeds. Use 0.5-1 qt/A or 0.6-1.1 lb/A on blue grama, indiangrass, little bluestem, sand lovegrass, sideoats grama and western wheatgrass.
CHEETAH	48-56 fl oz	Before CRP grasses break dormancy	Use broadcast spray equipment. Some stunting of CRP grasses will occur if applications made when plants are not dormant. See label for additional details.
DURACOR	12-20 fl oz	POST as broadcast or spot; PRE when seeding grasses	See label for broadleaf weed-specific rates. Difficult-to-control weeds and brush may require tank-mixing. Not for use in CT, ME, MA, NH, NY, RI, VT. If pasture or rangeland was treated with DuraCor in the preceding 18 months: Do not export outside the U.S.; do not distrubute harvested hay off the farm or ranch where treated; do not use for silage, haylage, baylage, green chop; do not move hay and silage made from treated grass off farm; do not use hay from treated areas or manure from animals feeding on treated hay in compost; do not use treated grasses for seed production. See label for complete restrictions.
ESCORT XP/PATRIOT	0.1 oz	PP,PRE	For certain native grasses.
FINESSE CEREAL AND FALLOW	0.2-0.4 oz	PP,POST	PP or POST. Add 1-2 qt NIS/100 gal.* Broadleaf control in native and improved grasses. See label for grasses included. Use 0.2-0.3 oz/A early POST after 3-4 leaf stage in new stands. Use 0.2-0.3 oz/A early POST in established stands.
FRAMEWORK 3.3 EC	1.2-3 pt	PPI,PRE	For use on forage legumes only in CRP, cover crop or set-aside. Do not feed or graze crop. Some stand reductions of legumes may result.
GRASLAN L/GRAZONPD3	Up to 2.6 pt	See label	Apply in 10-40 GPA by ground, ≥2 GPA by air. Do not apply >10 pt/A/year. Do not make >2 applications/year. Do not apply within 30 days of previous application.
GRAMOXONE SL 3.0 ‡	1.7-2.7 pt	Apply to emerged weeds prior to stand establishment	Add 2 pt NIS/100 gal.* For control of annual grass and broadleaf weeds. Tank mix 2,4-D Ester or Sterling Blue/ Clarifier/Clarity/Dicamba Max 4 for control of perennial broadleaf weeds.
MILESTONE	3-7 fl oz	During season of establishment, apply only after perennial grasses are well established (secondary root system and good vigor)	Apply spring through fall to control broadleaf weeds prior to grass planting. Grasses can be seeded as a dormant planting (late fall or early winter) in the year of application or grasses can be seeded the following spring. Plant grasses when soil temperatures are low enough to ensure that the seeds will not germinate and emerge until the following spring.
PLATEAU 2L or PLATEAU DG	4 fl oz or one soluble pak	PRE	Controls or suppresses most broadleaf and grass weeds, particularly summer annuals. May be used for weed control, seedhead or suppression, establishment and renovation of certain cool and warm season native grass. Do not use on switchgrass (PRE), tall fescue and certain other species.
ROUNDUP POWERMAX 3; WEATHERMAX/CREDIT XTREME/ HONCHO K6	See label for precise rates associated with weed species and annual per acre maximums.	PP,PRE, prior to crop emergence	Will control most emerged seedling grass and broadleaf weeds. Apply in 10 GPA carrier or less. Add 8.5-17 lb AMS/100 gal WC+NIS.*
RT 3	11-44 fl oz: annuals Up to 3.3 qt: perennials	POST to emerged plants	For renovation out of CRP, postemergence for suppression, and site preparation. PHI is 0 days. Add 8.5-17 lb AMS/100 gal WC+NIS.* For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY; see county restrictions for KS, MN, NE, NM, OK.
SENDERO	0.75-1.5 pt	PRE,POST	Controls most broadleaf weeds.
TRUST	1-1.5 pt	PPI,PRE	For use on forage legumes only. Incorporate immediately. Some stand reduction may occur.
VIDA	0.5-2 fl oz	Prior to planting CRP	Burndown. Do not exceed 3 applications/year or 5.5 fl oz/A/year. Minimum of 30 days between applications. Uniform spray coverage essential for efficacy. See label for county exclusions in Missouri.

See notes and footnotes at end of table.

PREPLANT OR PREEMERGENCE HERBICIDES *(continued)*

Herbicide	Rate/Acre	Application Time	Comments/Restrictions
2,4-D AMINE 4 or ***2,4-D LV 4*** or WEEDAR 64 or WEEDONE 638	1-2 qt or 3-4.2 pt or 0.5-4 pt or 2.5-5 pt	At least 30 days before grass seeding	Controls most broadleaf weeds.

POSTEMERGENCE HERBICIDES

Herbicide	Rate/Acre	Application Time	Comments/Restrictions
AIM EC/SHARK EW	Up to 2 fl oz	Foliar to emerged broadleaves	Max. 3 applications/season. Max. 5.9 fl oz/A/season. 7-day min. application interval. Usage must comply with federal, state and local guidelines. When used alone, no grazing or hay restrictions.
AMBER	0.28-0.56 oz	At least 60 days after emergence of desirable grasses	Add 1-2 qt NIS/100 gal.* Should be applied in a tank mix with 2,4-D, Sterling Blue/Clarifier/Clarity/Dicamba Max 4, Crossbow, Stinger,/Stinger HL Brash/Weedmaster.
BISON/MAESTRO MA or MAESTRO ADVANCED	1-2 pt or 0.67-1.6 pt	Apply to grasses from the 3 leaf stage	For control of broadleaf weeds in CRP and grasses grown for seed. See label for list of tolerant grasses. See label for specific weeds and sizes. Do not apply to fields with alfalfa or other legumes. Do not graze or feed to livestock.
BRASH/WEEDMASTER	0.5-4 pt 3 fl oz/3 gal water	Foliar to emerged broadleaves Spot treatment	For foliar application to emerged broadleaves, add 1-2 qt NIS/100 gal.* Also labeled for brush control, dormant basal, and cut strip treatments.
CARNIVORE/CLEANSWEEP M	1-2 pt	Foliar to emerged broadleaves	Apply to grasses from the 3-leaf stage. Apply when broadleaf weeds are up to the 8-leaf stage, 4 inches in height or 2 inches in diameter, whichever comes first. Do not graze or feed treated grass to livestock.
CLEANSWEEP D	Up to 2.5 pt	Foliar to emerged broadleaves	See label for weeds controlled; some species require tank mixes for adequate control. Max. 1 application/year. Max. 1.5 pt/A/year to CRP areas underseeded with alfalfa. Do not add spray adjuvants or fluid fertilizers when applying to CRP with alfalfa or other legumes. Do not graze or feed treated grass to livestock.
CHAPARRAL	1.5-3.3 oz	Perennial grasses well established	Broad spectrum contol of annual and perennial weeds and some brush with residual.
CHEETAH	48-56 fl oz	In fall, after CRP grasses reach dormancy	Use broadcast spray equipment. Some stunting of CRP grasses will occur if applications made when plants are not dormant. See label for additional details.
CIMARRON MAX PART A + PART B	mix ratio of 5 oz A : 2.5 gal B See label for treatment rates	To grasses planted the previous season or those fully tillered	Add 1-2 qt NIS/100 gal.* Controls many broadleaves. Treat small, actively growing weeds.
CLEANSE	10-12 fl oz	4-6 inch fescue in early spring	Add +1 pt HSOC-COC + 2.5-4 lb AMS.* Control or suppression of tall fescue in native Prairie Grass Restoration. Apply before emergence of warm-season grasses. Do not graze or hay.
CROSSBOW	1-2 qt	Do not use on newly seeded grasses	For use on CRP acres where perennial grasses are established. Use up to 1.5 gal/A for deep-rooted perennial and susceptible woody plants. Do not use if desired legumes are present. Do not use on bentgrass or newly seeded grasses.
CURTAIL	2-4 qt	After perennial grasses have become established (tillering)	Apply before thistles and knapweed have reached bud stage. Do not use if legumes are desired. PHI 7 days for forage or hay, 14 days for grazing lactating dairy, 7 days for meat animals before slaughter.
CURTAIL M	3.5-5 pt	POST established grasses	POST to well established grasses indicated by vigorous growth of tillers and secondary roots.
ESCORT XP/PATRIOT	See label	See label	For certain native grasses. Apply to seedling weeds. Controls most broadleaf weeds. Do not use on soils with pH>7.9, or on grass/legume mixtures. Use only in CO, southern ID, KS, MT, NE, NM, ND, OK, SD, TX, UT, WY. See label for maximum use rates, rotational restrictions and grasses that may be treated.

See notes and footnotes at end of table.

POSTEMERGENCE HERBICIDES *(continued)*

Herbicide	Rate/Acre	Application Time	Comments/Restrictions
GRAMOXONE SL 3.0 ‡	1.7-2.7 pt	Apply to emerged weeds prior to stand establishment	Add 2 pt NIS/100 gal.* For control of annual grass and broadleaf weeds. Tank mix 2,4-D Ester or Sterling Blue/ Clarifier/Clarity/Dicamba Max 4 for control of perennial broadleaf weeds.
GRAZON P+D ‡	1-4 pt	After perennial grasses are well established with a good secondary root system	Do not use if legumes are desired. Buffalo grass and bromegrass may be injured. See label for planting intervals.
HUSKIE or HUSKIE FX	11-15 fl oz or 16-18 fl oz	From 1-leaf (Huskie) or 2-leaf (Huskie FX)	For broadleaf weed control. Apply to young weeds in good growing conditions. Include NIS plus UAN/AMS.* Tank mix with glyphosate or glufosinate for improved control. Note 4.
KOCHIAVORE	1.25-2.5 pt	Apply to actively growing plants	Limited to 1 application/year. Do not apply > 1.5 pt/A/year to areas underseeded with alfalfa. Do not add adjuvants or fluid fertilizers when applying to areas planted with alfalfa nor other legumes. Do not graze or feed treated material to livestock.
MCPA AMINE	0.5-4 pt	2 or more true leaves in new seeding	Use 0.5 pt/A in newly seeded clover and pasture grasses. Use 1-4 pt/A in established pastures. Do not graze or forage.
MILESTONE	5-7 fl oz	Perennial grasses well established	Apply after perennial grasses well established with a secondary root system. POST for annual and perennial broadleaves with season long residual control of seedlings. Excellent long term control of many broadleaves including biennial and perennial thistles and knapweed. Do not use if loss of legume species cannot be tolerated.
PASTUREGARD HL	0.75-1.5 pt	See label	PHI 14 days hay, 0 days other livestock. Do not allow lactating dairy to graze or forage.
PLATEAU 2L or PLATEAU DG	4 fl oz or one soluble pak	PRE and POST	Add 0.75-1 pt HSOC-MSO or 0.25% v/v NIS + 2-3 pt 28% N.* Rate ranges 4-12 oz/A Plateau 2L depending on weed and crop species. See labels for higher rate for leafy spurge. Controls or suppresses most broadleaf and grass weeds, particularly summer annuals. May be used for weed control, seedhead suppression, establishment and renovation of certain cool and warm season native grass. Do not use on switchgrass, tall fescue and certain other species. Available only for government use.
POAST	0.75-2.5 pt	Apply when grasses are actively growing	Add 1 pt HSOC-COC.* For control of annual or perennial grasses in seeded clover, alfalfa, trefoils or vetches. See label for specific rates.
PURSUIT	4 fl oz	Legumes must have at least 3 fully expanded trifoliolate leaves and grasses at least 4 leaves	Add 1 qt/100 gal NIS + 1-2 qt 28% N.* For POST application to forage legumes and several perennial grasses. See label for species. Do not feed or graze treated area.
RAVE	2.5-4 oz	60 days after emergence of desirable grasses or 30 days after sprigging Bermudagrass	Desirable broadleaves will be injured after application. Established stands of orchardgrass, red fescue, and ryegrass will also likely be injured.
REMEDY ULTRA	Up to 6 qt	POST to emerged broadleaves or full leaf woody plants	Controls annual and perennial broadleaves, thistles, and woody plants. May also apply basal bark or cut stump.
RT 3	11-44 fl oz: annuals ≤3.3 qt: perennials	POST to emerged plants	For renovation out of CRP, post for suppression, and site preparation. PHI is 0 days. For use in CO, ID, MT, NV, ND, OR, SD, TX, UT, WA, WY; see county restrictions for KS, MN, NE, NM, OK. Add 8.5-17 lb AMS/100 gal or WC+NIS.*
RUGGED	1-2 qt	POST to emerged weeds	Do not apply after heads form or when grass is in boot to milk stage when a seed crop is desired. Do not use on newly seeded pastures. PHI 7 days forage or hay.
SADDLE-UP or SPITFIRE	5.33 pt or 5.2 pt: annual/perennial weeds 8 pt or 10.4 pt: woody plants	See label	Limit annual and perennial control to 2 applications/year with a minimum 30-day interval; limit woody plant control to 1 application/year (not for use in treatment of commercial timber or plants being grown for sale or other commercial use, or for seed production, or for research).
SECTION THREE	4-10.67 fl oz	POST to emerged weeds	Apply with HSOC-MSO or HSOC-COC at 1 pt/A by ground and 0.5 pt/A by air.[1] Use 6.67-8 fl oz/A for control of tall fescue.
SHREDDER E-99	See 2,4-D		
STARANE ULTRA/STAREDOWN	0.4-0.7 pt	Apply before 8" weeds	Do not graze or hay.

See notes and footnotes at end of table.

POSTEMERGENCE HERBICIDES *(continued)*

Herbicide	Rate/Acre	Application Time	Comments/Restrictions
STERLING BLUE*/ *CLARIFIER*/** CLARITY/DICAMBA MAX 4***	0.25-2 pt	Do not apply to seedling grasses until grasses exceed the 3-leaf stage	For broadleaf weeds in CRP, seeded to annual or perennial grasses. Do not apply to desired alfalfa, clovers, lespedeza, wild winter peas, vetch or other legumes. Bentgrass, carpetgrass, smooth brome, buffalograss and St. Augustine grass may be injured by rates exceeding 1 pt/A. Follow all label restrictions.
STERLING BLUE*/ *CLARIFIER*/** CLARITY/DICAMBA MAX 4*** + ***2,4-D LV4***	0.25-0.5 pt + 0.5-1 pt	After 5-leaf stage of grass	Controls most broadleaf weeds. Use lower rates on warm-season grasses. Do not use on grass/legume mixtures. Established grasses may be treated with 0.5-1 pt/A Dicamba Max 4/Clarifier/Clarity/Sterling Blue + 0.5-2 pt/A 2,4-D for perennial weed control.
STINGER/STINGER HL	0.67-1.33 pt 0.3-0.8 pt	After perennial grasses have become established (tillering)	Apply before thistles and knapweed have reached bud stage. Do not use where legumes or bentgrass are desired. Can not be grazed or hayed.
SURMOUNT ‡	SEE LABEL	SEE LABEL	Supplemental label (exp. date not given) for KS, OK, NM, and TX.
TELAR XP	0.25-1 oz	After growth well established	CRP and pasture. Chlorsulfuron. POST to well established grasses. Rate depends on grass species. See label for sensitive species and precautions. NIS at 1 qt/100 gal improves control.*
TORDON 22K	0.5-2 pt	After grasses have become established with secondary root systems	Use a minimum of 1 pt/A for woody species. Do not use if legumes are a desired cover crop. May be tank mixed with 2,4-D.
VASTLAN	2-9 qt	Apply to actively growing plants	Controls woody plant species, and annual and perennial broadleaf weeds. See label for addition of surfactant, MSO or COC.*
WIDEMATCH	1.33-2.66 pt	POST established grass	Apply to established grasses before weeds are 8" tall. For use in areas where kochia is a target along with other broadleaves.
2,4-D AMINE 4 or ***2,4-D LV4*** or ***2,4-D LV6*** or ***SHREDDER E-99*** or WEEDAR 64 or WEEDONE 638	1-2 qt or 3-4.2 pt or 1.5-2.75 pt or 1.33-2.67 pt or 0.5-4 pt or 2.5-5 pt	After 5-leaf stage of grass	Controls most broadleaf weeds. Use low rate on seedings and higher rates on established grass, particularly for biennial and perennial broadleaf weeds. Do not apply after boot stage to grass grown for seed. See label for perennial rates. Will injure or kill legumes.

For Products Labeled On Warm And Cool Season Grasses and for Grazing Restrictions see Crops II section: Pasture.

*** For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.

Other weed management practices: Mowing – with newly established stands do not remove >50% of the leaf area of seedling grass or legumes to avoid smothering new seedlings with clippings. Prescribed burning – can reduce weed seeds and woody plants. Check local and state regulations.

**May use other glyphosate herbicides: Roundup brands/Cornerstone brands/Credit Xtreme/Honcho K6 or others at labeled rates.

CRP INSECT CONTROL – See Non-Cropland Insects

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LAWN/TURF HERBICIDE PERFORMANCE RATINGS

C = CONTROL
PC = PARTIAL CONTROL
RA = REPEATED APPLICATION
S = SUPPRESSION
= NO CONTROL
L = LABELED

HERBICIDE	APPLICATION TIMING	LABELED USES[1]	LABELED TURF GRASSES										GRASSES									
			Bahiagrass	Bentgrass	Bermudagrass	Buffalograss	Bluegrass	Centipedegrass	Fescue, Tall	Ryegrass, perennial	St. Augustine	Zoysiagrass	Barnyardgrass	Bermudagrass	Bluegrass, Annual	Crabgrass	Goosegrass	Foxtail	Johnsongrass (seedling)	Nutsedge	Panicum	Sandbur
ASULAM 3.3/ASULOX *(asulam)*	POST	S			L[5]						L		C			C	C	C	C		C	C
ATRAZINE 4L ‡/***ATRAZINE 90DF*** ‡ *(atrazine)*	PRE	NO			L			L			L	L	S		C		S	S				S
BARRICADE 4FL *(prodiamine)*	PRE	HO	L	L	L[8]	L	L	L	L	L	L	L	C		C	C	C	C			C	
CERTAINTY *(sulfosulfuron)*	POST	HOS		L	L	L	L	L		L	L	L			RA				C	C		
CONFRONT *(triclopyr + clopyralid)*	POST	NO	L	L	L[8]	L	L	L	L	L		L										
CORNERSTONE BRANDS/ROUNDUP[10] *(glyphosate)*	POST	R	L	L	L	L	L	L	L	L	L	L	C	C	C	C	C	C	C		C	C
CREW *(dithyopyr + isoxaben)*	PRE	HOG	L	L	L	L	L	L	L	L	L	L	C		C	C/C[11]	C	C			C	PC[12]
DACTHAL W-75 /DACTHAL FLOWABLE *(dacthal)*	PRE	HO				L	L		L	L	L	L	C			C	C	C	C		C	C
DEFENDOR *(florasulam)*	POST	HOSG	L	L[3]	L[3]		L	L	L	L	L	L										
DIMENSION 2EW/DIMENSION ULTRA 40WP *(dithiopyr)*	PRE	HOSG[3]	L	L[5]	L[5]	L	L	L	L[5]	L	L	L	C		C	C	PC	PC				C
DRIVE XLR[8] *(quinclorac)*	PRE	G		L[7]	L	L	L	L[7]	L	L	L[7]	L	C			C	PC	PC				PC
LONTREL T&O *(clopyralid)*	POST	HOS	L	L	L	L	L	L	L	L	L	L										
MONUMENT *(trifloxysulfuron)*	POST	HO			L							L				S				C		
MAESTRO 2EC *(bromoxynil)*	POST	HOSG		L	L		L		L	L	L	L										
PENDULUM 2G/PENDULUM 3.3 EC *(pendimethalin)*	POST	NO	L	L	L	L	L	L	L	L	L	L	C		C	C	C	C	C		C	C
STERLING BLUE/***CLARIFIER***/CLARITY/ ***DICAMBA MAX 4*** *(dicamba)*	POST	NOG		L[7]		L[7]					L[7]											
TENACITY *(mesotrione)*	POST	HOS			L	L	L	L	L	L	L		C		S	C	C	C		S		
TRIMEC CLASSIC *(2,4-D + dicamba + mecoprop)*	POST	O	L	L[6]	L		L	L[6]	L	L	L[6]	L										
TRIMEC PLUS *(2,4-D+ dicamba + mecoprop + MSMA)*	POST	HO	L	L[6]	L		L		L			L	C			C	C	C	C	PC		PC
TURFLON ESTER/TURFLON ULTRA *(triclopyr)*	POST	HO			S		L		L	L												
2,4-D *(2,4-D)*	POST	HOG		L[6]	L		L	L[6]	L	L	L[6]	L										

[1] H – home lawns, S – sod farm only, N – not labeled for home lawns, O – ornamental turf which may include sod farms, landscapes, and golf courses, R – renovation or preplant uses, G – golf courses.
[2] Winter annual weed - apply PRE herbicide in fall or winter prior to weed emergence. Read all labels for restrictions on turf type, rates and application timing
[3] Fairway only use only, not putting greens.
[4] Do not use on new sprigs.
[5] Not recommended on certain turf varieties.
[6] Use low rates of phenoxy herbicides on bentgrass, St. Augustine and centipedegrass to avoid injury.
[7] May be injured.

Management and control measures will vary depending on which weeds are present. Proper identification of the weed problem is the first step in developing a management strategy.

Weeds often are grouped by life span. Determining a weed's life span can be important when developing a management strategy. Weeds are classified as annuals, biennials and perennials.

The best defense against weeds is a thick, well-managed turf. A vigorous turf will successfully compete with weeds for light, nutrients, and water. Weeds become established most readily in thin, weak stands of turf. Spraying by itself does not usually produce satisfactory, long-term results. Although herbicides can be used in an integrated weed control system, proper management can do much to encourage a dense, vigorous turf and discourage weeds.

Herbicides are available to control most turf weeds. Care should be used when applying any pesticide. Always read and follow label directions. Improper use can result in poor weed control, turf injury, or injury to sensitive ornamental or garden plants.

Preemergence herbicides should be applied to the turf before weeds germinate. To control most annual grasses, apply preemergence herbicides when soil temperature exceeds 55°F. A second application is sometimes needed to provide season-long control. Preemergence herbicides should be watered in immediately after application with at least 1/2 inch of water.

Postemergence herbicides are sprayed once weeds emerge and are applied to the foliage of actively growing weeds. Most postemergence herbicides control broadleaf weeds, and some are available for grasses.

Several factors influence the effectiveness of postemergence herbicide applications. Control is easiest to achieve when the weeds are small, healthy, and actively growing. As the weeds age, changes in the leaf surface, growth habit, and physiological function occur. These changes result in reduced herbicide uptake and translocation.

Avoid mowing for several days before and after postemergence herbicide application. Mowing before application reduces the amount of weed foliage available to intercept the chemical and causes stress which reduces herbicide uptake.

BROADLEAVES																										
Bindweed	Black Medic	Carpetweed	Chickweed, Common	Chickweed, Mouse-ear	Chicory	Clover, White	Creeping Charlie/Ground Ivy	Daisy, Oxeye	Dandelion	Dock, Curly	Hawkweed	Henbit	Knotweed	Lambsquarters	Mallow, Roundleaf	Plantain, Broadleaf	Plantain, Buckhorn	Purslane	Speedwell (Veronica spp.)	Spurge, Prostrate	Thistle (Cirsium & Carduus spp.)	Violet	Wild Carrot	Wild Garlic/Onion	Woodsorrel (oxalis)	Yarrow	HERBICIDE
																											ASULAM 3.3/ASULOX
			C	C		C			S			PC	C	C				S	C						C		***ATRAZINE 4L*** ‡/***ATRAZINE 90 DF*** ‡
		C	C[2]	C[2]							C[2]	C	C[9]	C	C			C	C	C					PC[9]		BARRICADE 4FL
			C			PC			C			S						PC									CERTAINTY
	C		C	C		C	RA		C	C	C	C		C		C	C	PC		C	C	RA			RA		CONFRONT
C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	***CORNERSTONE*** BRANDS/ROUNDUP[10]
PC[12]	L	L	C	L		L			L	PC[12]		C	L	L	L	L	L	C	C	C	L[13]		L		C		CREW
		C	C							S		S	C	C				C		C	S						DACTHAL W-75 /DACTHAL FLOWABLE
	C		C			C			RA																		DEFENDOR
	C	C	C	C								C	C					C	C	PC					C		DIMENSION 2EW/DIMENSION ULTRA 40WP
C	C					C			C			PC							C			C			PC		DRIVE XLR[8]
	C					C		C	C	C	C	C	C			RA	C		C		C							LONTREL T&O
	C	C	C	C		C	C		C			C																MONUMENT
			C			C	PC		C			C	C			C	C			C		PC				PC		MAESTRO 2EC
			C[2]	C[2]								C[2]	PC					C		C						PC		PENDULUM 2G/PENDULUM 3.3 EC
PC	C	C	C	C	C	C	RA	PC	C	C	RA	C	C	C	RA	S	S	C	PC	C	C	RA	C	RA	PC	C	***STERLING BLUE***/***CLARIFIER***/CLARITY/***DICAMBA MAX 4***
		C	C	C		C	PC		C	C		C		C				C				C	C	C	C		TENACITY
PC	C	C	C	C	C	C	PC	PC	C	C	C	C	C	C	C	C	C	C	PC	C	PC	PC	C	RA	C	C	TRIMEC CLASSIC
PC	C	C	C	C	C	C	PC	PC	C	C	C	C	C	C	C	C	C	C	PC	C	PC	PC	C	RA	C	C	TRIMEC PLUS
PC	C				C	C	C		C	C				C		C	C	C				C	C		C	C	TURFLON ESTER/TURFLON ULTRA
PC		C	RA	RA	C	PC	PC	PC	C	PC	RA	PC	PC	C	PC	PC	PC	PC	PC	RA	RA	PC	C	PC	PC	PC	***2,4-D***

[8] Do not use on Bermudagrass in sod farms.
[9] Apply PRE before seed germination.
[10] May use other glyphosate herbicides: Roundup brands/Cornerstone brands/Credit Xtreme/ Honcho K6 or others at labeled rates.
[11] POST control up to 5-leaf stage or first tiller.
[12] Partial control at highest rate.
[13] Control at highest rate.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

Mowing after application may remove the treated portion and prevent translocation to the roots.

Do not apply postemergence herbicides to turfgrass and weeds under heat or drought stress. Injury may occur to the turfgrass and weed control can be less effective. Water the turf thoroughly before application to assure that the weeds are actively growing. Unlike the preemergence herbicides, don't water for several days after application. Watering can wash the herbicide off the plant. Also, avoid spraying if rain is expected within 24 hours.

Many postemergence herbicides for the control of broadleaf weeds are very volatile, and may injure sensitive plants in the area. Care should be taken to only spray when the wind is 5 mph or less, and the air temperature is less than 80° F.

Postemergence broadleaf herbicides are either applied early in the spring or in the fall prior to the first frost. Fall is the preferred time to control winter annual, biennial and perennial broadleaf weeds.

Herbicides are a useful tool for controlling weeds, but they only provide short-term relief. The best approach is to use an integrated system which utilizes proper mowing, fertilizing, and irrigation management to establish a vigorous turf.

Source: Text adapted from University of Nebraska Cooperative Extension.

PREEMERGENCE OR POSTEMERGENCE HERBICIDES

Herbicide	Labeled Uses**	Rate/1000 sq ft	Comments/Restrictions
ASULAM 3.3	S	5 pt in 20-50 GPA water/A	POST for crabgrass and selected other grasses. Sod farm use only. Do not apply to freshly mowed turf or stressed turf.
ATRAZINE 4L ‡ or ***ATRAZINE 90DF*** ‡	H O G S	4 pt/A or 2.2 lb/A	PRE. For use in bermudagrass, centipedegrass, St. Augustine grass, and zoysiagrass. Apply after October 1 before emergence of winter annual weeds. Apply in late winter for control of summer annual weeds.
BARRICADE 4FL	H O G S	0.23-1.1 fl oz	PRE for established turf. See label. Do not apply to bermudagrass sod farms. Wait 60 days or 2 mowings in new seedings.
CERTAINTY 75WDG	H O G S	0.75-1.25 oz/A	POST. Selective herbicide that controls annual and perennial grasses, nutsedge and broadleaf weeds in established turf. Apply 1.25 oz/A to control purple and yellow nutsedge and kyllinga in warm-season turf. Repeat treatments may be applied. See label for turf species and restrictions. Labeled on golf course, except putting greens. Repeated applications control roughstalk bluegrass.
CONFRONT SPECIALTY HERBICIDE	N O	0.37-0.74 fl oz	POST. Confront Specialty Herbicide is a broad-spectrum herbicide for control of broadleaf weeds. May cause damage to non-target broadleaf plants. See label for instructions and precautions. Do not use grass clippings for mulch or compost. Do not apply to bermudagrass sod farms. Do not send grass clippings to a compost facility. Do not collect grass clippings for mulch or compost.
CORNERSTONE 5 PLUS/ CORNERSTONE PLUS[7]	R	Based on species. See label.	POST. For renovation or spot treatment. Non-selective herbicide that kills contacted plants. Wait 7 days before tilling.
CREW	H N O G	3.44-4.59 lb (150-200 lb/A)	Apply prior to seed seed gremination in early spring or fall or following complete weed removal. Repeat after min. 3 mos. for ornamentals, min. 5-10 weeks for turfgrass. Rainfall activation required; irrigate within 21 days in the absence of rainfall. Landscape ornamentals: Max. 150 lb/A/application; max. 300 lb/A/year; max. 2 applications/year. Turfgrass: Max. 200 lb/A/ application; max. 600 lb/A/year; max. 3 applications/year at 200 lb/A or 4 applications/year at 150 lb/A. Do not use on putting greens.
DACTHAL W-75 or DACTHAL FLOWABLE	H O	**Established turf** 14 lb or 14 pt/A: crabgrass 14-16 lb or 14-16 pt/A: spurge 20 lb or 20 pt/A: annual bluegrass **New turf** 14 lb or 14 pt/A: crabgrass	Apply before weeds germinate. For new turf, newly sprouted grass must be 1-2".
DEFENDOR	H O G S	0.09 fl oz	POST. Can be applied mid-winter in the south and early spring in the north to control winter annuals and perennial weeds. Apply before flowering of dandelions in the spring to reduce blossom.
DIMENSION 2EW or DIMENSION ULTRA 40WP	H O G S	0.75-1.5 pt/A or 0.47-1.25 lb/A	PRE and early POST control of crabgrass. Rates depend on control program and geographic region. See label for instructions and precautions. Can be applied to new seedings after 2 mowings. The addition of NIS at 2 qt/100 gal may improve POST control.
DRIVE XLR[8]	H O G S	1.45 fl oz/1000 sq ft 64 fl oz/A	POST. For bermudagrass, bluegrass, buffalograss, fescue, ryegrass, or zoysia, and other grasses. Provides control of bindweed with repeated applications. See label restrictions on timing for each grass. Do not use on golf greens. Do not use grass clippings for mulching or composting. Include MSO.*
FINALE	N O	4-6 qt/A	For trimming and edging of lansdcape areas, including golf courses along cart paths. For application to well-established, dormant hybrid or common Bermudagrass.
FREEHAND 1.75G	O G S	100-200 lb/A	PRE control of many annual grasses and broadleaves in tolerant turf species. See label for turf species, application timing, and restrictions.
FUSILADE II	N O S	0.07-0.14 oz	For the removal of bermudagrass and other grass weeds in zoysia and tall fescue. Do not apply to fescue in the summer. Apply with 0.5 pt NIS/25 gal of water.* Do not apply to turf under stress.
GAMEON	N O G S	1.1-1.5 fl oz	Max. 4 pt/A/application. Max. 8 pt/A/year. Max. 2 broadcast applications/year to same treatment site. 21-day min. applications interval. Avoid applications within 3 weeks (28 days) of previous application. Wait 72 hrs after application to mow turfgrass. Do not allow spray to contact exposed suckers or roots of shallow-rooted trees and shrubs. Grass clippings from within 2 weeks of application must be left onsite or discarded.
HERBIVORE	H O S	0.67-1.33 oz/A	POST. Apply with NIS at 1-2 qt/100 gal.* Apply 2.67 oz/A to rights of way.

See notes and footnotes at end of table.

PREEMERGENCE OR POSTEMERGENCE HERBICIDES *(continued)*

Herbicide	Labeled Uses**	Rate/1000 sq ft	Comments/Restrictions
LONTREL T&O	H O	0.1-0.5 fl oz	POST for selective broadleaves in turf, sod farms, and certain ornamental plantings such as conifers and non-leguminous woody species. Do not use grass clippings for mulch or compost. See label for precautions.
MONUMENT 75WG	H O G S	0.33-0.56 oz/A	Add 1-2 qt NIS/100 gal.* POST for bermudagrass and zoysiagrass in AL, AR, AZ, CA, FL, GA, HI, KS, KY, LA, MO (Bootheel), MS, NC, NM (parts), SC, TN, VA, OK (parts), and TX (parts). Labeled for nutsedge control.
MAESTRO 2EC	N O	1-2 pt/A	POST for broadleaves in seed or seed production or non-residential turf. For established or newly seeded grasses before boot stage. See label for tolerant species.
OUST EXTRA	O	1-2 oz/A	Apply to control weeds on industrial turfgrass, on roadsides or on other non-crop sites. Can be applied to bermudagrass and centipedegrass
PENDULUM 2G or PENDULUM 3.3 EC	H N O G R S	75-150 lb/A or 3.6-7.2 pt/A	PRE for annual grasses and certain broadleaves in cool and warm season grasses. Rate and timing dependent on use site and target weeds.
PENNNANT MAGNUM	O	1.3-2.6 pt/A	For warm season grasses including commercial St. Augustine grass sod production. Rate dependent on weed species; see label. Apply before weeds emerge. Soil moisture necessary to activate; irrigate with 0.5" water if rainfall does not occur within 7 days after treatment. Split applications at not <1 pt/A. Do not apply >once every 6 weeks. For commercial sod production, max. 4.2 pt/A/year to same area used for sod production. For other turf uses, max. 2.6 pt/A/year.
PRIMO MAXX	H O G	0.1-2 fl oz	A plant growth regulator. Applications as frequently as weekly during growing season, but not to exceed 7 fl oz/1000 sq ft (305 fl oz/A/year). Highest rates for edging/banding of lawn perimeters, sidewalks, curbs, around trees and shrubs, etc.
PYLEX	H O G	0.023-0.034 fl oz	POST. Add HSOC-MSO or HSOC-COC at 2 qt/100 gal.* To improve control of annual grass weeds, make applications before 4th tiller growth stage.
RESOLUTE 4L or RESOLUTE 65WG	H O G S	10-48 fl oz/A or 0.5-2.3 lb/A	PRE for residual control of many broadleaves and grasses. For established turf (not putting greens), lawns, and sod nurseries. See label for application timing, rates, and restrictions.
REVOLVER	H O S	0.1-0.6 oz	POST for annual and perennial grasses, and nutsedge in bermudagrass and zoysiagrass.
ROUNDUP LAWN & GARDEN	R	2-5 qt/A	POST. Do not disturb plants before treatment. Use in renovation establishment or spot treatment of lawns. Do not use galvanized sprayers. Controls annual and perennial grasses and broadleaves. Will kill grass plants it contacts.
SAPPHIRE	H O G S	.5-1.5 pt/A	POST, Add NIS at .25%/100 gal*. Broadcast and spot treatments, for established turf (not putting greens), residential lawns, sports fields, commercial turf and sod nurseries. See label for weeds controlled, application timing, rates, and restrictions. Do not apply more than 2.3 pt/A/year.
SEDGE HAMMER	H O S	0.6-1.3 oz/A	POST. Add 1-2 qt NIS/100 gal.* Contains halosulfuron for 3-8 leaf nutsedge control. Do not mow for 2 days. A second application may be done in 6-8 weeks. Do not use on golf greens.
SHREDDER E-99		SEE 2,4-D	
SIMAZINE 4L or ***SIMAZINE 90DF***	H O G	0.751.1-1.5 fl oz or 1.1-2.2 lb	PRE in fall or late winter in lawns, sod production, fairways, and similar areas. Do not apply on newly seeded grass. See label for tolerant species and restrictions.
SPARTAN CHARGE	S	2.1-10.2 fl oz: cool season 10.2-15.2 fl oz: warm season	POST. Sod production areas must be established 3 months prior to initial treatment. Apply to established seeded, sodded or sprigges turfgrasses folowing second mowing. Use of surfactants not recommended. See label for sedge control and split application rates. Not for use on golf course greens or tees. Do not graze or feed harvested forage. Do not harvest sod within 3 months of application.
SPECTICLE FLO	H O G S	6-10 fl oz/A	PRE for annual grasses, sedges, and broadleaves. Controls crabgrass, goosegrass, and annual bluegrass. See label for species sensitivities, application timing rates, and restrictions.
STERLING BLUE/CLARIFIER/ CLARITY/***DICAMBA MAX 4***	O	0.5-2 pt/A 0.5-4.5 tsp/1000 sq ft	PRE. For use in bermudagrass, centipedegrass, St. Augustine grass, and zoysiagrass. Apply after second mowing. Certain grass species may be sensitive to more than 16 fl oz/1000 sq ft.
TENACITY	H O G	4-8 fl oz/A	PRE or POST. See label for tolerant and sensitive grass species. Include NIS if used POST.* Do not use on golf putting greens. More effective POST in established turf. Wait 2 weeks or 4 mowings on new seedings. 24c FL (exp. date not given) for control of goosegrass on Bermudagrass athletic fields and golf courses (except greens).

See notes and footnotes at end of table.

PREEMERGENCE OR POSTEMERGENCE HERBICIDES *(continued)*

Herbicide	Labeled Uses**	Rate/1000 sq ft	Comments/Restrictions
TOWER	O G S	21-32 fl oz/A	Apply prior to weed seed germination in spring when soil temperature is >55° F.
TRIMEC CLASSIC or STRIKE 3	H O	1.2-1.5 fl oz or 1.1-1.5 fl oz	POST. For broadleaf weed control in established lawns. Apply when weeds are actively growing. Use reduced rates down to 0.67 fl oz/1000 sq ft for certain grasses and geographics. See label.
TRIMEC PLUS	H O	3 fl oz	POST. Controls newly emerged crabgrass and broadleaf weeds. Contains Trimec and MSMA. Do not apply when air temperature exceeds 80° F or when turf is under stress. Partial control of nutsedge.
TURFLON ESTER/ TURFLON ESTER ULTRA	H O S	0.375-0.75 fl oz	POST. For annual and perennial broadleaves and kikugugrass in ornamental turf. May injure certain species. Do not apply to golf course greens or exposed roots of shallow rooted trees and shrubs. See label for precautions. Ultra contains MSO. Not for sod in AZ.
VISTA XRT	H O	0.14-0.59 fl oz	Rate depends on weed species and grass tolerance. Supplemental label all states (exp. date not given) for POST control of perennial broadleaf weeds in established turf.
XONERATE	H O G S	1-10 oz/A	POST. See label for tolerant and sensitive grass species. See label for application timing, rates, and restrictions.
2,4-D LV4 or ***2,4D LV6*** or ***SHREDDER E-99*** or WEEDAR 64 or WEEDONE 638	H O	2-3.15 pt/A or 1.33-2.25 pt/A or 0.5-2 pt/A or 2-3 pt/A or 2.5-4.25 pt/A or	POST for broadleaves in well established turf on tolerant species. Includes lawn, parks, golf courses, etc. One pint/A = 0.37 fl oz/1000 sq ft. Wait 2-4 mowings on new seedings.

*** For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
** H – home lawns, S – sod farm only, N – not labeled for home lawns, O – ornamental turf which may include sod farms, landscapes, and golf courses, R – renovation or preplant uses, G – golf courses.
[1] May use other glyphosate herbicides: Roundup brands/Cornerstone brands/Credit Xtreme/Honcho K6 or others at labeled rate.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

	INSECTICIDE																				
INSECT*	ADVION	ALLECTUS SC	ARCHER	ARENA	***BRACKET 97***	CARAVAN G	DIVANEM	DYLOX 6.2G	FERENCE	MACH 1.5G	MACH 2	MAINSPRING GNL	MATCHPOINT	MERIDAN 0.33G	MERIDAN 25WG	MERIT	MUSTANG MAXX 0135	PERMETHRIM 3.2 AG ‡	PROVAUNT	SCIMITAR CS	TANDEM	TEMPO SC ULTRA
ANT	●	●	●			●	●							●	●					●	●	●
ARMYWORM		●			●				●	●	●		●						●	●	●	●
BILLBUG		●		●		●			●	●	●	●		●	●	●					●	●
CHIGGERS																					●	●
CHINCHBUG		●		●	●	●			●			●		●	●	S	●	●		●	●	●
CRICKET	●	●			●	S		●						S	S			●		●	●	●
CUTWORM		●		S	●			●	●	●	●		●			S			●	●	●	●
EARWIG	●	●																●		●		●
FLEA		●	●										●	●	●			●		●		●
GRASSHOPPER		●															●		●	●	●	●
LEAFHOPPER		●			●	●								●	●		●					
MITE		●					●													●		
MOSQUITO			●																			●
SOD WEBWORM		●		●		●		●	●	●	●		●	●	●		●		●	●	●	●
SOWBUG		●																●		●		
TICKS		●	●																	●		●
WHITE GRUB				●		●		●	●	●	●	●		●	●	●				S	●	

*Many other insects may be controlled, see label.
S – Suppression
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

LAWN/TURF INSECT TREATMENT GUIDELINES

Insecticide	Rate/1000 sq ft	Comments/Restrictions
ADVION	1.15-4.6 lb	For use in lawns, golf courses and athletic fields. For use by commercial applicators only.
ALLECTUS SC	1.1-4.5 pt/A	Residential, commercial, and recreational areas.
ARCHER	1-2 fl oz	Insect Growth Regulator. For use on lawns to control various insects. Rate depends on pest treated; see label.
ARENA 50WDG or ARENA 0.5G	8-10.67 oz/A or 50-66.67 lb/A	Residential, commercial, and industrial uses.
BRACKET 97	0.4-1.5 oz	Golf course and sod farms only. See label for specifications.
CARAVAN G	2-2.8 lb	Apply to established turf or at seeding or during seed germination. See label for instructions on application timing. Do not apply more than 120 lb/A/year.
DIVANEM	3.125-6.25 fl oz/A	Tank mix with a surfactant or wetting agent and water in with 0.1-0.25" irrigation immediatly after application.
DYLOX 6.2G	2-3 lb	Other formulation - 420SL.
FERENCE	2-20 fl oz	For use on golf courses, sod farms and other recreational turfgrass.
MACH 1.5G	1.5 lb: lepidoptera 3 lb: grubs	Controls lepidoptera larvae such as cutworms, webworms, armyworms and also white grubs. Residential and commercial lawns.
MACH 2	2 qt/A: lepidoptera 4 qt/A: grubs	Controls lepidoptera larvae such as cutworms, webworms, armyworms and also white grubs. Apply in a minimum of 1 gal water/1000 sq ft. Commercial turfgrass.
MATCHPOINT	0.08-0.41 oz	Not for residential turf. See label for insect-specific rates and timing. Dilute in water and apply using suitable equipment. May be tank mixed with other products for broader spectrum control. Max. 3 applications in any 21-day period before rotation to another insecticide class. Min. 7-day application interval. Max. 0.41 oz/1000 sq ft/ application. Max. 6 applications/season.
MAINSPRING GNL	0.046-0.459 fl oz	See label for insect-specific rates and timing. Mow to lowest possible height, apply in sufficient water (min. 2 gal/1000 sq ft).
MERIDIAN 0.33G	1.4-1.8 lb (60-80 lb/A)	For use in lawns, commercial grounds, parks, playgrounds, golf courses, athletic fields and sod farms.
MERIDIAN 2WG	3-4 oz	For use in lawns, commercial grounds, parks, playgrounds, golf courses, athletic fields and sod farms.
MERIT 0.5G	1.4-1.8 lb or 60-80 lb/A	Controls larvae stage of white grubs and first instar nymph of chinch bug. For control of white grubs, make application prior to egg hatch.
MUSTANG MAXX ‡	2.24-4 oz	For sod farms only. Maximum 20 oz/A/season.
PROVAUNT	2-12 oz/A	For lawns, golf courses, and recreational turf.
SCIMITAR CS	3.4-7 ml or 5-10 fl oz/A	Use 14 oz /A for chinch bug. Commercial application only. For residential and commercial turf.
TANDEM	28 fl oz/A	Commercial and industrial uses. Make a single application at 28 fl oz/A or 2 applications at 14 fl oz/A. Use 10.5 fl oz/A for chiggers and grasshoppers on residential areas.
TEMPO SC ULTRA	0.27 fl oz: chiggers, chinch bug, flea 0.135 -0.27 fl oz: others	Commercial use for landscape and recreational turf. Do not use on golf courses.

‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

E = EXCELLENT (≥ 91%)
G = GOOD (81-90%)
F = FAIR (65-80%)
= POOR (<65%)
C = CONTROL
NL = NOT LABELED

	Labeled Uses[1]				Diseases																
	HOME LAWNS	SOD FARM	OTHER TURF	GOLF COURSE	ALGAE	ANTHRACNOSE (*Colletotrichum graminicola*)	BROWN PATCH (*Rhizoctonia solani*)	DOLLAR SPOT (*Sclerotinia homoeocarpa*)	FAIRY RING (*various fungi*)	GRAY LEAF SPOT (*Pyricularia grisea*)	LEAF SPOT & MELTING OUT (*Drechslera & Bipolaris*)	NECROTIC RING SPOT (*Ophiosphaerella korrae*)	PINK SNOW MOLD/FUSARIUM PATCH (*Microdochium nivale*)	POWDERY MILDEW (*Erysiphe graminis*)	PYTHIUM BLIGHT (*Pythium spp.*)	RHIZOCTONIA, LARGE PATCH OF ZOYSIAGRASS	RUSTS (*Puccinia spp.*)	SPRING DEAD SPOT (*Ophiosphaerella spp.*)	SUMMER PATCH (*Magnaporthe poae*)	YELLOW PATCH/COOL-SEASON BROWN PATCH (*Rhizoctonia cerealis*)
ALIETTE WDG (fosetyl- aluminum)	NL	L	L	L											G						
BANNER MAXX II (propiconazole)	NL	L	L	NL		G	F	G		F	F	G	G	E		G	E	F	G	G	
BANOL (propamocarb hydrochloride)	NL	L	L	L											G						
BAYLETON 50 T&O (triadimefon)	L	NL	L	L		F	F	G			F		G	E		E	E		G	E	
CHIPCO 26019 FLO (iprodione)	NL	L	L	L			E	G			E	F	G								
COMPASS (trifloxystrobin)	L	L	L	L		E	E			E	E		G				F		G		
DACONIL WEATHER STIK/***PRAIZ*** (chlorothalonil)	NL	L	L	L	G	G	E	G		G	E		G				F		C		
EAGLE 20EW (myclobutanil)	L	L	L	L		G	F	G			F	G	G	E		G	E	F	G	G	
EMERALD (boscalid)	NL	NL	NL	L				E													
FLOXCOR (fluoxastrobin)	L	L	L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
FORE 80WP RAINSHIELD (mancozeb)	L	L	L	L	G	G	F	F			E		F		F		G				
HONOR (boscalid + pyraclostrobin)	NL	NL	NL	L		G	E	E	E	E	E	F	E	E	G	G	E		E		
INSIGNIA/INSIGNIA SC (pyraclostrobin)	L	L	L	L		G	E	F	G	E	E	F	E	E	G	G	E		E		
JUNCTION (copper hydroxide + mancozeb)	L	L	L	L	G		F	F		C	E		F	C	F		G				
MICROTHIOL DISPERSS (sulfur)	NL	L	L	L										G			G				
MEDALLION/MEDALLION SC (fludioxonil)	L	L	L	L		F	E			E	E		E						C	G	
PROSTAR 70WP (flutolanil)	NL	NL	L	NL			E		G							E				E	
SPOTRETE F (thiram)	NL	NL	L	NL			F	F			U		U				U				
SUBDUE MAXX (mefenoxam)	L	L	L	NL											G						
TERRAZOLE 35%WP (etridiazole)	NL	NL	NL	L											G						
TRINITY (triticonazole)	L	L	L	L	G	E	G	E			C	E	E			E	G		E	C	
TURFCIDE 400 (PCNB)	L	L	L	L			G				F		E			G					
3336 F (thiophanate methyl)	L	L	NL	L		G	G	E		G	C	F	G				F				

Read all labels for restrictions on turf type, rates, and application timing.

[1] L- Labeled, NL - Not Labeled

Fungicide	Labeled Uses*	Rate/1000 sq ft	Comments/Restrictions
ALIETTE WDG	G O S	4 oz: Pythium diseases (blight, root rot)	Begin preventative applications when conditions first favor disease.
APPEAR	G H O	3-4 fl oz/4-6 fl oz: Pythium blight; 6-8 fl oz: Pythium root rot and crown rot, Pythium damping	Begin applications when environmental conditions are favorable for disease development. Use lower rate for Pythium blight when applications are started early in the season and continue on 7-14 day interval.
BANNER MAXX II	O	0.5-2 fl oz: dollar spot 1-2 fl oz: anthracnose, brown patch, powdery mildew, gray leaf spot, melting out 2-4 fl oz: summer patch 3-4 fl oz: yellow patch, rhizoctonia large patch 4 fl oz: spring dead spot, necrotic ring spot	Apply prior to or in early stages of disease development. See label for use rates on other diseases. Do not use on Bermudagrass golf greens if temperature >90°F. Labeled on cool-season sod.
BANOL	G H O	1.33-2 fl oz (preventative) 3-4 fl oz (curative)	Apply to established turf if temperatures and humidity favor pythium development. Apply after new seeding germination for pythium damping-off. Apply in 2-5 GPA water. Not labeled in AZ.
BAYLETON 50 T&O	G H O	0.5-1 oz: dollar spot, brown patch, rusts, powdery mildew, gray leaf spot 1 oz: anthracnose 1-2 oz zoysia patch, fusarium patch/ pink snow mold	See label for preventative and curative rates.
BRISKWAY	G	0.3-0.725 fl oz	Apply when conditions are favorable for disease development. See label for use rates and application timing.
CARAVAN G	G H O	2-2.8 lb	Apply to established turf or at seeding or during seed germination. See label for controlled diseases. Controls diseases for 14-21 days. Do not apply >120 lb/A/year.
CHIPCO 26019 FLO/26GT	G O S	3-8 fl oz	Rate depends on disease.
CONCERT II	G S	1.5-8.8 fl oz	Apply when conditions are favorable for disease development. See label for information on use rates for specific disease.
CONTEND A	G	1 fl oz	Do not apply >1 fl oz/1000 sq ft/year. Do not exceed >1 application/year. Single application in late fall just before snow cover for gray and pink snow mold. Do not apply on top of snow. Optimum control on greens: Tank mix with snow mold fungicide from a different FRAC group.
CONTEND B	G	4.5 fl oz	Do not apply >5.2 fl oz/1000 sq ft/year. Single application in late fall just before snow cover for gray and pink snow mold. Tank mix with another snow mold fungicide may enhance control of severe disease pressure. Optimum control on greens: Tank mix with snow mold fungicide from a different FRAC group.
COMPASS	G H O S	0.1-0.25 oz: brown patch, leaf spot, rusts; 0.15-0.25 oz: anthracnose, gray leaf spot; 0.2-0.25 oz: summer patch, fusarium patch	Begin preventative applications when conditions first favor disease.
DACONIL ACTION	G O S	1-5.4 fl oz	See label for application rates, timing, and other restrictions. 2ee many states (exp. date not given) for suppression of Pythium Blight and Bacterial Wilt on turfgrass. 2ee most states (exp. date not given) reduced rate for the control of Dollar Spot on turf.
DACONIL ULTREX TURF CARE	G N O S	1-5.03 oz	Rates vary based on disease targeted or present. Begin applications when conditions favor disease development and repeat applications as long as these conditions persist. Residential applications are spot spray only. See label for max rates/year.
DACONIL WEATHER STIK/***PRAIZ***	G N O S	See label. Rates depend on disease, application timing and interval.	Begin preventative applications when conditions first favor disease.
DITHANE F-45 RAINSHIELD	G N O S	6.4-12.8 fl oz	Apply when conditions are favorable for disease development. See label for information on use rates for specific disease.

See notes and footnotes at the end of table.

Fungicide	Labeled Uses*	Rate/1000 sq ft	Comments/Restrictions
EAGLE 20EW	G H O S	1.2 fl oz: anthracnose, brown patch, leaf spot/melting out, powdery mildew, rusts; 1-2.4 fl oz: dollar spot; 1.2-2.4 fl oz: necrotic ring spot, pink snow mold, summer patch; 2.4 fl oz: zoysia large patch, spring dead spot	Begin preventative applications when conditions first favor disease.
EMERALD	G	0.13-0.18 oz	Excellent dollar spot control.
FLOXCOR	G H O S	8.0-16.0 fl oz	Apply when conditions are favorable for disease development. Refer to the label for specific disease rate, application and spray interval recommendations.
FORE 80WP RAINSHIELD	G H O S	4 fl oz: melting out, rusts, brown patch; 6 fl oz: algae; 6-8 fl oz: dollar spot; 8 fl oz: pythium blight, gray leaf spot	Begin preventative applications when conditions first favor disease.
HONOR	G	0.8-1.1 oz	Control of dollar spot and many common disease.
INSIGNIA or INSIGNIA SC	G H O S	0.5-0.9 oz or 0.4-0.7 fl oz	Broad spectrum for foliar and root diseases including pythium and fairy ring.
INSTRATA	G O S	2.75-11 fl oz	See label for application rates for specific diseases, turf injury precautions, and other restrictions.
INTERFACE	G	3-7 fl oz	Begin applications when conditions favor disease development or when disease conditions first appear. See label for use rates and application timing.
JUNCTION	G N O S	2-4 oz: all labeled diseases	Start applications when disease threatens in spring when grass greens-up.
LEXICON INSTRINSIC	G H O S	0.34-0.47 fl oz	Use Preventatively. Application interval between 14-28 days depending on pressure. Apply in 1-4 gal of water/1000 sq ft for ground application, under heavy pressure use 2-4 gal of water. Aerial application is permitted on sod farms only.
MAXTIMA	G N O S	0.2-0.8 fl oz	Rate is disease dependent; see label. Begin applications preventively and continue throughout season. Max. 2 sequential applications before rotating to a non-Group 3 fungicide. Max. 35 fl oz/A/application (0.8 fl oz/1000' sq ft/application). Max. 2 applications/year at 35 fl oz/A. Max. 4 applications/year at 17.1 fl oz/A. Max. 8 applications/year at 8.6 fl oz/A (dollar spot control only). Max. 70 fl oz/A/year. Do not use on residential or athletic fields. Do not apply by sprinkler irrigation or by air. See label for important disease resistance management information.
MEDALLION or MEDALLION SC	G H O S	0.2-0.5 oz or 0.75-2 fl oz	See label for specific rates. A preventative fungicide. For best results, apply prior to disease development.
MICROTHIOL DISPERSS	G O S	3-10 lb/A: powdery mildew, rusts	Apply as a preventative or at first sign of disease.
NAVICON	G N O S	0.7-0.85 fl oz	Rate is disease dependent; see label. Begin applications preventively and continue throughout season. Max. 2 sequential applicataions before rotating to a non-Group 3 and non-Group 11 fungicide. Max. 37 fl oz/A/application (0.85 fl oz/1000' sq ft/application). Max. 3 applications/A/year. Max. 111 fl oz/A/year. Do not use on residential or athletic fields. Do not apply by spinkler irrigation or by air. See label for important disease resistance management information.
PHOSTROL	G N O S	4-8 fl oz	Pythium disease control: Apply 1-3 gallons mix/1000 sq ft at 14-day intervals as broadcast spray; see label for additional diseases controlled and tank mixes.
PILLAR G, PILLAR G INTRINSIC	G H O S	3 lb	Broad spectrum preventative fungicide. See label for tolerant turf species, application timing and restrictions.
PRAIZ		SEE DACONIL WEATHER STIK	
PROSTAR 70WP	O	1.5 oz: yellow patch; 1.5-2.2 oz: brown patch (preventative) or 3 oz (curative); 2.2 oz: fairy ring (preventative) or 4.5 oz (curative); 2.2 oz: large brown patch	
RENOWN	G N O S	2.5-4.5 fl oz	Apply when conditions are favorable for disease development. See label for information on use rates for specific disease.
SECURE	G	0.5 fl oz	Apply when conditions are favorable for disease development and continue on 14 day intervals. For control of gray and pink snow molds, apply in late fall.
SECURE ACTION	G	0.5 fl oz	Apply when conditions are favorable for disease development and continue on 14 day intervals. For control of gray and pink snow molds, apply in late fall.

See notes and footnotes at the end of table.

Fungicide	Labeled Uses*	Rate/1000 sq ft	Comments/Restrictions
SPOTRETE F	G	3.75 fl oz preventive or 7.1 fl oz curative	Max. winter rate for turf is 3.64 gal/A/application. Max. summer rate is 2.52 gal/A/application. Max. rate is 11.19 gal/A/year. Pink and Gray Snow Mold controled when combined with other snow mold products with enhanced longevity.
SUBDUE MAXX	H O S	0.5-1 fl oz: pythium blight	Begin preventative applications when conditions first favor disease.
TARTAN	G N O S	1-2 fl oz	Summer patch, fusarium patch, fairy ring, pink snow mold and curative application to leaf spot with 2 fl oz/1000 sq ft. Most application intervals are 14-28 days. Apply when conditions are favorable for disease.
TERRAZOLE 35%WP	G	2-4 oz: pythium blight	Do not apply to fairways.
TOPAZ	G N O S	0.18-1.45 fl oz	Controls a variety of diseases, see full label for rates.
TRINITY	G H O S	0.5-2 fl oz	Rate depends on disease. Controls anthracnose, dollar spot, and patch diseases.
TURFCIDE 400	G H O S	16-24 fl oz: brown patch (warm climate grasses); 4.5-6 fl oz: brown patch (cool climate grasses); 10.5-15 fl oz: melting out/leaf spot; 3 fl oz: dollar spot, pink snow mold	Apply as a preventative or at first sign of disease.
VELISTA	G N O S	0.3-0.7 oz	Apply when conditions are favorable for disease development. See label for information on use rates for specific disease.
XZEMPLAR	G H O S	0.21-0.26 fl oz	Use Preventatively. Application interval between 14-28 days depending on pressure. Apply in 1-4 gal of water/1000 sq ft for ground application, under heavy pressure use 2-4 gal of water/1000 sq ft. Aerial application is permitted on sod farms only.
26 GT	G O S	See Chipco 26019 FLO	
3336 F	G H S	2-8 fl oz: anthracnose; 4-8 fl oz: brown patch, necrotic ring spot, spring dead spot, gray leaf spot, fusarium blight, rusts; 2-4 fl oz: dollar spot, large brown patch, fusarium patch/ pink snow mold, zoysia patch	Apply as a preventative or at first sign of disease.

Read all labels for restrictions on turf type, rates, and application timing.
* G – golf courses, H – home lawns, N – not labeled for home lawns, O – other turf, S – sod farm

PREEMERGENCE OR POSTEMERGENCE HERBICIDES

Herbicide**	Application Method	Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW	Water	Up to 2 fl oz	PP or PRE up to 30 days before planting grasses. Add 1-2 pt NIS/100 gal.* May be tank mixed with glyphosate for burndown prior to planting grasses. May be used alone in 2,4-D sensitive areas to control annual broadleaves or tank mix with other products for broad spectrum annual and perennial weed control. May be used for broadleaf weed control on farms and farmsteads in areas outside of crop growing areas.
ARSENAL	Water	2-6 pt 1-2% solution: Spot treatment	PRE or POST (generally more effective). Rain required to activate PRE application. It has limited lateral or vertical soil movement. Do not apply within root zone of desirable plants. To avoid kochia resistance, tank-mix with 5-15 lb/A Karmex DF plus surfactant or use Sahara DG. Good control of most grasses and broadleaf weeds when applied POST including Johnsongrass, bindweed and wooly leaf bursage. Add surfactant for POST treatments. Will not control ALS resistant weeds. Residual 6-12 months. Do not side trim desirable vegetation such as lawns and driveways.
ARSENAL POWERLINE	Water	1.5-6 pt	PRE or POST. Include NIS or MSO for POST applications.*
BRASH/WEEDMASTER or WEEDMASTER XHL	Water	0.5-4 pt; up to 7.5 pt. or 0.4-3.2 pt; up to 8.4 pt/A/year	POST. Rate depends on weed species and size. Newly seeded areas may be injured with >2 pt/A. Note 3.
CAPSTONE	Water	4-6 pt	For control of broadleaf weeds and woody plants on non-cropland areas including rights of way, fencerows, and non-irrigation ditch banks.
CLEANSWEEP D	Water	1.25-2.5 pt	Apply to young and actively growing weeds. Use lower rate on young and actively growing weeds.
CLEANTRAXX	Water	3-4.5 pt	PRE or POST. Rates may be higher or lower and depend on specific use. Weeds controlled in AZ, CA differ from other states. See label.
CORNERSTONE PLUS/ ***CORNERSTONE 5 PLUS***	Water	Up to 5 qt	For general non-selective weed control. See Roundup comments. Add 8.5-17 lb AMS/100 gal; include NIS or WC+NIS as needed.*
CROSSBOW	Water	1-1.5 gal/100 gal: woody plants 1-4 qt: annual and perennial broadleaves	POST. Apply to give thorough coverage of weedy brush plants including multi-flora rose. For broadleaf weeds, thoroughly wet all foliage. Use high rate for perennial weeds. Can also be used as a thin-line, dormant stem, cut stump and conventional basal bark application. Note 3.
CURTAIL	Water	2 qt	POST. For control of spotted and diffuse knapweeds and Canada thistle. Apply when weeds are actively growing. See label for use precautions and grazing restrictions.
CREW	Dry	3.44-4.59 lb (150-200 lb/A)	For use in parking areas, industrial sites, utility substations, highway guardrails, sign posts and delineators. Apply prior to seed germination in early spring or fall or following complete weed removal. Rainfall activation required; irrigate within 21 days in the absence of rainfall. Max. 200 lb/A/application; max. 600 lb/A/year; max. 3 applications/year at 200 lb/A or 4 applications/year at 150 lb/A.
DETAIL	Water	1-6 fl oz	POST. Apply at 2-4 fl oz/A when weeds are <6" and 4-6 fl oz/A when weeds are ≥ 6". Add 2-4 qt HSOC-MSO/100 gal.* Can be mixed with Arsenal, Arsenal PowerLine, and glyphosate. Labeled for aerial application. Maximum 6 fl oz/A/year.
DIMETRIC CHARGED	Water	22 fl oz	Non-selective vegetation control. Residual and POST control of broadleaf and grass weeds, including ALS resistant weeds. See label for tank mixes to increase residual or POST control (e.g., glyphosate, 2,4-D, glufosinate, paraquat). Applications to emerged weeds: use 0.25% NIS or 1 qt/A COC.*
DISTINCT	Water	4-6 oz	POST. For broadleaf control.
ENDURANCE	Water	1-2.3 lb	PRE. Control of grass and broadleaf weeds.
ESCORT XP	Water	0.33-2 oz	POST.
ESPLANADE 200 SC	Water	3.5-7 fl oz	PRE. Apply prior to weed emergence for certain broadleaf and grass weeds.
FIERCE EZ OR FIERCE MTZ	Water	6-9 fl oz or 1-1.5 pt	PRE and POST. May be tank-mixed for PRE applications. Add 1 qt/100 gal NIS or 0.5 qt/100 gal HSOC-COC to improve activity of POST applications.* Apply to emerged weeds <2". Fierce EZ may not be mixed with other herbicides in POST applications to weeds >2". For Fierce MTZ, a tank mix partner must be used in combination for control of weeds larger than 2 inches.
FINALE	Water	2-4 fl oz/gallon: spot or directed 2-6 qt/A: broadcast, boom or aerial	Foliar-active glufosinate - apply to actively growing weeds. Broadcast or boom in minimum 40 GPA. Aerial in minimum 5 GPA.
FREEHAND 1.75G	Granular	100-200 lb	PRE. Does not control emerged weeds.
FREQUENCY	Water	1-16 fl oz	PRE or POST. Broadleaves and certain grasses. Up to 16 fl oz/A when bare ground needs to be maintained. Include MSO or COC for POST application.*
FUSILADE DX/ FUSILADE II	Water	16-24 fl oz	POST. For non-crop and fallow areas. Add 1-2 qt NIS or HSOC-COC/100 gal.* Maximum 72 fl oz/A/season.
FUSION	Water	7-8 fl oz	POST. For rights-of-way. Add 0.5 gal HSOC-COC or NIS/100 gal.*

See notes and foot notes at end of table

PREEMERGENCE OR POSTEMERGENCE HERBICIDES *(continued)*

Herbicide**	Application Method	Rate/Acre	Comments/Restrictions
GOAL 2XL	Water	2-8 pt	PRE and POST. PRE use higher rate for longer residual control. POST use lower rate for weeds less than 4 inches tall. Use higher rate for weeds up to 12 inches tall. Do not feed or allow animals to graze.
GRASLAN L/ GRAZONPD3	Water	Up to 5 pt	Rate depends on weed or brush species, stage of growth and geographical region: see label. Up to 2 mL of formulation per injection site; limit of 1 injection/year.
KARMEX DF	Water	5-15 lb: annuals	PRE. Apply to soil before weed growth begins. Controls some annual and perennial weeds. For emerged weeds add 1-2 pt NIS/100 gal.* Effective on triazine-resistant weeds. If dense growth is present, cut tops and spray ground. Apply to ditches (inside or cut) in the fall, following draw-down. Residual: 10-12 months. Note 1.
KOCHIAVORE	Water	1.25-2.5 pt	Limit to 1 application/year. May require spray volume of 50-300 GPA. Apply when plants come into full leaf up to when plants go dormant. Best results when weeds are young and actively growing. Do not cut before herbicide translocates through plant. Maximum of 2.5 pt/A/year. Do not graze or feed treated material to livestock. For improved performance, use HSOC-COC or HSOC-MSO or other MSO/COC.*
KYBER PRO	Water	1.0 - 1.5 pt	PRE and POST. May be tank-mixed for PRE applications. Add 1 qt/100 gal NIS or 0.5 qt/100 gal HSOC-COC to improve activity of POST applications.* Apply to emerged weeds <2". A tank mix partner must be used in combination with Kyber Pro for control of weeds larger than 2 inches.
LANDMARK XP	Water	0.75-8 oz	PRE or early POST for broadleaf and grass control.
MAESTRO 2EC	Water	1-2 pt	POST. Apply to non-crop or industrial sites when weeds have emerged and are actively growing. Treat before weeds exceed 4-leaf stage, 2 inches in height or 1 inch in diameter.
MATRIX SG	Water	3-4 oz	PRE or POST.
MCPA AMINE or RHOMENE MCPA	Water	3.25 pt or 3.2 pt	Apply by air in min. 2 GPA water, by ground in min. 20-100 GPA water; see label for weeds controlled and other restrictions.
METHOD 50SG OR METHOD 240SL	Water	1-4 oz or 2-4 fl oz	Apply up to 9 oz/A or 18 fl oz/A for spot treatments, respectively. Mix with HSOC-MSO, HSOC-COC at 0.5 gal/100 gal or other MSO/COC at 1 gal/100 gal; add NIS or other NIS at 1 qt/100 gal.*
MILESTONE	Water	5-7 fl oz	POST for thistles and knapweed. Can be tank mixed.
NATIVEKLEAN	Water	19-34 fl oz	Apply as a coarse low-pressure spray to control broadleaf weeds, including invasive and noxious weeds and certain woody plants in areas not regularly mowed or maintained. Max. 34 fl oz/A/use season. Max. 34 fl oz/A/year. Do not apply to home lawns, turf, athletic fields, sod operations. Max. 2 applicaitons/year. Do not apply w/in 30 days of previous application. Do not use w/in 250 ft of residential properties. Do not graze or produce hay from treated areas. Higher spray volumes (>10 GPA) generally provide better coverage and control. See label for important resistance management information.
OPENSIGHT	Water	1-3.3 oz	POST for non-crop and right-of-way. Include HSOC-COC, HSOC-MSO, or NIS + UAN or AMS.*
OUST EXTRA	Water	2.67-5.33 oz	PRE or EARLY POST. Apply at rates based on weed species. Add NIS for emerged weeds.*
OUTRIDER	Water	0.75-2 oz	POST. For certain grasses and broadleaves in non-crop and native grasses. Add 2 qt NIS/100 gal.*
OVERDRIVE	Water	4-8 fl oz	POST. Do not apply to newly seeded grasses. Controls many annual and biennial weeds and controls or suppresses many perennial weeds in non-crop, pasture, hay, and rangeland. Maximum 8 fl oz/A/season.
PANTHER SC		SEE VALOR SX	
PERSPECTIVE	Water	1.75-8 oz	PRE or POST to weeds, vines and brush. Include MSO adjvant.* Apply POST to perennial weeds. Can be used as high volume or spot spray applications. Rainfast in 4 hours. May be applied to water's edge, but do not apply directly to water. Do not graze. Maximum amount is 11 oz/A/season.
PLATEAU	Water	4-12 fl oz (rate varies with use area and soil type)	Controls or suppresses most broadleaf and grass weeds, particularly summer annuals. PRE or POST for weed control, seedhead suppression, establishment of certain cool and warm season native grasses, renovation and restoration of wildflower establishment and maintenance. Do not use on switchgrass, tall fescue and certain other species. Do not use on area to be grazed or cut for hay. Available only for government uses. POST: Add 0.75-1 pt HSOC-MSO + 2-3 pt 28% N.*

See notes and foot notes at end of table

PREEMERGENCE OR POSTEMERGENCE HERBICIDES *(continued)*

Herbicide**	Application Method	Rate/Acre	Comments/Restrictions
PRAMITOL 25E	Water	4-10 gal	Apply prior to or up to 3 months after weed emergence; gives season-long control. Use lower rates for light soils and low rainfall areas. Use higher rates on heavier soil where weed growth is heavy and rainfall is high. For faster top-kill, substitute diesel oil, fuel oil or knockdown oil for the water. Controls annual and perennial weeds. Do not use in areas where a crop or other plantings are to be introduced later. Use higher rates for deep-rooted perennials. Good soil activity, some foliar uptake. Mobile in water. Residual: 10-15 months. Note 2.
PRAMITOL 5PS	Dry	0.35-0.92 lb/100 sq ft	Apply prior to or just after weed emergence. Good soil activity, some foliar uptake. Activity depends on rainfall. Use low rates for light soils and low rainfall areas. Use high rates on heavier soils where weed growth is heavy and rainfall is high. Do not use in areas where a crop or other plantings are to be introduced later. Use higher rate for deep-rooted perennials. Note 2.
PRONONE POWER PELLETS	Dry	1-2 pellets/inch of stem	For brush control in rangeland and pasture. Apply by hand using chemical-resistant gloves. See label for full instructions.
REGLONE/DIQUAT 2L	Water	1-2 pt: broadcast 1-2 qt or 0.75 oz: spot treatment	POST. Apply for full coverage and thorough contact to young weeds. Controls annual grass and broadleaves. No residual. May be used on farm ponds. See label for rates. Broadcast rate in 15 GPA water. Spot spray 1-2 qt/A plus ≥75% NIS/100 GPA water or 0.75 oz/A ≥75% NIS/1 GPA water.*
ROUNDUP PRO/ ROUNDUP PRO CONCENTRATE/ ROUNDUP PROMAX	Water	1-4 qt: annuals 2-5 qt: perennials 1-2% Solution	POST. Non selective, no residual. Apply to actively growing grass and broadleaf weeds. Apply to annuals before heading: to perennials from early bud to early seed stage. For hand held equipment, spray foliage till wet. Use higher rates on perennials. Do not use galvanized sprayers. Do not allow spray to contact desirable plants. Note 1.
RUGGED	Water	1-2 qt	Apply to annual broadleaves that are young and growing vigorously. Spray perennial weeds when near the bud stage, but not flowering. Do not use on St. Augustine grass. Bentgrass, clover, legumes and dichondra may be injured. Do not apply to newly seeded areas until grass is well established. Deep-rooted perennials may require repeated treatments. 2,4-D acid formulation.
SADDLE-UP	Water	2-5.33 pt/20-100 gallon (3-20 gallon low volume): herbaceaous broadleaf 6-8 pt/A: brush and vine ground 2-5.33 pt: aerial	Use low rate for annuals, mid-rate for biennials, high rate for established perennials. Brush and vine use high volume foliar or spot in 100 gallons, low volume in 3-20 gallons. Broadcast with ground equipment in 20-100 gallons, low volume in 3-20 gallons. Aerial 2-5.33 pt/A for herbaceous weeds, or 6-8 pt/A for woody brush and vines in 5-40 GPA.
SAPPHIRE	Water	13-24 fl oz.	Refer to Mixing Directions section for tank mixing precautions. Do not apply more than 2.3 pints/A/Year. Do not apply more than a total of 24 fl. oz. in a single application. Do not graze livestock or feed the forage cut from treated areas. Include a non-ionic surfactant at .25% v/v.* Do not make more than 2 application(s) per year. Minimum retreatment Interval is 28 days.
SAHARA DG	Water	**Annual rainfall ft** / **oz/ 1000 sq** / **lb/A** <15" / 4 / 5-10 15-35" / 5 / 6.5-13 >35" / 6 / 13-19	PRE or POST for control of many annual and perennial weeds including woody plants, bindweed, Johnsongrass and wooly leaf bursage. POST, add 1 qt NIS/100 gal or HSOC-MSO at 0.5 gal/100 gal.* Addition of 2-3 pt 28% N/A fertilizer is optional. Do not treat irrigation ditches, around desirable trees or trim lawns and other desirable vegetation. May be used under paved surfaces. Residual: 6-12 months.
SENDERO	Water	0.75-1.5 pt: annual weeds 1.75 pt: woody perennials	PRE or POST. Controls broadleaf weeds, brush, and mesquite. See label for full instructions.
SCORCH	Water	1.3-2.6 pt	Max. 2.6 pt/A/yearn; see label.
SCORCH EXT	Water	24 to 36 fl oz; Refer to the label for specific annual, biennial, perennial, brushy weed and vine, rates and carrier volumes	Ground applications only. Do not use this product on or near desirable plants, including within the dripline of the roots of desirable trees and shrubs, since injury may result. Do not exceed 36 fl. oz. of Scorch EXT per acre per application. Maximum of 1 application per year for treatment of woody plants, brush, and vines. Maximum of 2 applications per year for treatment of annual, biennial, and perennial broadleaved weeds. Do not exceed a total of 36 fl. oz. of Scorch EXT per acre per year
SHARPEN	Water	Up to 6 fl oz	POST. Controls selective broadleaves. Add 0.5 gal/100 gal HSOC-MSO + 8.5-17 lb AMS/100 gal or 1.25-2.5 gal/100 gal UAN.*
SHREDDER E-99		SEE 2,4-D	
SPIKE 20P	Dry	10-30 lb; 3/8-1.125 oz/100 sq ft	For scattered brush apply evenly to soil over root systems. For individual trees, apply 0.5 oz/2-4" stem diameter at base of tree. May be broadcast or used as individual plant treatment. Rates are based on species. See label for exact rate. Grazing is allowed following use of labeled rates. Caution must be taken near desirable trees or shrubs as small amounts of Spike 20P may cause serious injury. Controls numerous brush and woody plants including multiflora rose. Residual: 24-30 months. Note 3.

See notes and foot notes at end of table

PREEMERGENCE OR POSTEMERGENCE HERBICIDES *(continued)*

Herbicide**	Application Method	Rate/Acre	Comments/Restrictions
STALKER	Water	8-12 fl oz/gal water or oil; up to 5% v/v	Rates may be higher or lower and depend on specific use. See label. Apply as cut stump, tree injection, frill or girdle, cut stubble, basal and stem treatments or asphalt and paved surface treatment. May be mixed with oils. Note 3.
STERLING BLUE/ BANVEL/***DICAMBA MAX 4***	Water	0.5-1.5 pt: annuals 0.5-2 pt: biennials, perennials, woody brush and vines	Broadcast 3-600 GPA by ground or 5-40 GPA by air. Can also be applied as a spot concentrate to soil, during plant dormancy.
STINGER/TRANSLINE/ STINGER HL	Water	0.25-1.33 pt 0.3-0.8.pt	POST. Apply 0.25 pt/A to annual weeds 1-3 inches tall. Apply 0.5 pt/A to annual weeds 3-6 inches tall. Where Canada thistle or knapweeds are the primary weeds, best results are obtained by applying 0.67-1.33 pt/A. May be tank mixed with 2, 4-D.
STREAMLINE	Water	1.75-11.5 oz	PRE or POST to weeds, vines and brush. Include an adjuvant. Apply POST to perennial weeds. Can be used as high volume or spot spray applications. Rainfast in 4 hours. May be applied to water's edge, but do not apply directly to water. Do not graze. Maximum amount is 11.5 oz/A/season.
TARGA	Water	12-16 fl oz 5-12 fl oz: establishment of "wildflowers"	Single application by ground equipment only for postemergence control of certain grasses on sites such as fence rows, roadsides, equipment storage areas, and other similar areas. Spot/ small area treaments for paved areas. If used to enhance establishment of broadleaf plants identified as "wildflowers," do not apply >12 fl oz/A/year.
TELAR XP	Water	1-3 oz	PRE or early POST. Best control with annuals actively growing, or perennials in bud to bloom or fall rosette stage.
TORDON RTU ‡	Liquid	Apply undiluted (Ready to use)	May be used as a tree injection, frill or girdle treatment or stump treatment. See label. RTU is NOT a restricted use product. Prevents stump regrowth. Note 3.
TOTAL*/*TOTAL 2.3*/ *TOTAL SL*/*TOTAL TNV	Water	48-82 fl oz	Ground broadcast or spot treatment, or aerial application: In minimum 10 GPA. Repeat applications may be necessary to control regrowth. Rate is dependent on weed height and/or grasses that have tillered.
TOWER	Water	21-32 fl oz	PRE for selective grass and broadleaf control. Use 32 fl oz/A for longer residual.
TUSCANY SC		SEE VALOR SX	
VALOR SX or VALOR EZ/ PANTHER SC/TUSCANY SC/CHATEAU EZ	Water	6-12 oz or 6-12 fl oz	PRE. Apply to a weed-free soil surface, prior to weed emergence; moisture necessary to activate product. POST. Use 0.25% v/v NIS or 1 qt/A COC.* Apply to weeds <2" in height; if >2" in height, use tank mix partner; see label.
VASTLAN	Water	2-9 qt	Apply to actively growing plants. Controls woody plant species, and annual and perennial broadleaf weeds. See label for addition of surfactant, MSO or COC.*
VIDA	Water	0.5-2 fl oz	Burndown. Do not exceed 3 applications/year or 5.5 fl oz/A/year. Minimum of 30 days between applications Uniform spray coverage essential for efficacy. See label for county exclusions in Missouri.
VIEWPOINT	Water	13-20 oz	PRE or POST to weeds, vines and brush. Include an adjuvant. Apply POST to perennial weeds. Can be used in high volume and low volume application equipment; ground or helicopter. Rainfast in 4 hours. May be applied to water's edge, but do not apply directly to water. Do not graze. Maximum amount is 20 oz/A/season.
VELPAR L/VELPAR L VU	Water	3 ml per 1 in stem diameter or per 3-foot canopy	Apply in an exact delivery hand gun applicator (Spot Gun Kit). It delivers a thin stream of predetermined volume when triggered. Apply spots uniformly around the base of stem above the soil. Controls numerous brush species. Spot treatment.
WESTAR	Water	2-4 lb	PRE or early POST.
2,4-D AMINE 4 or ***2,4-D LV4*** or ***2,4-D LV6/SHREDDER E-99*** or WEEDAR 64 or WEEDONE 638 or WEEDAR XHL	Water	2-4 pt or 2-6 pt or 1.33-5.33 pt or 2-8 pt or 2.67-5.33 pt or 21-85 fl oz	POST. Apply to broadleaves when young and actively growing. Note 1. Refer to product labels for specific non cropland application rates. Maximum 4 lbs AE/A/year.

* **For MSO/COC:** Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
** Rainfall is required to activate some of these herbicides. Caution must be used to avoid runoff damaging desirable plants. These herbicides should not be applied to frozen ground, nor used on a large scale on land subject to erosion unless erosion is controlled.

NOTE 1: Can be used on irrigation ditchbanks.
NOTE 2: Does not control triazine-resistant weeds (kochia, pigweed, lambsquarters, etc.).
NOTE 3: See brush control section for ditch banks.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SPRAY SOLUTION MIXING GUIDE

Solution Volume	Amount of Product To Use *(fluid ounces)*		
	1%	1.5%	2%
1 Gallon	1.28 oz	1.92 oz	2.56 oz
5 Gallons	6.4 oz	9.6 oz	12.8 oz
10 Gallons	12.8 oz	19.2 oz	25.6 oz
25 Gallons	1 qt	1.5 qt	2 qt



Insecticide	Rate/Acre	PHI	G/F	Comments/Restrictions
ASANA XL ‡	2.9-9.6 fl oz	–	NO	Do not apply more than 0.5 lb a.i. Notes 1, 2.
BRACKET 97/ORTHENE 97	0.25 lb	–	NO	For grasshoppers. Note 1.
DIMILIN 2L ‡	2 fl oz	–	0	Note 1.
GRIZZLY TOO ‡	see label	–	NO	Notes 1, 2.
LAMBDA-CY AG ‡	See label	See label	NO	Rate depends on specifc crop adjacent to non-crop area being treated to control migratory insects that may threaten crops. Do not exceed 0.2 lb a.i./A/year.
WARRIOR II ‡	see label	–	NO	Notes 1, 2.

PHI – preharvest interval days. NO – do not graze or feed. **NOTE 1:** May be applied by air. **NOTE 2:** May be applied by chemigation.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SHELTERBELT HERBICIDE APPLICATION RATES

PREEMERGENCE OR POSTEMERGENCE HERBICIDES

Herbicide	Labeled Trees**		Rate/Acre	Comments/Restrictions
AIM EC/SHARK EW		S	2 fl oz	POST directed spray for shelterbelts of annual weeds up to 4". Apply in a minimum of 10 gallons of finished spray solution. Use higher water volumes if weed populations are large or weed size is greater than labeled height. Do not allow spray to contact greem stems or foliage of desirable species.
ATRAZINE 4L ‡	C		4-8 pt	Annual grasses and broadleaves. Apply prior to transplanting, after transplanting or in conifers established 4 weeks to 1 year depending on species. Apply before weeds are 1.5" tall. Apply to established trees between fall and early spring while trees are dormant. For new transplants, apply during or soon after transplanting. Do not apply on coarse-textured soils. Apply only once per year. Consult label for tree species.
ASULOX	C		1 gal	For Western Bracken control in douglas fir, grand fir and scotch pine. Apply after bud break and hardening or firming of new tree growth. Bracken should be in full frond prior to treatment.
CASORON 4G		S	100-200 lb	PRE. Apply to trees transplanted or established from 4 weeks to 2 years depending on species. Do not allow granules to stick to tree foliage. Do not apply more than 150 lb/A on plantings less than 1 year old. Fair control of some annual grasses and broadleaves. Apply to annuals in spring, to perennials, in fall after frost but before soil freezes. May incorporate shallowly. Do not graze livestock. Residual is usually 7-11 months.
CLEANSE	C		13-17 fl oz	POST for annual and some perennial grasses. Apply POST (over the top of trees) to actively growing grasses early in the spring with susceptible grasses are in the labeled growth stage. Perennial grasses may require a second application. Add 0.5 gal (but not <0.5 pt/A) HSOC-COC/100 gal.* May be applied over the top of small non-bearing trees or as a directed spray on larger trees.
CORNERSTONE PLUS or ***CORNERSTONE 5 PLUS***	C	S	Up to 5 qt or 7.5 pt	POST directed spot and site preparation (rates shown). May broadcast to dormant trees in WA and OR. See label for species, application time, spot and directed rates. Add 8.5-17 lb AMS/100 gal; Include NIS or WC+NIS as needed.*
FINALE	C	S	2-4 fl oz/gallon: spot or directed 2-6 qt/A: broadcast, boom or aerial	Foliar-active glufosinate - apply to actively growing weeds. As directed spray around containers and field-grown established ornamentals and Christmas trees. Broadcast or boom in minimum 40 GPA. Aerial in minimum 5 GPA.
FUSILADE DX/ FUSILADE II	C	S	1-1.5 pt	Apply DIRECTED or POST. Add 1-2 pt HSOC-COC/100 gal or 1 tbsp + 0.25 tbsp HSOC-COC/gal.* Post for control of annual and perennial grasses. Use on conifers (Christmas tree plantings and seedling establishment), non-bearing fruit and nut trees only. Apply POST (over the top of Christmas trees) to actively growing grasses early in the spring when susceptible grasses are in the label growth stage. Quackgrass may require 2 applications. Not effective on annual bluegrasses, fine fescues and foxtail barley. When treating non-bearing trees avoid contact with foliage by using directed spray.
FREEHAND 1.75G	C		100-200 lb	PRE. Apply at planting or to established stands. Do not allow contact with newly seeded tree roots. Apply to new transplants after watering and soil is packed.
GALLERY SC	C	S	16-31 fl oz	Apply PRE for certain broadleaf weeds. Apply in late summer or early fall, in early spring or anytime prior to germination of target weeds or immediately after cultivation.
GALLERY 75DF	C	S	0.66-1.33 lb	Apply PRE for certain broadleaf weeds. Apply in late summer to early fall, in early spring, or anytime prior to germination of target weeds, or immediately after cultrivation.
GARLON 3A/4	C	S	Based on weed species	POST for woody plants, broadleaf weeds and vines.
GOAL 2XL	C	S	4-8 pt	PRE or POST directed to new or established conifers, cottonwoods and early POST to deciduous trees or as dormant spray for certain fruit and nut trees. (SLN label in MN, ND, SD and WY allows additional shelterbelt uses.) For control of small annual grass and broadleaf weeds. Apply to conifers before bud break or after new growth has hardened off. Do not incorporate. Residual preemergence or contact postemerge herbicide. Controls broadleaf and some grass weeds including kochia, pigweeds, lambsquarters, Russian thistle. Apply to base of deciduous species as a postdirected spray prior to bud break or after new foliage has hardened off. When applied as directed, the conifer and selected deciduous species listed on this label have shown tolerance to Goal 2XL. It is impossible, however, to evaluate this product on all varieties, biotypes and cultivars of listed species on this label or under all possible growing conditions. The user should exercise reasonable judgement and caution with the product. Until familiar with results under user growing conditions, limit application to a few plants in a small treated area to determine plant tolerance and extent of injury if such occurs, prior to initiating large-scale applications.
GRAMOXONE SL 3.0 ‡		S	1.3-2.7 pt	POST directed spray for control of annual weeds up to 6" tall. Add NIS.* Apply in 10 GPA. Do not allow spray to contact green stems or foliage. Do not graze treated areas.
KARMEX 80DF		S	2.5-5 lb	PRE herbicide for planting established at least 1 year in CO, MT, NE, ND, SD, WY. Fair control of several annual grasses; fair-good control of some annual broadleaves. Use in spring before weeds emerge or in late fall. Apply as directed spray. Roundup may be added for burndown.

See notes and footnotes at end of table.

PREEMERGENCE OR POSTEMERGENCE HERBICIDES *(continued)*

Herbicide	Labeled Trees**	Rate/Acre	Comments/Restrictions
KERB SC	C	2.5-5 pt	Some annual and perennial weeds. Apply in the fall but before winter freeze-up. May be applied directed or topically. Controls quackgrass and other perennial grasses. Not recommended on fine textured soils of high O.M. Provides residual activity. Will control winter annual grasses and volunteer grains.
POAST	C S	1.5-2.5 pt	POST application for control of annual and perennial grasses. Add 1 pt HSOC-COC/A.* May be applied over the top of trees. May be applied over the top of small non-bearing trees or as a directed spray on larger trees.
PRINCEP 4L/ ***SIMAZINE 4L*** or PRINCEP CALIBER 90/ ***SIMAZINE 90DF***	C S	2-4 qt or 2.2-4.4 lb	PRE herbicide for conifer plantings established at least 2 years. Fair to good control of several annual grasses and excellent control of many annual broadleaves. Poor control of triazine-resistant Kochia and Russian Thistle. Apply in late fall for best results. Remove seed growth before application or apply before weeds emerge. Use the lower rate on coarser textured, low O.M. soils and the higher rate on finer textured, high organic matter soils. Do not use until soil is firmly settled around roots. Do not apply more than once a year, except as directed for quackgrass control. Refer to label for weeds controlled and species of trees. Do not graze on treated areas. OR and WA: Do not apply <1 year after transplanting.
RONSTAR G or RONSTAR 50 WSP	S	100-200 lb or 4-8 packets	For annual broadleaves and grasses. See label for tolerant species and application methods.
ROUNDUP POWERMAX 3; WEATHERMAX/ CREDIT XTREME/ HONCHO K6	C S	See label for precise rates associated with weed species and annual per acre maximums.	POST directed. Controls most emerged annual and perennial weeds. Do not allow spray to come in contact with tree leaves or green bark. Apply POST broadcast for site preparation or directed spray on weeds under the tree canopy. Do not broadcast over Christmas and shelterbelt trees. Non-selective translocated herbicide with no soil residual. Use lower rates on annual weeds and higher rates on perennial weeds. Roundup may be tank mixed with the residual herbicides: Karmex, Princep and Surflan A.S. Refer to individual labels for specific application information and restrictions. Add 8.5-17 lb AMS/100 gal (or 3-5 tbps/gal) or WC+NIS.*
STINGER/TRANSLINE	C S	0.25-0.67 pt	POST over-the-top of labeled trees for control of wild buckwheat, Canada thistle, knapweed, and other broadleaf weeds. See label for restrictions. For use on Douglas Fir, Blue Spruce, white pine and Ponderosa Pine, at least 1 year after transplanting. Maximum for Blue Spruce: 0.5 pt/A. Apply 0.25-0.5 pt/A for annual and 0.5-0.67 pt/A for perennials.
SURFLAN A.S.	C S	2-6 qt	PRE as a directed spray to soil surface or as an over-the-top spray for control of annual grasses and broadleaves in established plantings only. Does not control established weeds. Will remain stable on the soil surface for 21 days. A half inch rain or sprinkler irrigation is necessary to activate. Labeled for use on trees bases on a specialty use label. Provides 2-4 months residual at 2 qt/A, 6-8 months at 4 qt/A and 8-12 months at 6 qt/A.
TOTAL 2.3*/*TOTAL TNV	Water	48-82 fl oz	Ground broadcast or spot treatment, or aerial application: In minimum 10 GPA. Repeat applications may be necessary to control regrowth. Rate is dependent on weed height and/or grasses that have tillered.
TOWER	C	21-32 fl oz	PRE. Do not allow contact with new seedling roots. Do not apply to new transplants til watered and soil is packed. Do not apply at bud break.
VASTLAN	C S	2-9 qt	Apply to actively growing plants. Controls woody plant species, and annual and perennial broadleaf weeds. See label for addition of surfactant, MSO or COC.*
VELPAR L/VELPAR L VU	C	4-6 pt: 1st year planting 4-8 pt: established trees	Annual weeds and some perennial weeds. Apply as a broadcast spray prior to conifer bud bread. If application is made after bud break, then apply as a directed spray to prevent contact of foliage. Provides both contact and residual control of small weeds. Moisture is necessary for activation. Check label for precautions on newly planted and established trees and rates based on soil type. Tree tolerance varies. Consult label for recommended species.
WESTAR	C	6-14 oz: CT, MI, NY, OH, PA, WI 1.25-1.5 lb: OR, WA	Apply while trees are dormant as a PRE or early POST to weeds. Apply to conifers and non-crop trees while dormant.

***For MSO/COC:** *Optify HSCOC and Superb HC (COC) and Optify HSMSO and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.
For NIS/AMS: Class Act NG or Flex, or Optify A may be used where herbicides require NIS and AMS or a water conditioner.
** May use other glyphosate herbicides: Roundup brands/Cornerstone or others at labeled rates.
‡ This product is a restricted use pesticide (RUP) and may also have vegetative buffer zone requirements, application setback requirements, and/or other restrictions. See the label and the RUP page in the Technical Information section for more information on use restrictions.

SHELTERBELT LABELED FUNGICIDES

	FUNGICIDES												
DISEASE*	ALIETTE WDG	BANNER MAXX II	BAYLETON 50	BRAVO WEATHER STIK/ULTREX	DACONIL ULTREX TURF CARE	DACONIL WEATHER STIK/***PRAIZ***	DITHANE F-45 RAINSHIELD	KOCIDE 3000	PROLINE 480SC	SEGWAY	SUBDUE MAXX	***TETRABAN***	TOPSIN 4.5FL/ TOPSIN M WSB
Cyclaneusma Needlecast			●		●					●			
Diplodia Tip Blight	●									●	●	●	●
Interior Needle Blight			●		●								
Lophodermium Needlecast		●	●		●	●				●	●		
Melampsora Needle Rust	●						●						●
Phytophthora Root Rot	S									●	●		
Pine Gall Rust[1]		●				●							
Pine Needle Rust		●											
Ploioderm Needlecast													
Rhabdocline Needlecast			●		●					●		●	●
Rhizosphaera Needlecast			●		●					●			
Scirrhia Brown Spot			●		●	●				●		●	
Sirococcus Tip Blight	●	●	●		●		●			●			
Swiss Needlecast			●		●	●				●	●	●	●
Weir's Cushion Rust		●		●									

[1] Include pine-oak and pine-pine gall rusts

Fungicide	Rate/Acre	PHI	G/F	Comments/Restrictions
ALIETTE WDG	2.5 lb/100 gal: dip 2.5-5 lb: foliar	–	–	Prevents Phytophthora root rot. Dip conifers such as Douglas firs, spruce and pines before transplant. Forfoliar applications, do not exceed more than 1 application every 30 days.
BANNER MAXX II	5-8 fl oz/100 gal: Douglas fir 16 fl oz/100 gal: Pines	–	–	Controls Melampsora needle rust in Douglas fir; Diplodia and Sirococcus tip blights in pine. Apply 5-8 fl oz/100 gal for control of Sirococcus tip blight. Make 3 applications every 14 days prior to major period of infection. Apply 16 fl oz/A in 100 gal for Melampsora needle rust and Sirococcus tip blight. Apply 3 times starting in mid-late winter at 2-month intevals for Sirococcus tip blight. Apply once in May for Melampsora needle rust.
BAYLETON 50	5.5-8 oz	–	–	For control of pine needle rust, apply 5.5 oz/A in 68.75 gallons water. Application timing and intervals depend on target disease. Maximum 64 oz/A/season.
BRAVO WEATHER STIK or BRAVO ULTREX	1.5-5.5 pt or 1.25-5 lb	–	NO	Use rate and application timing depend on pest. Do not apply to forests. May be applied by air. Use highest rate when applying by air.
DACONIL ULTREX TURF CARE	1.25-5 lb	–	–	For use on Christmas trees. Make one application in the spring when new shoot growth is 0.5-2" in length. Do not apply to forests. Aerial application is allowed.
DACONIL WEATHER STIK/ ***PRAIZ***	1.5-5.5 pt	–	NO	Use rate and application timing depend on pest. Do not apply to forests. Do not apply to blue spruce. Aerial application allowed for Christmas tree and bough production plantations and tree seed orchards.
DITHANE F-45 RAINSHIELD	1.6-3.2 qt	14	–	Begin application in spring or early summer before infection occurs. Repeat after heavy rains. Make applications at 7-10 day intervals. PHI 14 days.
KOCIDE 3000	0.75-1.75 lb	–	–	Controls Rhabdocline needlecast in Douglas fir and needlecasts in fir, pine, and spruce. Labeled for use in Christmas tree plantings, forest stands and silviculture nurseries. Begin applications in spring at the initiation of new growth and repeat at 7-30 day intervals as needed. Maximum 66.7 lb/A/season.
PROLINE 480 SC	5 fl oz: nursery seedlings 10 fl oz per 50 lbs seed: nursery seeds	–	–	Controls Fusiform rust, pitch canker, and Rhizoctonia foliar blight in pine and other conifer nursery seedlings. Controls Fusiform rust and pitch canker as a seed treatment for nursery seeds of pines and other conifers. Do not apply in forest plantings or established woodlands.
SEGWAY	3-6 fl oz	–	–	May be applied to soil surface, as a soil drench, or foliar spray in container grown plants in greenhouses, outdoor nurseries, and landscapes or field grown plants in nurseries. Apply at 14-28 day intervals as needed and alternate with a fungicide of a different mode of action.
SUBDUE MAXX	See label	–	–	Application rate depends on planting and application type. Apply in the spring and again in the fall.
TETRABAN	6-15.5 fl oz	–	–	Apply by ground, air or irrigation prior to disease development and continue throughout season at 7- to 21- day intervals.
TOPSIN 4.5FL/T-METHYL 4.5 F or TOPSIN M WSB/T-METHYL 70 WSB	conifers: 20 fl oz/100 gal/A or 1 lb/100 gal/A fir: 20 fl oz/50 gal/A or 1 lb/50 gal/A	–	–	Conifers: Controls Diplodia tip blight in Austrian, Red, Scots and Christmas Trees; apply at bud break; repeat 10 to 14 days later, just before needles emerge; repeat again 10 to 14 days after needle emergence; max. 60 fl oz/A/year or 3 lb/A/year. Fir: Control Swiss Needle Cast and Rhabdocline in Douglas Fir; apply in early May; repeat at 4-week intervals; max. 100 fl oz/A/year or 5 lb/A/year.

PHI = preharvest interval days.
G/F = grazing and feeding interval days.
NO = do not graze or feed.

WEED COMPETITIVE INDEX

RELATIVE COMPETITION OF COMMON WEED SPECIES WITH CROPS

All weed species compete with crops for water, mineral nutrients and sunlight. Some species are more competitive than others due to growth rate, size, canopy shape, and emergence date.

The following table developed by the University of Nebraska compares the relative ability of weeds to compete and reduce crop yield. The competitive index (CI) is expressed as a range of 1-10. A weed with a CI of 10 is ten times as competitive as a weed with a CI of 1.0 on a per plant basis. Ten plants of a CI of 1.0 would cause approximately the same loss as a single plant of a weed with a CI of 10.0.

These competitive index values are relatively consistent when comparing the relative competitiveness of weed species to each other. However, the actual values can be lower or higher under different environmental conditions.

RELATIVE COMPETITIVENESS OF CROPS WITH WEEDS

Crops also differ in their competitiveness with weeds. The following chart illustrates the relative competitiveness of several crops with weeds. The index assumes that weeds emerge with the crop.

Crop	Corn	Soybean	Sorghum	Sugarbeet
Relative Competitiveness	10	2.8	2.8	1.4

	COMPETITIVE INDEX				
	North Carolina	Nebraska		Michigan	
WEED SPECIES	SOYBEAN	CORN & SOYBEAN	W. WHEAT	SOYBEAN	CORN
Barnyardgrass	0.3	0.3		1.5	2
Bindweed, field		3		3	
Cocklebur	10	5.5		5.5	5
Crabgrass	0.2	0.5		0.5	1.6
Fall panicum	0.4	0.4		0.5	2
Foxtail, giant		2			
Foxtail, yellow or green		1			
Foxtails	0.2-0.3			0.5-1	2-2.4
Kochia		2.5	5		
Lambsquarter	5.2	1.5	5	4	10
Marestail		2	5	4	
Morningglory	3-4	5.5			
Mustards			10		
Nightshade, black	3	3.5		2	2
Palmer Amaranth	4				
Pigweed, redroot	4	2.5	2	4	
Quackgrass				1.5	3
Ragweed, common	3.8	4.5**		10	10
Ragweed, giant	9.5			8	10
Russian thistle		2.3	5		
Sandbur		0.4		1	1.6
Shattercane/sorghum		3.5/2.5			
Smartweed, annual		1.5	3		
Sunflower		10	5		
Velvetleaf	3	4.2		4.8	4.2
Volunteer Corn	1	6			
Waterhemp		2.5	3		
Wild proso millet	0.6				
Woolly cupgrass		2.5			

** 4.5 in Corn, 3 in Soybeans

COMMON NAMES OF WEEDS IN FIELD CROPS

The common names farmers use to refer to a weed species often depend upon the area in which they live. Successful control depends on knowing the correct name of the weed in question. The left column lists the names weeds may be known by locally; the right the corresponding name that may be found on the herbicide label.

COMMON NAME	LABEL NAMES
Amber cane	Shattercane
American black nightshade	Black nightshade
American hemp	Hemp dogbane
Amy-root	Hemp dogbane
Angle-pod	Honeyvine milkweed
Annual morningglory	Morningglory
Annual nightshade	Black nightshade
Annual sunflower	Sunflower
Apple of Sodom	Horsenettle
Arabian millet	Johnsongrass
Arkansas Rose	Prairie wildrose
Baconweed	Common lambsquarters
Barnyardgrass	Barnyardgrass
Beargrass	Sandbur
Bigroot morningglory	Bigroot morningglory, Possession vine
Bindweed	Field bindweed, Hedge bindweed, Morningglory
Bittercress	Yellow rocket
Bitterroot	Hemp dogbane
Bitterweed	Common ragweed, Bitter sneezeweed
Black amber	Shattercane
Blackheart	Lady's thumb, Smartweed
Black nightshade	Black nightshade, Eastern black nightshade
Blackweed	Common ragweed
Bladdercherry	Ground cherry
Bladder katmia	Venice mallow
Blue-joint	Quackgrass
Blue-vine	Honeyvine milkweed
Bottlegrass	Green foxtail, Yellow foxtail, Foxtail
Bracted bindweed	Hedge bindweed
Bristle grass	Yellow foxtail
Broom cypress	Kochia
Brown-eyed Susan	Venice mallow
Buckvine	Trumpet creeper
Buffaloweed	Giant ragweed
Bull nettle	Horsenettle
Bunchgrass	Large crabgrass
Bur	Common cocklebur
Bur cucumber	Bur cucumber
Burgrass	Sandbur
Burning Bush	Kochia
Bur ragweed	Woollyleaf bursage
Bushy wallflower	Treacle mustard
Butterprint	Velvetleaf
Butterweed	Groundsel (Senecio Sp.)
Buttonbur	Common cocklebur
Buttonweed	Velvetleaf
Careless weed	Smooth pigweed, Redroot pigweed Waterhemp or Palmer amaranth
Carolina horsenettle	Horsenettle
Carrotweed	Common ragweed
Cheat	Cheat, downy brome
Chinamen's greens	Redroot pigweed
Chinese lantern	Groundcherry
Choctaw-root	Hemp dogbane

COMMON NAME	LABEL NAMES
Chufa	Yellow nutsedge
Clammy groundcherry	Groundcherry
Cleavers	Catchweed bedstraw
Climbing milkweed	Honeyvine milkweed
Clotbur	Common cocklebur
Cocklebur	Common cocklebur
Cocks-foot	Barnyardgrass
Cockspurgrass	Barnyardgrass
Cock-spurs	Sandbur, field or longspine
Coco sedge	Yellow nutsedge
Coffeebean	Hemp sesbania
Coffeeweed	Sicklepod
Colorado bluegrass	Quackgrass
Colorado grass	Texas panicum
Comb flower	Common sunflower
Common cocklebur	Common cocklebur
Common foxtail	Yellow foxtail
Common lambsquarter	Common lambsquarters
Common milkweed	Milkweed
Common pigweed	Redroot pigweed
Common ragweed	Common ragweed
Common sunflower	Sunflower
Compass plant	Wild lettuce
Copperleaf	Hophornbeam copperleaf
Corn-lily	Field bindweed
Cottonweed	Velvetleaf, Common milkweed
Couchgrass	Quackgrass
Cowbind	Field bindweed
Cow-itch	Trumpetcreeper
Cow-vine	Trumpetcreeper
Crabgrass	Smooth crabgrass, or Large crabgrass
Creeping Charlie	Ground ivy
Creeping Jenny	Field bindweed
Crowfoot	Large crabgrass
Cubagrass	Johnsongrass
Curled dock	Curly dock
Curly dock	Curly dock
Curly indigo	Jointvetch
Daisy fleabane	Rough fleabane
Deadly nightshade	Black nightshade
Devil's grass	Quackgrass
Devil's shoelaces	Trumpetcreeper
Devil's shoestring	Swamp smartweed
Devil's vine	Hedge bindweed
Ditchbur	Cocklebur
Dock	Dock, or Curly dock
Dogbane	Hemp dogbane
Doggrass	Quackgrass
Earth almond	Yellow nutsedge
Edible galingale	Yellow nutsedge
Egyptian millet	Johnsongrass
Elephant ear	Velvetleaf
Enslen's vine	Honeyvine milkweed
Evergreen millet	Johnsongrass

COMMON NAME	LABEL NAMES
Fall panicum	Fall panicum
False mallow	Prickly sida
Fanweed	Field pennycress
Fat-hen	Lambsquarters
Field bindweed	Field bindweed
Field sandbur	Sandbur, Field or longspine
Fingergrass	Large crabgrass
Fireball	Kochia
Firebush	Kochia
Fireweed	Kochia
Flower-of-an-hour	Venice mallow
Foxtail	Giant foxtail, Green foxtail, Yellow foxtail
Frostbite	Lambsquarters
Giant crabgrass	Fall panicum
Giant foxtail	Giant foxtail
Giant ragweed	Giant ragweed
Glandular smartweed	Pennsylvania smartweed
Goatgrass	Jointed goatgrass
Goathead	Puncture vine
Golden foxtail	Yellow foxtail
Goosefoot	Lambsquarter
Greasegrass	Fall panicum
Great ragweed	Giant ragweed
Green amaranth	Smooth pigweed
Green foxtail	Green foxtail
Green pigweed	Smooth pigweed, Redroot pigweed, Waterhemp
Greenvine	Field bindweed
Groundcherry	Groundcherry
Hairy crabgrass	Large crabgrass
Hearts-ease	Pennsylvania smartweed
Heartweed	Lady's thumb
Hedge-bells	Field bindweed
Large morning glory	Hedge bindweed
Hedgehog grass	Sandbur
Hedge-lily	Hedge bindweed
Hellvine	Trumpetcreeper
Hemp	Hemp dogbane or Marijuana
Hemp dogbane	Hemp dogbane
Hogweed	Common ragweed, Horseweed
Honeyvine	Honeyvine milkweed
Honeyvine milkweed	Honeyvine milkweed
Hoorahgrass	Texas panicum
Horse cane	Giant ragweed
Horsenettle	Horsenettle
Horsetail	Horsetail, scouringrush
Horseweed	Giant ragweed, Field horseweed or Marestail
Hound's-berry	Black nightshade
Husk tomato	Groundcherry
Indian hemp	Hemp dogbane
Indian mallow	Velvetleaf, or Prickly sida
Johnsongrass	Johnsongrass
Jointgrass	Field horsetail
Kansas ragweed	Common ragweed
Kinghead	Common ragweed
Knotgrass	Quackgrass
Kochia	Kochia
Lady's thumb	Lady's thumb

COMMON NAME	LABEL NAMES
Lakeweed	Woollyleaf bursage
Lambsquarters	Common lambsquarters
Lanternweed	Groundcherry
Lap-love	Field bindweed
Large crabgrass	Large crabgrass
Large hairy crabgrass	Large crabgrass
Leatherleaf	Pennsylvania smartweed
Lily-vine	Hedge bindweed
Lover's pride	Lady's thumb
Maiden-cane	Johnsongrass
Man-of-the-earth	Bigroot morningglory
Marestail	Horseweed
Mayweed	Dog fennel or Stink weed
Mealweed	Common lambsquarters
Means-grass	Johnsongrass
Mexican fireweed	Kochia
Mexican sandbur	Puncturevine
Milkweed	Common milkweed, Honeyvine milkweed, Hemp dogbane
Millet	Giant, Green or yellow foxtail
Milletgrass	Johnsongrass
Mintweed	Lanceleaf sage
Modesty	Venice mallow
Morningglory	Morningglory, Field bindweed
Muletail	Giant ragweed
Narrow dock	Curly dock
Nightshade	Black nightshade
Nimble Kate	Bur cucumber
Nodding foxtail	Giant foxtail
Nodding thistle	Musk thistle
Northern nutgrass	Yellow nutsedge
Nutgrass	Yellow nutsedge
Nutrush	Yellow nutsedge
Nutsedge	Yellow nutsedge
Pale dock	Dock
Panicgrass	Large crabgrass, Fall panicum
Peach-leaved persicary	Lady's thumb
Peach-wort	Lady's thumb
Pennsylvania smartweed	Pennsylvania smartweed
Peppergrass, annual	Virginia pepperweed, Greenflower pepperweed
Peppergrass, perennial	Hoary cress
Pie maker	Velvetleaf
Pigeongrass	Green or Yellow foxtail
Pigweed	Redroot pigweed, Waterhemp, Smooth pigweed, Palmer amaranth, Powell amaranth
Pinkweed	Pennsylvania smartweed
Poisonberry	Black nightshade
Polish millet	Large crabgrass
Pondgrass	Quackgrass
Possession vine	Bindweed
Poverty weed	Skeletonleaf bursage or Silverleaf povertyweed or Poverty sumpweed
Prickly sida	Prickly sida
Prickly mallow	Prickly sida
Prince's feather	Smooth pigweed
Purplehead	Pennsylvania smartweed
Purple Mustard	Blue mustard

COMMON NAME	LABEL NAMES
Quackgrass	Quackgrass
Queen Anne's lace	Wild carrot or Poison hemlock
Quickgrass	Quackgrass
Ragweed	Common or Giant ragweed
Ragweed, perennial	Western ragweed
Red amaranth	Smooth pigweed
Redroot	Redroot pigweed
Redroot pigweed	Redroot pigweed
Red sorrel	Sheep sorrel
Roman wormwood	Common ragweed
Rope-wind	Hedge bindweed
Rough green amaranth	Redroot pigweed
Rough green pigweed	Redroot pigweed
Rough pigweed	Redroot pigweed
Rush-nut	Yellow nutsedge
Rutland-beauty	Hedge bindweed
St. Mary's grass	Johnsongrass
Sandbrier	Horsenettle
Sandbur	Field or longspine sandbur, Buffalobur
Sand-spurs	Sandbur
Sand-vine	Honeyvine milkweed
Scattercane	Shattercane
Scouring Rush	Field horsetail
Scutchgrass	Quackgrass
Seargrass	Quackgrass
Shattercane	Shattercane
Sheepbur	Common cocklebur
Shoestring	Swamp smartweed
Shoestrings	Trumpetcreeper
Shoestring tanweed	Swamp smartweed
Shoo-fly	Venice mallow
Silkweed	Common milkweed
Slender pigweed	Smooth pigweed
Sloughgrass	Quackgrass or Smooth crabgrass
Small flowered morningglory	Field bindweed
Smartweed	Pennsylvania smartweed
Smooth crabgrass	Smooth crabgrass
Smooth fingergrass	Smooth crabgrass
Smooth pigweed	Tall waterhemp
Snakegrass	Field horsetail
Sour dock	Curly dock
Spiny sida	Prickly sida
Spotted smartweed	Lady's thumb
Spreading panicgrass	Fall panicum
Spreading witchgrass	Fall panicum
Spreading wormseed	Bushy wallflower
Sprouting crabgrass	Fall panicum
Squitch	Quackgrass
Star cucumber	Burcucumber
Stickerweed	Horsenettle
Sticktight	Devils beggarstick
Stinging nettle	Tall nettle
Stinkweed	Field pennycress
Stubbleberry	Black nightshade
Summer cypress	Kochia
Summergrass	Yellow foxtail

COMMON NAME	LABEL NAMES
Sunflower	Sunflower, common or annual
Swamp smartweed	Swamp smartweed
Tanweed	Swamp smartweed
Teaweed	Prickly sida
Tenella	Blue mustard
Thistle mallow	Prickly sida
Three-seeded Mercury	Hophornbean copperleaf
Ticklegrass	Fall panicum or Witchgrass
Tie-vine	Morningglory
Tread-softly	Horsenettle
Trumpet vine	Trumpetcreeper
Tumbleweed	Kochia
Tumbleweed	Russian thistle
Twitchgrass	Quackgrass
Unicorn plant	Devil's claw
Velvetleaf	Velvetleaf
Venice mallow	Venice mallow
Virginia silk	Common milkweed
Watergrass	Small or large crabgrass, Nutsedge, Barnyardgrass
Waterhemp	Waterhemp
Water smartweed	Swamp smartweed
Wheatgrass	Quackgrass
White cockle	White campion
White goosefoot	Lambsquarters
White pigweed	Waterhemp
Whitetop	Hoary cress
Wickens	Quackgrass
Wild beet	Smooth or redroot pigweed
Wild cane	Shattercane
Wild cotton	Velvetleaf, Common milkweed, Hemp dogbane
Wild cucumber	Bur cucumber
Wild flax	Coreopsis
Wild lettuce	Prickly lettuce
Wild millet	Barnyardgrass, or Giant, green or yellow foxtail
Wild oats	Wild oats or downy brome
Wild poinsetta	Wild poinsetta, Painted poinsetta, Toothed spurge
Wild potato vine	Bigroot morningglory
Wild spinach	Lambsquarter
Wild sweet potato	Bigroot morningglory
Wild taney	Common ragweed
Wild tomato	Horsenettle
Winter cress	Yellow rocket
Witchgrass	Quackgrass
Woollyleaf povertyweed	Woollyleaf bursage
Yellow bristlegrass	Yellow foxtail
Yellow dock	Curly dock
Yellow foxtail	Yellow foxtail
Yellow nutgrass	Yellow nutsedge
Yellow nutsedge	Yellow nutsedge

NOTES

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MANAGING THE PROBLEM

Through the repeated use of herbicides with similar modes of action, on the same site, we have imposed selection for increased resistance within existing weed populations. The result is the development of species or biotypes that can no longer be controlled with some selective herbicides. There has been a dramatic increase in the incidence of herbicide resistance over the last 20 years. There are currently over 310 weed biotypes where herbicide-resistant biotypes have been reported. Triazine and ALS inhibiting herbicides account for most of the examples of resistance.

Weed resistance to the sulfonylurea and imidazolinone herbicides developed after a few years of use. Like triazine-resistant biotypes, the resistant biotypes show varying degrees of cross resistance to other chemicals in the same chemical family. Multiple resistance to several different classes of herbicides has also become a major concern.

Sulfonylurea, sulfonamide and imidazolinone herbicides have the same mode of action. They inhibit the action of the ALS enzyme needed for the production of essential amino acids required for cell development in plants. The potential to develop weed resistance to these herbicides is high where an ALS-inhibiting herbicide is used in more than one crop in a 2 or 3 year crop rotation, e.g., corn-soybean rotations. Using crops resistant to ALS-inhibiting herbicides increases the continued use of herbicides with the same mode of action. With the annual rate of introduction of new pesticides rapidly declining, it is imperative that we avoid losing safe and effective products due to misuse that builds up resistance to weed population. This is especially important in the new ALS-inhibiting herbicides that are used at lower rates and pose less environmental risk than many other pesticides.

RELATIVE RISK OF DEVELOPING RESISTANCE

High Risk

- Amino Acid Synthesis Inhibitors (ALS Inhibitors)
- Lipid Synthesis Inhibitors (ACCase Inhibitors)

Medium Risk

- Photosynthesis Inhibitors (Photosystem II)
- Cell Membrane Disruptors (Photosystem I)
- Cell Membrane Disruptors (PPO Inhibitors)
- Pigment Inhibitors
- Seedling Root Inhibitors (Cell Division Inhibitors)

Low Risk

- Amino Acid Synthesis Inhibitors (EPSPS Inhibitors)
- Nitrogen Metabolism Inhibitors (Glutamine Synthetase Inhibitors)
- Growth Regulators (Synthetic Auxin)
- Seedling Shoot Inhibitors

RISKS ASSOCIATED WITH CERTAIN CULTURAL PRACTICES

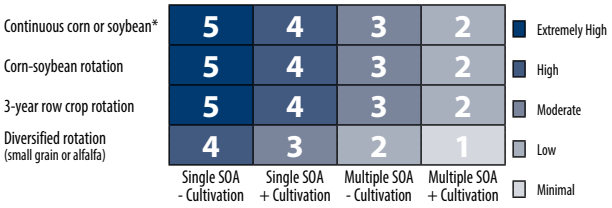


*Chart can apply to other crops as well.
Source: C. Sprague, Michigan State University

CHARACTERISTICS OF HERBICIDES SUSCEPTIBLE TO WEED RESISTANCE

Characteristics of herbicides and their use that contribute to an increased probability for the evolution of herbicide resistance: 1) Single site and specific mode of action; 2) Extremely effective in killing a wide range of weed species; 3) Long soil residual and season-long control of germinating weeds; 4) Applied frequently over several seasons without rotating or combining with other types of herbicides.

If a herbicide-resistant weed population is identified and confirmed, it is important to determine the extent of its distribution within the immediate area. It may be possible to contain a small infestation of the species to one farm or one field. Other control measures include substituting herbicides in an existing system, altering tillage operations, the use of herbicides applied at different times during the cropping season, and crop rotation.

CHARACTERISTICS OF WEED SPECIES THAT DEVELOP HERBICIDE RESISTANCE

Weed species most likely to develop resistance tend to have: 1) Genetic variability; 2) A short life cycle (annuals); 3) Short seed dormancy such as kochia and Russian thistle; 4) High initial frequency of resistance in the population.

ROLE OF GENETICALLY ENGINEERED CROPS IN WEED RESISTANCE MANAGEMENT

Genetically engineered crops resistant to Roundup (or other glyphosate-based herbicides) and Liberty (or other glufosinate-based herbicides) help manage current resistant weeds and add another mode of action to prevent other weeds from developing resistance to other herbicides. However, effective weed control with these products will result in a heavy selection pressure toward any weed with natural tolerance including wild buckwheat, yellow nutsedge, velvetleaf and morningglories. The dominant weed species in a field are likely to shift to these weeds over time. Currently there are few examples of glyphosate resistance and none for glufosinate. As a result, rapid development of weed resistance to glyphosate or glufosinate does not appear to be likely. With all weed control strategies, herbicide and crop rotation should be used as a primary defense in the development of resistant weeds.

STRATEGIES TO AVOID HERBICIDE RESISTANT WEEDS

The fundamental principal for managing herbicide resistant weeds is to reduce selection pressure for the evolution of resistance. Perhaps the easiest and best way of accomplishing this is through mechanical control and the normal use of crop and herbicide rotation. Herbicides used in rotation should differ in their mode/site of action (see below). Simply changing the product used may not result in a change in mode/site action. Other recommendations include using shorter-residual herbicides, e.g., Ally XP or Patriot instead of Glean XP, Beyond Xtra instead of Pursuit, tank mixes or sequential treatments of herbicides with different modes of action, e.g., tank mixing 2,4-D or dicamba with Ally XP or Patriot; greater integration of tillage with herbicides; and preventing weed escapes from going to seed.

For more information,
See www.iwilltakeaction.com
http://www.weedscience.org

For more information on site of action,
See www.hracglobal.com

Site of Action[1]	Site of Action Description
1	ACCase inhibitor
2	ALS inhibitor
3	Microtubule assembly inhibitor
4	Auxin mimics
5	Photosystem II (PSII) inhibitor - Serine 264 Binders
6	Photosystem II (PSII) inhibitor - Histidine 215 Binders
9	EPSP synthase inhibitor
10	Glutamine synthetase inhibitor
12	Phytoene desaturase (PDS) inhibitor
13	DOXP synthase inhibitor
14	Protoporphyrinogen oxidase (PPO) inhibitor
15	Cell division (VLCFA) inhibitor - e.g. chloroacetamides
18	Dihydropteroate synthase (DHP) inhibitor
19	Auxin transport inhibitor
22	Photosystem I electron diverter
23	Microtubule organization inhibitor
24	Uncouplers
27	HPPD inhibitor
28	Inhibition of Dihydroorotate Dehydrogenase
29	Cellulose synthesis inhibitor
30	Fatty acid thioesterase inhibitor
31	Serine-threonine protein phophatase inhibitor
32	Solanesyl diphosphate synthase inhibitor
33	Homogentisate solanesyltransferase inhibitor
34	Lycopene cyclase inhibitor
0	Unknown

HERBICIDE SITES OF ACTION AND FAMILIES

THE FOLLOWING TABLE IS A PARTIAL LIST OF WEEDS WITH KNOWN HERBICIDE RESISTANCE IN THE UNITED STATES.

For full details:
http://www.weedscience.org

SITE OF ACTION		HERBICIDE-RESISTANT WEED SPECIES
ACCASE INHIBITOR (grass growing point inhibitor)	**1**	Giant foxtail, green foxtail, large crabgrass, johnsongrass (Fusilade DX, Cleanse), persian darnel and wild oats.
ALS INHIBITOR	**2**	Black nightshade, bushy wall flower/treacle mustard, cheat, cocklebur, common chickweed, common sunflower, downy brome, flix weed, giant foxtail, giant, common ragweed, green foxtail, large crabgrass, kochia, lambsquarters, marestail, Palmer amaranth, prickly lettuce, prostrate, redroot and smooth pigweeds, Russian thistle, ryegrass, shattercane, waterhemp, wild mustard, wild oat, and yellow foxtail (IMI), Japanese brome, velvetleaf and tansy mustard.
MICROTUBULE ASSEMBLY INHIBITOR (seedling root inhibitor)	**3**	Annual bluegrass, goosegrass, green foxtail, johnsongrass (trifluralin).
AUXIN MIMICS	**4**	Barnyardgrass (Facet L), kochia (dicamba), Palmer amaranth (2,4-D), wild carrot (2,4-D), waterhemp (2,4-D).
PHOTOSYSTEM II INHIBITOR	**5**	Barnyardgrass, cocklebur, common lambsquarter, common ragweed, giant foxtail, jimsonweed, kochia, marestail, Palmer amaranth, Pennsylvania smartweed, prostrate pigweed, smooth pigweed, velvetleaf (triazines), waterhemp, yellow foxtail.
EPSP SYNTHASE INHIBITOR	**9**	Common ragweed, giant ragweed, hairy fleabane, kochia, marestail/horseweed, Palmer amaranth, rigid ryegrass, waterhemp.
PPO INHIBITOR	**14**	Common ragweed, Palmer amaranth, waterhemp.
VERY LONG CHAIN FATTY ACID SYNTHESIS INHIBITORS	**15**	Waterhemp, Palmer amaranth.
HPPD INHIBITOR	**27**	Waterhemp, Palmer amaranth.

MODE OF ACTION *(effect on Plant growth)**	SITE OF ACTION	GROUP	HERBICIDE CHEMICAL FAMILY	SITE(S) OF ACTION *(more than one Site of Action indicates PREMIX)*	TRADE NAMES
LIPID SYNTHESIS INHIBITORS	**ACCASE INHIBITORS**	**1**	Aryloxphenoxypropionate (Fops)	1	Assure II, Clincher SF, Discover NG, Fusilade DX, Fusilade II, NextStep NG, Ricestar HT, Tacoma 1EC, Targa
				1,1	Fusion, Axial Bold
				1,2	RebelEX
				1,6,27	Wolverine Advanced
			Cyclohexanedione (Dims)	1	Cleanse 2EC, Poast, Section Three, Select Max, Shadow, Shadow 3EC
			Phenylpyrazolin	1	Axial XL
				1,4	AxialStar
				1,4,4	Rezuvant
AMINO ACID SYNTHESIS INHIBITORS	**ALS INHIBITORS**	**2**	Imidazolinone	2	Arsenal, Arsenal PowerLine, Beyond Xtra, Cadre, Chopper Gen2, Clearcast, Habitat, Plateau, Pursuit, Scepter 70 DG, Stalker
				2,14	Authority Assist
				2,14,15	Zidua PRO
				2,2,4	Viewpoint
				2,15,27	TriVolt
				2,4	Clearpath
				2,6	Varisto
				2,5	Sahara DG
				2,9	OneStep
			Pyrimidinyl(thio)benzoate	2	Regiment, Staple LX, Tradewind, UpBeet
			Sulfonylaminocarbonyltriazolinone	2	Everest 3.0, Olympus, Varro
				2,2	Autumn Super 51 WDG, Osprey Xtra, Rimfire Max
				2,27	Capreno, Corvus
				2,6,27	Huskie Complete
			Sulfonylurea	2	Accent Q, Ally XP, Amber, Certainty, Classic, Envoke, Escort XP, Express, Glean XP, Herbivore, League, Londax, Matrix SG, Monument 75WG, Osprey, Oust XP, Outrider, Patriot, Peak, Permit, Pre-Pare, Revolver, Sandea, Strada, Telar XP, Vios FX

MODE OF ACTION *(effect on Plant growth)**	SITE OF ACTION	GROUP	HERBICIDE CHEMICAL FAMILY	SITE(S) OF ACTION *(more than one Site of Action indicates PREMIX)*	TRADE NAMES
AMINO ACID SYNTHESIS INHIBITORS *(continued)*	**ALS INHIBITORS** *(continued)*	**2**	Sulfonylurea (continued)	2,14	Valor XLT
				2,14,15	Fierce XLT
				2,2	Affinity BroadSpec, Affinity TankMix, Alluvex, Audit 1:1, Audit 4:1, Audit 75 WDG, Basis Blend, Cimarron Plus, Cimarron X-tra, Cloak EX, Crusher, Finesse Cereal and Fallow, FirstShot SG, Harmony Extra SG, Landmark XP, Leadoff, Lineage Clearstand, Osprey Xtra, Oust Extra, Panoflex , Pastora, Permit Plus, Resolve Q, Rimfire Max, Spirit, Steadfast Q, Strada Pro, Synchrony XP
				2,2,14	Afforia, Enlite, Envive
				2,2,2	Ally Extra SG
				2,2,2,4	Agility SG
				2,2,4	Supremacy, Viewpoint
				2,27	Butte, Realm Q, Revulin Q
				2,4	Chaparral, Opensight, Perspective, Rave, Streamline, Vios FX Yukon
				2,4	Strada XT2
				2,4,4	Cimarron Max
				2,5	Duet, Westar
				2,5,14	Trivence
				2,15	League MVP
			Triazolopyrimidine	2	Defendor, FirstRate GR2, Grasp SC, PowerFlex HL, Python, Sapphire, Strongarm, TeamMate, Varro
				1,2	RebelEX
				2,14	Authority First DF, Authority XL, Cleantraxx, Pindar GT, Sonic, Surveil
				2,2,4	GoldSky
				2,4	Grasp Xtra, Hornet, OpenSky, Orion, Quelex, Starane Flex, Tarzec
				2,5,15	Tendovo
				2,4,15	SureStart II, Threesidual, TripleFLEX II
				2,4,4	PerfectMatch
	EPSP SYNTHASE INHIBITOR	**9**	Glycine	9	Cornerstone 5 Plus, Cornerstone Plus, Credit Xtreme, Honcho K6, Rodeo, Roundup PowerMAX 3, Roundup Pro, Roundup Pro Concentrate, Roundup PROMAX, Roundup WeatherMAX, RT 3
				2,9	OneStep
				4,9	Enlist Duo
				9,14	Flexstar GT 3.5
				9,15	Sequence
				9,15,27	Halex GT
				9,15,27,27	Acuron GT
GROWTH REGULATORS	**T1R1 AUXIN RECEPTORS SYNTHETIC AUXINS**	**4**	Arylpicolinate	4	Loyant
				4,4	DuraCor
				4,4	NovaGraz
			Benzoate	4	Clarifier, Clarity, Dicamba Max 4, DiFlexx, Spitfire, Sterling Blue
				2,2,2,4	Agility SG
				2,4	Rave, Yukon
				2,4,4	Cimarron Max
				4,19	Distinct, Overdrive, Status
				4,27	DiFlexx DUO

HERBICIDE SITES OF ACTION AND FAMILIES *continued*

MODE OF ACTION *(effect on Plant growth)**	SITE OF ACTION	GROUP	HERBICIDE CHEMICAL FAMILY	SITE(S) OF ACTION *(more than one Site of Action indicates PREMIX)*	TRADE NAMES
GROWTH REGULATORS *(continued)*	**T1R1 AUXIN RECEPTORS SYNTHETIC AUXINS** *(continued)*	**4**	Benzoate *(continued)*	4,4	Brash, Pulsar, Saddle-Up, WeedMaster, WeedMaster XHL
				4,4,4	Brushmaster, Scorch, Scorch EXT, Strike 3
			Pyridine/Pyridyloxy-Carboxylate	4	Element 3A, Element 4, Elevore, GameOn, Garlon 3A, Garlon 4, Garlon 4 Ultra, Grandstand R, Lontrel, Method 240SL, Method 50SG, Milestone, Pathfinder II, Remedy Ultra, Renovate 3, Starane Ultra, StareDown, Stinger, Stinger HL, Tordon 22K, Tordon RTU, Transline, Vastlan, Vista XRT
				1,4	AxialStar
				2,2,4	GoldSky, Supremacy, Viewpoint
				2,4	Chaparral, Opensight, OpenSky, Perspective, Quelex, Grasp Xtra, Hornet, Starane Flex, Streamline, Tarzec
				2,4,15	SureStart II, Threesidual, TripleFLEX II
				2,4,4	PerfectMatch
				4,15,27	Kyro, Resicore, Resicore REV
				4,4	Capstone, Confront, Curtail, Curtail M, DuraCor, Graslan L, GrazonPD3, Grazon P+D, GrazonNext HL, NovaGraz, PastureGard HL, Sendero, Capstone, Surmount, Confront, Tordon 101 Mixture, Crossbow, PastureGard HL, Pixxaro EC,Tordon RTU, Pulsar, Sendero, Surmount, WideMatch
				4,4,1	Rezuvant
				4,4,4	GameOn, Scorch, Scorch EXT, Weld, WideARmatch
				4,4,6	Carnivore, Cleansweep D, Cleansweep M, Kochiavore
				4,6	Starane NXT
				4,6,27	Huskie FX
			Phenoxy-Carboxylate	4	2,4-D Amine 4, 2,4-D LV 4, 2,4-D LV 6, 2,4-DB 175, 2,4-DB 200, 2,4- DB DMA 175, 2,4-DB DMA 200, Butyrac 175, Butyrac 200, Duplosan, Enlist One, GameOn, Hi-Dep, MCPA Amine 4, MCPA Ester 4, Rugged, Shredder E-99, Thistrol, Tordon RTU, Weedar 64, Weedar XHL, Weedone 638
				2,4	Orion
				2,4,4	Cimarron Max
				4,4	Brash, Brushmaster, Crossbow, Curtail, Curtail M, Graslan L, GrazonPD3, Grazon P+D, GrazonNext HL, Saddle-Up, Tordon 101 Mixture, Tordon RTU, WeedMaster, WeedMaster XHL
				4,4,4	GameOn, Scorch, Scorch EXT, Strike 3, Weld
				4,4,6	Carnivore, Cleansweep D, Cleansweep M, Kochiavore
				4,6	Bison, Maestro Advanced, Maestro MA
				4,9	Enlist Duo
				4,15,27	Maverick
			Quinoline Carboxylic Acid	4	Drive XLR8, Facet L
				2,4	Clearpath, Strada XT2
	AUXIN TRANSPORT INHIBITOR	**19**	Semicarbazone	4,19	Distinct, Overdrive, Status
PHOTOSYNTHESIS INHIBITORS	**PHOTOSYSTEM II INHIBITORS - SERINE 264 BINDERS** **SYSTEMIC**	**5**	Amide	5	Stam 80 EDF, Stam M4, SuperWHAM!
				2,5	Duet
			Triazine	5	Aatrex 4L, Aatrex Nine-O, Atrazine 4L, Atrazine 90DF, Caparol 4L, Pramitol 25E, Princep 4L, Princep Caliber 90, Simazine 4L, Simazine 90DF/90 WDG

MODE OF ACTION *(effect on Plant growth)**	SITE OF ACTION	GROUP	HERBICIDE CHEMICAL FAMILY	SITE(S) OF ACTION *(more than one Site of Action indicates PREMIX)*	TRADE NAMES
				5,15	Bicep II Magnum, Bicep Lite II Magnum, Charger Max ATZ, Charger Max ATZ Lite, Confidence Xtra, Confidence Xtra 5.6L, Degree Xtra, FulTime NXT, Harness Xtra, Harness Xtra 5.6L, Keystone LA NXT, Keystone NXT, Tremor ATZ Lite NXT, Tremor ATZ NXT
				5,15,27	Lexar EZ, Lumax EZ
				5,15,27,27	Acuron
				5,27	Callisto Xtra, ImpactZ
			Triazinone	5	Dimetric EXT, Dimetric Liquid, Mauler, Velpar L, Velpar L VU
				2,5	Westar
				2,5,14	Trivence
				2,5,15	Tendovo
				5,5	Velpar AlfaMax, Velpar AlfaMax Gold
				5,14	Dimetric Charged, Sonic Boom
				5,15	Axiom DF, Boundary 6.5 EC, PREsidual
				5,14,15	Fierce MTZ, Kyber Pro
			Triazolinone	5	Xonerate
			Uracil	5	Sinbar WDG
				5,5	Krovar I DF
			Urea	5	Cotoran 4L, Daze 4SC, Direx 4L, FreeFall SC, Karmex DF, Linex 4L, Lorox DF, Spike 20P, Tupersan
				2,5	Sahara DG
				5,5	Adios, Cutout, Krovar I DF, Velpar AlfaMax, Velpar AlfaMax Gold
	PHOTOSYSTEM II INHIBITORS - HISTIDINE 215 BINDERS	**6**	Benzothiadiazole	6	Basagran, Basagran 5L
				2,6	Varisto
				6,14	Storm
			Nitrile	6	Maestro 2EC
				1,6,27	Wolverine Advanced
				2,6,27	Huskie Complete
				27,6	Talinor
	CONTACT			4,4,6	Carnivore, Cleansweep D, Cleansweep M, Kochiavore
				4,6	Bison, Maestro Advanced, Maestro MA, Starane NXT
				4,6,27	Huskie FX
				6,27	Huskie, Tolvera
NITROGEN METABOLISM INHIBITOR	**GLUTAMINE SYNTHETASE INHIBITOR**	**10**	Phosphinic Acid	10	Cheetah, Finale, Liberty Ultra, Liberty 280 SL, Rely 280, Total, Total 2.3, Total SL, Total TNV
				10,27	Sinate

HERBICIDE SITES OF ACTION AND FAMILIES *continued*

MODE OF ACTION *(effect on Plant growth)**	SITE OF ACTION	GROUP	HERBICIDE CHEMICAL FAMILY	SITE(S) OF ACTION *(more than one Site of Action indicates PREMIX)*	TRADE NAMES
PIGMENT INHIBITORS	**BLEACHING (PDS; PHYTOENE DESATURASE)**	**12**	N-Phenyl heterocycles	12	Solicam DF
	DEOXY-D-XYULOSE PHOSPHATE SYNTHASE INHIBITORS	**13**	Isoxazolidinone	13	Command 3ME
	HPPD INHIBITORS	**27**	Isoxazole	27	Balance Flexx, Scoparia
				2,27	Corvus
				2,15,27	TriVolt
			Pyrazole	6,27	Huskie, Tolvera
				1,6,27	Wolverine Advanced
				2,6,27	Huskie Complete
				4,6,27	Huskie FX
				4,15,27	Kyro
			Pyrazolone	27	Armezon, Frequency, Impact, Pylex
				10,27	Sinate
				5,27	ImpactZ
				15,27	Armezon PRO, Impact Core
			Triketone	27	Broadworks, Callisto, Incinerate, Laudis, Tenacity
				15,27	Harness MAX
				15,27,27	Acuron Flexi
				15,15,27,27	Storen
				2,27	Capreno, Realm Q, Revulin Q
				27,6	Talinor
				4,15,27	Maverick, Resicore, Resicore REV
				4,27	DiFlexx DUO
				5,15,27	Lexar EZ, Lumax EZ
				5,15,27,27	Acuron
				5,27	Callisto Xtra
				9,15,27	Halex GT
				9,15,27,27	Acuron GT
			Other	2,27	Butte

MODE OF ACTION *(effect on Plant growth)**	SITE OF ACTION	GROUP	HERBICIDE CHEMICAL FAMILY	SITE(S) OF ACTION *(more than one Site of Action indicates PREMIX)*	TRADE NAMES
CELL MEMBRANE DISRUPTERS	PPO INHIBITORS	14	Aryl triazinone	14	Aim EC, Shark EW, Spartan 4F
				14,14	Display, Spartan Charge
				14,15	Anthem Flex, Anthem Maxx, Authority Edge, Authority Elite, Authority Supreme, BroadAxe XC
				2,14	Authority Assist, Authority First DF, Authority XL, Sonic
				5,14	Sonic Boom
			Diphenylether	14	Agent 1.88, Avalanche Ultra, Cobra, Flexstar, Goal 2XL, GoalTender, Phoenix, Reflex
				14,15	Prefix, WarrantUltra
				2,14	Cleantraxx, Pindar GT
				6,14	Storm
				9,14	Flexstar GT 3.5
			N-phenylphthalimide	14	Chateau EZ, Clipper, Panther SC, Resource, Tuscany SC, Valor EZ, Valor SX
				14,15	Fierce EZ, Perpetuo
				2,14	Surveil, Valor XLT
				5,14	Dimetric Charged
				2,14,15	Fierce XLT, Zidua PRO
				2,2,14	Afforia, Enlite, Envive, Trivence
				5,14,15	Fierce MTZ
			Oxadiazole	14	Ronstar 50 WSP, Ronstar G
			Phenylpyrazole	14	ET, Vida
			Pyrimidinedione	14	Detail, Sharpen, Treevix
				14,15	Testify, Verdict, Surtain
	PHOTOSYSTEM I ELECTRON DIVERTER	22	Bipyridylium	22	Diquat 2L, Gramoxone SL 3.0, Reglone, Reward
				14,22	Cyclone Star
SEEDLING ROOT GROWTH INHIBITORS	MICROTUBULE ASSEMBLY INHIBITORS	3	Benzamide	3	Kerb SC
			Benzoic Acid	3	Dacthal Flowable, Dacthal W-75
			Dinitroaniline	3	Barricade 4FL, Barricade 65WG, Endurance, Framework 3.3 EC, Pendulum 2G, Pendulum 3.3 EC, Prowl H2O, Resolute 4FL, Resolute 65WG, Sonalan 10G, Sonalan HFP, Surflan A.S., Treflan HFP, Treflan TR-10, Trust
				3,15	Buckle
				3,15	Freehand 1.75G
				3,29	Snapshot 2.5 TG
			Pyridine	3	Dimension 2EW, Dimension Ultra 40WP
				3,29	Crew

HERBICIDE SITES OF ACTION AND FAMILIES *continued*

MODE OF ACTION *(effect on Plant growth)**	SITE OF ACTION	GROUP	HERBICIDE CHEMICAL FAMILY	SITE(S) OF ACTION *(more than one Site of Action indicates PREMIX)*	TRADE NAMES
SEEDLING SHOOT GROWTH INHIBITORS	VERY LONG-CHAIN FATTY ACID INHIBITORS	15	Benzofuran	15	Nortron SC
			Chloroacetamide	15	Charger Basic, Charger Max, Confidence, Dual II Magnum, Dual IIG Magnum, Dual Magnum, Enversa, Harness, Outlook, Pennant Magnum, Surpass NXT, Tower, Tremor NXT, Warrant
				14,15	Authority Elite, BroadAxe XC, Prefix, Testify, Verdict, WarrantUltra, Surtain
				15,27	Armezon PRO, Harness MAX, Impact Core
				15,27,27	Acuron Flexi
				15,15,27,27	Storen
				2,15,27	TriVolt
				2,4,15	SureStart II, Threesidual, TripleFLEX II
				3,15	Freehand 1.75G
				2,5,15	Tendovo
				4,15,27	Kyro, Maverick, Resicore, Resicore REV
				5,15	Bicep II Magnum, Bicep Lite II Magnum, Boundary 6.5 EC, Charger Max ATZ, Charger Max ATZ Lite, Confidence Xtra, Confidence Xtra 5.6L, Degree Xtra, FulTime NXT, Harness Xtra, Harness Xtra 5.6L, Keystone LA NXT, Keystone NXT, PREsidual, Tremor ATZ Lite NXT, Tremor ATZ NXT
				5,15,27	Lexar EZ, Lumax EZ
				5,15,27,27	Acuron
				9,15	Sequence
				9,15,27	Halex GT
				9,15,27,27	Acuron GT
			Isoxazoline	15	Zidua SC
				14,15	Anthem Flex, Anthem Maxx, Authority Edge, Authority Supreme, Fierce EZ, Perpetuo
				2,14,15	Fierce XLT, Zidua PRO
				5,14,15	Fierce MTZ, Kyber Pro
			Oxyacetamide	5,15	Axiom DF
			Thiocarbamate	15	Bolero 8 EC, Bolero UltraMax, Eptam 20-G, Eptam 7E, Far-Go
				2,15	League MVP
				3,15	Buckle
DHP INHIBITOR	DIHYDROPTEROATE SYNTHETASE INHIBITORS	18	Carbamate	18	Asulam 3.3, Asulox
CELLLULOSE/CELL WALL SYNTHESIS	CELLULOSE SYNTHESIS INHIBITORS	29	Alkylazine	29	Alion, EsplAnade 200 SC, Specticle Flo
			Benzamide	29	Gallery 75 DF, Gallery SC
				3,29	Crew, Snapshot 2.5 TG
			Nitrile	29	Casoron 4G
UNKNOWN	UNKNOWN SITE OF ACTION	0	Acetamide	0	Devrinol DF-XT
			Other	0	DSMA, MSMA 6 Plus, Krenite
			Phosphorodithioate	0	Prefar 4-E

HERBICIDE INJURY: MERISTEMATIC INHIBITORS I

1. IMPROPER LEAF UNFURLING OF CORN



2. CORN LEAF-OUT UNDERGROUND



3. LEAF PUCKERING AND DRAWSTRING OF SOYBEAN



4. STUNTED, TWISTED, BUGGY-WHIPPED CORN



5. STUNTED PLANTS AND CRINKLED LEAVES: SOYBEAN



6. SOYBEAN BUD SEAL



7. STUNTED CORN WITH SWOLLEN PROLIFERATED ROOTS



8. PURPLE CORN SYNDROME



9. DNA SOYBEAN INJURY



10. LODGED SOYBEANS



11. CORN INJURY FROM HERBICIDE CARRYOVER



The meristematic inhibitors reduce the ability of meristems or regions of active cell division to develop and grow normally. Meristematic inhibitors can be divided into three categories: herbicides that primarily affect shoot meristems **(Shoot Inhibitors)**, which include the acetanilide and thiocarbamate herbicides; herbicides that primarily affect root meristems **(Root Inhibitors)**, which include the dinitroanilines; and herbicides that inhibit both root and shoot meristems or growing points **(Shoot and Root Inhibitors)**, which include the imidazolinones, sulfonylureas, amino acid type herbicides and the postemergence grass herbicides.

SHOOT INHIBITORS

Chloroacetamides. This family of herbicides includes alachlor (several premixes), metolachlor (Dual and several premixes), and acetachlor (Harness, Surpass NXT). These herbicides translocate with the transpiration stream and primarily affect shoot meristems in sensitive plants.

1. **Improper Leaf Unfurling of Corn.** Stressful environmental conditions or excessive rates of alachlor, metolachlor or acetachlor may cause improper unfurling of corn leaves. Corn seedlings may appear malformed and stunted. Injured plants often outgrow this damage after emergence. Injury symptoms are similar to those caused by thiocarbamate herbicides.

2. **Corn Leaf-Out Underground.** Germinating corn injured by alachlor, metolachlor or acetachlor may result in plants leafing-out underground. This problem is more severe with deep planting, soil crusting, cool temperatures and certain sensitive hybrids.

3. **Leaf Puckering and Drawstring of Soybeans.** Acetanilide injury to soybeans may cause a slight puckering of the first few leaves. Injured plants may also show a "drawstring effect" where the midrib of the leaf is shortened, giving the injured leaves a heart-shaped appearance.

Thiocarbamates. This family of herbicides includes butylate EPTC (Eptam). This family of herbicides translocates with the transpiration stream and primarily affects shoot meristems, so symptoms of injury can look very similar to acetanilide injury.

4. **Stunted, Twisted, Buggy-Whipped Corn.** Herbicides such as butylate and EPTC may cause stunting, twisting and buggy-whipping of some corn plants.

5. **Stunted Plants and Crinkled Leaves: Soybean.** Injury to soybean from butylate or EPTC can occur through either misapplication of the herbicides or planting of soybeans into a thiocarbamate treated field after a corn crop failure. Vernolate, a soybean herbicide, can cause similar injury symptoms. Injury symptoms include stunted plants with crinkled, malformed leaves. If the injury is not too severe, plants often recover and grain yields are unaffected.

6. **Soybean Bud Seal.** Severe soybean injury called "bud seal" may occur from misapplication of thiocarbamate herbicides. Soybeans may recover from all but the most severe bud seal injury.

ROOT INHIBITORS

Dinitroanilines (DNA). This herbicide family includes trifluralin (Treflan and Trust), pendimethalin (Framework 3.3 EC, Prowl H20), ethalfluralin (Sonalan 10G, Sonalan HFP), oryzalin (Surflan A.S.) and several premixes containing these DNA herbicides. The dinitroaniline herbicides translocate very little in plants and therefore primarily affect root meristems.

7. **Stunted Corn with Swollen Proliferated Roots.** Dinitroaniline herbicides such as trifluralin, pendimethalin, oryzalin and ethalfloralin may cause corn injury through misapplication or carryover of herbicide residues. Corn seedlings may appear stunted and chlorotic and develop proliferated, stubby root systems with club-shaped lateral roots.

8. **Purple Corn Syndrome.** Dinitroaniline or DNA induced root inhibition may cause corn plants to appear stunted, chlorotic and purple. Cool wet soils, fertility imbalance, compaction and other stresses that slow plant growth and development may accentuate injury.

9. **DNA Soybean Injury.** Excessive rates of dinitroaniline herbicides may result in early soybean injury denoted by pruned lateral roots, swollen and cracked hypocotyls, stunted plants and crinkled leaves.

10. **Lodged Soybeans.** Preemergence applications or shallow incorporation of dinitroaniline herbicides can occasionally cause symptoms of soybean injury that include girdling or callusing of plant stems at the soil surface. Later in the season, stems may easily break off (lodge). Injury may occur because of misapplication or where prolonged dry periods allow the chemical to remain in a concentrated layer near the soil surface.

11. **Corn Injury from Herbicide Carryover.** Carryover injury from any herbicide rarely appears uniformly throughout the field. Differences in herbicide rate and distribution, soil texture, organic matter content, pH, tillage, etc., often cause herbicide injury to appear in streaks or in isolated areas of the field.

Source: Revised from UNIVERSITY OF ILLINOIS March 1989 Curran et al.

HERBICIDE INJURY: MERISTEMATIC INHIBITORS II

1. CORN STUNTING AND INTERVEINAL CHLOROSIS OF LEAVES



2. BOTTLE-BRUSH CORN ROOTS



3. GOLDEN BEANS



4. LEAVES OF GOLDEN BEANS



5. RED VEINS



6. SLOW PLANT DEATH



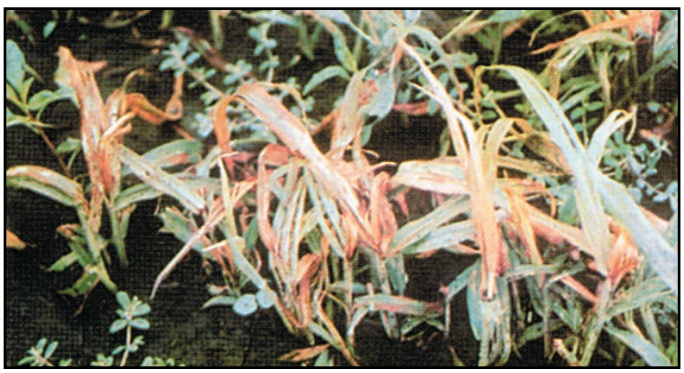
7. CHLOROSIS/NECROSIS OF CORN LEAVES



8. GRADUAL CHLOROSIS/NECROSIS OF SOYBEAN LEAVES



9. LEAF CHLOROSIS, NECROSIS AND GRASS PLANT DEATH



10. DEAD GRASS MERISTEM



SHOOT AND ROOT INHIBITORS

Imidazolinones and Sulfonylureas. Both these herbicide families inhibit plant growth by preventing the synthesis of certain amino acids. These herbicides are systemic, having both foliar and soil activity, and are capable of stopping root and shoot growth, depending on the site of herbicide uptake. The imidazolinone herbicides include imazamox (Beyond Xtra), imazaquin (Scepter 70 DG), imazethapyr (Pursuit) and several premixes containing imazaquin or imazethapyr. The sulfonylurea herbicides include chlorimuron (Classic) nicosulfuron (Accent Q), foramsulfuron (Revolver).

1. **Corn Stunting and Interveinal Chlorosis of Leaves.** Imazaquin, imazethapyr or chlorimuron can injure corn through misapplication or through carryover of herbicide residues. Corn may appear stunted with interveinal chlorosis and/or purpling of the new leaves first. Risk of carryover injury from chlorimuron is much greater on soils with a pH above 6.8.

2. **Bottle-Brush Corn Roots.** Imidazolinones and sulfonylureas may inhibit root development of corn. With more severe injury, lateral roots are pruned. Short, proliferated roots may cause a "bottle brush" like appearance.

3. **Golden Beans.** Although soybean injury from imazaquin and chlorimuron applications is not common, it occurs more frequently on coarser-textured, lower organic matter soils. Soybean leaves may appear chlorotic and/or crinkled. The herbicide injury symptoms may appear similar to or be associated with those caused by potassium deficiency and/or soybean cyst nematodes.

4. **Leaves of Golden Beans.** An imidazolinone or sulfonylurea may cause soybean leaf margins to appear chlorotic to necrotic. Leaf yellowing may appear anywhere on the soybean plant (both the upper and lower portions of the plant).

5. **Red Veins.** The sulfonylurea herbicides can cause leaf veins to appear red or purplish. This is more frequently seen with susceptible weeds or less tolerant crops.

6. **Slow Plant Death.** Postemergence applications of the imidazolinones and sulfonylureas kill weeds slowly. Although plant growth may slow or stop shortly after application, injury symptoms are often unnoticed for two to three weeks after application.

Amino Acid. The amino acid type herbicides include glyphosate (Cornerstone, Roundup, Rodeo). These translocated herbicides are nonselective, controlling both broad leaves and grasses. The amino acid herbicides are foliar applied materials, therefore injury symptoms first appear on the shoots of susceptible species. However, depending on the growth stage of the target species at application time (especially perennials), root inhibition may also occur.

7. **Chlorosis/Necrosis of Corn Leaves.** Glyphosate is the most common amino acid type herbicide. It is used for spot treatment of problem weeds in field crops and noncrop land. Glyphosate is very active on corn and is often applied with a ropewick. Crop injury occurs as a slow yellowing (chlorosis), followed by necrosis and plant death.

8. **Gradual Chlorosis/Necrosis of Soybean Leaves.** Glyphosate is often used for spot treatment of problem weeds in soybeans. However, if glyphosate comes in contact with soybean leaves, plant injury may occur. Newest soybean leaves will first appear chlorotic then may turn necrotic.

Postemergence Grass Herbicides. TThe postemergence grass herbicides include clodinafop (Discover), fenoxaprop (Tacoma 1EC), fluazifop (Fusilade), sethoxydim (Poast), clethodim (Cleanse) and quizalofop (Assure II). These herbicides are systemic, controlling annual and some perennial grasses. They have little or no activity on broadleaf species. As with the amino acid herbicides, the postemergence grass herbicide injury symptoms first appear on the shoots of susceptible grass species. Root inhibition may also occur depending on plant growth stage and application timing.

9. **Leaf Chlorosis, Necrosis and Grass Plant Death.** The newest leaf tissue of treated grasses slowly turns chlorotic and then necrotic. This is eventually followed by plant death.

10. **Dead Grass Meristem.** A common symptom of ACC-ase herbicides such as Assure II, Discover, Fusilade, Poast, Tacoma 1EC, and others. Young whorl leaves may be separated easily from the plant, indicating that the herbicide is acting on the plant meristem.

Source: Revised from UNIVERSITY OF ILLINOIS March 1989 Curran et al.

HERBICIDE INJURY: PHOTOSYNTHETIC INHIBITORS

1. CHLOROSIS/NECROSIS OF OLDER CORN LEAVES



2. CHLOROSIS/NECROSIS OF CORN LEAF TISSUE



3. INTERVEINAL CHLOROSIS AND YELLOWING OF SOYBEAN LEAVES



4. CHLOROSIS AND NECROSIS OF THE OLDER LEAF TISSUE IN SOYBEAN



5. CHLOROSIS AND NECROSIS OF OLDER LEAF TISSUE IN WHEAT



6. NECROTIC SPOTS ON CORN AND SOYBEAN LEAVES



7. NECROTIC LEAF BURN



8. NECROTIC OR BRONZE SPECKLING ON SOYBEAN LEAVES



Photosynthetic Inhibitors (PSI). The photosynthetic inhibitors include the triazines: atrazine, metribuzin (Dimetric EXT/Dimetric Liquid), simazine (Princep), and several premixes containing these active ingredients; the uracils: bromacil and terbacil; and the phenylureas: diuron (Karmex DF) and linuron (Lorox DF and Linex 4L). These herbicides all inhibit photosynthesis in susceptible plants.

1. Chlorosis/Necrosis of Older Corn Leaves. Chlorosis and necrosis of corn leaves, beginning at the leaf tips of older leaves, may result from application of atrazine or metribuzin. Injury is more likely following prolonged cool, wet conditions that stress the plant.

2. Chlorosis/Necrosis of Corn Leaf Tissue. Postemergence applications of linuron should be directed away from the corn leaves and onto the weeds. Plant tissue contacted by these herbicides may turn chlorotic, then necrotic. Symptoms from postemergence applications of photosynthetic inhibitor herbicides look similar to symptoms from contact type herbicide injury. Risk of injury is greater with the addition of crop oil.

3. Interveinal Chlorosis and Yellowing of Soybean Leaves. Interveinal chlorosis and necrosis of the older soybean leaf tissue may result from the use of a triazine herbicide such as metribuzin or a phenylurea herbicide such as linuron. With linuron, heavy rain may also splash treated soil onto the leaves causing necrotic spotting or "splash burn". Plants can often recover from this "splash burn" injury if the buds are not affected.

4. Chlorosis and Necrosis of the Older Leaf Tissue in Soybean. Atrazine residues may carry over and cause soybean injury symptoms very similar to metribuzin or linuron injury. Atrazine residues in combination with metribuzin may cause additive injury to soybeans following corn.

5. Chlorosis and Necrosis of Older Leaf Tissue in Wheat. Wheat is sensitive to atrazine and may be injured from residues that carry over. Chlorosis and necrosis of the older leaf tissue first are symptoms of photosynthetic inhibitor herbicide injury to wheat. Contact Herbicides. The contact herbicides include a bipyridy-lium: paraquat (Gramoxone SL 3.0); the diphenyl ethers: acifluorfen (Avalanche Ultra), lactofen (Cobra), fomesafen (Reflex and Flexstar), and several premixes containing diphenyl ethers; and two others: bentazon (Basagran) and bromoxynil (Maestro 2EC). The contact herbicides disrupt cell membranes and translocate very little in the plant.

6. Necrotic Spots on Corn and Soybean Leaves. Paraquat is a nonselective herbicide that kills plant tissue very quickly. Injury symptoms can be noticed within several hours after application, first as water-soaked areas on the leaf that turn to necrotic spots wherever spray drift contacted the leaves.

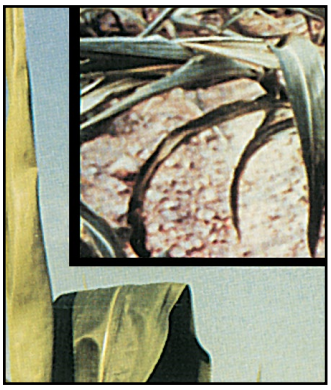
7. Necrotic Leaf Burn. The diphenyl ethers such as acifluorfen, lactofen and fomesafen may cause necrotic spotting or burn of leaf tissue contacted by herbicide spray. Slight leaf crinkling may also occur. Risk of injury from the diphenyl ethers is greater with the addition of crop oils and with applications made under high temperatures. Likelihood of soybean recovery is relatively good from this type of injury.

8. Necrotic or Bronze Speckling on Soybean Leaves. Soybeans generally have very good tolerance to bentazon (Basagran). However, under stress conditions or very warm temperatures, soybean leaves may show yellowing, bronzing, speckling or leaf burn. The addition of crop oil to the spray tank increases the risk of injury. Soybean injury is generally considered cosmetic only, with little risk of yield reduction.

Source: Revised from UNIVERSITY OF ILLINOIS March 1989 Curran et al.

HERBICIDE INJURY: PLANT GROWTH REGULATORS

1. ONION LEAFING IN CORN



2. ELBOWING, LODGING AND STALK BREAKAGE IN CORN



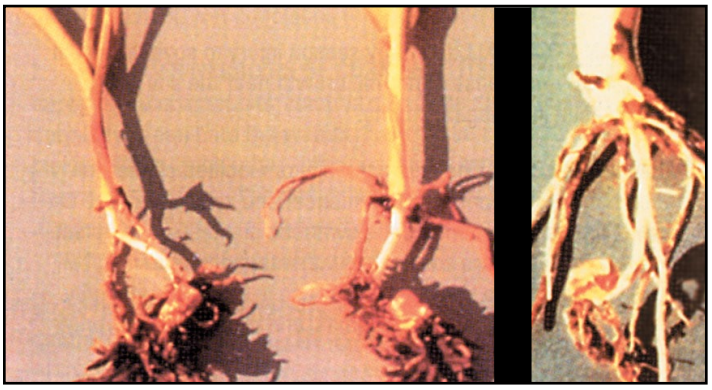
3. CORN BRACE ROOT INJURY



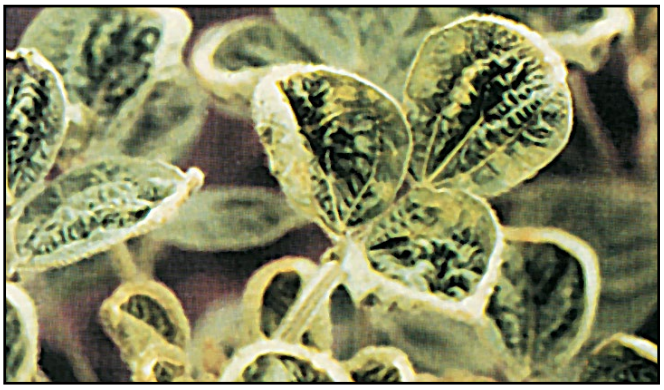
4. MISSING CORN KERNELS



5. IMPROPER CORN ROOT DEVELOPMENT



6. SOYBEAN LEAF PUCKERING AND CUPPING



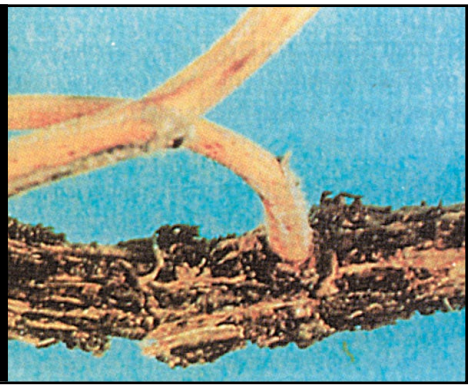
7. SOYBEAN LEAF PUCKERING/DISTORTED GROWTH



8A. SOYBEAN STEM CALLUS



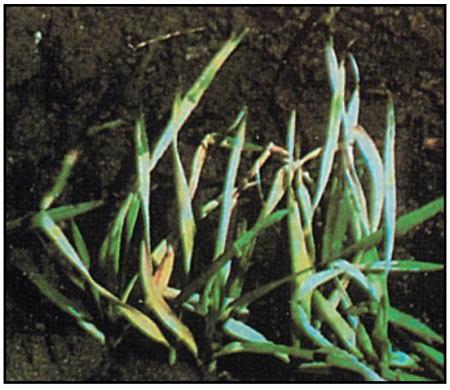
8B. SOYBEAN STEM CALLUS



9. CHLOROTIC/WHITE CORN



10. CHLOROTIC/WHITE SMALL GRAINS



11. OFF-TARGET BLEACHING



Plant Growth Regulators-PGRs (Growth hormones, synthetic auxins). The growth regulator type herbicides include the benzoic acids: dicamba; the phenoxy acetic acids which include 2,4-D, 2,4-DB (Butyrac), and MCPA; and the pyridines: picloram (Tordon 22K) triclopyr (Garlon 3A, Garlon 4, Garlon 4 Ultra and a component of Crossbow), clopyralid (Stinger/Stinger HL), aminopyralid (Milestone) and fluroxypyr (Starane Ultra/StareDown). All of these compounds are systemic. The plant growth regulator herbicides mimic different growth regulating compounds in the plant and may cause a variety of growth abnormalities in susceptible species. The injury symptoms generally are first seen in the newest leaves. Some injury symptoms may resemble those caused by meristematic inhibitor compounds.

1. Onion Leafing in Corn. 2,4-D applied postemergence may injure corn. Symptoms can include onion leafing, elbowing and malformed brace roots. Certain corn hybrids are more sensitive to 2,4-D than others. Corn may occasionally be injured by applications of dicamba, however, the risk of injury may be less than with 2,4-D. Injury symptoms of dicamba are similar to those caused by 2,4-D.

2. Elbowing, Lodging and Stalk Breakage in Corn. Corn stalks may become brittle for one or two weeks following 2,4-D application, increasing the risk of stalk breakage by wind or cultivation equipment. Excessive rates of 2,4-D, may result in "elbowing" or lodging of corn stalks, particularly when sensitive hybrids are grown. Elbowing and lodging symptoms in corn may look similar to damage caused by corn rootworm larvae. Avoid applying 2,4-D or dicamba to corn which is under stress from adverse weather conditions.

3. Corn Brace Root Injury. Excessive rates of 2,4-D or dicamba may cause malformation of corn brace roots, resulting in proliferation of roots, fusing or fasciation of roots and roots growing upward rather than downward.

4. Missing Corn Kernels. Postemergence applications of 2,4-D and dicamba during the period from tassel to dough stage may result in lack of kernel set or ear development.

5. Improper Corn Root Development. The primary root system in seedling corn may appear proliferated and stubby where excessive rates of dicamba applied preemergence or a misapplication of chloramben contacts the germinating seed.

6. Soybean Leaf Puckering and Cupping. Dicamba applications to corn, small grains or noncropland may drift and injure nearby soybeans and other desirable vegetation. Cupped and puckered leaves and abnormal bud development are symptoms of dicamba injury. Dicamba and 2,4-D drift injury look similar.

7. Soybean Leaf Puckering/Distorted Growth. 2,4-D applied postemergence to corn may drift and injure nearby soybeans and other desirable plants. Symptoms of injury include puckering of leaves, parallel venation or leaf strapping, distortion of stems, callus growth and lodging. 2,4-DB applied postemergence over the top to soybeans can cause similar symptoms.

8. Soybean Stem Callus. Early season injury to soybeans from 2,4-D or 2,4-DB may cause abnormal growth near the soil surface which can result in soybean lodging.

Pigment Inhibitors (Bleachers). The pigment inhibitors include clomazone (Command 3ME), isoxaflutole (Balance Flexx), tombotrione (Laudis), topramezone (Impact) and mesotrione (Callisto). These herbicides inhibit the production of photosynthetic pigments in the plant. The pigment inhibitors are soil active, with intermediate to long soil persistence. Clomazone is registered for use in soybeans and may injure corn, small grains, forage legumes and ornamentals through misapplication, drift or carryover.

9. Chlorotic/White Corn. Corn injury from clomazone can occur through misapplication, drift or carryover. Shortly after emergence, the corn may appear chlorotic, then bleached or white. The likelihood of corn recovering from clomazone injury is good as long as a portion of the plant remains green. Various inbreds and hybrids may respond differently to clomazone residues. Other pigment inhibitors may cause similar symptomology.

10. Chlorotic/White Small Grains. Small grains such as wheat and oats are very sensitive to clomazone residues. Plants appear chlorotic or bleached (white). Other pigment inhibitors may cause similar symptomology.

11. Off-Target Bleaching. Preemergence applications of clomazone may move off-target by particle or vapor drift. Sensitive ornamentals may appear chlorotic or white. Unless injury is severe, plants generally recover from clomazone injury due to movement outside the target area. Other pigment inhibitors may cause similar symptomology.

Source: Revised from UNIVERSITY OF ILLINOIS March 1989 Curran et al.

HERBICIDE PROPERTIES AFFECTING PERFORMANCE

The table on the following page presents information which can help in the more effective use of common herbicides and avoid contamination of the environment through drift, runoff and leaching of the herbicide. A description of these herbicide properties is listed below.

PROPERTIES AFFECTING PERFORMANCE, RUNOFF AND LEACHING

1. SOIL DEGRADATION

a) Microbial decomposition is the most common pathway by which herbicides degrade. Herbicides vary greatly in their susceptibility to this process (herbicides with asterisks are most susceptible). The rate of microbial breakdown is affected by temperature, moisture, soil pH and soil organic matter. A warm (80-90° F), moist, well-aerated soil with pH of 5.5-7.0 is most favorable for rapid microbial breakdown. Any adverse condition, such as cold temperatures or dry soil, will increase the residual or carryover potential.

b) Chemical Decomposition is not biological and is influenced somewhat less by changes in soil moisture and temperature. In general, high soil temperature increases the rate of chemical breakdown. As a result, breakdown of chemicals subject to chemical decomposition proceeds at a near normal pace in dry, hot seasons. High pH reduces the rate of chemical breakdown of sulfonylurea and triazine herbicides. Low pH reduces the rate of breakdown of Pursuit and Scepter 70 DG.

2. SURFACE LOSS

a) Photodecomposition is the decomposition of herbicides by ultraviolet rays from sunlight. Soil-applied herbicides with high ratings should be incorporated.

b) Volatility is the conversion of a herbicide to a gaseous form. High volatility ratings imply that soil-applied herbicides should be incorporated and that post-applied herbicides may volatilize and drift to susceptible plants. High temperature, moist soils and wind are factors which increase the rate of volatilization. Volatility of soil-applied herbicides is greater from moist than from dry soil. Volatility into soil pore spaces improves the mobility and root uptake of some soil-applied herbicides.

3. WATER SOLUBILITY

The higher the solubility, the greater the tendency for a herbicide to move with water. High solubility of soil-applied herbicides is desirable for dry soil conditions since it requires a minimal amount of rain for activation. A disadvantage of high solubility is that excessive rainfall can leach the herbicide out of the zone of weed seeds and roots. A second disadvantage of high solubility is an increased potential to leach into groundwater.

Water Solubility Classes of Pesticides

Solubility (ppm)	Solubility Class
>3,000	Very high
300-3000	High
30-300	Moderate
3-30	Low
<3	Very low

4. SOIL ADSORPTIVITY

The strength of bonding of a herbicide to soil clay and organic matter affects herbicide mobility and the rate required for weed control. Soil applied herbicides with strong soil adsorptivity require large adjustments in rate for different soil types. Postemergence herbicides with strong soil adsorptivity generally have little or no soil residual activity. Herbicides with low soil adsorptivity are often good choices for fields with wide variation in soil characteristics. Low adsorptivity increases the potential for a herbicide to runoff or leach into groundwater.

5. HALF-LIFE (SOIL PERSISTENCE OR RESIDUAL)

The length of time a herbicide persists in the soil is affected by all the factors listed above. Since half-life (soil residual) is affected by rate, soil properties, environmental conditions, plant species and many other factors, it is not possible to determine the exact length of time that a herbicide will control weeds or carryover to affect plant-back crops. The days of activity listed in the following table are only general guidelines on the relative persistence of herbicides. The actual value in the field may be lower than the value listed when conditions for rapid breakdown exist or higher than the listed value where breakdown is slow or the use rate is excessive.

PESTICIDE MOVEMENT IN WATER INTO SURFACE WATERS OR UNDERGROUND

Physical and chemical properties affect the potential movement of pesticides into surface water as runoff or into groundwater through leaching. The effect of these properties (shown on the following pages) on pesticide movement can be summarized as follows:

Relative Persistence or Half Life

The slower a pesticide degrades, the greater the chances it will move into ground or surface waters.

Water Solubility

The higher the water solubility (generally over 30 ppm), the higher the potential for leaching into groundwater and for surface runoff into streams, reservoirs, etc.

Soil Adsorptivity

The weaker the pesticide is bonded to soil particles, the greater the potential for that pesticide to be found in water.

MOVEMENT OF PESTICIDES ATTACHED TO SOIL SEDIMENT

As with leaching and surface runoff, movement of pesticides attached to soil increases as the length of persistence increases. Low solubility and strong soil absorptivity favor movement with soil particles.

ACTIVE INGREDIENT	PLANT UPTAKE F = FOLIAR S = SHOOT R = ROOT	SOIL DEGRADATION[1,2] MICROBIAL	SOIL DEGRADATION[1,2] CHEMICAL	SURFACE LOSS[1,3] PHOTO-DECOMPOSITION	SURFACE LOSS[1,3] VOLATILITY	WATER SOLUBILITY[1] *(ppm at 77°F)*	SOIL ADSORPTIVITY [1,4] (KOC); MOBILITY	HALF-LIFE UNDER FIELD CONDITIONS (DAYS)[1]
2,4-D, DIMETHYLAMINE SALT	F/R	★★★	★	L	M	796,000	20; Mobile	10
2,4-D, 2-ETHYLHEXYL ESTER	F/R	★★★	★	L	M-H	1	46; Mobile	34
2,4-DB, DIMETHYLAMINE SALT	F	★★★	★	L	L	709,000	20; Mobile	10
ACETOCHLOR	S/R	★★★	★	L	L	282	156; Mobile	14
ACIFLUORFEN	F	★★★	★	H	L	250,000	113; Moderately Mobile	54
AMINOCYCLOPYRACHLOR	F/S/R	★★★	★	L	L	3,130-3,870	28; Mobile	100
AMINOPYRALID	F/R	★★★	★	L	L	212,000-203,000	13; Mobile	35
ATRAZINE	R/F	★★	★★★	M	L	33	100; Mobile	60
BENTAZON	F/R	★★★	★	L	L	570	55; Mobile	13
BROMACIL	R	★★	★	L	L	700	32; Mobile	60
BROMOXYNIL OCTONOATE	F	★	★★	L	L	0.08	10,000; Hardly Mobile	7
CARFENTRAZONE-ETHYL	F	★★★	★	L	L	12	866; Moderately Mobile	4
CHLORIMURON-ETHYL	F	★★★	★	L	L	1200	110; Mobile	40
CHLORSULFURON	F/R	★	★★★	L	L	7,000	40; Mobile	40
CLETHODIM	F/S	★★★	★	L-M	L	5,450	40; Mobile	3
CLODINAFOP-PROPARGYL	F	★★★	★	M-H	L	4	1,500; Slightly Mobile	1
CLOMAZONE	S/R	★★★	★	L	M-H	1,100	300; Moderately Mobile	24
CLOPYRALID, MONOETHANOLAMINE SALT	F/R	★★★	NA	L	L	300,000	6; Highly Mobile	40
CLORANSULAM-METHYL	R/S	★★★	★	L	L	3-3,430	30; Mobile	11
CYHALOFOP-BUTYL	F	★★★	★	L	L	0.44	4,523; Slightly Mobile	1
DICAMBA, AMINE SALTS	F/R/S	★★★	★	L-M	M-H	400,000	2; Highly Mobile	14
DIMETHENAMID-P	S/R	★★★	★	L	L	1,449	241; Moderately Mobile	31
DIQUAT DIBROMIDE	F	★	★	L	L	718,000	1,000,000; Immobile	1,000
DIURON	R	★★★	★	L	L-M	42	480; Moderately Mobile	90
EPTC	S/R	★★★	★	L	H	344	200; Moderately Mobile	6
ETHALFLURALIN	S/R	★★	★★	M	L	0.3	4,000; Slightly Mobile	60
FLORASULAM	F/R	★★★	★	L	L	6,360	22; Mobile	8.5
FLUAZIFOP-P-BUTYL	F	★★	★★	L	L	2	5,700; Slightly Mobile	15
FLUCARBAZONE-SODIUM	F/R	★★★	★	L	L	44,000	20; Mobile	15
FLUFENACET	R/S	★★★	★	L	L	56	401; Moderately Mobile	199
FLUMETSULAM	R/F	★★★	★	L	L	5,650	28; Mobile	47
FLUMICLORAC-PENTYL ESTER	F	★★	★★★	L	L	0.189	30; Mobile	2.5
FLUMIOXAZIN	F/R	★★★	★★	L	L	1.79	2,242; Slightly Mobile	14.7
FLUROXYPYR 1-METHYLHEPTYL ESTER	F	★★★	★	L	L	0.09	24,600; Hardly Mobile	36
FLUTHIACET-METHYL	F	★	★★★	H	NA	0.78	100; Mobile	8
FOMESAFEN	F/R	★★	★	H	L	700,000	60; Mobile	100
FORAMSULFURON	F	★★★	NA	L	L	3290	52; Mobile	15
GLUFOSINATE-AMMONIUM	F	★★★	NA	L	L	1,370,000	100; Mobile	7
GLYPHOSATE[6]	F	★★★	★	L	L	900,000	24,000; Hardly Mobile	47
HALAUXIFEN-METHYL	F/S/R	★★★	★	L	L	1.8	88; Mobile	7
HALOSULFURON-METHYL	F/R	★★★	★★★	L	L	10.2	109; Mobile	26.7
HEXAZINONE	R/F	★★	NA	M-H	L	33,000	54; Mobile	90

See note and footnotes at end of table.

HERBICIDE PROPERTIES AFFECTING PERFORMANCE *continued*

ACTIVE INGREDIENT	PLANT UPTAKE F = FOLIAR S = SHOOT R = ROOT	SOIL DEGRADATION[1,2] MICROBIAL	SOIL DEGRADATION[1,2] CHEMICAL	SURFACE LOSS[1,3] PHOTO-DECOMPOSITION	SURFACE LOSS[1,3] VOLATILITY	WATER SOLUBILITY[1] *(ppm at 77°F)*	SOIL ADSORPTIVITY [1,4] (KOC); MOBILITY	HALF-LIFE UNDER FIELD CONDITIONS (DAYS)[1]
IMAZAMETHABENZ-METHYL	R/S	★★★	★★	L-M	L	1370	66; Mobile	45
IMAZAMOX	F/R	★★★	★	L	L	626,000	67; Mobile	17
IMAZAPIC, AMMONIUM SALT	R/F	★★★	★	NA	L	259,000	81; Mobile	1,200
IMAZAPYR	R/F	★★★	★	L	L	11,000-500,000	100; Mobile	90
IMAZAQUIN	R/S	★★★	★	L-M	L	160,000	20; Mobile	60
IMAZETHAPYR	F/R	★★★	★	L	L	200,000	10; Highly Mobile	90
ISOXAFLUTOLE[5]	F/S/R	★★	★	L-M	L	6.2	145; Moderately Mobile	1
LACTOFEN	F	★★★	★	M-H	L	0.1	10,000; Slightly/ Hardly Mobile	3
LINURON	R/F	★★★	★	L	L-M	75	400; Moderately Mobile	60
MCPA[7]	F/S/R	★★★	★	L	L-M	825	20; Mobile	25
MCPP[7]	F/R	★★★	★	L	NA	620	26; Mobile	13
MESOSULFURON-METHYL	F/R	★	★★★	NA	L	7.24-15,390	190; Moderately Mobile	78
MESOTRIONE	F/S/R	★★★	★	L	L	160	390-17; Moderately Mobile-Mobile	18
METRIBUZIN	R/F	★★★	★	L	L	1,220	60; Mobile	40
METSULFURON-METHYL	F/R	★	★★★	L	L	9500	35; Mobile	120
NICOSULFURON	F	★★★	★	NA	L	22,000	30; Mobile	21
NORFLURAZON	R	★★	★	M-H	NA	28	600; Moderately Mobile	90
PARAQUAT DICHLORIDE	F	★	★	M	L	620,000	1,000,000; Immobile	1,000
PENDIMETHALIN	S/R	★	★★★	L	L-M	0.275	5,000; Slightly Mobile	90
PENOXSULAM	F/S/R	★★★	★	L-M	L	5.7-1,460	94; Mobile	15
PICLORAM	F/R	★	★★	M-H	L	200,000	16; Mobile	90
PINOXADEN	F/R	★★★	★★★	L	L	200	212; Moderately Mobile	3
PRIMISULFURON-METHYL	F/R	★★	★★	M	L	70	50; Mobile	30
PRODIAMINE	S/R	★★	★★	M-H	L-M	0.013	13,000; Hardly Mobile	120
PROMETON	R/F	★	NA	M	L	720	150; Moderately Mobile	500
PROPOXYCARBAZONE-SODIUM	F/R	★★★	★	L-M	L	42,000	29; Mobile	23
PROSULFURON	F/S/R	★	★★★	L	L	4,000	14; Mobile	62
PYRASULFOTOLE	F	★★★	★	NA	L	4,200-49,000	400; Moderately Mobile	12
PYRITHIOBAC-SODIUM	F/R	★★★	★	H	L	728	9; Highly Mobile	60
PYROXASULFONE	S/R	★★★	★	L	L	3.48	129; Moderately Mobile	21
PYROXSULAM	F	★★★	★	L	L	16.4-3,200	100; Mobile	14
QUINCLORAC	F/S/R	★★★	★	L	L	0.065	50; Mobile	450
QUIZALOFOP-P-ETHYL	F	★★★	★	L	NA	0.4	1,816; Slightly Mobile	60
RIMSULFURON	F	★	★★★	NA	L	7,300	47; Mobile	10
S-METOLACHLOR	S/R	★★★	★	M-H	L-M	480	137; Moderately Mobile	15
SAFLUFENACIL	F/S/R	★★★	★★★	L-M	L	14-2,100	300; Moderately Mobile	18
SETHOXYDIM	F	★★★	NA	H	L	4,390	100; Mobile	5
SIMAZINE	R	★★★	★★	M	L	6.2	130; Mobile	60
SULFENTRAZONE	R/F	★★★	NA	L	L	780	43; Mobile	541
SULFOMETURON-METHYL	F/R	★	★★★	L	L	70	78; Mobile	20

See note and footnotes at end of table.

ACTIVE INGREDIENT	PLANT UPTAKE F = FOLIAR S = SHOOT R = ROOT	SOIL DEGRADATION[1,2] MICROBIAL	SOIL DEGRADATION[1,2] CHEMICAL	SURFACE LOSS[1,3] PHOTO-DECOMPOSITION	SURFACE LOSS[1,3] VOLATILITY	WATER SOLUBILITY[1] *(ppm at 77°F)*	SOIL ADSORPTIVITY [1,4] (KOC); MOBILITY	HALF-LIFE UNDER FIELD CONDITIONS (DAYS)[1]
SULFOSULFURON	F	★★	★★★	H	L	1,627	33; Mobile	45
TEBUTHIURON	R	★★★	NA	L	L	2,500	80; Mobile	360
TEMBOTRIONE	F/S/R	★★★	★★	L	L	0.22-29.7	50; Mobile	40
TERBACIL	R	★★★	NA	L	L	710	55; Mobile	120
THIENCARBAZONE-METHYL	F/R	★★★	★	L	L	172-417	148; Moderately Mobile	29
THIFENSULFURON-METHYL	F/R	★★★	★★★	NA	L	2,400	45; Mobile	12
THIOBENCARB	R/S	★★★	NA	L-M	L-M	28	900; Moderately Mobile	21
TOPRAMEZONE	F/S/R	★★★	★	L-M	L	15,000	100; Mobile	160
TRALKOXYDIM	F/R	★★★	★	L	L	6	20; Mobile	18
TRIALLATE	S	★★★	NA	L	M-H	4	2,400; Slightly Mobile	82
TRIASULFURON	F/R	★★	★★	L-M	L	815	60; Mobile	59.1
TRIBENURON-METHYL	F/R	★★★	★★★	L	L	280	46; Mobile	10
TRICLOPYR	F	★★	★★★	M	L	440	68; Mobile	13
TRIFLURALIN	S	★★	★★	H	M	0.3	8,000; Slightly Mobile	60
TRIFLUSULFURON-METHYL	F	★★ ★★	★★★	L	L	3.8-11,000	58; Mobile	3

[1] See preceding pages for explanation of these properties. First value in a range linked to lower soil pH or acid formulations; second value linked to higher soil pH or salt formulations.

[2] ★★★ = Minor, Secondary (or pH-dependent), or Major Factor, respectively; NA = Not applicable as a factor due to stability, soil pH, adsorption or other factors, or because value is unknown. (Chemical degradation of sulfonyureas is reduced as soil pH increases.)

[3] L,M,H = Low, Medium, High, respectively; NA = Not applicable as a mechanism for loss, or value is unknown.

[4] < 10 mL/g = Highly Mobile; 10-100 = Mobile; 100-1,000 = Moderately Mobile; 1,000 - 10,000 = Slightly Mobile; 10,000 - 100,000 = Hardly Mobile; > 100 ,000 = Immobile

[5] Isoxaflutole is rapidly converted in soil to herbicidally active ingredient Diketonitrile which has greater solubility and mobility.

[6] These herbicides bond quickly to soil and are inactive shortly after application.

[7] MCPA and MCPP salt formulaitons dissociate rapidly in soil to their less soluble acid forms; water solubility values are for MCPA and MDCA acids.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
2,4-D AMINE 4	3.8AEL	2,4-D	Phenoxy	4	DANGER-C	Moderate	Severe
2,4-D LV 4	3.8AEL	2,4-D	Phenoxy	4	Caution	Moderate	Moderate
2,4-D LV 6	5.6AEL	2,4-D	Phenoxy	4	Caution	Mild	Mild
2,4-DB 175	1.75AEL	2,4-DB	Phenoxy	4	DANGER-C	Slight	Severe
2,4-DB 200	2AEL	2,4-DB	Phenoxy	4	DANGER-C	Mild	Severe
2,4-DB DMA 175	1.75AEL	2,4-DB	Phenoxy	4	DANGER-C	Slight	Severe
2,4-DB DMA 200	2AEL	2,4-DB	Phenoxy	4	DANGER-C	Mild	Severe
AATREX 4L	4SC	Atrazine	Triazine	5	Caution	Slight	Moderate
AATREX NINE-O	90WG	Atrazine	Triazine	5	Caution	Slight	Moderate
ACCENT Q	54.5WDG	Nicosulfuron	Sulfonylurea	2	Caution	Slight	Moderate
ACURON	3.44ZC	Metolachlor + Mesotrione + Atrazine + Bicyclopyrone	Chloroacetamide + Triketone + Triazine + Triketone	5,15,27,27	Caution	Moderate	Moderate
ACURON FLEXI	3.26ZC	Mesotrione + Metolachlor + Bicylopyrone	Triketone + Chloroacetamide + Triketone	15,27,27	Caution	Slight	Moderate
ACURON GT	4.295ZC	Mesotrione + Metolachlor + Bicylopyrone + Glyphosate	Triketone + Chloroacetamide + Triketone + Glycine	9,15,27,27	Caution	Slight	Moderate
ADIOS	1.5SC	Thidiazuron + Diuron	Urea + Urea	5,5	Caution	Slight	Slight
AFFINITY BROADSPEC	50SG	Thifensulfuron + Tribenuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
AFFINITY TANKMIX	50SG	Thifensulfuron + Tribenuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
AFFORIA	50.8DG	Thifensulfuron + Tribenuron + Flumioxazin	Sulfonylurea + Sulfonylurea + N-phenylphthalimide	2,2,14	Caution	Slight	Slight
AGENT 1.88	1.88L	Fomesafen	Diphenylether	14	Danger	Slight	Serious
AGILITY SG	72.6SG	Dicamba + Metsulfuron + Tribenuron + Thifensulfuron	Benzoic Acid + Sulfonylurea + Sulfonylurea + Sulfonylurea	2,2,2,4	Warning	Slight	Severe
AIM EC	2EC	Carfentrazone	Aryl triazinone	14	Caution	Mild	Mild
ALION	1.67SC	Indaziflam	Alkylazine	29	Caution	Slight	Moderate
ALLUVEX	33.4WSG	Rimsulfuron + Thifensulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
ALLY EXTRA SG	51.8SG	Thifensulfuron + Metsulfuron + Tribenuron	Sulfonylurea + Sulfonylurea + Sulfonylurea	2,2,2	Caution	Slight	Moderate
ALLY XP	60DF	Metsulfuron	Sulfonylurea	2	Caution	Slight	Moderate
AMBER	75WG	Triasulfuron	Sulfonylurea	2	Caution	Mild	Mild
ANTHEM FLEX	4SEM	Pyroxasulfone + Carfentrazone	Isoxazoline + Aryl triazinone	14,15	Caution	Moderate	Slight
ANTHEM MAXX	4.3SC	Pyroxasulfone + Fluthiacet	Isoxazoline + Aryl triazinone	14,15	Caution	Slight	Slight
ARMEZON	2.8SC (AE)	Topramezone	Pyrazolone	27	Caution	Slight	Moderate
ARMEZON PRO	5.35EC	Topramezone + Dimethenamid	Pyrazolone + Chloroacetamide	15,27	Caution	Slight	Moderate
ARSENAL	2AEL	Imazapyr	Imidazolinone	2	Caution	Mild	Moderate
ARSENAL POWERLINE	2AEL	Imazapyr	Imidazolinone	2	Caution	Slight	Moderate
ASSURE II	0.88EC	Quizalofop-P ethyl	Aryloxphenoxy-propionate (Fops)	1	Danger	Moderate	Moderate
ASULAM 3.3	3.3L	Asulam	Carbamate	18	Caution	Slight	Moderate
ASULOX	3.34L	Asulam	Carbamate	18	Caution	Slight	Moderate
ATRAZINE 4L	4L	Atrazine	Triazine	5	Caution	Mild	Moderate
ATRAZINE 90DF	87.72WDG	Atrazine	Triazine	5	Caution	Mild	Moderate
AUDIT 1:1	50WDG	Thifensulfuron + Tribenuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
AUDIT 4:1	50WDG	Thifensulfuron + Tribenuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
AUDIT 75 WDG	75WDG	Thifensulfuron + Tribenuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
AUTHORITY ASSIST	4SC	Sulfentrazone + Imazethapyr	Aryl triazinone + Imidazolinone	2,14	Caution	Slight	Moderate
AUTHORITY EDGE	4.25SC	Pyroxasulfone + Sulfentrazone	Isoxazoline + Aryl triazinone	14,15	Caution	Slight	Mild
AUTHORITY ELITE	7L	Sulfentrazone + Metolachlor	Aryl triazinone + Chloroacetamide	14,15	Caution	Moderate	Moderate
AUTHORITY FIRST DF	70DF	Sulfentrazone + Cloransulam	Aryl triazinone + Triazolopyrimidine	2,14	Caution	Slight	Moderate
AUTHORITY SUPREME	4.16SC	Pyroxasulfone + Sulfentrazone	Isoxazoline + Aryl triazinone	14,15	Caution	Slight	Mild
AUTHORITY XL	70DG	Sulfentrazone + Chlorimuron	Aryl triazinone + Sulfonylurea	2,14	Caution	Moderate	Moderate
AUTUMN SUPER 51 WDG	51WDG	Iodosulfuron + Thifensulfuron	Sulfonylurea + Sulfonylaminocarbonyltriazolinone	2,2	Caution	Slight	Moderate
AVALANCHE ULTRA	2S	Acifluorfen	Diphenylether	14	DANGER-C	Slight	Moderate
AXIAL BOLD	0.69EC	Pinoxaden + Fenoxaprop	Phenylpyrazolin + Aryloxphenoxy-propionate (Fops)	1,1	Warning	Moderate	Moderate
AXIAL XL	0.42EC	Pinoxaden	Phenylpyrazolin	1	Warning	Severe	Moderate

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
AXIALSTAR	1.15EC	Pinoxaden + Fluroxypyr	Phenylpyrazolin + Carboxylic Acid	1,4	Caution	Moderate	Moderate
AXIOM DF	68DF	Flufenacet + Metribuzin	Oxyacetamide + Triazinone	5,15	Caution	Slight	Mild
BALANCE FLEXX	2SC	Isoxaflutole + Safener	Isoxazole + Safener	27	Caution	Slight	Moderate
BARRICADE 4FL	4FL	Prodiamine	Dinitroaniline	3	Caution	Slight	Moderate
BARRICADE 65WG	65WG	Prodiamine	Dinitroaniline	3	Caution	Mild	Moderate
BASAGRAN	4WSL	Bentazon	Benzothiadiazole	6	Caution	Slight	Moderate
BASAGRAN 5L	5WSL	Bentazon	Benzothiadiazole	6	DANGER-C	Slight	Moderate
BASIS BLEND	30SG	Rimsulfuron + Thifensulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
BEYOND XTRA	1SL (AE)	Imazamox	Imidazolinone	2	Caution	Slight	Moderate
BICEP II MAGNUM/ BICEP II MAGNUM FC	5.5SC	Atrazine + Metolachlor	Triazine + Chloroacetamide	5,15	Caution	Slight	Moderate
BICEP LITE II MAGNUM	6SC	Atrazine + Metolachlor	Triazine + Chloroacetamide	5,15	Caution	Moderate	Moderate
BISON	4EC	MCPA + Bromoxynil	Phenoxy + Nitrile	4,6	Warning	Moderate	Moderate
BOLERO 8 EC	8EC	Thiobencarb	Thiocarbamate	15	Caution	Moderate	Moderate
BOLERO ULTRAMAX	15WG	Thiobencarb	Thiocarbamate	15	Caution	Slight	Moderate
BOLL'D	6L	Ethephon	Plant Growth Regulator	NA	DANGER-C	Severe	Moderate
BOUNDARY 6.5EC	6.5EC	Metolachlor + Metribuzin	Chloroacetamide + Triazinone	5,15	Warning	Slight	Moderate
BRASH	3.87S	Dicamba + 2,4-D	Benzoic Acid + Phenoxy	4,4	DANGER-C	Mild	Severe
BROADAXE XC	7EC	Sulfentrazone + Metolachlor	Aryl triazinone + Chloroacetamide	14,15	Caution	Moderate	Moderate
BROADWORKS	4SC	Mesotrione	Triketone	27	Caution	Slight	Mild
BRUSHMASTER	1.77AEL	2,4-D + 2,4-DP + Dicamba	Phenoxy + Phenoxy + Benzoic Acid	4,4	Caution	Moderate	Moderate
BUCKLE	13G	Triallate + Trifluralin	Thiocarbamate + Dinitroaniline	3,15	Caution	Slight	Moderate
BUTTE	3.64G	Benzobicyclon + Halosulfuron	Other + Sulfonylurea	2,27	Caution	Slight	Slight
BUTYRAC 175	1.75L	2,4-DB	Phenoxy	4	DANGER-C	Moderate	Moderate
BUTYRAC 200	2L	2,4-DB	Phenoxy	4	DANGER-C	Slight	Moderate
CADRE	2L	Imazapic	Imidazolinone	2	Caution	Slight	Slight
CALLISTO	4SC	Mesotrione	Triketone	27	Caution	Slight	Mild
CALLISTO XTRA	3.7SC	Atrazine + Mesotrione	Triazine + Triketone	5,27	Caution	Slight	Moderate
CAPAROL 4L	4SC	Prometryn	Triazine	5	Caution	Slight	Severe
CAPRENO	3.45L	Thiencarbazone + Tembotrione	Sulfonylaminocarbonyltriazolinone + Triketone	2,27	Caution	Slight	Moderate
CAPSTONE	1.1AEL	Aminopyralid + Triclopyr	Carboxylic Acid + Carboxylic Acid	4,4	Caution	Moderate	Moderate
CARNIVORE	4.01L	MCPA ester + Fluroxypyr + Bromoxynil	Phenoxy + Carboxylic Acid + Nitrile	4,4,6	Caution	Slight	Moderate
CASORON 4G	4G	Dichlobenil	Nitrile	29	Caution	Slight	Moderate
CERTAINTY	75WDG	Sulfosulfuron	Sulfonylurea	2	Caution	Slight	Slight
CHAPARRAL	71.58WDG	Aminopyralid + Metsulfuron	Carboxylic Acid + Sulfonylurea	2,4	Warning	Slight	Moderate
CHARGER BASIC	7.62EC	Metolachlor	Chloroacetamide	15	Caution	Slight	Moderate
CHARGER MAX	7.64EC	Metolachlor	Chloroacetamide	15	Caution	Slight	Slight
CHARGER MAX ATZ	5.5F	Atrazine + Metolachlor	Triazine + Chloroacetamide	5,15	Caution	Slight	Moderate
CHARGER MAX ATZ LITE	6L	Atrazine + Metolachlor	Triazine + Chloroacetamide	5,15	Caution	Moderate	Moderate
CHATEAU EZ	4L	Flumioxazin	N-phenylphthalimide	14	Caution	Slight	Moderate
CHEETAH	2.34WSL	Glufosinate	Phosphinic Acid	10	Caution	Slight	Moderate
CHOPPER GEN2	2AF	Imazapyr	Imidazolinone	2	Caution	Slight	Moderate
CIMARRON MAX	48.25Co-Pack DF,L	Metsulfuron + 2,4-D + Dicamba	Sulfonylurea + Phenoxy + Benzoic Acid	2,4,4	DANGER-C	Moderate	Serious
CIMARRON PLUS	63DF	Metsulfuron + Chlorsulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
CIMARRON X-TRA	67.5DG	Metsulfuron + Chlorsulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
CLARIFIER	4WSL (AE)	Dicamba	Benzoic Acid	4	Caution	Slight	Severe
CLARITY	4WSL (AE)	Dicamba	Benzoic Acid	4	Caution	Slight	Moderate
CLASSIC	25DG	Chlorimuron	Sulfonylurea	2	Caution	Slight	Moderate
CLEANSE 2EC	2EC	Clethodim	Cyclohexanedione (Dims)	1	Warning	Slight	Severe
CLEANSWEEP D	4.251L	MCPA ester + Fluroxypyr + Bromoxynil	Phenoxy + Carboxylic Acid + Nitrile	4,4,6	Caution	Slight	Moderate
CLEANSWEEP M	4.01L	MCPA ester + Fluroxypyr + Bromoxynil	Phenoxy + Carboxylic Acid + Nitrile	4,4,6	Caution	Slight	Moderate
CLEANTRAXX	4.01SC	Penoxsulam + Oxyfluorfen	Triazolopyrimidine + Diphenylether	2,14	Caution	Slight	Moderate
CLEARCAST	1AEL	Imazamox	Imidazolinone	2	Caution	Slight	Moderate
CLEARPATH	75S	Imazethapyr + Quinclorac	Imidazolinone + Quinoline Carboxylic Acid	2,4	Caution	Slight	Moderate

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
CLINCHER SF	2.38EC	Cyhalofop	Aryloxphenoxy-propionate (Fops)	1	Warning	Slight	Moderate
CLIPPER	51WDG	Flumioxazin	N-phenylphthalimide	14	Caution	Slight	Slight
CLOAK EX	22.7WDG	Chlorimuron	Sulfonylurea	2	Caution	Slight	Moderate
COBRA	2EC	Lactofen	Diphenylether	14	DANGER-C	Severe	Slight
COMMAND 3ME	3ME	Clomazone	Isoxazolidinone	13	Caution	Slight	Severe
COMPACT 6X	2L	Mepiquat Chloride	Plant Growth Regulator	NA	Caution	Slight	Moderate
CONFIDENCE	7E	Acetochlor	Chloroacetamide	15	Warning	Moderate	Severe
CONFIDENCE XTRA	6L	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
CONFIDENCE XTRA 5.6L	5.6L	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
CONFRONT	3SL	Triclopyr + Clopyralid	Carboxylic Acid + Carboxylic Acid	4,4	DANGER-C	Slight	Serious
CORNERSTONE 5 PLUS	4AEWSL	Glyphosate	Glycine	9	Caution	Slight	Moderate
CORNERSTONE PLUS	3AEWSL	Glyphosate	Glycine	9	Caution	Slight	Slight
CORVUS	2.63SC	Thiencarbazone + Isoxaflutole	Sulfonylaminocarbonyltriazolinone + Isoxazole	2,27	Caution	Slight	Moderate
COTORAN 4L	4L	Fluometuron	Urea	5	Caution	Slight	Moderate
CREDIT XTREME	4.5AEL	Glyphosate	Glycine	9	Caution	Slight	Moderate
CREW	0.75GR	Dithiopyr + Isoxaben	Pyridine + Benzamide	3,29	Caution	Mild	Moderate
CROSSBOW	3EC	2,4-D + Triclopyr	Phenoxy + Carboxylic Acid	4,4	Caution	Mild	Moderate
CRUSHER	50WDG	Rimsulfuron + Thifensulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Mild	Moderate
CURTAIL	2.38SL	Clopyralid + 2,4-D	Carboxylic Acid + Phenoxy	4,4	DANGER-C	Slight	Serious
CURTAIL M	2.77EC	Clopyralid + MCPA ester	Carboxylic Acid + Phenoxy	4,4	Caution	Slight	Moderate
CUTOUT	1.5L	Thidiazuron + Diuron	Urea + Urea	5,5	Caution	Slight	Mild
DACTHAL FLOWABLE	6F	DCPA	Benzoic Acid	3	Caution	Slight	Moderate
DACTHAL W-75	75WP	DCPA	Benzoic Acid	3	Caution	Slight	Moderate
DAZE 4SC	4SC	Thidiazuron	Urea	5	Caution	Mild	Slight
DEFENDOR	0.42SC	Florasulam	Triazolopyrimidine	2	Caution	Slight	Slight
DEGREE XTRA	4.04L	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Slight
DETAIL	2.85SC	Saflufenacil	Pyrimidinedione	14	Caution	Slight	Moderate
DEVRINOL DF-XT	50WP	Napropamide	Acetamide	0	Caution	Slight	Moderate
DICAMBA MAX 4	4WSL	Dicamba	Benzoic Acid	4	Caution	Slight	Mild
DIFLEXX	4SC (AE)	Dicamba + Safener	Benzoic Acid + Safener	4	Caution	Slight	Moderate
DIFLEXX DUO	2.13SC	Dicamba + Tembotrione	Benzoic Acid + Triketone	4,27	Caution	Slight	Moderate
DIMENSION 2EW	2EW	Dithiopyr	Pyridine	3	Warning	Moderate	Moderate
DIMENSION ULTRA 40WP	0.125WP	Dithiopyr	Pyridine	3	Caution	Slight	Slight
DIMETRIC CHARGED	3.67L	Metribuzin + Flumioxazin	Triazinone + N-phenylphthalimide	5,14	Caution	Slight	Slight
DIMETRIC EXT	75DF	Metribuzin	Triazinone	5	Caution	Slight	Moderate
DIMETRIC LIQUID	3L	Metribuzin	Triazinone	5	Caution	Slight	Moderate
DIQUAT 2L	2SL	Diquat	Bipyridylium	22	Caution	Moderate	Moderate
DIREX 4L	4L	Diuron	Urea	5	Caution	Slight	Slight
DISCOVER NG	0.5EC	Clodinafop-propargyl	Aryloxphenoxy-propionate (Fops)	1	Caution	Moderate	Moderate
DISPLAY	2.02EC	Carfentrazone + Fluthiacet	Aryl triazinone + Aryl triazinone	14,14	Warning	Moderate	Moderate
DISTINCT	70WDG (AE)	Diflufenzopyr + Dicamba	Semicarbazone + Benzoic Acid	4,19	Caution	Slight	Moderate
DRIVE XLR8	1.5L	Quinclorac	Quinoline Carboxylic Acid	4	Caution	Slight	Moderate
DSMA	3.6WSL	DSMA	Arsenical	0	Caution	Slight	Slight
DUAL II MAGNUM	7.64EC	Metolachlor	Chloroacetamide	15	Caution	Moderate	Moderate
DUAL IIG MAGNUM	16GR	Metolachlor	Chloroacetamide	15	Caution	Moderate	Moderate
DUAL MAGNUM	7.62EC	Metolachlor	Chloroacetamide	15	Caution	Moderate	Moderate
DUET	4.03L	Propanil + Bensulfuron	Amide + Sulfonylurea	2,5	Caution	Slight	Moderate
DUPLOSAN	2L	2,4-DP	Phenoxy	4	Caution	Slight	Slight
DURACOR	9.71GR	Aminopyralid + Florpyrauxifen	Carboxylic Acid + Arylpicolinate	4,4	Caution	Slight	Slight
ELEMENT 3A	3SL	Triclopyr	Carboxylic Acid	4	DANGER-C	Slight	Severe
ELEMENT 4	4EC	Triclopyr	Carboxylic Acid	4	Caution	Slight	Moderate
ELEVORE	0.572AS	Halauxifen	Pyridine-carboxylate	4	Caution	Slight	Moderate
ENDURANCE	65G	Prodiamine	Dinitroaniline	3	Caution	Slight	Mild
ENLIST DUO	3.3L	Glyphosate + 2,4-D	Glycine + Phenoxy	4,9	Warning	Slight	Moderate
ENLIST ONE	3.8L	2,4-D	Phenoxy	4	Warning	Slight	Moderate

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
ENLITE	47.86DG	Chlorimuron + Thifensulfuron + Flumioxazin	Sulfonylurea + Sulfonylurea + N-phenylphthalimide	2,2,14	Caution	Slight	Moderate
ENVERSA	3.0 ME	Acetochlor	Chloroacetamide	15	Caution	Slight	Moderate
ENVIVE	41.3DG	Chlorimuron + Thifensulfuron + Flumioxazin	Sulfonylurea + Sulfonylurea + N-phenylphthalimide	2,2,14	Caution	Slight	Moderate
ENVOKE	75WG	Trifloxysulfuron	Sulfonylurea	2	Caution	Slight	Slight
EPTAM 20-G	20G	EPTC	Thiocarbamate	15	Caution	Mild	Moderate
EPTAM 7E	7EC	EPTC	Thiocarbamate	15	Warning	Mild	Moderate
ESCORT XP	60DF	Metsulfuron	Sulfonylurea	2	Caution	Slight	Slight
ESPLANADE 200 SC	1.67SC	Indaziflam	Alkylazine	29	Caution	Moderate	Slight
ET	0.208L	Pyraflufen	Phenylpyrazole	14	DANGER-C	Moderate	Severe
EVEREST 3.0	1.75ODL	Flucarbazone	Sulfonylaminocarbonyltriazolinone	2	Caution	Slight	Slight
EVERPREX	7.62EC	Metolachlor	Chloroacetamide	15	Caution	Moderate	Moderate
EVIK DF	79WG	Amteryn	Triazine	5	Caution	Mild	Moderate
EXPRESS	50SG	Tribenuron	Sulfonylurea	2	Caution	Slight	Slight
FACET L	1.5AEL	Quinclorac	Quinoline Carboxylic Acid	4	Caution	Slight	Moderate
FAR-GO	4E	Triallate	Thiocarbamate	15	Caution	Slight	Moderate
FIERCE EZ	3.04SC	Flumioxazin + Pyroxasulfone	N-phenylphthalimide + Isoxazoline	14,15	Caution	Slight	Moderate
FIERCE MTZ	2.64SC	Flumioxazin + Pyroxasulfone + Metribuzin	N-phenylphthalimide + Isoxazoline + Triazinone	5,14,15	Warning	Slight	Moderate
FIERCE XLT	62.41WDG	Chlorimuron + Flumioxazin + Pyroxasulfone	Sulfonylurea + N-phenylphthalimide + Isoxazoline	2,14,15	Caution	Slight	Moderate
FINALE	1WSL	Glufosinate	Phosphinic Acid	10	Warning	Slight	Moderate
FINESSE CEREAL and FALLOW	75DF	Chlorsulfuron + Metsulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
FINISH 6 PRO	6.375L	Ethephon + Cyclanilide	Plant Growth Regulator + Plant Growth Regulator	NA	DANGER-C	Moderate	Serious
FIRSTRATE	84WDG	Cloransulam	Triazolopyrimidine	2	Caution	Slight	Slight
FIRSTSHOT SG	50SG	Thifensulfuron + Tribenuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
FLEXSTAR	1.88SL	Fomesafen	Diphenylether	14	Warning	Slight	Mild
FLEXSTAR GT 3.5	2.8SL	Fomesafen + Glyphosate	Diphenylether + Glycine	9,14	Caution	Slight	Moderate
FOLEX 6 EC	6EC	Tribufos	Defoliant/Dessicant	NA	DANGER-C	Severe	Severe
FRAMEWORK 3.3 EC	3.3EC	Pendimethalin	Dinitroaniline	3	Caution	Slight	Moderate
FREEFALL SC	4SC	Thidiazuron	Urea	5	Caution	Mild	Mild
FREEHAND 1.75G	1.75G	Dimethenamid + Pendimethalin	Chloroacetamide + Dinitroaniline	3,15	Caution	Slight	Moderate
FREQUENCY	2.8AEL	Topramezone	Pyrazolone	27	Caution	Slight	Moderate
FULTIME NXT	4.04ZC	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Slight
FUSILADE DX	2EC	Fluazifop-P-butyl	Aryloxphenoxy-propionate (Fops)	1	Caution	Moderate	Moderate
FUSILADE II	2EC	Fluazifop-P-butyl	Aryloxphenoxy-propionate (Fops)	1	Caution	Moderate	Moderate
FUSION	2.56EC	Fluazifop-P-butyl + Fenoxaprop	Aryloxphenoxy-propionate (Fops) + Aryloxphenoxy-propionate (Fops)	1,1	Caution	Moderate	Moderate
GALLERY 75 DF	75WDG	Isoxaben	Benzamide	29	Caution	Moderate	Moderate
GALLERY SC	4.16SC	Isoxaben	Benzamide	29	Caution	Slight	Slight
GAMEON	2.24L	2,4-D + Fluroxypyr + Halauxifen	Phenoxy + Carboxylic Acid + Pyridine-carboxylate	4	Warning	Slight	Serious
GARLON 3A	3SL	Triclopyr	Carboxylic Acid	4	DANGER-C	Moderate	Severe
GARLON 4	4EC	Triclopyr	Carboxylic Acid	4	Caution	Slight	Moderate
GARLON 4 ULTRA	4EC	Triclopyr	Carboxylic Acid	4	Caution	Slight	Moderate
GIN OUT	0.35WSL	Mepiquat Chloride	Plant Growth Regulator	NA	Caution	Slight	Mild
GLEAN XP	75DF	Chlorsulfuron	Sulfonylurea	2	Caution	Slight	Slight
GOAL 2XL	2EC	Oxyfluorfen	Diphenylether	14	Warning	Severe	Moderate
GOALTENDER	4SC	Oxyfluorfen	Diphenylether	14	Caution	Slight	Slight
GOLDSKY	0.838OD	Florasulam + Pyroxsulam + Fluroxypyr	Triazolopyrimidine + Triazolopyrimidine + Carboxylic Acid	2,2,4	Warning	Moderate	Serious
GR2	21.5DG	Pyroxsulam	Triazolopyrimidine	2	Caution	Slight	Moderate
GRAMOXONE SL 3.0	2SL,3SL	Paraquat	Bipyridylium	22	DANGER-P	Moderate	Serious
GRANDSTAND R	3SL	Triclopyr	Carboxylic Acid	4	DANGER-C	Slight	Severe

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
GRASLAN L/ GRAZONPD3	3.81SL	Picloram + 2,4-D	Carboxylic Acid + Phenoxy	4,4	Warning	Slight	Serious
GRASP SC	2SC	Penoxsulam	Triazolopyrimidine	2	Caution	Slight	Slight
GRASP XTRA	2.31SC	Penoxsulam + Triclopyr	Triazolopyrimidine + Carboxylic Acid	2,4	Warning	Slight	Moderate
GRAZON P+D	2.54SL	Picloram + 2,4-D	Carboxylic Acid + Phenoxy	4,4	DANGER-C	Slight	Serious
GRAZONNEXT HL	3.74L	Aminopyralid + 2,4-D	Carboxylic Acid + Phenoxy	4,4	Danger	Slight	Serious
HABITAT	2L	Imazapyr	Imidazolinone	2	Caution	Slight	Slight
HALEX GT	4.39ZC	Metolachlor + Glyphosate + Mesotrione	Chloroacetamide + Glycine + Triketone	9,15,27	Caution	Slight	Moderate
HARMONY EXTRA SG	50SG	Thifensulfuron + Tribenuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
HARNESS	7E	Acetochlor	Chloroacetamide	15	Warning	Slight	Moderate
HARNESS MAX	3.58L	Acetochlor + Mesotrione	Chloracetamide + Triketone	15,27	Caution	Slight	Slight
HARNESS XTRA	6L	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
HARNESS XTRA 5.6L	5.6L	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
HERBIVORE	75WDG	Halosulfuron	Sulfonylurea	2	Caution	Slight	Moderate
HI-DEP	3.8AEL	2,4-D	Phenoxy	4	DANGER-C	Mild	Severe
HONCHO K6	4.5AEWSL	Glyphosate	Glycine	9	Caution	Moderate	Moderate
HORNET	78.5WDG	Flumetsulam + Clopyralid	Triazolopyrimidine + Carboxylic Acid	2,4	Warning	Slight	Serious
HUSKIE	2.06EC	Pyrasulfotole + Bromoxynil	Pyrazole + Nitrile	6,27	Warning	Mild	Moderate
HUSKIE COMPLETE	2.39L	Thiencarbazone + Safener +Bromoxynil + Pyrasulfotole	Sulfonylaminocarbonyltriazolinone + Safener + Nitrile	2,6,27	DANGER-C	Severe	Serious
HUSKIE FX	2.3EC	Pyrasulfotole + Bromoxynil + Fluroxapyr	Pyrazole + Nitrile + Carboxylic Acid	4,6,27	Warning	Moderate	Moderate
IMPACT	2.8WSL	Topramezone	Pyrazolone	27	Caution	Slight	Moderate
IMPACTZ	4.26WDL	Topramezone + Atrazine	Pyrazolone + Triazine	5,27	Caution	Slight	Slight
IMPACT CORE	7.15EC	Topramezone + Acetochlor	Pyrazolone + Chloroacetamide	15,27	Warning	Severe	Severe
INCINERATE	4SC	Mesotrione	Triketone	27	Caution	Slight	Mild
KARMEX DF	80DF	Diuron	Urea	5	Caution	Mild	Moderate
KERB SC	3.3SC	Pronamide	Benzamide	3	Caution	Slight	Moderate
KEYSTONE LA NXT	6SEM	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
KEYSTONE NXT	5.6SEM	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
KOCHIAVORE	4.01L	2,4-D + Fluroxypyr + Bromoxynil	Phenoxy + Carboxylic Acid + Nitrile	4,4,6	Caution	Slight	Moderate
KRENITE S	4WSL	Fosamine	Other	17	Caution	Slight	Moderate
KROVAR I DF	80DG	Bromacil + Diuron	Uracil + Urea	5,7	Caution	Slight	Moderate
KYBER PRO	2.64 SC	Flumioxazin + Pyroxasulfone + Metribuzin	N-phenylphthalimide + Isoxazoline + Triazinone	5,14,15	Danger	Slight	Moderate
KYRO	3.073CS	Acetochlor + Topramezone + Clopyralid	Chloroacetamide + Pyrazalone + Carboxylic Acid	15,27,4	Caution	Slight	Severe
LANDMARK XP	75DG	Sulfometuron + Chlorsulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Mild	Moderate
LAUDIS	3.5SC	Tembotrione	Triketone	27	Caution	Slight	Moderate
LEADOFF	33.4WSG	Rimsulfuron + Thifensulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
LEAGUE	75WDG	Imazosulfuron	Sulfonylurea	2	Caution	Moderate	Moderate
LEAGUE MVP	10.43G	Imazosulfuron + Thiobencarb	Sulfonylurea + Thiocarbamate	2,15	Caution	Slight	Moderate
LEXAR EZ	3.7ZC	Metolachlor + Atrazine + Mesotrione	Chloroacetamide + Triazine + Triketone	5,15,27	Caution	Slight	Moderate
LIBERTY ULTRA	1.76 LC	Glufosinate P-Ammonium	Phosphinic Acit	10	Danger	Slight	Serious
LIBERTY 280 SL	2.34WSL	Glufosinate	Phosphinic Acid	10	Warning	Slight	Moderate
LINEX 4L	4L	Linuron	Urea	5	Caution	Slight	Slight
LONDAX	60DF	Bensulfuron	Sulfonylurea	2	Warning	Slight	Moderate
LONTREL	3SL	Clopyralid	Carboxylic Acid	4	Caution	Slight	Moderate
LOROX DF	50DF	Linuron	Urea	5	Caution	Slight	Moderate
LOYANT	0.21L	Florpyrauxifen	Arylpicolinate	4	Caution	Slight	Slight
LUMAX EZ	3.67ZC	Metolachlor + Atrazine + Mesotrione	Chloroacetamide + Triazine + Triketone	5,15,27	Caution	Moderate	Moderate
MAESTRO 2 EC	2EC	Bromoxynil	Nitrile	6	Warning	Moderate	Moderate
MAESTRO ADVANCED	5EC	Bromoxynil + MCPA	Nitrile + Phenoxy	6,4	Caution	Slight	Moderate
MAESTRO MA	4EC	Bromoxynil + MCPA	Nitrile + Phenoxy	6,5	Caution	Slight	Mild
MATRIX SG	25SG	Rimsulfuron	Sulfonylurea	2	Caution	Slight	Slight
MAULER	4L	Metribuzin	Triazinone	5	Caution	Slight	Slight

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
MAVERICK	2.047SC	Pyroxasulfone + Clopyralid+ Mesotrione	Isoxazoline + Carboxylic Acid + Triketone	4,15,27	Caution	Slight	Moderate
MCPA AMINE 4	3.7WSL	MCPA	Phenoxy	4	DANGER-C	Slight	Severe
MCPA ESTER 4	3.7EC	MCPA	Phenoxy	4	Caution	Moderate	Moderate
METHOD 240SL	2SL (AE)	Aminocyclopyrachlor	Carboxylic Acid	4	Caution	Slight	Moderate
METHOD 50SG	50DF	Aminocyclopyrachlor	Carboxylic Acid	4	Caution	Slight	Moderate
MILESTONE	2SL	Aminopyralid	Carboxylic Acid	4	Caution	Slight	Moderate
MONUMENT 75WG	75WG	Trifloxysulfuron	Sulfonylurea	2	Caution	Slight	Slight
MSMA 6 PLUS	6L	Methanearsonate	Arsenical	0	Caution	Slight	Moderate
NATIVEKLEAN	3.74L	Aminopyralid + 2,4-D	Carboxylic Acid + Phenoxy	4,4	Danger	Slight	Serious
NEXTSTEP NG	0.5L	Clodinafop-propargyl	Aryloxphenoxy-propionate (Fops)	1	Caution	Slight	Slight
NORTRON SC	4SC	Ethofumesate	Benzofuran	15	Caution	Slight	Mild
NOVAGRAZ	3.12LC	Flurpyrauzifen + 2,4-D	Arylpicolinate + Phenoxy	4	Danger	Severe	Serious
OLYMPUS	70WDG	Propoxycarbazone	Sulfonylaminocarbonyltriazolinone	2	Caution	Slight	Slight
ONESTEP	2.17S	Imazapyr + Glyphosate	Imidazolinone + Glycine	2,9	Warning	Slight	Moderate
OPENSIGHT	0.6195WDG	Aminopyralid + Metsulfuron	Carboxylic Acid + Sulfonylurea	2,4	Warning	Moderate	Moderate
OPENSKY	1.06SE	Fluroxypyr + Pyroxsulam	Carboxylic Acid + Triazolopyrimidine	2,4	Caution	Slight	Moderate
OPTIFY	0.18FC	Complex Polymeric Polyhydroxy Acids	Plant Growth Regulator	NA	Caution	Slight	Slight
ORION	2.373SE	Florasulam + MCPA ester	Triazolopyrimidine + Phenoxy	2,4	Caution	Moderate	Slight
OSPREY	4.5WDG	Mesosulfuron	Sulfonylurea	2	Caution	Slight	Moderate
OSPREY XTRA	6WDG	Mesosulfuron + Thiencarbazone	Sulfonylurea + Sulfonylaminocarbonyltriazolinone	2,2	Caution	Slight	Moderate
OUST EXTRA	71.25DG	Sulfometuron + Metsulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
OUST XP	75DG	Sulfometuron	Sulfonylurea	2	Caution	Slight	Moderate
OUTLOOK	6EC	Dimethenamid	Chloroacetamide	15	Warning	Slight	Moderate
OUTRIDER	75WDG	Sulfosulfuron	Sulfonylurea	2	Caution	Slight	Moderate
OVERDRIVE	70WG (AE)	Diflufenzopyr + Dicamba	Semicarbazone + Benzoic Acid	4,19	Caution	Slight	Moderate
PANOFLEX	50SG	Tribenuron + Thifensulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
PANTHER SC	4L	Flumioxazin	N-phenylphthalimide	14	Caution	Slight	Moderate
PASTORA	71.2DF	Nicosulfuron + Metsulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
PASTUREGARD HL	4EC	Triclopyr + Fluroxypyr	Carboxylic Acid + Carboxylic Acid	4,4	Caution	Moderate	Moderate
PATHFINDER II	0.75RTU (L)	Triclopyr	Carboxylic Acid	4	Caution	Slight	Slight
PATRIOT	60WDG	Metsulfuron	Sulfonylurea	2	Caution	Mild	Slight
PEAK	57WG	Prosulfuron	Sulfonylurea	2	Caution	Slight	Moderate
PENDULUM 2G	2G	Pendimethalin	Dinitroaniline	3	Caution	Moderate	Moderate
PENDULUM 3.3 EC	3.3EC	Pendimethalin	Dinitroaniline	3	Caution	Slight	Moderate
PENNANT MAGNUM	7.62L	Metolachlor	Chloroacetamide	15	Caution	Moderate	Moderate
PENTIA	0.82L	Mepiquat Penatborate	Plant Growth Regulator	NA	Caution	Slight	Slight
PERFECTMATCH	1.61SEM	Clopyralid + Pyroxsulam + Fluroxypyr	Carboxylic Acid + Triazolopyrimidine + Carboxylic Acid	2,4,4	Danger	Slight	Serious
PERMIT	75DF	Halosulfuron	Sulfonylurea	2	Caution	Slight	Moderate
PERMIT PLUS	60DF	Halosulfuron + Thifensulfuron	Sulfonylurea	2,2	Warning	Slight	Moderate
PERPETUO	2.3SC	Flumiclorac-pentyl + Pyroxasulfone	N-phenylphthalimide + Isoxazoline	14,15	Caution	Slight	Moderate
PERSPECTIVE	55.3DF	Aminocyclopyrachlor + Chlorsulfuron	Carboxylic Acid + Sulfonylurea	2,4	Caution	Slight	Moderate
PHOENIX	2EC	Lactofen	Diphenylether	14	Caution	Moderate	Slight
PINDAR GT	4.01SC	Penoxsulam + Oxyfluorfen	Triazolopyrimidine + Diphenylether	2,14	Caution	Slight	Moderate
PIX WSG	0.9WSG	Mepiquat Chloride	Plant Growth Regulator	NA	Caution	Slight	Moderate
PIXXARO EC	2.43EC	Fluroxypyr + Haluaxifen	Carboxylic Acid + Carboxylic Acid	4,4,	Caution	Slight	Moderate
PLATEAU	2AEL	Imazapic	Imidazolinone	2	Caution	Slight	Slight
POAST	1.5EC	Sethoxydim	Cyclohexanedione (Dims)	1	Warning	Moderate	Moderate
POWERFLEX HL	13WDG	Pyroxsulam	Triazolopyrimidine	2	Caution	Slight	Slight
PRAMITOL 25E	25E	Prometon	Triazine	5	Warning	Severe	Moderate
PRAMITOL 5PS	5P	Prometon	Triazine	6	Warning	Severe	Moderate
PREFAR 4-E	4EL	Bensulide	Phosphorodithioate	0	Caution	Moderate	Moderate
PREFIX	5.29EC	Metolachlor + Fomesafen	Chloroacetamide + Diphenylether	14,15	Warning	Slight	Severe
PRE-PARE	70WDG	Flucarbazone	Sulfonylurea	2	Caution	Slight	Slight

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
PRESIDUAL	6.5L	Metolachlor + Metribuzin	Chloroacetamide + Triazinone	5,15	Warning	Slight	Moderate
PRINCEP 4L	4SC	Simazine	Triazine	5	Caution	Slight	Moderate
PRINCEP CALIBER 90	90WG	Simazine	Triazine	5	Caution	Slight	Moderate
PROWL H2O	3.8ACS	Pendimethalin	Dinitroaniline	3	Caution	Slight	Moderate
PULSAR	1.673EC	Dicamba + Fluroxypyr	Benzoic Acid + Carboxylic Acid	4,4	Caution	Moderate	Moderate
PURSUIT	2SL (AE)	Imazethapyr	Imidazolinone	2	Caution	Slight	Slight
PYLEX	2.8SC (AE)	Topramezone	Pyrazolone	27	Caution	Slight	Moderate
PYTHON	80WDG	Flumetsulam	Triazolopyrimidine	2	Caution	Slight	Slight
QUELEX	20.4WDG	Halauxifen + Florasulam	Pyridine-carboxylate + Triazolopyrimidine	2,4	Caution	Slight	Severe
RAVE	63.8WG	Triasulfuron + Dicamba	Sulfonylurea + Benzoic Acid	2,4	Caution	Slight	Moderate
REALM Q	38.75WDG	Rimsulfuron + Mesotrione	Sulfonylurea + Triketone	2,27	Caution	Slight	Moderate
REBELEX	2.03SEE	Penoxsulam + Cyhalofop-butyl	Triazolopyrimidine + Aryloxphenoxy-propionate (Fops)	1,2	Caution	Slight	Slight
REFLEX	2SL	Fomesafen	Diphenylether	14	DANGER-C	Slight	Severe
REGIMENT	80WSP	Bispyribac	Pyrimidinyl(thio)benzoate	2	Caution	Slight	Moderate
REGLONE	2SL	Diquat	Bipyridylium	22	Caution	Moderate	Moderate
RELY 280	2.34WSL	Glufosinate	Phosphinic Acid	10	Warning	Slight	Moderate
REMEDY ULTRA	4EC	Triclopyr	Carboxylic Acid	4	Caution	Moderate	Moderate
RENOVATE 3	3AEL	Triclopyr	Carboxylic Acid	4	DANGER-C	Slight	Severe
RESICORE/RESICORE REV	3.29SEM, 3.26SEM	Acetochlor + Cloypralid + Mesotrione	Chloroacetamide + Carboxylic Acid + Triketone	4,15,27	Caution	Slight	Moderate
RESOLUTE 4FL	4FL	Prodiamine	Dinitroaniline	3	Caution	Slight	Mild
RESOLUTE 65WG	65WG	Prodiamine	Dinitroaniline	3	Caution	Slight	Mild
RESOLVE Q	22.4WSG	Rimsulfuron + Thifensulfuron + Safener	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
RESOURCE	0.86EC	Flumiclorac-pentyl	N-phenylphthalimide	14	Warning	Severe	Moderate
REVOLVER	0.19SC	Foramsulfuron	Sulfonylurea	2	Caution	Moderate	Moderate
REVULIN Q	51.2DF	Nicosulfuron + Mesotrione	Sulfonylurea + Triketone	2,27	Caution	Slight	Moderate
REWARD	3.73L	Diquat	Bipyridylium	22	Warning	Slight	Moderate
REZUVANT	1.324EC	Fluroxypyr + Halauxifen + Phenylpyrazolin	Carboxylic Acid + Pyridine-carboxylate +	1,4,4	Caution	Moderate	Moderate
RICESTAR HT	0.58EC	Fenoxaprop	Aryloxphenoxy-propionate (Fops)	1	Warning	Slight	Severe
RIMFIRE MAX	6.67WDG	Propoxycarbazone + Mesosulfuron + Mefenpyr Safener	Sulfonylaminocarbonyltriazolinone + Sulfonylurea	2,2	Warning	Slight	Severe
RODEO	4AESL	Glyphosate	Glycine	9	Caution	Slight	Slight
RONSTAR 50 WSP	50WSP	Oxadiazon	Oxadiazole	14	Warning	Severe	Moderate
RONSTAR G	2G	Oxadiazon	Oxadiazole	14	Warning	Moderate	Moderate
ROUNDUP POWERMAX 3	4.8AEWSL	Glyphosate	Glycine	9	Caution	Moderate	Moderate
ROUNDUP PRO	3AEWSL	Glyphosate	Glycine	9	Caution	Slight	Slight
ROUNDUP PRO CONCENTRATE	3.7AEWSL	Glyphosate	Glycine	9	Caution	Slight	Moderate
ROUNDUP PROMAX	4.5AEWSL	Glyphosate	Glycine	9	Caution	Slight	Moderate
ROUNDUP WEATHERMAX	4.5AEWSL	Glyphosate	Glycine	9	Caution	Moderate	Moderate
RT 3	4.5AEWSL	Glyphosate	Glycine	9	Caution	Moderate	Moderate
RUGGED	3.49AEL	2,4-D	Phenoxy	4	DANGER-C	Slight	Severe
SADDLE-UP	4WSL	Dicamba + 2,4-D	Benzoic Acid + Phenoxy	4,4	DANGER-C	Slight	Severe
SAHARA DG	70DG	Imazapyr + Diuron	Imidazolinone + Urea	2,5	Caution	Slight	Moderate
SANDEA	75DF	Halosulfuron	Sulfonylurea	2	Caution	Slight	Moderate
SAPPHIRE	.31SC	Penoxsulam	Triazolopyrimidine	2	Caution	Slight	Slight
SCEPTER 70 DG	70DG	Imazaquin	Imidazolinone	2	Caution	Slight	Slight
SCOPARIA	4SC	Isoxaflutole	Isoxazole	27	Caution	Slight	Moderate
SCORCH	4.79L	Dicamba + 2,4-D + Fluroxypyr	Benzoic Acid + Phenoxy + Carboxylic Acid	4,4,4	Danger	Severe	Severe
SCORCH EXT	5.33 L	Dicamba + 2,4-D + Dichlorprop-P	Benzoic Acid + Phenoxy + Phenoxycarboxylic acid	4,4,4	Warning	Moderate	Moderate
SECTION THREE	3EC	Clethodim	Cyclohexanedione (Dims)	1	Caution	Moderate	Moderate
SELECT MAX	0.97EC	Clethodim	Cyclohexanedione (Dims)	1	Caution	Moderate	Moderate
SENDERO	2.8SL	Aminopyralid + Clopyralid	Carboxylic Acid + Carboxylic Acid	4,4	Caution	Slight	Moderate
SEQUENCE	5.25EW	Glyphosate + Metolachlor	Glycine + Chloroacetamide	9,15	Caution	Slight	Slight

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
SHADOW	2EC	Clethodim	Cyclohexanedione (Dims)	1	Caution	Slight	Mild
SHADOW 3EC	3EC	Clethodim	Cyclohexanedione (Dims)	1	Caution	Slight	Moderate
SHARK EW	2EW	Carfentrazone	Aryl triazinone	14	Caution	Mild	Mild
SHARPEN	2.85SC	Saflufenacil	Pyrimidinedione	14	Caution	Slight	Moderate
SHREDDER E-99	6AEL	2,4-D	Phenoxy	4	Caution	Slight	Moderate
SIMAZINE 4L	4L	Simazine	Triazine	5	Caution	Slight	Moderate
SIMAZINE 90DF/90 WDG	90DF/WDG	Simazine	Triazine	5	Caution	Slight	Slight
SINATE	2.57WSL	Topramezone + Glufosinate	Pyrazolone + Phosphinic Acid	10,27	Caution	Slight	Slight
SINBAR WDG	80WP	Terbacil	Uracil	5	Caution	Moderate	Moderate
SNAPSHOT 2.5 TG	2.5GR	Trifluralin + Isoxaben	Dinitroaniline + Benzamide	3,29	Caution	Mild	Moderate
SOLICAM	78.6DF	Norflurazone	Pyridazinone	12	Caution	Slight	Mild
SONALAN 10G	10G	Ethalfluralin	Dinitroaniline	3	DANGER-C	Slight	Severe
SONALAN HFP	3EC	Ethalfluralin	Dinitroaniline	3	DANGER-C	Moderate	Severe
SONIC	70WDG	Sulfentrazone + Cloransulam	Aryl triazinone + Triazolopyrimidine	2,14	Caution	Slight	Moderate
SONIC BOOM	3.35SC	Sulfentrazone + Metribuzin	Aryl Triazinone + Triazinone	5,14	Caution	Slight	Slight
SPARTAN 4F	4F	Sulfentrazone	Aryl triazinone	14	Caution	Slight	Moderate
SPARTAN CHARGE	3.5SE	Carfentrazone + Sulfentrazone	Aryl triazinone + Aryl triazinone	14,14	Caution	Slight	Moderate
SPECTICLE FLO	0.62L	Indaziflam	Alkylazine	29	Caution	Slight	Slight
SPIKE 20P	20GR	Tebuthiuron	Urea	5	Caution	Slight	Slight
SPIRIT	57WG	Prosulfuron + Primisulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Slight
SPITFIRE	3.82EC	Dicamba + 2,4-D	Benzoic Acid + Phenoxy	4,4	Caution	Moderate	Severe
STALKER	2AEL	Imazapyr	Imidazolinone	2	Caution	Moderate	Moderate
STAM 80 EDF	81DF	Propanil	Amide	5	Caution	Moderate	Moderate
STAM M4	4L	Propanil	Amide	5	Warning	Moderate	Severe
STANCE	0.92SC	Cyclanilide + Mepiquat Chloride	Plant Growth Regulator + Plant Growth Regulator	NA	Caution	Slight	Moderate
STAPLE LX	3.2L	Pyrithiobac	Pyrimidinyl(thio)benzoate	2	Caution	Slight	Slight
STARANE FLEX	0.875SE	Florasulam + Fluroxypyr	Triazolopyrimidine + Carboxylic Acid	2,4	Warning	Slight	Serious
STARANE NXT	2.913EC	Fluroxypyr + Bromoxynil	Carboxylic Acid + Nitrile	4,6	Warning	Slight	Severe
STARANE ULTRA	2.8EC	Fluroxypyr	Carboxylic Acid	4	Warning	Slight	Moderate
STAREDOWN	2.8EC	Fluroxypyr	Carboxylic Acid	4	Warning	Slight	Moderate
STATUS	56WG (AE)	Diflufenzopyr + Dicamba	Semicarbazone + Benzoic Acid	4,19	Caution	Moderate	Moderate
STEADFAST Q	37.7WDG	Nicosulfuron + Rimsulfuron + Safener	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
STERLING BLUE	4SL (AE)	Dicamba	Benzoic Acid	4	Caution	Mild	Moderate
STINGER	3SL	Clopyralid	Carboxylic Acid	4	Caution	Slight	Moderate
STINGER HL	5SL	Clopyralid	Carboxylic Acid	4	Caution	Slight	Moderate
STOREN	2.84ZC	Metolachlor + Pyroxasulfone + Mesotrione + Bicyclopyrone	Chloroacetamide + Isoxazoline + Triketone + Triketone	15,15,27,27	Caution	Moderate	Moderate
STORM	4SL	Bentazon + Acifluorfen	Benzothiadiazole + Diphenylether	6,14	DANGER-C	Moderate	Severe
STRADA	50WDG	Orthosulfamuron	Sulfonylurea	2	Caution	Slight	Moderate
STRADA PRO	53.97WDG	Orthosulfamuron + Halosulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
STRADA XT2	70DF	Orthosulfamuron + Quinclorac	Sulfonylurea + Quinoline Carboxylic Acid	2,4	Caution	Slight	Moderate
STREAMLINE	52.1DF	Aminocyclopyrachlor + Metsulfuron	Carboxylic Acid + Sulfonylurea	2,4	Caution	Slight	Moderate
STRIKE 3	3.23AEL	2,4-D + MCPP + Dicamba	Phenoxy + Phenoxy + Benzoic Acid	4,4,4	DANGER-C	Slight	Severe
STRONGARM	84WDG	Diclosulam	Triazolopyrimidine	2	Caution	Slight	Moderate
SUPERWHAM!	4F	Propanil	Amide	5	Caution	Moderate	Moderate
SUPREMACY	31WDG	Fluroxypyr + Tribenuron + Thifensulfuron	Carboxylic Acid + Sulfonylurea + Sulfonylurea	2,2,4	Warning	Slight	Serious
SURESTART II	4.16SEM	Acetochlor + Flumetsulam + Clopyralid	Chloroacetamide + Triazolopyrimidine + Carboxylic Acid	2,4,15	Warning	Slight	Moderate
SURFLAN A.S.	4L	Oryzalin	Dinitroaniline	3	Caution	Slight	Moderate
SURMOUNT	2.15EW	Picloram + Fluroxypyr	Carboxylic Acid + Carboxylic Acid	4,4	DANGER-C	Slight	Severe
SURPASS NXT	7EC	Acetochlor	Chloroacetamide	15	Warning	Moderate	Moderate
SURTAIN	1.628ACS	Pyroxasulfone Saflufenacil	Isoxazoline Pyrimidinedione	15 14	Warning	Slight	Moderate

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
SURVEIL	48WG	Cloransulam + Flumioxazin	Triazolopyrimidine + N-phenylphthalimide	2,14	Caution	Slight	Moderate
SYNCHRONY XP	28.4DG	Chlorimuron + Thifensulfuron	Sulfonylurea + Sulfonylurea	2,2	Caution	Slight	Moderate
TACOMA 1EC	1EC	Fenoxaprop	Aryloxphenoxy-propionate (Fops)	1	Warning	Serious	Serious
TALINOR	1.77EC	Bicyclopyrone + Bromoxynil	Triketone + Nitrile	27,6	Caution	Slight	Moderate
TARGA	0.88EC	Quizalofop-P ethyl	Aryloxphenoxy-propionate (Fops)	1	Danger	Moderate	Moderate
TARZEC	31.95WDG	Pyroxsulam + Halauxifen	Triazolopyrimidine + Pyridine-carboxylate	2,4	Caution	Slight	Moderate
TEAMMATE	21.5WDG	Pyroxsulam	Triazolopyrimidine	2	Warning	Slight	Moderate
TELAR XP	75DF	Chlorsulfuron	Sulfonylurea	2	Caution	Slight	Slight
TENACITY	4L	Mesotrione	Triketone	27	Caution	Slight	Mild
TENDOVO	4.177 ZC	Metolachlor + Metribuzin + Chloransulam	Metolachlor + Metribuzin + Triazolopyrimidine	2,5,15	Warning	Moderate	Moderate
TERMINATE	6.375L	Ethephon + Cyclanilide	Plant Growth Regulator + Plant Growth Regulator	NA	DANGER-C	Moderate	Serious
THISTROL	2L	MCPB	Phenoxy	4	Caution	Moderate	Moderate
THREESIDUAL	4.16SC (AE)	Acetochlor + Flumetsulam + Clopyralid	Chloroacetamide + Triazolopyrimidine + Carboxylic Acid	2,4,15	Warning	Slight	Serious
TOLVERA	1.713 EC	Tolpyralate + Bromoxynil	HPPD inhibitor + Nitrile	6,27	Warning	Slight	Severe
TORDON 22K	21.1SL	Picloram	Carboxylic Acid	4	Caution	Slight	Moderate
TORDON RTU	14.2RTU (L)	Picloram + 2,4-D	Carboxylic Acid + Phenoxy	4,4	Caution	Slight	Moderate
TOTAL	2.34WSL	Glufosinate	Phosphinic Acid	10	Caution	Slight	Slight
TOTAL 2.3	2.34WSL	Glufosinate	Phosphinic Acid	10	Warning	Slight	Severe
TOTAL SL	2.34WSL	Glufosinate	Phosphinic Acid	10	Caution	Slight	Moderate
TOTAL TNV	2.34WSL	Glufosinate	Phosphinic Acid	10	Caution	Slight	Slight
TOWER	6EC	Dimethenamid	Chloroacetamide	15	Warning	Slight	Serious
TRADEWIND	80SP	Bispyribac	Pyrimidinyl(thio)benzoate	2	Caution	Slight	Moderate
TRANSLINE	3SL	Clopyralid	Carboxylic Acid	4	Caution	Slight	Moderate
TREEVIX	70WDG	Saflufenacil	Pyrimidinedione	14	Caution	Slight	Moderate
TREFLAN HFP	4EC	Trifluralin	Dinitroaniline	3	Caution	Moderate	Moderate
TREFLAN TR-10	10G	Trifluralin	Dinitroaniline	3	Caution	Slight	Moderate
TREMOR ATZ LITE NXT	6E	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
TREMOR ATZ NXT	5.6E	Acetochlor + Atrazine	Chloroacetamide + Triazine	5,15	Caution	Slight	Moderate
TREMOR NXT	7EC	Acetochlor	Chloroacetamide	15	Warning	Moderate	Moderate
TRIPLEFLEX II	4.16SC (AE)	Acetochlor + Flumetsulam + Clopyralid	Chloroacetamide + Triazolopyrimidine + Carboxylic Acid	2,4,15	Warning	Slight	Serious
TRIVENCE	61.3DG	Chlorimuron + Metribuzin + Flumioxazin	Sulfonylurea + Triazinone + N-phenylphthalimide	2,5,14	Caution	Slight	Moderate
TRIVOLT	3.65SC	Thiencarbazone + Isoxaflutole + Flufenacet	Sulfonylaminocarbonyltriazolinone + Isoxazole + Oxyacetamide	2,15,27	Caution	Slight	Slight
TRUST	4EC	Trifluralin	Dinitroaniline	3	Caution	Slight	Moderate
TUPERSAN	50WP	Siduron	Urea	5	Caution	Slight	Slight
TUSCANY SC	4L	Flumioxazin	N-phenylphthalimide	14	Caution	Slight	Moderate
UPBEET	50DF	Triflusulfuron	Pyrimidinyl(thio)benzoate	2	Caution	Slight	Slight
VALOR EZ	4L	Flumioxazin	N-phenylphthalimide	14	Caution	Slight	Moderate
VALOR SX	51WDG	Flumioxazin	N-phenylphthalimide	14	Caution	Slight	Moderate
VALOR XLT	40.3WDG	Flumioxazin + Chlorimuron	N-phenylphthalimide + Sulfonylurea	2,14	Caution	Slight	Moderate
VARISTO	4.187SL (AE)	Imazamox + Bentazon	Imidazolinone + Benzothiadiazole	2,6	Caution	Slight	Slight
VARRO	0.083L	Thiencarbazone	Sulfonylaminocarbonyltriazolinone	2	Caution	Moderate	Moderate
VASTLAN	4SL	Triclopyr	Carboxylic Acid	4	Warning	Slight	Serious
VELPAR ALFAMAX	77.7DG	Hexazinone + Diuron	Triazinone + Urea	5,5	DANGER-C	Slight	Serious
VELPAR ALFAMAX GOLD	78.5DG	Hexazinone + Diuron	Triazinone + Urea	5,5	DANGER-C	Slight	Serious
VELPAR L	2WDL	Hexazinone	Triazinone	5	DANGER-C	Slight	Severe
VELPAR L VU	2WDL	Hexazinone	Triazinone	5	DANGER-C	Slight	Severe
VERDICT/TESTIFY	5.57EC	Saflufenacil + Dimethenamid	Pyrimidinedione + Chloroacetamide	14,15	Warning	Moderate	Serious
VIDA	0.208L	Pyraflufen	Phenylpyrazole	14	DANGER-C	Moderate	Severe
VIEWPOINT	61.7DF	Imazapyr + Metsulfuron + Aminocyclopyrachlor	Imidazolinone + Sulfonylurea + Carboxylic Acid	2,2,4	Caution	Slight	Moderate

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Herbicide Family	Site of Action[1]	Signal Word[2]	Dermal Irritation	Eye Irritation
VIOS FX	1.06 EC	thiencarbazone + fluroxypyr	sulfonylaminocarbonyltriazolinone + carboxylic acid	2,4	Caution	Moderate	Moderate
VISTA XRT	2.8EC	Fluroxypyr	Carboxylic Acid	4	Warning	Slight	Moderate
WARRANT	3ME	Acetochlor	Chloroacetamide	15	Caution	Slight	Slight
WARRANTULTRA	3.45EC	Acetochlor + Fomesafen	Chloroacetamide + Diphenylether	14,15	Danger	Slight	Serious
WEEDAR 64	3.8AEL	2,4-D	Phenoxy	4	DANGER-C	Moderate	Severe
WEEDAR XHL	6AEL	2,4-D	Phenoxy	4	DANGER-C	Moderate	Severe
WEEDMASTER	3.87SL	Dicamba + 2,4-D	Benzoic Acid + Phenoxy	4,4	DANGER-C	Slight	Severe
WEEDMASTER XHL	5SL	Dicamba + 2,4-D	Benzoic Acid + Phenoxy	4,4	DANGER-C	Slight	Severe
WEEDONE 638	2.8AEL	2,4-D	Phenoxy	4	Warning	Slight	Severe
WELD	2.89AEL	MCPA + Clopyralid + Fluroxypyr	Phenoxy + Carboxylic Acid + Carboxylic Acid	4,4,4	Caution	Slight	Moderate
WESTAR	75.1DG	Hexazinone + Sulfometuron	Triazinone + Sulfonylurea	2,5	DANGER-C	Moderate	Serious
WIDEARMATCH	1.88L	Fluroxypyr + Halauxifen + Clopyralid	Carboxylic Acid + Pyridine-carboxylate + Carboxylic Acid	4,4,4	Warning	Slight	Serious
WIDEMATCH	1.5EW	Clopyralid + Fluroxypyr	Carboxylic Acid + Carboxylic Acid	4,4	Caution	Slight	Moderate
WOLVERINE ADVANCED	1.58EC	Fenoxaprop + Bromoxynil + Pyrasulfotole	Aryloxphenoxy-propionate (Fops) + Nitrile + Pyrazole	1,6,27	DANGER-C	Moderate	Severe
XONERATE	70WDG	Amicarbazone	Triazolinone	5	Caution	Slight	Serious
YUKON	67.5WDG	Halosulfuron + Dicamba	Sulfonylurea + Benzoic Acid	2,4	Caution	Slight	Slight
ZIDUA PRO	4.09SC	Saflufenacil + Imazethapyr + Pyroxasulfone	Pyrimidinedione + Imidazolinone + Isoxazoline	2,14,15	Caution	Slight	Slight
ZIDUA SC	4.17SC	Pyroxasulfone	Isoxazoline	15	Caution	Slight	Slight

[1] Site of action. See "Herbicide Resistance and Site of Action" on the first page in this section. Based on WSSA/HRAC classification.
[2] C - corrosive; P - poison. A signal word is required for all registered pesticides. It is determined by the most severe toxicity category assigned to the five acute toxicity studies (acute oral, acute dermal, acute inhalation 4 hr exposure, primary eye irritation, and primary skin irritation) or by the presence of ≥4% methanol. Toxicity categories: I- Danger, II- Warning, III- Caution, IV- none required.

Formulation Abbreviations
ACS = aqueous capsule suspension
AE = acid equivalent
AEL = acid equivalent, as liquid
AF = aqueous flowable
AS = aqueous suspension
Co-Pack = co-packaging of products
CS = capsule suspension
DC = Dispersible concentrate
DF = dry flowable
DG = dispersible granule
DS = powder for dry seed treatment
E = emulsifiable concentrate
EC = emulsifiable concentrate
EG = extruded granule
EL = emulsifiable liquid
ES = emulsion for seed treatment
EW = emulsifiable concentrate (emulsion in water)
F = flowable
FC = flowable concentrate
FL = flowable
FS = flowable concentrate for seed treatment
G = granular
GB = granular bait
GR = granular
KK = combi pak (solid/liquid)
KL = combi pak (liquid/liquid)
L = liquid
LC = liquid concentrate
LS = solution for seed treatment
ME = microencapsulated
OD = oil dispersion
ODL = oil dispersion liquid
OL = oil soluble liquid
P = pellet
RTU = ready to use
S = soluble or solution
SC = soluble (suspension) concentrate - flowable
SE = suspo-emulsion
SEM = suspoemulsion
SG = water soluble granule
SL = water soluble concentrate (liquid or slurry)
SP = soluble powder
ULV = ultra low volume concentrate
W = wettable powder
WDG = water dispersible granule
WDL = water dispersibile liquid
WG = water dispersible granule
WSB = water soluble bag
WSC = water soluble concentrate
WSG = water soluble granule
WSL = water soluble liquid
WSP = water soluble packet (package)
WP = wettable powder
XP = extruded paste
ZC = SE + CS

For more information, see:
www.epa.gov/pesticide-registration/labeling-requirements

NOTES

Trade Name	Formulation	Common A.I. Name (*Indicates a Fungicide A.I.)	Chemical Class	Mode of Action[1]	IRAC GROUP[2]	Toxicity			Timing for Bees[5]	Application[6]	Notes
						Signal Word[3]	Aquatic Invertebrates[4]	Bees[4]			
ABAMEX	0.15EC	Abamectin	A	C,S	6	Caution	E. Toxic	E. Toxic	NDB	F	
ABBA ULTRA	0.3EC	Abamectin	A	C,S	6	Warning	E. Toxic	E. Toxic	NDB	F	
ACTARA	25WDG	Thiamethoxam	NI	C,S	4A	Caution	High	High	BCAV	F	10
ACTELLIC	5E	Pirimiphos-Methyl	OP	C	1B	Caution	NR	NR	NR	STGR	1
ADMIRE PRO	4.6L	Imidacloprid	NI	C,S	4A	Caution	High	High	BCAV	F,S,ST	
ADVION	0.22G	Indoxacarb	V	C,S	22A	Caution	Toxic	NR	NR	F	
ADVISE FOUR	4FL	Imidacloprid	NI	C,S	4A	Caution	High	High	BCAV	F,S,ST	
AGREE	50WG	Bacillus thuringiensis	Bt	C,S	11	Caution	NR	NR	NR	S	
AGRI-FLEX	1.547SC	Abamectin + Thiamethoxam	A,NI	C,S	6,4A	Warning	E.Toxic	E.Toxic	BCAV	F	4,9
AGRI-MEK	0.7SC	Abamectin	A	C,S	6	Warning	High	High	BCAV	F	
ALTACOR	35WDG	Chlorantraniliprole	DI	C,S	28	Caution	Toxic	NR	NR	F	
ARCHER	1.3EC	Pyriproxyfen	JH	I	7C	Caution	NR	NR	NR	F,S	
ARCTIC	3.2EC	Permethrin	SP	C	3A	Caution	E. Toxic	High	BCAV	F,S	
ARENA	0.25G,50WG	Clothianidin	NI	C,S	4A	Caution	Toxic	Toxic	NDB	F,S	4,6
ASANA XL	0.66EC	Esfenvalerate	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
ASSAIL	70WP,30SG	Acetamiprid	NI	C,S	4A	Caution	Non-Toxic	Toxic	AV	F	
AVEO EZ	16.5SP	Bacillus amyloliquefaciens	BP	S	UNB	Warning	NR	NR	NR	S	
AVAUNT	30DG	Indoxacarb	V	C,S	22A	Caution	Toxic	High	BCAV	F	
AVAUNT EVO	30DG	Indoxacarb	V	C,S	22A	Caution	Toxic	High	BCAV	F	
AZTEC 4.67G/AZTEC HC	4.67G/8.9G	Beta-Cyfluthrin + Tebupirimfos	SP,OP	C,C	3A,1B	Warning	Toxic	NR	NR	S	
BAYTHROID XL	1L	Beta-Cyfluthrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
BELAY INSECTICIDE	2.13SC	Clothianidin	NI	C,S	4A	Caution	Toxic	High	NDB	F,S	4,6
BELEAF	50SG	Flonicamid	HF	S	9C	Caution	High	NR	NR	F	
BESIEGE	1.252ZC	Lambda-Cyhalothrin + Chlorantraniliprole	SP,DI	C,S	3A,28	Warning	E. Toxic	High	BCAV	F	
BIDRIN 8	8L	Dicrotophos	OP	C	1B	Danger-P	NR	High	AV	F	
BIFEN 2 AG GOLD	2L	Bifenthrin	SP	C	3A	Warning	E.Toxic	High	BCAV	S	2,4,9
BLACKHAWK	36G	Spinosad	SPI	C,S	5	Caution	Toxic	Toxic	BCAV	F	5
BRACKET 97	97G	Acephate	OP	C,S	1B	Caution	Toxic	High	BCAV	F	
BRIGADE 2EC	2EC	Bifenthrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
CALYPSO	4F	Thiacloprid	NI	C,S	4A	Warning	NR	NR	DA	F	
CAPTURE LFR	1.5SC	Bifenthrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
CAPTURE 3RIVE 3D	1.6SC	Bifenthrin	SP	C	3A	Caution	NR	NR	NR	S	
CARAVAN G	0.09G	Thiamethoxam + Azoxystrobin*	NI	S	4A	Caution	High	High	BCAV	F	
CARBINE 50WG	50WG	Flonicamid	HF	S	9C	Warning	NR	NR	NR	F	
CENTRIC 40WG	40WG	Thiamethoxam	NI	C,S	4A	Caution	High	High	BCAV	F	
CENTYNAL	0.42SC	Deltamethrin	SP	C	3A	Caution	E. Toxic	High	AV	STGR	
CERTADOR	L	Dinotefuran	NI	C,S	4A	Caution	Hazardous	High	NDB	F,S	3,4,8,9
CLOSER	SC	Sulfoxaflor	SU	C,S	4C	Danger	NR	High	LEM	F	5
COMITE	6.55L	Propargite	IM	O	12C	Danger-C	Toxic	NR	NR	F,S	
COMITE II	6L	Propargite	IM	O	12C	Danger-C	Toxic	NR	NR	F,S	
CONFIRM 2F	2L	Tebufenozide	E	I	18	Caution	Toxic	Virtually None	A	F	
CORAGEN	1.67SC	Chlorantraniliprole	DI	C,S	28	None	Toxic	NR	NR	F,S	
COUNTER 20G	20G	Terbufos	OP	C,S	1B	Danger-P	NR	NR	NR	S	5
CRUISER	70WS	Thiamethoxam	NI	C,S	4A	Caution	High	High	ST	10	
DANITOL	2.4EC	Fenpropathrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F	
DELEGATE	25WG	Spinetoram	SPI	C,S	5	Caution	Toxic	High	BCAV	F	
DELTA GOLD	1.5EC	Deltamethrin	SP	C	3A	Danger-P	E. Toxic	High	AV	F,S	
DENIM	0.16EC	Emamectin Benzoate	A	S	6	Danger	Toxic	High	BCAV	F	
DIACON-D IGR	D	Methoprene	JH	I	7A	Caution	Toxic	NR	NR	STGR	
DIACON IGR	2.5L	Methoprene	JH	I	7A	Caution	NR	NR	NR	STGR	
DIBROM 8E	8E	Naled	OP	C	1B	Danger	Toxic	High	BCAV	F	
DIMATE	4E	Dimethoate	OP	C,S	1B	Warning	Toxic	High	LEM	F,S	

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name (*Indicates a Fungicide A.I.)	Chemical Class	Mode of Action[1]	IRAC GROUP[2]	Toxicity			Timing for Bees[5]	Application[6]	Notes
						Signal Word[3]	Aquatic Invertebrates[4]	Bees[4]			
DIMETHOATE 4EC	4EC	Dimethoate	OP	C,S	1B	Warning	Toxic	High	LEM	F,S	
DIMILIN	2L,25W	Diflubenzuron	CH	I	15	Caution	Toxic	Little to None	A	F	
DIPEL	DF,ES	Bacillus thuringiensis	Bt	C,S	11	Caution	NR	NR	NR	F	
DIVANEM	0.7SC	Abamectin	A	C,S	6	Warning	Toxic	Highly toxic	BCAV	F	
DURIVO	2.505SL	Chlorantraniliprole + Thiamethoxam	DI,NI	C,S	28,4A	Caution	High	High	BCAV	S	
DYLOX	SL,G,T&O	Trichlorfon	OP	C,S	1B	Caution/ Warning	E. Toxic	NR	NR	S	
ELEVEST	2.22SC	Bifenthrin + Chlorantraniliprole	SP,DI	C,S	3A,28	Caution	E. Toxic	High	BCAV	F,S	
ENDIGO ZCX	2.7ZC	Lambda-Cyhalothrin + Thiamethoxam	SP,NI	C,S	3A,4A	Warning	E. Toxic	High	BCAV	F	
ENTRUST SC	2SC	Spinosad	SPI	C,S	5	Caution	Toxic	Toxic	LEM	F	4,5
ESTEEM 0.86 EC	0.86EC	Pyriproxyfen	JH	I	7C	Caution	Toxic	Little to None	NR	F	
ETHOS ELITE LFR ‡	1.5SC	Bacillus velezensis + Bacillus subtilis + Bifenthrin	SP	C	3A	Caution	E. Toxic	High	BCAV	S	
ETHOS XB	1.5SC	Bifenthrin + Bacillus amyloliquefaciens Strain D747*	SP	C	3A	Caution	E. Toxic	High	BCAV	S	
ETHOS 3D	1.4SC	Bifenthrin + Bacillus amyloliquefaciens Strain D747*	SP	C	3A	Warning	E. Toxic	High	BCAV	S	
EXIREL	0.83SE	Cyantraniliprole	DI	S	28	Warning	Toxic	High	NDB	F	11,12
FASTAC	0.83ME	Alpha-Cypermethrin	SP	C,S	3A	Danger	Toxic	High	NDB	F,S	
FERENCE	1.67SC	Cyantraniliprole	DI	S	28	Warning	Toxic	High	NDB	F	
FORCE 6.5G	6.5G	Tefluthrin	SP	C	3A	Caution	High	High	NR	S	1
FORCE 10G HL	10G	Tefluthrin	SP	C	3A	Warning	High	High	NR	S	1
FORCE EVO	2.1EC	Tefluthrin	SP	C	3A	Danger	High	High	NR	S	1
FULFILL	50WDG	Pymetrozine	HF	S	9B	Caution	NR	Low	DA	F	
GRIZZLY TOO	1CS	Lambda-Cyhalothrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
HERO	1.24EC	Zeta-Cypermethrin + Bifenthrin	SP,SP	C,S	3A,3A	Caution	E. Toxic	High	BCAV	F,S	
IMIDAN 70-W	70W	Phosmet	OP	C	1B	Warning	Toxic	High	BCAV	F,S	
INDEX	2.8L	Chlorethoxyfos + Bifenthrin	OP,SP	C,S	1B,3A	Danger-P	Toxic	NR	NR	S	
INTREPID 2F	2F	Methoxyfenozide	E	I	18	Caution	NR	Virtually None	A	F	5
INTREPID EDGE	3L	Methoxyfenozide + Spinetoram	E,SPI	I,C,S	18,5	Caution	Toxic	Toxic	NDB	F	5,9,11
INTRUDER	70WSP	Acetamiprid	NI	C,S	4A	Caution	NR	Toxic	AV	F	
JAVELIN	85WG	Bt	Bt	C,S	11	Caution	Toxic	NR	NR	F	
KNACK	0.86EC	Pyriproxyfen	JH	I	7C	Caution	Toxic	Little to None	NR	F,S	
LAMBDA-CY AG	2.08S	Lambda-Cyhalothrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
LANNATE LV, LANNATE SP	2.4L,90WSP	Methomyl	C	C	1A	Danger-P	Toxic	High	BCAV	F	
LEVERAGE 360	3L	Beta-Cyfluthrin + Imidacloprid	SP,NI	C,S	3A,4A	Caution	E. Toxic	High	BCAV	F	
MAINSPRING GNL	1.67L	Cyantraniliprole	DI	S	28	Warning	Toxic	High	NDB	F	11,12
MALATHION 5 OR 5EC	5EC	Malathion	OP	C	1B	Warning	Toxic	High	BCAV	F	
MALATHION 8 FLOWABLE	8L	Malathion	OP	C	1B	Caution	Toxic	High	BCAV	F	
MATCHPOINT	36WDG	Spinosad	SPI	C,S	5	Caution	Toxic	Toxic	NR	F	4,5
MERIDIAN 0.33G, 25WG	0.33G,25WG	Thiamethoxam	NI	C,S	4A	Caution	High	High	NR	A	1
MERIT 0.5 G	0.5G	Imidacloprid	NI	C,S	4A	Caution	High	NR	NR	S	
MICROTHIOL DISPERSS	80W	Sulfur				Caution				F	
MINECTO PRO	1.37SC	Cyantraniliprole + Abamectin	DI,A	C,S	28,6	Warning	Toxic	Highly toxic	BCAV	F	12

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name (*Indicates a Fungicide A.I.)	Chemical Class	Mode of Action[1]	IRAC GROUP[2]	Toxicity			Timing for Bees[5]	Application[6]	Notes
						Signal Word[3]	Aquatic Invertebrates[4]	Bees[4]			
MOCAP EC, MOCAP 15G	6EC,15G	Ethoprop	OP	C		Danger-P	Toxic	High	AV	S	
MOVENTO	2L	Spirotetramat	TA	S	23	Caution	Toxic	Low	NDB	F	2,3,7
MOVENTO HL	4L	Spirotetramat	TA	S	23	Caution	Toxic	Low	NDB	F	2,3,7
MOVENTO MPC	1.25L	Spirotetramat	TA	S	23	Caution	Toxic	Low	NDB	F	2,3,7
MUSTANG	1.5EW	Zeta-Cypermethrin	SP	C,S	3A	Warning	High	High	BCAV	F,S	
MUSTANG MAXX	0.8EC	Zeta-Cypermethrin	SP	C,S	3A	Warning	High	High	BCAV	F,S	
NEALTA	1.67L	Cyflumetofen	UN	C,S	25A	Caution	High	NR	NR	F	
NEEMIX 4.5	0.39L	Azadirachtin		I	U	Warning	Hazardous	NR	NR	F	
NUPRID 4F MAX	4FL	Imidacloprid	NI	C,S	4A	Caution	High	High	BCAV	F,S,ST	
NURIZMA	2.5I	Broflanilide	DI	S	30	Caution	Toxic	High	NDB	S	
OBERON 2 SC, OBERON 4 SC	2SC,4SC	Spiromesifen	TA	S	23	Caution	Toxic	NR	NR	F,S	
OMITE-6E	6E	Propargite	IM	O	12C	Danger-C	Toxic	NR	NR	F	
ONAGER	1L	Hexythiazox	MG	C	10A	Caution	Toxic	Little to None	NR	F	11
ORTHENE 97	97SP	Acephate	OP	C,S	1B	Caution	NR	High	BCAV	F,S	
OUTREACH SC	SC 7.6 x 10^9 CFU/fl.oz.	Bacillus amyloliquefaciens strain PTA-4838	Bionematicide	C		Caution	NR	NR	NR	S	
PH3 ALUMINUM PHOSPHIDE	Pellet/Tablet	Aluminum Phosphide	M4	R	24A	Danger-P	NR	NR	NR	STGR	
PLATINUM 75 SG	75SG	Thiamethoxam	NI	C,S	4A	Caution	High	High	BCAV	S	
PROCLAIM	5SG	Emamectin Benzoate	A	S	6	Caution	Toxic	High	BCAV	F	
PROVAUNT	30WG	Indoxacarb	V	C,S	22A	Caution	Toxic	High	BCAV	F	
PYGANIC EC 1.4$_{II}$/ PYGANIC EC 5.0$_{II}$	0.1EC/0.41EC	Pyrethrins		C,S	3A	Caution	High	High	BCAV	F	
RADIANT	1SC	Spinetoram	SPI	C,S	5	Caution	Toxic	High	BCAV	F	
REGENT 4 SC	4SC	Fipronil	SPI	C,S	2B	Warning	Toxic	NR	NR	S	1
RENESTRA	0.64DC	Afidopyropen + Alpha-Cypermethrin	SP	O,C,S	9D, 3A	Warning	E. Toxic	Toxic	BCAV	F,S	
REQUIEM EC	16.75EC	Chenopodium ambrosioides near ambrosioides		C		Caution	Toxic	NR	NR	F	11
RIDGEBACK	12.4AS	Sulfoxaflor + Bifenthrin	SU,SP	C,S	4C,3A	Warning	E. Toxic	High	BCAV	F	
SALIBRO	4.17SC	Reklemel (Nematicide)				Caution				S	1
SCIMITAR CS		Lambda-cyhalothrin	SP	C	3A	Caution	E.Toxic	High	BCAV	F,S	
SEFINA	0.42	Afidopyropen		O	9D	Caution	Toxic	Low	A	F	
SENSAT	0.73L	Spinosad	SPI	C,S	5	Caution	Toxic	Toxic	NR	STGR	1
SENSTAR	1.35SE	Spirotetramat + Pyriproxyfen	TA,JH	S,I	23,7C	Caution	Toxic	Toxic	DA	F	2,3,7
SEQUOIA	2L	Sulfoxaflor	SU	C,S	4C	Danger	NR	High	LEM	F	5
SIVANTO PRIME	1.67SL	Flupyradifurone	NI	C,S	4D	Caution	Toxic	Toxic	A	F	
SIVANTO 200 SL	1.67SL	Flupyradifurone	NI	C,S	4D	Caution	Toxic	Toxic	A	F	
SMARTCHOICE HC	12.9G	Chlorethoxyfos + Bifenthrin	OP,SP	C,S	1B,3A	Warning	Toxic	NR	NR	S	
SPINTOR	2SC	Spinosad	SPI	C,S	5	Caution	Toxic	Toxic	NR	F	4,5
STEWARD	1.25EC	Indoxacarb	V	C,S	22A	Caution	Toxic	High	BCAV	F	
SUCCESS	2L	Spinosad	SPI	C,S	5	Caution	Toxic	Toxic	NR	F	4,5
TANDEM	1.37CS	Thiamethoxam + Lambda-Cyhalothrin	NI,PYR	C,S	3A,4A	Caution	High	High	LEM	F	
TELONE II	L	1,3-dichloropropene				Warning	High	NR	NR	S	
TEMPO SC ULTRA	1L	Beta-Cyfluthrin	SP	C	3A	Caution	E. Toxic	High	BCAV	F,S	
THIMET 20-G	20G	Phorate	OP	C,S	1B	Danger-P	NR	NR	NR	S	11
TRANSFORM WG	50WG	Sulfoxaflor	SU	C,S	4C	Danger	High	High	LEM	F	4,5,2
TRIGARD	75WP	Cyromazine	MD	I	17	Caution	NR	Little to None	NR	F	
TRILOGY	5.46L	Neem oil		I		Caution	Hazardous	Toxic	AV	F	
TUNDRA EC	2EC	Bifenthrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
TUNDRA LFC	1.5SC	Bifenthrin	SP	C	3A	Caution	E. Toxic	High	BCAV	F,S	

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name (*Indicates a Fungicide A.I.)	Chemical Class	Mode of Action[1]	IRAC GROUP[2]	Toxicity			Timing for Bees[5]	Application[6]	Notes
						Signal Word[3]	Aquatic Invertebrates[4]	Bees[4]			
ULTOR	1.25L	Spirotetramat	TA	S	23	Caution	Toxic	Low	NDB	F	2,3,7
VANTACOR	5SC	Chlorantraniliprole	DI	C,S	28	None	Toxic	NR	NR	F,S	
VENOM	70SG	Dinotefuran	NI	S	4A	Caution	Hazardous	High	NDB	F	3,4,8,9
VELUM PRIME / VELUM ONE	4.16SC	Fluopyram* (nematicide)									
VELUM RISE	2.96 L	Fluopyram* (nematicide + Penflufen)									
VERIMARK	1.67SC	Cyantraniliprole	DI	S	28	Warning	Toxic	High	NDB	F	11,12
VERSYS	0.83L	Afidopyropen		O	9D	Caution	Toxic	Low	A	F	
VOLIAM FLEXI	40WDG	Chlorantraniliprole + Thiamethoxam	DI,NI	C,S	28,4A	Caution	Toxic	High	BCAV	F	
VYDATE L or C-LV	2L,3.77SL	Oxamyl	C	C,S	1A	Danger-P	Toxic	High	BCAV	F,S	
WARRIOR II	2.08CS	Lambda-Cyhalothrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	
XENTARI	DF	Bacillus thuringiensis	Bt	C,S	11	Caution	Toxic	NR	NR	F	
XPEDIENT PLUS V	2L	Bifenthrin	SP	C	3A	Warning	E. Toxic	High	BCAV	F,S	2,4,9
XXPIRE	WG	Spinetoram + Sulfoxaflor	SPI,SP	C,S	4C,5	Caution	Toxic	High	BCAV	F	
ZEAL SC	2.88SC	Etoxazole	MG	C	10B	Caution	Toxic	Little to None	NR	F	
ZIRONAR	DF	Bacillus licheniformis* + Bacillus subtilis*	BP	S	UNB	None	NR	NR	NR	S	

[1] C - Contact or physical toxicant, S - Systemic, R - Respiratory, I - Insect Growth Regulator, O - Other. Insecticides can also be classified according to the table on the following page.

[2] See table on the following page. Classification by Insecticide Resistance Action Committee (IRAC) for group and site of action http://www.irac-online.org

[3] C - corrosive; P - poison. A signal word is required for all registered pesticides. It is determined by the most severe toxicity category assigned to the five acute toxicity studies (acute oral, acute dermal, acute inhalation 4 hr exposure, primary eye irritation, and primary skin irritation) or by the presence of ≥4% methanol. Toxicity categories: I- Danger, II- Warning, III- Caution, IV- none required.

[4] Ratings from product labels or SDSs. E. Toxic - Extremely Toxic, NR - no restrictions or recommendations on the label or SDS. Note, aquatic invertebrates are not the same as fish. For specific toxicity to fish, see the product labels.

[5] A = Little or no affect on bees and can be applied any time.
AV = Do not apply or allow to drift to crops or weeds where bees are actively foraging. BCAV = Toxicity rating from previous column applies to bees exposed to direct treatment of blooming crops or weeds. Do not apply or allow to drift to blooming crops or weeds if bees are foraging in the treatment area.
DA = Do not expose bees to direct application.
LEM = apply during late evening, night, or early morning when bees are not foraging.
NDB = Do not apply to blooming crops or weeds. See Notes for more information.
NR = No restrictions or recommendations on the label or SDS.

[6] F = foliar, S = soil, ST = seed treatment, STGR = stored grain.

NOTE 1: Contact by bees is unlikely.
NOTE 2: Toxic to bee larvae.
NOTE 3: Pollen and nectar is toxic to bee larvae.
NOTE 4: Do not apply during bloom, pollen shed, or nectar production.
NOTE 5: Toxic to bees for 3 hr following treatment.
NOTE 6: Toxic to bees for 5 days following treatment.
NOTE 7: Adult bee exposure to direct treatments or residues on blooming crops can affect larvae.
NOTE 8: Toxic to bees for 38 hr following treatment.
NOTE 9: Do not apply to blooming, pollen shedding, or nectar producing parts of plants if bees are foraging on the plants.
NOTE 10: Wait 5 days before placing bee hives in treated field.
NOTE 11: Runoff may be hazardous to aquatic life.
NOTE 12: Reduce risk to bees by applying before 7 a.m. or after 7 p.m. or when temperature is < 55° F.

Composition Abbreviations
ACS = aqueous capsule suspension
AE = acid equivalent
AEL = acid equivalent, as liquid
AF = aqueous flowable
AS = aqueous suspension
Co-Pack = Co-Pack
CS = capsule suspension
DC = dispersible concentrate
DF = dry flowable
DG = dispersible granule
DS = powder for dry seed treatment
E = emulsifiable concentrate
EC = emulsifiable concentrate
EL = emulsifiable liquid
ES = emulsion for seed treatment
EW = emulsifiable concentrate (emulsion in water)
F = flowable
FC = flowable concentrate
FL = flowable
FS = flowable concentrate for seed treatment
G = granular
GB = granular bait
GR = granular
KK = combi pak (solid/liquid)
KL = combi pak (liquid/liquid)
L = liquid
LS = solution for seed treatment
ME = microencapsulated
OD = oil dispersion
ODL = oil dispersion liquid
OL = oil soluble liquid
P = pellet
RTU = ready to use
S = soluble or solution
SC = soluble (suspension) concentrate - flowable
SE = suspo-emulsion
SEM = suspoemulsion
SG = water soluble granule
SL = water soluble concentrate (liquid or slurry)
SP = soluble powder
ULV = ultra low volume concentrate
W = wettable powder
WDG = water dispersible granule
WDL = water dispersibile liquid
WG = water dispersible granule WSB = water soluble bag
WSC = water soluble concentrate
WSG = water soluble granule
WSL = water soluble liquid
WSP = water soluble packet (package)
WP = wettable powder
XP = extruded paste
ZC = SE + CS

NOTES FOR BEES

Some pesticides may remain on plants for an extended period. These can be identified by the word "residue" on the label under Bee caution. Pesticide toxicity and information for bees is in the "Environmental Hazards" section of the label. Some states have directories for sensitive crops and bees. https://driftwatch.org/ for applicator, specialty crop or apiary registration or login, state-specific maps

MODE OF ACTION AND CHEMICAL CLASSIFICATION[1]					
SITE OF ACTION					
MAIN GROUP	SUB-GROUP	ACTION	ABBREVIATION[2]	GROUP GROUP NAME	SUB GROUP
1	1A	Nerve	C	Acetylcholinesterase inhibitors	Carbamate
1	1B	Nerve	OP	Acetylcholinesterase inhibitors	Organophosphate
2	2A	Nerve	CD	GABA-gated chloride channel antagonists	Cyclodiene organochlorines
2	2B	Nerve	PP	GABA-gated chloride channel antagonists	Phenylpyrazoles
3	3A	Nerve	SP	Sodium channel modulators	Pyrethroids, Pyrethrins
3	3B	Nerve		Sodium channel modulators	Methoxychlor, DDT
4	4A	Nerve	NI	Nicotinic acetylcholine receptor agonists	Neonicotinoids
4	4B	Nerve		Nicotinic acetylcholine receptor agonists	Nicotine
4	4C	Nerve	SU	Nicotinic Acetylcholine receptor agonist	Sulfoximines
5		Nerve	SPI	Nicotinic acetylcholine receptor allosteric activators	Spinosyn
6		Nerve and Muscle	A	Chloride channel activators	Avermectin
7	7A	Growth regulation	JH	Juvenile hormone mimics	Juvenile hormone analogues
7	7B	Growth regulation	JH	Juvenile hormone mimics	Fenoxycarb
7	7C	Growth regulation	JH	Juvenile hormone mimics	Pyriproxyfen
8	8A	Multi-site		Miscellaneous non-specific	Alkyl halides
8	8B	Multi-site		Miscellaneous non-specific	Chloropicrin
8	8C	Multi-site		Miscellaneous non-specific	Sulfuryl fluoride
8	8D	Multi-site		Miscellaneous non-specific	Borax
8	8E	Multi-site		Miscellaneous non-specific	Tartar emetic
9	9B	Nerve	HF	Selective homopteran feeding blockers	Pymetrozine
9	9D	Nerve	HF	Selective homopteran feeding blockers	Afidopyropen
10	10A	Growth regulation	MG	Mite growth inhibitors	Clofentazine, Hexythiazox, Diflovidazin
10	10B	Growth regulation	MG	Mite growth inhibitors	Etoxazole
11		Microbial	Bt	Microbial disruptors of insect midgut membranes	Bt, Bs, and related proteins produced
12	12A	Energy metabolism	IM	Inhibitors of mitochondrial ATP synthase	Diafenthiuron
12	12C	Energy metabolism	IM	Inhibitors of mitochondrial ATP synthase	Propargite
12	12D	Energy metabolism	IM	Inhibitors of mitochondrial ATP synthase	Tetradifon
12	12B	Energy metabolism	IM	Inhibitors of mitochondrial ATP synthase	Organotin miticides
13		Energy metabolism		Uncouplers of oxidative phosphorylation	Chlorfenapyr, DNOC, Sulfluramid
14		Nerve		Nicotinic acetylcholine receptor channel blocker	Nereistoxin analogues
15		Growth regulation	CH	Inhibitors of chitin biosynthesis, type 0	Benzoylureas
16		Growth regulation	CH	Inhibitors of chitin biosynthesis, type 1	Buprofezin
17		Growth regulation	MD	Molting disruptor, dipteran	Cyromazine
18		Growth regulation	E	Ecdysone receptor agonist	Dacylhydrazines
19		Nerve		Octopamine receptor agonists	Amitraz
20	20A	Energy metabolism		Mitochondrial complex III electron transport inhibitors	Hydramethylnon
20	20A	Energy metabolism		Mitochondrial complex II electron transport inhibitors	Fluacrypyrim
20	20B	Energy metabolism		Mitochondrial complex III electron transport inhibitors	Acequinocyl
21	21A	Energy metabolism		Mitochondrial complex I electron transport inhibitors	METI acaricides and insecticides
21	21B	Energy metabolism		Mitochondrial complex I electron transport inhibitors	Rotenone
22	22A	Nerve	V	Voltage dependent sodium channel blockers	Indoxacarb
22	22B	Nerve	V	Voltage dependent sodium channel blockers	Metaflumizone
23		Growth regulation, lipid synthesis	TA	Inhibitors of acetyl CoA carboxylaase	Tetronic and tetramic acid derivatives
24	24A	Energy metabolism	M4	Mitochondrial complex IV electron transport inhibitors	Phosphine
24	24B	Energy metabolism	M4	Mitochondrial complex IV electron transport inhibitors	Cyanide
25		Energy metabolism		Mitochondrial complex II electron transport inhibitors	Cyenopyrafen
28		Nerve and Muscle	DI	Ryanodine receptor modulators	Diamides

See notes and footnotes at end of table.

MODE OF ACTION AND CHEMICAL CLASSIFICATION[1]					
SITE OF ACTION					
MAIN GROUP	SUB-GROUP	ACTION	ABBREVIATION[2]	GROUP GROUP NAME	SUB GROUP
29		Nerve		Selective homopteran feeding blockers	Flonicamid
30		Nerve		GABA-gated chloride channel allosteric modulator	Broflanilide
U		Unknown		Azadaractin, Benzoximate, Bifenazate, Bromopropylate, Chinomethionate, Cryolite, Cyflumetofen, Dicofol, Pyridalyl	

[1] Many other groups and active ingredients exist. For a complete list, see http://www.irac-online.org

[2] Group abbreviations are not provided by IRAC, but used in this book for convenience.

Insecticide Resistance Management (IRM) Guidelines

- Minimize insectide use by selecting insect-tolerant or resistant crop varieties.
- Utilize non-chemical techniques including biological sprays such as Bt's, field refuge, crop rotation, early harvest, planting date etc.
- Maximize beneficial insect survival with appropriate application timing and use of products with relatively low toxicity.
- Use products at full, recommended rates. Reduced rates select tolerant insect populations.
- If using mixtures with different MOA classes, use each at full recommended rates
- Use different insecticide MOA classes with multiple applications per year.
- Use well-maintained, calibrated equipment with recommended water volume, and spray pressure to obtain optimal coverage.
- Target younger larval instars that are more effectively controlled than older stages.
- Use local economic thresholds (ET) and spray intervals.

Trade Name	Formulation	Common A.I. Name (*Indicates an Insecticide A.I.)	FRAC Group[1]	FRAC Target Site Code	FRAC Code Number	Signal Word[2]	Protectant or Systemic[3]	Application[4]
ABOUND	2.08SC	Azoxystrobin	QOI	C3	11	Caution	P,LPS	F
ABSOLUTE 500 SC	4.36SC	Tebuconazole + Trifloxystrobin	DMI,QOI	G1,C3	3,11	Caution	P,S	F
ABSOLUTE MAXX	4.36SC	Tebuconazole + Trifloxystrobin	DMI,QOI	G1,C3	3,11	Caution	P,S	F
ACTIGARD	50WG	Acibenzolar	P1	P	21	Caution	P,S	F
ACTINOVATE AG	0.037;1x10^{7}CFU/g	Streptomyces lydicus WYEC 108	NC	N	N	Caution	P,S	F,D,S
ADASTRIO	4SC	Azoxystrobin + Fluindapyr + Flutriafol	QOI,SDHI,DMI	C3,C2,G1	11,7,3	Caution	P,S	F
AFFIANCE	1.5SC	Azoxystrobin + Tetraconazole	QOI,DMI	C3,G1	11,3	Caution	P,S	F
AFLA-GUARD GR	Solid	Aspergillus flavus				Caution		S
AFRAME PLUS	2.2SE	Azoxystrobin + Propiconazole	QOI,DMI	C3,G1	11,3	Warning	P,S	F
AGRI TIN FLOWABLE	4L	Triphenyltin Hydroxide	NC	N	N	DANGER-P	P	F
ALIETTE	80WDG	Fosetyl-Aluminum	U	U	33	Caution	P,S	F
ALTIPRO	2.75L	Azoxystrobin + Prothioconazole	QOI,DMI	G3, G1	11,3	Caution	P, S	F, S
ALUMNI	4.1SC	Thiabendazole	MBC	B1	1	Caution		D
ALTO	0.83 SL	Cyproconazole	DMI	G1	3	Caution	P,S	F
AMISTAR TOP	2.72SC	Azoxystrobin + Difenoconazole	QOI,DMI	C3,G1	11,3	Caution	P,S	F
APPEAR	4.1SC	Potassium Phosphite	U	U	33	Caution	S	F
APROACH	2.08SC	Picoxystrobin	QOI	G1	C3	Caution	P,S	F,S
APROACH PRIMA	2.34SC	Picoxystrobin + Cyproconazole	QOI,DMI	C3,G1	3,11	Caution	P,S	F
APROVIA TOP	1.62EC	Difenoconazole + Benzovindiflupyr	DMI,SD	G1,C2	3,7	Warning	P,S	F
AVODIGEN	0.75L	Bacillus licheniformis strain FMCH001, Bacillus subtilis strain FMCH002	MI	F6	44		P	S
BADGE SC	2.27SC	Copper Hydroxide + Copper Oxychloride	M	M	M1	Caution	P	F,ST
BADGE X2	45.31DF	Copper Hydroxide + Copper Oxychloride	M	M	M1	Warning	P	F
BANNER MAXX II	14.3EC	Propiconazole	DMI	G1	3	Caution	P,S	F
BANOL	6L	Propamocarb	C	F4	28	Caution	P,S	F
BAYLETON 50 T&O	5.5ozWSP	Triadimefon	DMI	G1	3	Caution	S	F
BEXFOND	7.4 x 10^{11} CFU/ fl.oz.	Bacillus amyloliquefaciens subspecies plantarum strain FZB42	MI	F6	44	Caution	P	D, S
BIO-TAM 2.0	5x10^6 CFU/g	ICC 012 + ICC 080 strains of Trichoderma asperellum + gamsii	NC	N	N	Caution	P,S	S,D
BLOCKER 10G	10G	PCNB	AH	F4	15	Caution	P,S	S
BOTRAN	75WP	Dicloran	AH	F3	14	Caution	P	F
BRAVO ULTREX	82.5WDG	Chlorothalonil	M	M	M5	Danger-C	P	F
BRISKWAY	2.72SC	Azoxystrobin + Difenoconazole	Q01, DMI	C3,G1	11,3	Caution	P,S	F
CABRIO EG	20EG	Pyraclostrobin	QOI	C3	11	Caution	LPS	F
CANNONBALL WG	50WG	Fludioxonil	PP	E2	12	Caution	P,S	F
CAPTAN	Many	Captan	M	M	M4	Warn/Danger	P	F,S,ST
CARAVAN G	0.09G	Azoxystrobin + Thiamethoxam*	QOI	C3	11	Caution	P	F
CHAMP DRY PRILL	37.5DF	Copper Hydroxide	M	M	M1	Warning	P	F
CHAMP FORMULA 2 FLOWABLE	4.5L	Copper Hydroxide	M	M	M1	Warning	P	F
CHAMP WG	50DF	Copper Hydroxide	M	M	M1	DANGER-C	P	F
CHAMPION++	46.1DF	Copper Hydroxide	M	M	M1	Caution	P	F
CHIPCO 26019 FLO, 26GT	2L	Iprodione	D	E3	2	Caution	P,S	F
COMPASS	50WDG	Trifloxystrobin	QOI	C3	11	Caution	P,LPS	F
CONCERT II	4.3 SEM	Propiconazole + Chlorothalonil	DMI,M	G1,M	3,M5	Danger	P,S	F
CONTANS	5WG	Coniothyrium Minitans				Caution	S	S,F
CONTEND A	0.86SL	Benzovinduiflupyr + Difenoconazole	SD,DMI	C2,G1	7,3	Caution	P,S	F,S
CONTEND B	1.66SE	Azoxystrobin + Propiconazole	QOI	C3,G1	11,3	Warning	P,LPS	F,S
CUPROFIX ULTRA 40 DISPERSS	40P	Copper Sulfate + Mancozeb	M,M	M,M	M1,M3	Caution	P	F
CURZATE 60 DF	60DF	Cymoxanil	U	U	27		P,S	F

See notes and footnotes at end of table.

FUNGICIDE CLASSIFICATION *continued*

Trade Name	Formulation	Common A.I. Name (*Indicates an Insecticide A.I.)	FRAC Group[1]	FRAC Target Site Code	FRAC Code Number	Signal Word[2]	Protectant or Systemic[3]	Application[4]
DACONIL	Many	Chlorothalonil	M	M	M5	Danger	P	F
DACONIL ACTION	6.112SC	Chlorothalonil + Acibenzolar	M,P	M,P1	M5,P	Warning	P,S	F
DACNOIL ULTREX TURF CARE	82.5WDG	Chlorothalonil	M	M	M5	Danger	P	F
DACONIL WEATHER STIK	54SC	Chlorothalonil	M	M	M6	Caution	P	F
DELARO 325 SC	2.76SC	Prothioconazole + Trifloxystrobin	DMI,QOI	G1,C3	3,11	Caution	P,S	F
DELARO COMPLETE	3.83L	Prothioconazole + Trifloxystrobin + Fluopyram	DMI,QOI,SD	G1,C3,C2	3,11,7	Caution	P,S	F
DITHANE F-45 RAINSHIELD	4SC	Mancozeb	M	M	M3	Caution	P	F,ST
DOMARK 230 ME	1.9L	Tetraconazole	DMI	G1	3	Caution	P,S	F
EAGLE 20EW	20EW	Myclobutanil	DMI	G1	3	Caution	P,S	F
ECHO 720, ECHO 90 DF	6L,90DF	Chlorothalonil	M	M	M5	Warning	P	F
ELATUS	45WG	Benzovindiflupyr + Azoxystrobin	SD,QOI	C2,C3	7,11	Caution	P,S	F
ELUMIN	4SC	Ethaboxam	TC	B3	22	Caution	S,LPS	F
EMERALD	70G	Boscalid	SD	C2	7	Warning	P,S	F
EMESTO SILVER	0.98L	Penflufen + Prothioconazole	SDHI,DMI	C2,G1	7,3	Caution	P,S	ST
EMINENT VP	1L	Tetraconazole	DMI	G1	3	Caution	P,S	F
ENABLE 2F	2F	Fenbuconazole	DMI	G1	3	Caution	P,S	F
ENDURA	70WG	Boscalid	SD	C2	7	Warning	P,S	F
ETHOS ELITE LFR ‡	1.5SC	Bacillus velezensis + Bacillus subtilis + Befenthrin*	MI	F6	44	Caution	P,S	S
ETHOS XB	1.5SC	Bacillus smyloliquefaciens Strain D747 + Befenthrin*	MI	F6	44	Caution	P,S	S
ETHOS 3D	1.4SC	Bacillus smyloliquefaciens Strain D747 + Befenthrin*	MI	F6	44	Warning	P,S	S
EVERLON	4.17SC	Fluxaproxad + Pyraclostrobin	SD,QOI	C2,C3	7,11	Caution	P,S	F,S
EVITO 480 SC	4SC	Fluoxastrobin	QOI	C3	11	Caution	P,LPS	F
EVITO T	4L	Fluoxastrobin + Tebuconazole	QOI,DMI	C3,G1	11,3	Warning	P,S	F
EXCALIA	2.84SC	Inpyrfluxam	SDHI	C2	7	Caution	P	F
FLINT	50WDG	Trifloxystrobin	QOI	C3	11	Caution	P,LPS	F
FLINT EXTRA	4.05FL	Trifloxystrobin	QOI	C3	11	Caution	P,LPS	F
FLOXCOR	3.98FL	Fluoxastrobin	QOI,DMI	C3,G1	11,3	Warning	P,S	F
FONTELIS	1.67SC	Penthiopyrad	SD	C2	7	Caution	P,LPS	F
FORCIVO	4SC	Azoxystrobin + Fluindapyr + Flutriafol	QOI,SDHI,DMI	C3,C2,G1	11,7,3	Caution	P,S	F
FORE 80WP RAINSHIELD	80WP	Mancozeb	M	M	M3	Caution	P	F
FORUM	4.17L	Dimethomorph	CAA	C5	40	Caution	P,LPS	F
GAVEL	75DF	Mancozeb + Zoxamide	M,BZ	M,B3	M3,22	Caution	P	F
GRADUATE	50WP	Fludioxonil	PP	E2	12	Caution	P,S	F
GRADUATE A+	3.98SC	Fludioxonil + Azoxystrobin	PP,QOI	E2,C3	12,11	Caution	P,S	F
GRADUATE MAX MP	1.92SC	Fludioxonil	PP	E2	12	Caution	P,S	D
HEADLINE	2.09EC	Pyraclostrobin	QOI	C3	11	Warning	P,LPS	F
HEADLINE AMP	1.68SC	Pyraclostrobin + Metconazole	QOI,DMI	C3,G1	11,3	Warning	P,S	F
HEADLINE SC	2.08SC	Pyraclostrobin	QOI	C3	11	Warning	P,LPS	F
HONOR	28G	Pyraclostrobin + Boscalid	QOI,SD	C3,C2	11,7	Caution	P,S	F
INDAR 2F	2L	Febuconazole	DMI	G1	3	Caution	P,S	F
INLINE	10.54EC	1,3-dichloropropene + Chloropicrin				DANGER-C		S
INSIGNIA	20G	Pyraclostrobin	QOI	C3	11	Caution	P,S	F
INSIGNIA SC	2.08SC	Pyraclostrobin	QOI	C3	11	Warning	P,S	F
INSPIRE SUPER	2.82EW	Difenoconazole + Cyprodinil	DMI,AP	G1,D1	3,9	Caution	P,S	F
INSPIRE XT	4.16EC	Difenoconazole	DMI	G1	3	Danger-C	P,S	F

See notes and footnotes at end of table.

FUNGICIDE CLASSIFICATION *continued*

Trade Name	Formulation	Common A.I. Name (*Indicates an Insecticide A.I.)	FRAC Group[1]	FRAC Target Site Code	FRAC Code Number	Signal Word[2]	Protectant or Systemic[3]	Application[4]
INSTRATA	3.591SE	Chlorothalonil + Propiconazole + Fludioxonil	M,DMI,PP	M,G1,E2	M5,3,12	Caution	P,LPS	F
INTERFACE	2.27L	Iprodione + Trifloxystrobin	D,QO1	E3,C3	2,11	Caution	P,S	F
KOCIDE 3000	46.1DF	Copper Hydroxide	M	M	M1	Warning	P	F
LEXICON INTRINSIC	SC	Fluxapyroxad + Pyraclostrobin	SD,QOI	C2,I1	7,11	Caution	P,S	F
LUCENTO	4.17SC	Bixafen + Flutriafol	SDHI,DMI	C2,G1	7,3	Caution	S	S,F
LUNA EXPERIENCE	3.34 SC	Fluopyram + Tebuconazole	SD,DMI	C2,G1	7,3	Caution	P,S	F
LUNA FLEX	3.13 SC	Fluopyram + Difenoconazole	SD,DMI	C2,G1	7,3	Caution	P,S	F
LUNA PRO	3.34 SC	Fluopyram + Prothioconazole	SD,DMI	C2,G2	7,3	Warning	P,S	F
LUNA SENSATION	4.2 SC	Fluopyram + Trifloxystrobin	SD,QO1	C2,C3	7,11	Caution	P,S	F
LUNA TRANQUILITY	4.16 SC	Fluopyram + Pyrimethanil	SD,AP	C2,D1	7,9	Caution	P,S	F
MANKOCIDE	61.1DF	Copper Hydroxide + Mancozeb	M,M	M,M	M1,M3	Danger-C	P	F,ST
MANZATE MAX/ MANZATE PRO-STICK	Many	Mancozeb	M	M	M3	Caution	P	F,ST
MAXTIMA	3.34SC	Mefentrifluconazole	DMI	G1	3	Caution	S	F
MEDALLION, MEDIALLION SC	50WP, 1.04SC	Fludioxonil	PP	E2	12	Caution	P	F
MENTOR	45WP	Propiconazole	DMI	G1	3	Caution	P,S	F
MENTOR EC	0.88EC	Propiconazole	DMI	G1	3	Caution	P,S	D
MERIVON	4.18L	Fluxapyroxad + Pyraclatrobin	SD,QOI	C2,I1	7,11	Warning	P,S	S
METTLE 125 ME	1ME	Tetraconazole	DMI	G1	2	Caution	P,S	F
MICROTHIOL DISPERSS	80W	Sulfur	M	M	M2	Caution	P	F
MINUET	2.7 x 10^{10} CFU/g	QST713 strain of Bacillus subtilis	MI	F6	44	Caution	P	F
MIRAVIS	1.67SC	Pydiflumetofen	SD	C2	7	Caution	P,S	F
MIRAVIS ACE	2.301SE	Pydiflumetofen + Propiconazole	SD,DMI	C2,G1	7,3	Caution	P,S	F
MIRAVIS NEO	2.5SE	Pydiflumetofen + Propiconazole + Azoxystrobin	SD,DMI,QOI	C2,G1,C3	7,3,11	Warning	P,S	F
MIRAVIS PRIME	3.34SC	Pydiflumetofen + Fludioxonil	SD,PP	C2,E2	7,12	Caution	P,S	F
MIRAVIS TOP	1.67SC	Pydiflumetofen + Difenoconazole	SD,DMI	C2,G1	7,3	Caution	P,S	F
MONCUT SC	3.8SC	Flutolanil	SD	C2	7	Caution	P,S	F
MURAL	45WG	Azoxystrobin + Benzovindiflupyr	QOI,SD	C3,C2	11,7	Caution	P,S	F,S
NAVICON	1.67SC	Mefentrifluconazole	DMI	G1	3	Warning	S	F
NEXICOR	2.96L	Fluxapyroxad + Pyraclostrobin + Propiconazole	SD,QOI,DMI	C2,I1,GI	7,11,3	Caution	P,S	F
OMEGA TOP MP	4.17SC	Fluazinam	C	C5	29	Warning	P	F
OMEGA 500F	4.17SC	Fluazinam	C	C5	29	Warning	P	F
ONSET	3.6L	Tebuconazole	DMI	G1	3	Caution	P,S	F
ORONDIS	1.67SC	Oxathiapiprolin	OSBPI	F9	49	Caution	S	F,S
ORONDIS GOLD	1.17DC	Oxathiapiprolin + Mefenoxam	OSBPI,PA	F9,A1	49,4	Danger	P,S	S
ORONDIS GOLD 200	1.67SC	Oxathiapiprolin	OSBPI	F9	49	Caution	S	F,S
ORONDIS GOLD B	4SL	Mefenoxam	PA	A1	4	Caution	P,S	S
ORONDIS OPTI	3.37SC	Chlorothalonil + Oxathiapiprolin	M,OSBPI	M,F9	M5,49	Danger	P,S	F
ORONDIS ULTRA	2.33SC	Oxathiapiprolin + Mandipropamid	OSBPI,CAA	F9,F5	49,40	Caution	S	F
PENNCOZEB 75DF	75DF	Mancozeb	M	M	M3	Caution	P	F,ST
PH-D	11.3WDG	Polyoxin D Zinc Salt	H	H4	19	Caution	P	F
PHOSTROL	4.17SC	Potassium Phosphite	U	U	33	Caution	S	F
PILLAR G, PILLAR G INTRINSIC	81G	Pyraclostrobin + Triticonazole	QOI,DMI	C3,G1	11,3	Caution	P,S	F
PRAIZ	6L	Chlorothalonil	M	M	M5	Warning	P	F
PRESIDIO	4SC	Fluopicolide	BN	B5	43	Caution	P,S	F
PREVISTO	0.3L	Copper Hydroxide	M	M	M1	Danger	P	F
PREVICUR FLEX	6E	Propamocarb	C	F4	28	Caution	P,S	F

See notes and footnotes at end of table.

FUNGICIDE CLASSIFICATION *continued*

Trade Name	Formulation	Common A.I. Name (*Indicates an Insecticide A.I.)	FRAC Group[1]	FRAC Target Site Code	FRAC Code Number	Signal Word[2]	Protectant or Systemic[3]	Application[4]
PRIAXOR	4.17SC	Fluxaproxad + Pyraclostrobin	SD,QOI	C2,C3	7,11	Caution	P,S	F,S
PRISTINE	38DG	Boscalid + Pyraclostrobin	SD,QOI	C2,C3	7,11	Caution	P,S	F
PROCURE 480SC	4SC	Triflumizole	DMI	G1	3	Caution	P,S	F
PROLINE 480SC	4SC	Prothioconazole	DMI	G1	3	Caution	P,S	F
PROPULSE	3.34L	Fluopyram + Prothioconazole	SD,DMI	C2,G1	7,3	Caution	P,S	F
PROSARO 421 SC	3.5SC	Prothioconazole + Tebuconazole	DMI,DMI	G1,G1	3,3	Caution	P,S	F
PROSARO PRO 400 SC	3.35SC	Prothioconazole + Tebuconazole + Fluopyram	DMI,DMI,SD	G1,G1,C2	3,3,7	Caution	P,S	F
PROSTAR 70 WP	70WP	Flutolanil	SD	C2	7	Caution	P,S	F
PROTEGAM YLD	4.18SC	Prothioconazole + Trifloxystrobin	DMI,QOI	G1,C3	3,11	Caution	P,S	F
PROVOST SILVER	3.52L	Prothioconazole + Tebuconazole	DMI,DMI	G1,G1	3,3	Caution	P,S	F
PROVYSOL	3.34L	Mefentrifluconazole	DMI	G1	3	Caution	S	F
QUADRIS OPTI	5.5SC	Azoxystrobin + Chlorothalonil	QOI,M	C3,M	11,M5	Warning	P,LPS	F
QUADRIS RIDOMIL GOLD SL	2.08SC + 4SL	Azoxystrobin + Mefenoxam	QOI,PA	C3,A1	11,4	Caution	P,S	S
QUADRIS TOP	2.72SC	Azoxystrobin + Difenoconazole	QOI,DMI	C3,G1	11,3	Caution	P,S	F
QUADRIS TOP SBX	3.76SC	Azoxystrobin + Difenoconazole	QOI,DMI	C3,G1	11,3	Warning	P,S	F
QUASH	50WDG	Metconazole	DMI	G1	3	Caution	P,LPS	F
QUILT XCEL	2.2SE/1.66SE	Azoxystrobin + Propiconazole	QOI,DMI	C3,G1	11,3	Warning	P,S	F
RALLY 40WSP	40WSP	Myclobutanil	DMI	G1	3	Caution	P,S	F
RANMAN	3.33L	Cyazofamid	QII	C4	21	Caution	P,LPS	F
RENOWN	5.16L	Chlorothalonil + Azoxystrobin	M,QOI	M,C3	M5,11	Warning	P,S	F
REVUS	2.08SC	Mandipropamid	CAA	F5	40	Caution	P,LPS	F
REVUS TOP	4.16SC	Mandipropamid + Difenoconazole	CAA,DMI	F5,G1	40,3	Caution	P,S	F
REVYTEK	3.33L	Mefentrifluconazole + Fluxapyroxad + Pyraclostrobin	DMI,SD,QOI	G1,C2,C3	3,7,11	Warning	S,LPS	F
RHYME	2.08SC	Flutriafol	DMI	G1	3	Warning	S	F
RIDOMIL GOLD BRAVO SC	3.67SC	Mefenoxam + Chlorothalonil	PA,M	A1,M	4,M5	Warning	P,S	F
RIDOMIL GOLD COPPER	65WP	Mefenoxam + Copper Hydroxide	SD,M	C2,M	3	Danger	P,S	F
RIDOMIL GOLD GR	2.5G	Mefenoxam	PA	A1	4	Caution	P,S	S
RIDOMIL GOLD MZ WG	68WG	Mefenoxam + Mancozeb	PA,M	A1,M	4,M3	Caution	P,S	F
RIDOMIL GOLD SL	4SC	Mefenoxam	PA	A1	4	Caution	P,S	S,F
ROVRAL 4F	4F	Iprodione	D	E3	2	Caution	P,S	F
RUSTEASE	2.34SC	Azoxystrobin + Cyproconazole	QOI,DMI	C3,G1	11,3	Caution	P,LPS	F
SCALA SC	5SC	Pyrimethanil	AP	D1	9	Caution	P,S	F
SCHOLAR SC	1.92SC	Fludioxonil	PP	E2	12	Caution	P,S	F
SECURE	4.17L	Fluazinam	–	C5	29	Warning	P	F
SECURE ACTION	4.18L	Fluazinam + Acibenzolar	–,P1	C5,P	29,21	Caution	P,S	F
SERENADE ASO	1.34F	QST713 strain of Bacillus subtilis	MI	F6	44	Caution	P	F
SERENADE OPTI	26.2 % WP	QST713 strain of Bacillus subtilis	MI	F7	45	Caution	P	F
SERIFEL	5.5 x 10^{10} CFU/g	Bacillus amyloliquefaciens Strain MBI 600	MI	F6	44	Caution	P	F
SONATA	1 x 10^{9} CFU/g	QST2808 strain of Bacillus pumilus	MI	F6	44	Caution	P	F
SPHAEREX	5.504L	Metconazole + Prothioconazole	DMI,DMI	G1,G1	3,3	Caution	P,LPS	F
SPOTRETE F	4.2L	Thiram	M	–	M03	Caution	P	F
STRATEGO YLD	4.18SC	Prothioconazole + Trifloxystrobin	DMI,QOI	G1,C3	3,11	Caution	P,S	F
SUBDUE GR/SUBDUE MAXX	1G/22EW	Mefenoxam	PA	A1	4	Caution	S	F,S
SWITCH	62.5WG	Cyprodinil + Fludioxonil	AP,PP	D1,E2	9,12	Caution	P,S	F
T-METHYL 4.5 F	4.5SC	Thiophanate Methyl	MBC	B1	1	Caution	P,S	F
T-METHYL 70 WSB	70WSB	Thiophanate Methyl	MBC	B1	1	Caution	P,S	F

See notes and footnotes at end of table.

FUNGICIDE CLASSIFICATION *continued*

Trade Name	Formulation	Common A.I. Name (*Indicates an Insecticide A.I.)	FRAC Group[1]	FRAC Target Site Code	FRAC Code Number	Signal Word[2]	Protectant or Systemic[3]	Application[4]
TANOS	50DF	Famoxadone + Cymoxanil	QOI,U	C3,U	11,27	Caution	P,S	F
TARTAN	2.4L	Trifloxystrobin + Triadimefon	QOI,DMI	C3,G1	11,3	Caution	S	F
TAEGRO 2	1.0 x 10^{10} CFU/g	FZB24 strain of Bacillus subtillus	MI	F6	44	Warning	P	F
TERRAZOLE 35%WP	35WP	Etridiazole	AH	F3	14	Caution	P	S
TESARIS	2.47SC	Fluxapyroxad	SD	C2	7	Caution	P	F
TETRABAN	L	Azoxystrobin	QOI	C3	11	Caution	P,LPS	F
TILT	3.6EC	Propiconazole	DMI	G1	3	Warning	P,S	F
TOP MP	2.08EC	Difenoconazole	DMI	G1	3	Warning	P,LPS	F
TOPAZ	3.6EC	Propiconazole	DMI	G1	3	Warning	P,S	F
TOPGUARD	1.04SC	Flutriafol	DMI	G1	3	Caution	P,S	F
TOPGUARD EQ	4.29SC	Azoxystrobin + Flutriafol	QO1,DMI	C3,G1	11,3	Caution	P,S	F,S
TOPSIN M WSB/ TOPSIN 4.5FL	70WP/4.5L	Thiophanate Methyl	MBC	B1	1	Caution	P,S	F
TORINO	0.85L	Cyflufenamid	U	U	U6	Caution	S	F
TRINITY	1.69L	Triticonazole	DMI	G1	3	Caution	P,S	F
TRIVAPRO	2.21SE	Benzovindiflupyr + Azoxystrobin + Propiconazole	SD,QOI,DMI	C2,C3,GI	7,11,3	Warning	P,S	F
TURFCIDE 400	4L	PCNB	AH	F3	14	Caution	P,S	S
ULTRA FLOURISH	2EC	Mefenoxam	PA	A1	4	Caution	S	F,S
UNIFORM	3.72L	Azoxystrobin + Mefenoxam	QOI,PA	C3,A1	11,4	Caution	P,S	S
VANGARD WG	75WG	Cyprodinil	AP	D1	9	Caution	P,S	F
VAULT IP/VAULT IP PLUS	1.4 x 10^{9} + 1.4 x 10^{10} CFU/g	Bacillus amyloliquefaciens, strain MBI 600 + Bacillus subtilis, strain BU1814	MI	F6	44	-	P	F
VELISTA	50 WDG	Penthiopyrad	SD	C2	7	Caution	P,S	F
VELTYMA	3.34L	Mefentrifluconazole + Pyraclostrobin	DMI,QOI	G1,C3	3,11	Warning	S	F
VELUM PRIME / VELUM ONE	4.16 SC	Fluopyram	SD	C2	7	Caution	S	F,S
VELUM RISE	2.96 L	Fluopyram (nematicide) + Penflufen	SD	C2	7	Caution	S	F,S
VIATUDE	2.09SC	Picoxystrobin + Prothioconazole	QOI, DMI	C3, G1	11,3	Caution	P, S	F
XYWAY 3D	2.5SC	Flutriafol	DMI	G1	3	Warning	P,S	S
XYWAY LFR	1.92SC	Flutriafol	DMI	G1	3	Caution	P,S	S
XZEMPLAR	SC	Fluxapyroxad	SD	C2	7	Caution	P	F
ZAMPRO	4.38SC	Ametoctradin + Dimethomorph	Qxl,CAA	C8,H5	45,40	Caution	P,S	F
ZING!	4.9 L	Chlorothalonil + Zoxamide	M + BZ	M,B3	M5,22	Caution	P,S	F
ZIRONAR	DF	Bacillus licheniformis* + Bacillus subtilis*	MI	F6	44	None	S	S
ZORINA	2.5SC	Mefentrifluconazole + Boscalid	DMI + SD	G1, C2	3,7	Caution	P,S	F
3336 F	4L	Thiophanate Methyl	MBC	B1	1	Caution	P,S	F,S

[1] See next page for abbreviation definitions.

[2] C - corrosive; P - poison. A signal word is required for all registered pesticides. It is determined by the most severe toxicity category assigned to the five acute toxicity studies (acute oral, acute dermal, acute inhalation 4 hr exposure, primary eye irritation, and primary skin irritation) or by the presence of ≥4% methanol. Toxicity categories: I- Danger, II- Warning, III- Caution, IV- none required.

[3] Preventative fungicides must be present before fungal infection. They prevent disease infection but do not control existing infections. Other fungicides are systemic with curative properties to control fungi that have already infected plant tissue. Some fungicides have both preventive and curative activity.

[4] D - drench/dip, F - foliar, S - soil, ST - seed treatment.

P = Protectant or Preventative fungicides. Protectant fungicides prevent the spores from germinating or penetrating plant tissue. Application must be made before infection occurs. Fungicides that exhibit only (P) properties are non-systemic and remain on the leaf surface. Complete spray coverage of both leaf surfaces is important. Adjuvants are often beneficial to increase coverage.

S = Systemic or Curative fungicides. Fungicides that translocate within the plant and provide limited curative control of existing infestations as well as preventative against new infestations. Some of these fungicides inhibit spore development but they function primarily by inhibiting the growth of mycelium. Note however, that the mobility of systemic fungicides is generally less than with systemic herbicides such as glyphosate. All current systemic fungicides only move upward (xylem mobile). No current fungicide moves downward in the plant. Curative fungicides will not always cure diseased plants. They are effective if applied before infection or in the first 3 days after infection, but may not be effective for more advanced latent infections.

LPS = Local or Partial Systemic fungicides. Fungicides with limited mobility in plant tissue. They penetrate into the leaf but move only a limited distance. They provide limited control of existing disease infestations. Some local systemics such as pyraclostrobin and other strobilurons penetrate the cuticular leaf wax, move through the leaf and penetrate the cuticular wax on the other side of the leaf (translaminar movement). Strobiluron fungicides tend to have longer residual than triazole fungicides.

FUNGICIDE CLASSIFICATION *continued*

FUNGICIDE RESISTANCE MANAGEMENT

Disease organisms have multiple generations per year which favors the selection of resistant or tolerant organisms.

1. Rotate or premix fungicides with different modes of action. Do not use 2 or more applications of the same fungicide class alone.
2. Do not apply fungicides below labeled rates.
3. Avoid unnecessary applications.

The potential for disease resistance varies with the fungicide family and mode of action.

Chloronitriles (M) – These fungicides have multi-sites of activity and pose little risk of resistance.

Strobilurins (QOI) – These fungicides are active on a single site and pose the greatest risk of resistance. Resistance development to strobilurins is not affected by the rate of product used. Consecutive applications should not be made due to resistance concerns.

Triazoles (DMI) – Resistance by fungi favored by use of reduced rates. Avoid consecutive applications.

High Risk of Resistance – FRAC Codes: 1, 2, 4, 7, 10, 11, 25, 41.

For more information, see: http://www.frac.info

[1] Group abbrevations are not provided by FRAC, but used in this book for convenience.
[2] Definitions for mode of action.
A - Nucleic acid synthesis
B - Mitosis and cell division
C - Respiration
D - Amino acid and protein synthesis
E - Signal transduction
F - Lipid and membrane synthesis
G - Sterol biosynthesis in membranes
H - Glucan synthesis\
I - Melanin synthesis in cell wall
M - Multisite contact activity
N - Not classified
P - Host plant defense induction
U - Unknown

FUNGICIDE GROUPS (FRAC)
FUNGICIDE RESISTANCE ACTION COMMITTEE WWW.FRAC.INFO

CODE NUMBER	TARGET SITE CODE	GROUP ABREVIATION[1]	GROUP NAME	MOA[2]
1	B1	MBC	Methyl benzimidazole carbamates	B
2	E3	D	Dicarboximides	E
3	G1	DMI	Demethylation inhibitor, SBI Class I	G
4	A1	PA	Phenylamides	A
5	G2		Amines (morpholines) SBI Class II	G
6	F2		Phosphorothiolates, dithiolanes	F
7	C2	SD	Succinate dehydrogenase inhibitors	C
8	A2		Hydroxy 2-amino pyrimidines	A
9	D1	AP	Anilino-pyrimidine	D
10	B2	NC	N-phenyl carbamates	B
11	C3	QOI	Quinone outside inhibitors	C
12	E2	PP	Phenylpyrroles	E
13	E1	Q	Quinoline Aza-naphthalenes	E
14	F3	AH	Aromatic hydrocarbon, Hetoroaromatics	F
16.1	I1	MBI-R	Melanin biosynthesis inhibitor-reductase	I
16.2	I2	MBI-D	Melanin biosynthesis inhibitor-dehydratase	I
17	G3	SBI	Hydroxyanilide Class III	G
18	G4	SBI	SBI: Class IV	G
19	H4	H	Polyoxins	H
20	B4		Phenylureas	B
21	C4	QII	Quinone inside inhibitor	C
22	B3	BZ	Benzamides	B
22	B3	TC	Thiazole carboxamide	
23	D2	AB	Enopyranuronic acid antibiotic	D
24	D3	HA	Hexopyranosyl antibiotic	D
25	D4	GA	Glucopyranosyl antibiotic	D
26	H3		Glucopyranosyl antibiotic	H
27	U	U	Cyanoacetamide-oximes	U
28	F4	C	Carbamates	F
29	C5		Unnamed	C
30	C6	TN	Organo tin compound	C
31	A4		Carboxylic acids	A
32	A3	HE	Heteroaromatics	A
33	U	P	Phosphonates	U
34	U		Phthalamac acids	U
35	U		Benzotriazines	U
36	U		Benzene-sulfonamides	U
37	U		Pyridazinones	U
38	C7		Thiophene-carboxamides	C
39	C1		Pyrimidinamides	C
40	F5	CAA	Carboxylic acid amides	F
41	D5		Tetracycline antibiotic	D
41	D5		Tetracycline antibiotic	D
42	U		Thiocarbamates	U
43	B5	BN	Benzamides	B
44	F6	MI	Microbials	F
45	C8		Quinone x inhibitor	C
49	F9	OSBPI	Oxysterol binding protein homologue inhibition	F
M	M	M	M1-M9	Mu
P	P1-P4	P	P1, P2, P3, P4	P
U	U	U	U5, U6, U7, U8, U12	U
N	N	NC	Not classified	N

Trade Name	Formulation	Common A.I. Name	Signal Word[1]	Insecticide			Fungicide		
				Chemical Class	Mode of Action[2]	IRAC GROUP[3]	FRAC GROUP[4]	FRAC Code Number[4]	Protectant or Systemic
AERIS	5L	Imidacloprid + Thiodicarb	Caution	NI,C	C,S	4A,1A			
ALLEGIANCE-FL	2.6FL	Metalaxyl	Warning				PA	4	P,S
APRONMAXX RFC	0.52L	Fludioxonil + Mefenoxam	Caution				PA,PP	4,12	P,S
APRON MAXX RTA	0.16L	Fludioxonil + Mefenoxam	Caution				PA,PP	4,12	P,S
APRON MAXX RTA + MOLY	0.0165L + 5.55% Moly	Fludioxonil + Mefenoxaml + Molybdenum	Caution				PA,PP	4,12	P,S
APRON XL	L	Mefenoxam	Warning				PA	4	P,S
APRON XL 350ES	2.92L	Mefenoxam	Warning				PA	4	P,S
AVICTA 500 FS	4.17L	Abamectin	Danger	A	C	6			
AVICTA COMPLETE BEAN 500	L	Abamectin + Thiamethoxam + Mefenoxam + Fludioxonil	Warning	A,NI	C,S	6,4A	PA,PP	4,12	P,S
AVICTA COMPLETE CORN 250		Avicta Duo Corn + Cruiser + Apron XL + Maxim XL + Dynasty	Warning						
AVICTA DUO CORN	L	Abamectin + Thiamethoxam	Warning	A,NI	C,S	6,4A			
AVICTA DUO 250 CORN	8.37FC	Abamectin + Thiamethoxam	Warning	A,NI	C,S	6,4A			P,S
AVICTA DUO COTTON	L	Abamectin + Thiamethoxam	Warning	A,NI	C,S	6,4A			
AVODIGEN	L	Bacillus licheniformis strain FMCH001, Bacillus subtilis strain FMCH002		Bionematicide	C				P
BION 500FS	4.17L	Acibenzolar	Caution				P	P	
CAPTAN	Many	Captan	Warn/Poison				M	M4	P
CORONET	2.5L	Pyraclostrobin + Boscalid	Caution				QOI,SD	11,7	P,S*
CRUISER	5FS	Thiamethoxam	Caution	NI	C,S	4A			
CRUISER	70WS	Thiamethoxam	Caution	NI	C,S	4A			S
CRUISERMAXX SUGARBEETS		Cruiser 5FS + Aprol XL + Maxim 4FS							
CRUISERMAXX	2.42L	Thiamethoxam + Mefenoxam + Fludioxonil	Caution	NI	C,S	4A	PA,PP	4,4A	P,S
CRUISERMAXX APX	1.99L	Thiamethoxam + Mefenoxam + Picarbutrazox+ Fludioxonil + Sedaxane	Caution	NI	C,S	4A	PA,U,PP,SDHI	4,17,4A,7	P,S
CRUISERMAXX CEREALS	0.62L	Thiamethoxam + Mefenoxam + Difenoconazole	Caution	NI	C,S	4A	PA,DMI	4,3	P,S
CRUISERMAXX PEANUTS	0.236L	Thiamethoxam + Mefenoxam + Fludioxonil + Azoxystrobin	Caution	NI	S	4A	PA,PP,Q01	4,12,11	P,S
CRUISERMAXX POTATO	L	Thiamethoxam + Fludioxonil	Caution	NI	C,S	4A	PP	12	P
CRUISERMAXX POTATO EXTREME	L	Thiamethoxam + Fludioxonil + Difenconazole	Caution	NI	C,S	4A	DMI,PP	3,12	P,S
CRUISERMAXX RICE	2.887	Thiamethoxam + Fludioxonil + Azoxystrobin + Mefenoxam	Caution	NI	C,S	4A	QOI,PP,PA	11,12,4	P,S
CRUISERMAXX SUNFLOWER		Cruiser 5FS + Dynasty + Maxim 4FS + Apron XL							
CRUISERMAXX VIBRANCE	2.49L	Thiamethoxam + Mefenoxam + Fludioxonil + Sedaxane	Caution	NI	C,S	4A	PA,PP,SDHI	4,7,12	P,S
CRUISERMAXX VIBRANCE CEREALS	0.71L	Sedaxane + Difenoconazole + Mefenoxam + Thiamethoxam	Caution	NI	C,S	4A	SDHI, DMI,PA	7,3,4	P,S
CRUISERMAXX VIBRANCE POTATO	2.88L	Thiamethoxam + Fludioxonil + Difenoconazole + Sedaxane	Caution	NI	C,S	4A	PP,DMI, SDHI	12,3,7	P,S
CRUISERMAXX VIBRANCE PULSES	1.45L	Thiamethoxam + Thiabendazole + Sedaxane + Mefenoxam + Fludioxonil	Caution	NI	C,S	4A	MBC,SDHI, PA,PP	1,4,7,12	P,S
DERMACOR X-100	5.21F	Chlorantraniliprole	Caution	DI	C	28			
DITHANE F-45 RAINSHIELD	4L	Mancozeb	Caution				M	M5	P
DIVIDEND EXTREME	0.96L	Difenoconazole + Mefenoxam	Caution				DMI,PA	3,4	P,S
DYNASTY	0.83L	Azoxystrobin	Caution				QOI	11	P,S*
DYNASTY CST	1.04L	Azoxystrobin + Fludioxonil + Mefenoxam	Caution				QOI,PP,PA	11,12,4	P,S
DYNASTY PD	5.6P	Azoxystrobin + Fludioxonil + Mefenoxam	Caution				QOI,PP,PA	11,12,4	P,S
EMESTO SILVER	0.98L	Penflufen + Prothioconazole	Caution				SDHI + DMI	3,7	P,S
EVERGOL ENERGY	1.47L	Prothioconazole + Penflufen + Metalaxyl	Caution				DMI,SDHI, PA	3,7,4	P,S

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Signal Word[1]	Insecticide			Fungicide		
				Chemical Class	Mode of Action[2]	IRAC GROUP[3]	FRAC GROUP[4]	FRAC Code Number[4]	Protectant or Systemic
EVERGOL ENERGY SB	1.47L	Prothioconazole + Penflufen + Metalaxyl	Caution				DMI,SDHI, PA	3,7,4	P,S
FORTENZA	5FS	Cyantraniliprole	Caution	DI	C,S	28			P,S
GAUCHO 600	FL	Imidacloprid	Caution	NI	C,S	4A			
HELIX XTRA	2.41L	Thiamethoxam + Difenoconazole + Mefenoxam + Fludioxonil	Caution	NI	C,S	4A	DMI,PA,PP	3,4,12	P,S
HELIX VIBRANCE	2.47L	Thiamethoxam + Difenoconazole + Mefenoxam + Fludioxonil + Sedaxane	Caution	NI	C,S	4A	DMI,PA, PP,SDHI	3,4,7,12	P,S
ILEVO	5L	Fluopyram	Caution				C2	7	P
INTEGO SUITE SOYBEAN	2.361L	Clothianidin + Metalaxyl + Ipconazole + Ethaboxam	Caution	NI	C,S	4A	A1,DMI,TC	3,4,22	P,S
LUMIDERM	FS	Cyantraniliprole	Caution	DI	S	28			
LUMISENA	1.67FL	Oxathiapiprolin					F9 [U15]	49	P
MANKOCIDE	61.1DF	Copper Hydroxide + Maneb	DANGER				M,M	M1,M3	P
MANZATE MAX, MANZATE PRO-STICK, MANCOZEB	Many	Mancozeb	Caution				M	M3	P
MAXIM 025FS	FC	Fludioxonil	Caution				PP	12	P,S
MAXIM 4FS	4FS	Fludioxonil	Caution				PP	12	P
MAXIM QUATTRO	3.18L	Fludioxonil + Mefenoxam + Azoxystrobin + Thiabendazole	Caution				PA,PP, QOI,MBC	12,4,11,1	P,S
MAXIM XL	2.7L	Mefenoxam + Fludioxonil	Caution				PA,PP	4,12	P,S
MERTECT 340-F	4.1F	Thiabendazole	Caution				MBC	1	S
NIPSIT INSIDE	5L	Clothianidin	Caution	NI	C,S	4A			P,S
NIPSIT SUITE CEREALS OF	0.365L	Clothianidin + Metalaxyl + Metconazole	Caution	NI	C,S	4A	A1,DMI	4,3	P,S
OBVIUS	0.389L	Fluxapyroxad + Pyraclostrobin + Metalaxyl	Caution				SDHI,QOI, A1	4,7,11	P,S
OBVIUS PLUS	2.963L	Fluxapyroxad + Pyraclostrobin + Metalaxyl + Thiophanate-methyl	Caution				SDHI,QOI, A1,MBC	4,7,11,1	P,S
PENNCOZEB 75DF	75DF	Mancozeb	Caution				M3	3	P
PLENARIS 200FS	1.67FL	Oxathiapiprolin					F9 [U15]	49	P
PONCHO BETA	3.77L	Clothianidin + Beta-Cyfluthrin	Caution	NI,SP	C,S	4A,3A			
PONCHO VOTIVO	5.01L	Clothianidin + Bacillus firmus I-15825	Caution	NI,-5	C,S	4A,-5			
PONCHO XC	5L	Clothianidin	Caution	NI	C,S	4A			P,S
PROSPER EVERGOL	2.53L	Clothiandin + Penflufen + Trifloxystrobin + Metalaxyl	Caution	NI	C,S	4A	SDHI,Q01, A1	7,11,4	P,S
RANCONA CREST	1.3757L	Ipconazole + Metalaxyl + Imidacloprid	Caution	NI	C,S	4A	DMI,PA	3,4	P,S
RANCONA PINNACLE	0.0895L	Ipconazole + Metalaxyl	Caution	NI			DMI,PA	3,4	P,S
RANCONA SUMMIT	0.208L	Ipconazole + Metalaxyl	Caution				DMI,PA	3,4	P,S
RAXIL PRO MD	0.205MS	Prothioconazole + Tebuconazole + Metalaxyl	Danger				DMI,DMI, PA	3,3,4	P,S
RAXIL PRO SHIELD	0.972 MS	Imidacloprid + Prothioconazole + Metalaxyl + Tebuconazole	Caution	NI	C,S	4A	DMI,PA, DMI	3,4,3	P,S
REVUS	2.08SC	Mandipropamid	-				CAA	40	P
RIZOLEX	4.17L	Tolclofos-methyl	Caution				AH	14	P
SALTRO	4.17FC	Pydiflumetofen	Caution				SDHI	7	P,S
SEED SHIELD SOYBEAN	L	Thiamethoxam + Mefenoxam + Fludioxonil + Azoxystrobin	Caution	NI	C,S	4A	PA,PP,QOI	4,12,11	P,S
SENATOR 600 FS	FL	Imidacloprid	Caution	NI	C,S	4A			
SEPRESTO	75P	Clothianidin + Imidacloprid	Caution	NI,NI	C,S	4A,4A			
STAMINA	1.67L	Pyraclostrobin	Caution				QOI	11	P,S*
STAMINA F4 CEREALS	0.432L	Pyraclostrobin + Triticonazole + Metalaxyl + Fluxapyroxad	Caution				Q01,DMI,PA, SDHI	11,3,4,7	P,S
SYSTIVA XS	2.72AS	Fluxapyroxad	Caution				SDHI	7	S
TERAXXA	2.5L	Broflanilide	Caution			30			
TERAXXA F4	0.57L	Broflanilide + Fluxapyroxad + Pyraclostrobin + Triticonazole + Metalaxyl	Caution			30	SDHI,QOI, DMI,PA	7,11,3,4	P,S
TREBUSET	4.17FC	Pydiflumetofen	Caution				SDHI	7	P,S

See notes and footnotes at end of table.

Trade Name	Formulation	Common A.I. Name	Signal Word[1]	Insecticide			Fungicide		
				Chemical Class	Mode of Action[2]	IRAC GROUP[3]	FRAC GROUP[4]	FRAC Code Number[4]	Protectant or Systemic
TRUNEMCO	FL	B. amyloliquefaciens strain MBI 600 + cis-Jasmone	Caution	Bionematicide					
VIBRANCE	4.3L	Sedaxane	Caution				SDHI	7	P,S
VIBRANCE CINCO	2.73FC	Azoxystrobin + Mefenoxam + Fludioxonil + Sedaxane + Thiabendaozole	Caution				QOI,PA,PP, SDHI,MBC	11,4,12, 7,1	P,S
VIBRANCE CST	1.65FC	Azoxystrobin + Fludioxonil + Mefenoxam + Sedaxane	Caution				QOI,PP,PA, S,DHI	11,12,4,7	P,S
VIBRANCE EXTREME	0.805L	Sedaxane + Difenoconazole + Mefenoxam	Caution				SDHI,DMI, PA	7,3,4	P,S
VIBRANCE MAXX	0.94L	Sedaxane + Mefenoxam + Fludioxonil	Caution				SDHI,PA, PP	4,7,12	P,S
VIBRANCE MAXX PULSES RTA	0.673FC	Thiabendazole + Sedaxane + Mefenoxam + Fludioxonil	Caution				PP, SDHI, PP, MBC	1,7,4,12	P,S
VIBRANCE RST	1.65FC	Azoxystrobin + Sedaxane + Mefenoxam + Fludioxonil	Caution				QOI, PP, SDHI, PP	11,7,4,12	P,S
VIBRANCE TRIO	1.66FC	Fludioxonil + Sedaxane + Mefenoxam	Caution				PP,SDHI,PP	12,7,4	P,S
VIBRANCE ULTRA POTATO	2.56FC	Mandipropamid + Difenoconazole + Sedaxane	Caution				CAA,PA, SDHI	40,3,7	P,S
VORTEX	L	Ipconazole	Caution				DMI	3	P,S
WARDEN CEREALS HR	1.72L	Ipconazole + Metalaxyl + Imidacloprid	Caution	NI	C,S	4A	DMI,A1	3,4	P,S
WARDEN CEREALS II	L	Sedaxane + Difenoconazole + Mefenoxam	Caution				SDHI,DMI, PA	7,3,4	P,S
WARDEN CEREALS WRII	L	Thiamethoxam + Difenoconazole + Mefenoxam + Fludioxonil + Sedaxane	Caution	NI	C,S	4A	DMI,PA, PP,SDHI	3,4,12,7	P,S
WARDEN CX II	L	Thiamethoxam + Mefenoxam + Fludioxonil + Sedaxane + Picarbutrazox	Caution	NI	C,S	4A	PA,PP,SDHI,U	4,7,12,U17	P,S
WARDEN RTA	2.93L	Mefenoxam + Fludioxonil	Caution				PA,PP	4,12	P,S
VAYANTIS	3.3FC	Picarbutrazox	Caution				U	17	S
ZELTERA	3.2L	Inpyrfluxam	Caution				SDHI	7	S

[1] A signal word is required for all registered pesticides. It is determined by the most severe toxicity category assigned to the five acute toxicity studies (acute oral, acute dermal, acute inhalation 4 hr exposure, primary eye irritation, and primary skin irritation) or by the presence of ≥4% methanol. Toxicity categories: I- Danger, II- Warning, III- Caution, IV- none required.

[2] C - Contact or physical toxicant, S - Systemic, R - Respiratory, I - Insect Growth Regulator, O - Other. Insecticides can also be classified according to the table earlier in this section. Classification by Insecticide Resistance Action Committee (IRAC) for group and site of action http://www.irac-online.org

[3] See Fungicide Resistance Management page for abbreviation definitions.

[4] Preventive fungicides must be present before fungal infection. They prevent disease infection but do not control existing infections. Other fungicides are systemic with curative properties to control fungi that have already infected plant tissue. Some fungicides have both preventative and curative activity.

P = Protectant or Preventative fungicides. Protectant fungicides prevent the spores from germinating or penetrating plant tissue. Application must be made before infection occurs. Fungicides that exhibit only (P) properties are non-systemic and remain on the leaf surface. Complete spray coverage of both leaf surfaces is important. Adjuvants are often beneficial to increase coverage.

S = Systemic or Curative fungicides. Fungicides that translocate within the plant and provide limited curative control of existing infestations as well as preventative against new infestations. Some of these fungicides inhibit spore development but they function primarily by inhibiting the growth of mycelium. Note however, that the mobility of systemic fungicides is generally less than with systemic herbicides such as glyphosate. All current systemic fungicides only move upward (xylem mobile). No current fungicide moves downward in the plant. Curative fungicides will not always cure diseased plants. They are effective if applied before infection or in the first 3 days after infection, but may not be effective for more advanced latent infections.

S* = Local or Partial Systemic fungicides. Fungicides with limited mobility in plant tissue. They penetrate into the leaf but move only a limited distance. They provide limited control of existing disease infestations. Some local systemics such as pyraclostrobin and other strobilurons penetrate the cuticular leaf wax, move through the leaf and penetrate the cuticular wax on the other side of the leaf (translaminar movement). Strobiluron fungicides tend to have longer residual than triazole fungicides.

EPA REGISTRATION NUMBERS FOR PESTICIDES

Trade Name	EPA Registration No. *(from product label)*
AATREX 4L	100-497
AATREX NINE-0	100-585
ABAMEX	228-734
ABBA ULTRA	5481-621
ABOUND FL	100-1098
ABSOLUTE 500 SC	264-849
ABSOLUTE MAXX	264-849
ACCELERATE	4581-284-82695
ACCENT Q	352-773
ACRAMITE SC	400-514
ACRAMITE 50WS	400-503
ACTARA	100-938
ACTELLIC 5E	1381-170
ACTIGARD	100-922
ACTINOVATE AG	73314-1
ACURON	100-1466
ACURON FLEXI	100-1568
ACURON GT	100-1675
ADASTRIO	279-3642
ADIOS	66330-344
ADMIRE PRO	264-827
ADVION	100-1481
ADVISE FOUR	1381-219
AERIS	264-1057
AFFIANCE	10163-332
AFFINITY BROAD SPEC	279-9601
AFFINITY TANK MIX	279-9599
AFFORIA	352-889
AFLA-GUARD GR	100-1469
AFRAME PLUS	100-1324
AGENT 1.88	33270-31
AGILITY	352-751
AGREE WG	70051-47
AGRI-FLEX	100-1350
AGRI-MEK SC	100-1351
AGRI TIN FLOWABLE	55146-84
AGROX PREMIERE	1381-165
AGROX 2-WAY	2935-466
AIM EC	279-3241
ALIETTE WDG	264-516
ALION	264-1106
ALLEGIANCE-FL	264-935
ALLUVEX	352-877
ALLY XP	352-435
ALLY EXTRA SG	352-715
ALTACOR	352-730
ALTIPRO	1381-275
ALTO 100	100-1226
ALUMNI	100-899
AMBER	100-768
AMISTAR TOP	100-1313
ANTHEM FLEX	279-3464
ANTHEM MAXX	279-3468
APPEAR	100-1451
APROACH	352-840
APROACH PRIMA	352-883
APRONMAXX RFC	100-1195

Trade Name	EPA Registration No. *(from product label)*
APRON MAXX RTA	100-946
APRON MAXX RTA + MOLY	100-945
APRON XL	100-799
APRON XL 350ES	100-1565
APROVIA TOP	100-1476
AQUATHOL K	70506-176
AQUATHOL SUPER K	70506-191
ARCHER	100-1111
ARENA 50WDG	66330-40
ARENA 0.25 G	59639-157
ARCTIC 3.2EC	1381-187
ARMEZON	7969-262
ARMEZON PRO	7969-372
ARSENAL AC	241-299
ARSENAL POWERLINE	241-431
ASANA XL	59639-209
ASCEND[2]	1381-273
ASCEND PRO	1381-266
ASCEND SL	1381-253
ASCEND ST3	1381-276
ASCEND WSG	1381-254
ASSAIL 70WP	8033-23-70506
ASSAIL 30SG	8033-65-82695
ASSURE II	5481-646
ASULAM 3.3	9779-342
ASULOX	70506-139
ATRAZINE 4L	1381-158
ATRAZINE 90DF	9779-253
AUDIT 1:1	66330-418
AUDIT 4:1	66330-419
AUDIT 75WDG	66330-384
AUTHORITY ASSIST	279-3330
AUTHORITY EDGE	279-9643
AUTHORITY FIRST DF	279-3246
AUTHORITY SUPREME	279-3601
AUTHORITY XL	279-3413
AUTUMN SUPER 51	264-1134
AVALANCHE ULTRA	70506-60-1381
AVAUNT	279-9587
AVAUNT EVO	352-906
AVEO EZ	59639-220
AVICTA 500 FS	100-1204
AVICTA COMPLETE BEANS 500	100-1457
AVICTA COMPLETE CORN 250	100-1405
AVICTA DUO 250 CORN	100-1353
AVICTA DUO CORN	100-1321
AVICTA DUO COTTON	100-1321
AVODIGEN	279-368
AXIAL BOLD	100-1632
AXIAL STAR	100-1389
AXIAL XL	100-1256
AXIOM DF	264-850
AZINPHOS METHYL 50W	66330-233
AZTEC 4.67G	5481-9028
AZTEC HC	5481-577
BADGE SC	80289-3-10163
BADGE X2	80289-12-10163

Trade Name	EPA Registration No. *(from product label)*
BALANCE FLEXX	264-1067
BANNER MAXX II	100-1326
BANOL	432-942
BARRICADE 4FL	100-1139
BARRICADE 65WG	100-834
BASAGRAN	7969-45-1381 66330-413
BASAGRAN 5L	7969-112
BASIS BLEND	352-854
BAYLETON 50 T&O	432-1360
BAYTHROID XL	264-840
BELAY INSECTICIDE	59693-150
BELEAF	71512-10-279
BESIEGE	100-1402
BEXFOND	69553-9-62719
BEYOND XTRA	241-441
BICEP II MAGNUM /BICEP II MAGNUM FC	100-817
BICEP LITE II MAGNUM	100-827
BIDRIN 8	5481-448
BIFEN 2 AG GOLD	83222-1
BION 500FS	100-1363
BIO-TAM 2.0	80289-9-67690
BISON	9779-347
BLACKHAWK	62719-523
BLOCKADE	100-922
BLOCKER 10G	5481-8988
BOLERO 8 EC	59639-79
BOLERO 15G	59639-112
BOLERO ULTRAMAX	59639-112
BOLL'D	9779-349
BOLL'D 6	85678-5-1381
BOTRAN 75-W	10163-189
BOUNDARY 6.5EC	100-1162
BRACKET 97	70506-8-1381
BRASH	1381-202
BRAVO ULTREX	66222-277
BRAVO WEATHER STIK	66222-276
BRIGADE 2EC	279-3313
BRISKWAY	100-1433
BROADAXE XC	279-3442-100
BROADWORKS	100-1131
BRUSHMASTER	2217-774
BUCKLE	10163-289
BUTOXONE 175	71368-48-81315
BUTTE	10163-334
BUTYRAC 175	42750-39
BUTYRAC 200	42750-38
CABRIO EG	7969-187
CADRE	241-381
CALLISTO	100-1131
CALLISTO XTRA	100-1359
CANNONBALL WG	100-1454
CAPAROL 4L	100-620
CAPRENO	264-1063
CAPSTONE	62719-572
CAPTAN 50W ARYSTA	66330-234

Trade Name	EPA Registration No. *(from product label)*
CAPTEC 4L	66330-239
CAPTEVATE 68WDG	66330-48
CAPTURE LFR	279-3302
CAPTURE 3RIVE 3D	279-3467
CARAVAN G	100-1415
CARBINE 50WG	71512-9-279
CARNIVORE	1381-249
CARZOL SP	10163-265
CASORAN 4G	400-168
CENTRIC 40WG	100-1147
CENTYNAL	53883-276-2724
CERONE	264-377
CERTADOR	7969-376
CERTAINTY	524-534
CHAMP DRY PRILL	55146-57
CHAMP FORMULA 2 FLOWABLE	55146-64
CHAMP WG	55146-1
CHAMPION++	55146-115
CHAPARRAL	62719-597
CHARGER BASIC	1381-207
CHARGER MAX	1381-194
CRUISERMAXX APX	100-1690
CHARGER MAX ATZ	1381-199
CHARGER MAX ATZ LITE	1381-208
CHATEAU EZ	59639-221
CHEETAH	71368-112
CHIPCO 26019 FLO	432-888
CHOPPER	241-296
CHOPPER GEN2	241-430
CIMARRON MAX	352-615
CIMARRON PLUS	352-670
CIMARRON X-TRA	352-669
CLARIFIER	7969-137-33270
CLARITY	7969-137
CLASSIC	352-436
CLEANSE	42750-72-33270
CLEANSWEEP M	71368-89
CLEANSWEEP D	71368-90
CLEANTRAXX	62719-702
CLEARCAST	241-437
CLEAR PATH	7969-222
CLINCHER SF	62719-357
CLIPPER	59639-161
CLOAK EX	71368-84
CLOSER SC	62719-623
COBRA	59639-34
COMITE	400-104
COMITE II	400-154
COMMAND 3ME	279-3158
COMPASS	432-1371
COMPACT 6X	19713-640-1381
CONCERT II	100-1347
CONFIDENCE	524-473
CONFIDENCE XTRA	524-480
CONFIDENCE XTRA 5.6L	524-485
CONFIRM 2F	8033-111-10163

Trade Name	EPA Registration No. *(from product label)*
CONFRONT	62719-92
CONSERVE SC	62719-291
CONTANS WG	72444-1
CONTEND A	100-1477
CONTEND B	100-1540
COMPASS	432-1371
CORAGEN	279-9606
CORNERSTONE PLUS	524-454-1381 1381-192
CORNERSTONE 5 PLUS	42750-59-1381 1381-241
CORONET	7969-274
CORVUS	264-1066
COTORAN 4L	66222-181
COUNTER 20G	5481-562
CREDIT XTREME	71368-81
CREW	62719-742
CROSSBOW	62719-260-72693
CRUISER EXTREME	100-1208
CRUISER 5FS	100-941
CRUISER 70WS	100-1294
CRUISERMAXX	100-1247
CRUISERMAXX APX	100-1690
CRUISERMAXX CEREALS	100-1305
CRUISERMAXX PEANUTS	100-1438
CRUISERMAXX POTATO	100-1248
CRUISERMAXX POTATO EXTREME	100-1444
CRUISERMAXX RICE	100-1369
CRUISERMAXX VIBRANCE	100-1508
CRUISERMAXX VIBRANCE CEREALS	100-1383
CRUISERMAXX VIBRANCE POTATO	100-1556
CRUISERMAXX VIBRANCE PULSES	100-1563
CRUSHER	279-3589
CUPROFIX ULTRA 40 DISPERSS	70596-201
CURTAIL	62719-48
CURTAIL M	62719-86
CURZATE 60 DF	352-592
CUTOUT	228-678
D-638 ALBAUGH	42750-36
DACONIL ACTION	100-1364
DACONIL ULTREX TURF CARE	50534-202-100
DACONIL WEATHER STIK	50534-209-100
DACTHAL FLOWABLE	5481-487
DACTHAL W-75	5481-490
DANITOL 2.4 EC	59639-35
DAZE 4SC	1381-212
DEADLINE BULLETS, DEADLINE M-PS	5481-507
DEADLINE GT	6836-350-5481
DEFENDOR	62719-560
DEGREE XTRA	524-511
DELARO 325 SC	264-1055
DELARO COMPLETE	264-1207

Trade Name	EPA Registration No. *(from product label)*
DELEGATE WG	62719-541
DELTA GOLD	264-1011-1381
DENIM	100-903
DERMACOR X-100	352-820
DETAIL	7969-297
DEVRINOL DF-XT	70506-36
DIACON-D IGR	2724-788
DIACON IGR	2724-427
DIBROM 8E	5481-479
DICAMBA MAX 4	83222-14
DIFLEXX	264-1173
DIFLEXX DUO	264-1184
DIMATE 4E	9779-273
DIMENSION 2EW	62719-542
DIMENSION ULTRA 40WP	62719-445
DIMETHOATE 4EC	19713-231
DIMETRIC CHARGED	71368-125-1381
DIMETRIC EXT	1381-197
DIMETRIC LIQUID	1381-259
DIMLIN 2L	400-461
DIPEL DF	73049-39
DIPEL ES	73049-17
DIQUAT 2L	228-675
DIREX 4L	352-678
DISCOVER NG	100-1173
DISPLAY	279-9558
DISTINCT	7969-150
DITHANE F-45 RAINSHIELD	62719-396
DIVANEM	100-1611
DIVIDEND EXTREME	100-1141
DOMARK 230 ME	80289-7-10163
DRIVE XLR8	7969-272
DRYACIDE 100	69261-3-1381
DUAL MAGNUM	100-816
DUAL IIG MAGNUM	100-910
DUAL II MAGNUM	100-818
DUET	71085-9
DUPLOSAN	228-742
DURACOR	62719-739
DURIVO	100-1318
DYLOX 6.2G	432-1308
DYNASTY	100-1159
DYNASTY CST	100-1177
DYNASTY PD	100-1190
EAGLE 20EW	62719-463
EARLY HARVEST TST	65175-3-1812
ECHO 720	60063-7
ECHO 90 DF	60063-10
ELATUS	100-1480
ELEMENT 3A	62719-37
ELEMENT 4	62719-40
ELEVEST	279-9652
ELEVORE	62719-718
ELITE 45WP	264-749
ELUMIN	59639-211
EMERALD	7969-196
EMESTO SILVER	264-1123

Trade Name	EPA Registration No. *(from product label)*
EMINENT VP	80289-18-10163
ENABLE 2F	62719-416
ENDIGO ZCX	100-1458
ENDURA	7969-197
ENDURANCE	100-834
ENHANCE	7501-36-42056
ENHANCE PLUS	7501-37-42056
ENLITE	352-757
ENLIST DUO	62719-695
ENLIST ONE	62719-649
ENTRUST SC	62719-621
ENVERSA	62719-775
ENVIVE	352-756
ENVOKE	5481-684
EPTAM 20-G	10163-281
EPTAM 7E	10163-283
ESPLANADE 200 SC	432-1516
ESTEEM 0.86 EC	59639-95
ET	71711-7
ETHOS ELITE LFR ‡	279-9651
ETHOS XB	279-3473
ETHOS 3D	352-906
ETHREL	264-267
EVEREST 3.0	66330-429
EVERGOL ENERGY	264-1122
EVERGOL ENERGY SB	264-1122
EVERLON	7969-311-1381
EVERPREX	352-923
EVIK DF	100-786
EVITO 480 SC	66330-64
EVITO T	66330-383
EXCALIA	59639-230
EXIREL	352-859
EXPRESS	352-632
FACET L	7969-315
FAR-GO	10163-286
FASTAC CS	7969-364
FERENCE	100-1551
FIERCE EZ	59639-237
FIERCE MTZ	59639-236
FIERCE XLT	59639-194
FINALE	432-1229
FINESSE CEREAL and FALLOW	352-827
FINISH 6 PRO	264-703
FIRSTRATE	5481-676
FIRST PICK	228-607
FIRSTSHOT	352-755
FLEXSTAR	100-1101
FLEXSTAR GT 3.5	100-1385
FLINT	264-777
FLINT EXTRA	264-826
FOLEX 6 EC	5481-504
FONTELIS	352-834
FORCE 6.5G	100-1625
FORCE 10G HL	100-1615-5481
FORCE EVO	100-1610
FORCIVO	279-3642-62719

Trade Name	EPA Registration No. *(from product label)*
FORE 80WP RAINSHIELD	62719-388
FORTENZA	100-1420
FORUM	241-427
FRAMEWORK 3.3 EC	1381-216
FREEFALL SC	228-653
FREEHAND 1.5G	7969-273
FREQUENCY	7962-281
FULFILL	66222-274
FULTIME NXT	62719-668
FUSILADE DX	100-1070
FUSILADE II	100-1084
FUSION	100-1059
GALLERY 75DF	62719-145
GALLERY SC	62719-658
GAMEON	62719-724
GARLON 3A	62719-37
GARLON 4	62719-40
GARLON 4 ULTRA	62719-527
GAUCHO 600	264-968
GAVEL 75DF	10163-6414
GINSTAR	264-634
GIN OUT	228-606
GLEAN XP	352-653
GLYFOS	4787-31
GLYFOS XTRA	4787-23
GOAL TENDER	62719-447
GOAL 2XL	62719-424
GOLDSKY	62719-582
GR2	62719-686-352
GRADUATE	100-969
GRADUATE A+	100-1308
GRADUATE MAX MP	100-1242
GRAIN GUARD	400-558
GRAMOXONE SL 3.0	100-1652
GRANDSTAND R	62719-215
GRASLAN L	62719-655
GRASP SC	62719-500
GRASP XTRA	62719-610
GRAZONPD3	62719-655
GRAZON P+D	62719-182
GRAZONNEXT HL	62719-628
GRIZZLY TOO	1381-211
HABITAT	241-426
HALEX GT	100-1282
HARMONY EXTRA SG	279-9602
HARNESS	524-473
HARNESS MAX	524-636
HARNESS XTRA	524-480
HARNESS XTRA 5.6 L	524-485
HEADLINE	7969-186
HEADLINE AMP	7969-291
HEADLINE SC	7969-289
HELIX VIBRANCE	100-1528
HELIX XTRA	100-935
HERBIVORE	2749-528-1381
HERO	279-3315
HI-DEP	2217-703

Trade Name	EPA Registration No. *(from product label)*
HONCHO K6	524-539
HONOR	7969-255
HORNET	5481-678
HUSKIE	264-1023
HUSKIE COMPLETE	264-1135
HUSKIE FX	264-1208
HYDROTHOL 191	70506-175
HYDROTHOL G	4581-172
ILEVO	264-1167
IMIDAN 70-W	10163-169
IMPACT	5481-524
IMPACTZ	5481-612
IMPACT CORE	5481-648
INCINERATE	100-1131-1381
INDAR 2F	62719-416
INDEX	5481-587
INLINE	62719-348
INSIGNIA	7969-184
INSIGNIA SC	7969-290
INSPIRE SUPER	100-1317
INSPIRE XT	100-1312
INSTINCT	62719-583
INSTINCT HL	62719-692
INSTINCT II	62719-657
INSTRATA	100-1231
INTEGO SUITE SOYBEAN	59639-205
INTEGRITY	7969-279
INTERFACE	432-1505
INTREPID 2F	62719-442
INTREPID EDGE	62719- 666
INTRUDER	8033-24-10163
JAVELIN WG	70051-66
JUNCTION	67690-35
KARMEX DF	66222-51
KERB SC	62719-578
KEYSTONE NXT	62719-671
KEYSTONE LA NXT	62719-670
KNACK	59639-95
KOCHIAVORE	1381-258
KOCIDE DF	1812-334
KOCIDE 4.5 LF	1812-303
KOCIDE 101	1812-288
KOCIDE 3000	352-662
KRENITE S	42750-247
KROVAR I DF	5481-635
KYBER PRO	59639-236
KYRO	62719-766
LAMBDA-CY AG	83222-42
LANDMARK XP	432-1560
LANNATE SP	352-342
LANNATE LV	352-384
LAUDIS	264-860
LEADOFF	352-853
LEAGUE	59639-166
LEAGUE MVP	59639-189
LEVERAGE 360	264-1104
LEXAR EZ	100-1414

Trade Name	EPA Registration No. *(from product label)*
LEXICON INTRINSIC	7969-350
LIBERTY ULTRA	7969-500
LIBERTY 280 SL/RELY 280	264-829
LINEX 4L	61842-21
LOGIC	100-722
LONDAX 60 DF	1056-147
LONTREL T + O	62719-305
LOROX DF	352-686
LOYANT	62719-698
LUCENTO	352-906
LUMAX EZ	100-1442
LUMIDERM	352-858
LUMISENA	352-920
LUNA EXPERIENCE	264-1091
LUNA FLEX	264-1218
LUNA PRO	264-1084
LUNA SENSATION	264-1090
LUNA TRANQUILITY	264-1085
MAESTRO 2EC	71368-29
MAESTRO ADVANCED	71368-77
MAESTRO MA	71368-28
MAINSPRING	100-1543
MALATHION 5	9779-5
MALATHION 5EC	19713-217
MALATHION 8 FLOWABLE	10163-21
MANKOCIDE	91411-7-70051
MANKOCIDE DUPONT	352-690
MANZATE MAX	70506-194
MANZATE PRO-STICK	70506-234
MATCHPOINT	62719-523
MATRIX	352-556
MATRIX SG	352-768
MAULER	70506-68-59639
MAVERICK	59639-255
MAXIM 025FS	100-1566
MAXIM 4 FS	100-758
MAXIM QUATTRO	100-1352
MAXIM XL	100-916
MAXTIMA	7969-404
MCPA AMINE ALBAUGH	42750-14
MCPA ESTER ALBAUGH	42750-23
MEDALLION	100-769
MEDALLION SC	100-1448
MENTOR	100-780
MENTOR EC	100-1562
MERIDIAN 0.33G	100-961
MERIDIAN 25WG	100-943
MERIT 0.5 G	432-1328
MERIVON	7969-310
MERTECT 340-F	100-889
METHOD 240SL	432-1565
METHOD 50SG	352-787
METTLE 125 ME	80289-8-10163
MICROTHIOL DISPERSS	70506-187
MILESTONE	62719-519
MINECTO PRO	100-1592
MINUET	264-1202
MIRAVIS	100-1601
MIRAVIS ACE	100-1645
MIRAVIS NEO	100-1605
MIRAVIS PRIME	100-1603
MIRAVIS TOP	100-1602
MOCAP EC	5481-9041
MOCAP 15G	5481-9040
MONCUT SC	71711-28
MONUMENT	100-1134
MOVENTO	264-1050
MOVENTO HL	264-1188
MOVENTO MPC	264-1065
MSMA 6 PLUS	19713-42
MURAL	100-1479
MUSTANG	279-3126
MUSTANG MAXX	279-3426
NATIVEKLEAN	62719-730
NAVICON	7969-403
NEALTA	7969-336
NEEMIX 4.5	70051-9
NEW PATH	241-412
NEXICOR	7969-380
NEXTSTEP NG	100-1173-66330
NIPSIT INSIDE	59639-151
NIPSIT SUITE CEREALS OF	59639-183
NORTRON SC	264-613
NOVAGRAZ	62719-751
N-SERVE 24	62719-20
N-SERVE 24 E	62719-19
NUPRID 4F MAX	228-528
NURIZMA	7969-423
OBERON 2 SC	264-719
OBERON 4 SC	264-850
OBVIUS	7969-371
OBVIUS PLUS	7969-426
OLYMPUS	264-809
OMEGA 500F	71512-1-100
OMEGA TOP MP	71512-1-100
OMITE-6E	400-89
ONAGER	10163-277
ONE STEP	241-414
ONSET	1381-203
ONSET 3.6L	1381-203
OPENSIGHT	62719-597
OPENSKY	62719-721
OPTIFY	33270-37
ORION	100-1307
ORONDIS	100-1571
ORONDIS GOLD	100-1614
ORONDIS GOLD 200	100-1571
ORONDIS GOLD B	100-1202
ORONDIS OPTI	100-1591
ORONDIS ULTRA	100-1612
ORTHENE 97	5481-8978
OSPREY	264-802
OSPREY XTRA	264-1195
OUST XP	352-601
OUST EXTRA	352-622
OUSTSTAR	352-603
OUTLOOK	7969-156
OUTRIDER	59639-223
OUTREACH SC	73049-531
OVERDRIVE	7969-150
PALISADE EC	100-949
PALISADE MAXX	100-1677
PANOFLEX	352-876
PANTHER SC	71368-113
PASTORA	352-819
PASTUREGARD HL	62719-637
PATHFINDER II	62719-176
PATRIOT	228-391
PEAK	100-763
PENDULUM 2G	241-375
PENDULUM 3.3 EC	241-341
PENNANT MAGNUM	100-950
PENNCOZEB 75 DF	70506-185
PENTIA	228-750
PERFECTMATCH	62719-685
PERMIT	81880-2-10163
PERMIT PLUS	81880-26-10163
PERPETUO	59639-242
PERSPECTIVE	352-846
PH-D	66330-56
PHOENIX	59639-118
PHOSTROL	55146-83
PH3 ALUMINUM PHOSPHIDE	1015-74 1015-76
PILLAR G, PILLAR G INTRINSIC	7969-304
PINDAR GT	62719-611
PIRIMOR 50DF	100-1073
PIX PLUS	66330-351
PIX WSG	66330-394
PIXXARO EC	62719-735
PLATEAU	241-365
PLANTINUM 75 SG	100-1291
PLENARIS 200FS	100-1590
POAST	7969-58
PONCHO BETA	264-1056
PONCHO VOTIVO	264-1109
PONCHO XC	7969-458
POWERFLEX HL	62719-643
PRAIZ	1381-269
PRAMITOL 25E	66222-22-9779
PREFAR 4L	10163-200
PREFIX	100-1268
PRE-PARE	66330-49
PRESIDIO	59639-140
PRESIDUAL	1381-272
PRESTIGE	71049-3-73049
PREVICUR FLEX	264-678
PREVISTO	10163-330
PRIAXOR	7969-311
PRIMO MAXX	100-937
PRINCEP 4L	100-526

Trade Name	EPA Registration No. *(from product label)*
PRINCEP CALIBER 90	100-603
PRISTINE	7969-199
PROCLAIM	100-904
PROCURE 480SC	400-518
PROGIBB 4%	73049-15
PROLINE 480SC	264-825
PROPULSE	264-1084
PROSARO 421 SC	264-862
PROSARO PRO 400 SC	264-1209
PROSPER EVERGOL	264-1121
PROSTAR 70 WP	432-1223
PROTEGAM YLD	264-1093-1381
PROVAUNT	352-716
PROVOST SILVER	264-862
PROVYSOL	7969-411
PROWL H2O	241-418
PULSAR	100-1343
PURSUIT	241-310
PYGANIC EC 1.4$_{II}$	1021-1771
PYGANIC EC 5.0$_{II}$	1021-1772
PYLEX	7969-327
PYTHON	5481-677
QUADRIS OPTI	100-1171
QUADRIS RIDOMIL GOLD SL	100-1311
QUADRIS TOP	100-1313
QUADRIS TOP SBX	100-1554
QUASH	59639-147
QUELEX	62719-661
QUILT XCEL	100-1324
RADIANT SC	62719-545
RALLY 40WSP	62719-410
RANCONA CREST	400-574
RANCONA PINNACLE	400-566
RANCONA SUMMIT	400-570
RANMAN	71512-3-88783
RAVE	100-927
RAXIL PRO MD	264-1072
RAXIL PRO SHIELD	264-1186
REALM Q	352-837
REBELEX	62719-607
REDI-PIK	72167-47-66222
REFLEX	100-993
REGENT 4 SC	7969-207
REGIMENT	59639-105
REGLONE	100-1061
REMEDY ULTRA	62719-552
RENESTRA	7969-436
RENOVATE	62719-37-67690
RENOWN	100-1315
REQUIEM EC	264-1159
RESICORE	62719-693
RESICORE REV	62719-756
RESOLUTE 4L	100-1139
RESOLUTE 65WG	100-834
RESOLVE Q	352-777
RESOURCE	59639-82
REVOLVER	432-1266
REVULIN Q	352-900
REVUS	100-1254
REVUS TOP	100-1278
REVYTEK	7969-406
REWARD LANDSCAPE AQUATIC	100-1091
REZUVANT	62719-750
RHOMENE MCPA	228-143-71368
RHYME	279-3588
RICESTAR HT	264-682
RIDGEBACK	62719-749
RIDOMIL GOLD BRAVO SC	100-1221
RIDOMIL GOLD COPPER	100-804
RIDOMIL GOLD GR	100-798
RIDOMIL GOLD MZ WG	100-803
RIDOMIL GOLD SL	100-1202
RIMFIRE MAX	264-1099
RIZOLEX	59639-178
RODEO	62719-324
RONSTAR G	432-886
RONSTAR 50 WSP	432-893
ROUNDUP CUSTOM	524-343
ROUNDUP POWERMAX 3	524-659
ROUNDUP PRO CONCENTRATE	524-529
ROUNDUP PRO	524-475
ROUNDUP PROMAX	524-579
ROUNDUP WEATHERMAX	524-537
ROVRAL 4F	279-9564
ROYAL MH-30	400-84
RT 3	524-544
RUGGED	1381-247
RUSTEASE	100-1225-1381
SADDLE-UP	1381-255
SALIBRO	352-932
SANDEA	10163-254
SAPPHIRE	62719-547
SCALA SC	264-788
SCEPTER 70 DG	5481-610
SCHOLAR SC	100-1242
SCIMITAR CS	100-1078
SCOPARIA	264-600
SCORCH	71368-117
SCORCH EXT	71368-130
SECTION THREE	66330-414-1381
SECURE	71512-20-100
SECURE ACTION	100-1633
SEFINA	7969-391
SELECT MAX	59639-132
SENATOR 500 FS	228-522
SENDERO	62719-645
SENSAT	264-995
SENSTAR	59639-243
SEPRESTO	264-1081
SEQUENCE	100-1185
SEQUOIA	62719-623
SERENADE ASO	264-1152
SERENADE OPTI	264-1160
SERIFEL	71840-18
SHADOW	66330-353
SHARK EW	279-3242
SHARPEN	7969-278
SHOWCASE 2.5	62719-516
SHREDDER E-99	1381-195
SIMAZINE 4L	9779-296, 33270-27
SIMAZINE 40DF	9779-295
SIMAZINE 90 WDG	34704-686
SINATE	5481-637
SINBAR WDG	61842-27
SIVANTO PRIME/SIVANTO 200 SL	264-1141
SMARTCHOICE HC	5481-579
SNAPSHOT 2.5 TG	62179-175
SOLICAM DF	61842-41
SOLVE 2, 4-D	42750-22
SONALAN HFP	62719-188
SONALAN 10G	62719-184
SONATA	264-1153
SONIC	62719-680
SONIC BOOM	70506-394-62719
SPARTAN 4F	279-3220
SPARTAN CHARGE	279-3337
SPECTICLE FLO	432-1518
SPHAEREX	7969-473
SPIKE 20P	62719-121
SPINTOR 2SC	62719-294
SPIRIT	10163-381
SPITFIRE	71368-109
SPOTRETE F	45728-26-1001
STALKER	241-398
STAM 80 EDF	71085-38
STAM M4	71085-36
STAMINA	7969-266
STAMINA F4 CEREALS	7969-399
STANCE	264-841
STAPLE LX	352-613
STARANE FLEX	62719-604
STARANE NXT	62719-557
STARANE ULTRA	62719-577
STAREDOWN	62719-577
STATURE SC	241-428
STATUS	7969-242
STEADFAST Q	352-774
STERLING BLUE	7969-137-1381 42750-209-1381
STEWARD EC	279-9596
STINGER	62719-73
STINGER HL	62719-747
STORCIDE II	264-992
STOREN	100-1735
STORM	70506-59
STRADA	71711-44
STRADA PRO	71711-47
STRADA XT2	71711-46
STRATEGO YLD	264-1093
STREAMLINE	352-848

Trade Name	EPA Registration No. *(from product label)*
STRONGARM	62719-288
SUBDUE GR	100-794
SUBDUE MAXX	100-796
SUCCESS	62719-292
SUPER BOLL	228-659
SUPERWHAM!	71085-5
SUPREMACY	66330-406
SURESTART II	62719-679
SURFLAN A.S.	70506-43
SURMOUNT	62719-480
SURPASS NXT	62719-672
SURTAIN	7969-501
SURVEIL	62719-689
SWITCH 62.5 WG	100-953
SYNCHRONY XP	352-648
SYSTIVA XS	7969-308
T-METHYL 4.5 F	228-652
T-METHYL 70 WSB	228-655
TACOMA 1EC	264-666-1381
TAEGRO 2	70127-12
TALINOR	100-1570
TANDEM	100-1437
TANOS	352-604
TARGA	33906-9-81880
TARTAN	432-1446
TARZEC	62719-719
TEAMMATE	62719-686
TELAR XP	432-1561
TELONE II	62719-32
TEMPO 20WP-GC	432-1338
TEMPO 20WP PACKETS	432-1301
TEMPO SC ULTRA	432-1363
TEMPO ULTRA WP	432-1304
TEMPRANO	67760-71-400
TENACITY	100-1267
TENDOVO	100-1684
TERAXXA	7969-418
TERAXXA F4	7969-419
TERMINATE	228-727
TERRAZOLE 35%WP	400-416
TESARIS	7969-309
TESTIFY	7969-279-1381
TETRABAN	33270-32
THIMET 20-G	5481-530
THISTROL	71368-5
THREESIDUAL	62719-679-1381
TILT	100-617
TOLVERA	62719-761
TOPAZ	42750-211-1381
TOP MP	100-1262
TOPGUARD	67760-75
TOPGUARD EQ	279-3596
TOPSIN M WSB	8033-125-70506
TOPSIN 4.5FL	8033-122-70506
TORDON 22K	62719-6
TORDON RTU	62719-31
TORINO	8033-103-10163

Trade Name	EPA Registration No. *(from product label)*
TOTAL	70506-310-1381
TOTAL 2.3	42750-258-1381
TOTAL SL	71368-112-1381
TOTAL TNV	70506-310-1381
TOUCHE EG	7969-224
TOWER	7969-239
TRADEWIND	59639-165
TRANSFORM WG	62719-625
TRANSLINE	62719-259
TREBUSET	100-1648
TREEVIX	7969-276
TREFLAN HFP	62719-250
TREFLAN TR-10	62719-131
TREMOR ATZ LITE NXT	33270-25
TREMOR ATZ NXT	33270-24
TREMOR NXT	33270-23
TRIFLURALIN 4 EC ALBAUGH	42750-32
TRIGARD	100-654
TRIPLEFLEX	62719-570-524
TRIPLEFLEX II	524-614
TRINITY	7969-257
TRIVAPRO	100-1613
TRIVENCE	352-887
TRIVOLT	264-1211
TRUNEMCO	55146-162
TRUST	1381-146
TUNDRA EC	1381-196
TUNDRA LFC	70506-305-1381
TURFLON ESTER	62719-258
TURFLON ESTER ULTRA	62719-566
TURFCIDE 400	5481-8992
TUSCANY SC	71368-113
ULTOR	264-1065
ULTRA FLOURISH	55146-73
UPBEET	352-569
UNIFORM	100-1187
UNITY	10163-294
VALOR EZ	59639-221
VALOR SX	59639-99
VALOR XLT	59639-117
VANGARD WG	100-828
VANTACOR	279-9656
VARISTO	241-447
VARRO	264-1062
VASTLAN	62719-687
VAULT IP/VAULT IP PLUS	71840-31
VAYANTIS	100-1635
VELISTA	100-1534
VELPAR ALFAMAX	352-665
VELPAR ALFAMAX GOLD	352-666
VELPAR L	352-392
VELPAR L VU	432-1573
VELTYMA	7969-409
VELUM PRIME	264-1078
VELUM ONE	264-1078
VELUM RISE	264 1222

Trade Name	EPA Registration No. *(from product label)*
VENDEX 50WP	70506-211
VENOM	59639-135
VERDICT	7969-279
VERIMARK	352-860
VERSYS	7969-389
VIATUDE	352-942
VIBRANCE	100-1374
VIBRANCE CINCO	100-1629
VIBRANCE CST	100-1589
VIBRANCE EXTREME	100-1382
VIBRANCE MAXX	100-1561
VIBRANCE MAXX PULSES RTA	100-1657
VIBRANCE RST	100-1656
VIBRANCE TRIO	100-1637
VIBRANCE ULTRA POTATO	100-1628
VIDA	10163-314
VIEWPOINT	352-847
VINDICATE	62719-684
VIOS FX	264-1221
VOLIAM FLEXI	100-1319
VORTEX	264-988
VYDATE L	352-372
VYDATE C-LV	352-532
WARDEN CEREALS HR	400-574-1381
WARDEN CEREALS II	100-1382-1381
WARDEN CEREALS WRII	100-1527-1381
WARDEN CX II	100-1720-1381
WARDEN RTA	100-1146-1381
WARRANT	524-591
WARRANT ULTRA	524-620
WARRIOR	100-1112
WARRIOR II	100-1295
WEEDAR 64	71368-1
WEEDAR XHL	71368-140
WEEDMASTER	71368-34
WEEDMASTER XHL	71368-139
WEEDONE 638	71368-3
WELD	1381-246
WESTAR	352-626
WIDEARMATCH	62719-746
WIDEMATCH	62719-512
WOLVERINE ADVANCED	264-1168
XENTARI DF	73049-40
XONERATE	66330-46
XPEDIENT PLUS V	5481-609
XXPIRE	62719-676
XYWAY 3D	279-9638
XYWAY LFR	279-9658
XZEMPLAR	7969-349
YUKON	81880-6-10163
ZAMPRO	7969-302
ZEAL SC	59639-202
ZELTERA	59639-231
ZIDUA PRO	7969-365
ZIDUA SC	7969-374
ZING!	10163-331

Trade Name	EPA Registration No. *(from product label)*
ZIRAM 76DF	4581-140-82695
ZIRONAR	279-3618
ZORINA	7969-508
2,4-D AMINE 4 HERBICIDE	1381-103
2,4-D LV 4 HERBICIDE	1381-102
2,4-D LV 6 HERBICIDE	1381-250
2,4-DB 175	19713-675-1381
2,4-DB 200	1381-215
26 GT	432-888
3336 F	1001-69

Provisions of the 1972 Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) initiated a restricted use category for pesticides more hazardous to humans and the environment. Designation as an RUP is based on hazard to humans or non-target species, use history, post-registration field studies, and adequacy of label language. Many of the more commonly used insecticides and herbicides are now labeled for restricted use. Commercial applicators and growers wishing to apply restricted use pesticides must pass an examination allowing them to become certified. Certification and recertification programs are available, generally, through the county extension agent. Chemicals which have restricted use will be so labeled. The following list of commonly used current pesticides is believed to be up to date at the time of publication of this guide. **Pesticides are listed by trade name and the common name of the restricted chemical. Other pesticides with the same active ingredient (e.g. atrazine) are also restricted even if not listed. Custom tank mixes containing an RUP are also restricted. Certain formulations or use patterns may be restricted.** The common name of unrestricted pesticides in premixes are not listed.

HERBICIDES[1]

AAtrex (atrazine)
Acuron (atrazine)
Atrazine (atrazine)
Balance Flexx (isoxaflutole)
Bicep formulations (atrazine)
Callisto Xtra (atrazine)
Charger Max ATZ formulations (atrazine)
Confidence Xtra, Confidence Xtra 5.6L (atrazine)
Corvus (isoxaflutole)
Degree Xtra (atrazine)
FulTime NXT (atrazine)
Gramoxone SL 3.0 (paraquat)
Grazon P+D (picloram)
Harness Xtra, Harness Xtra 5.6L (atrazine)
Huskie Complete (thiencarbazone)
ImpactZ (atrazine)
Keystone NXT (atrazine)
Keystone LA NXT (atrazine)
Lexar EZ (atrazine)
Lumax EZ (atrazine)
Scoparia (isoxaflutole)
Surmount (picloram)
Tordon 22K (picloram)
Tremor ATZ Lite NXT, Tremor ATZ NXT (atrazine)
TriVolt (isoxaflutole)

INSECTICIDES[1]

Abamex (abamectin)
AbbA Ultra (abamectin)
Aeris (thiodicarb)
Agri-Flex (abamectin)
Agri-Mek SC (abamectin)
Arctic 3.2 EC (permethrin)
Avicta 500 FS (abamectin)
Avicta Complete Beans 500 (abamectin)
Avicta Complete Corn 250 (abamectin)
Avicta Duo 250 Corn (abamectin)
Avicta Duo Corn (abamectin)
Avicta Duo Cotton (abamectin)
Azinphos methyl
Aztec 4.67G, Aztec HC (cyfluthrin)
Baythroid XL (cyfluthrin)
Besiege (lambda-cyhalothrin)
Bidrin 8 (dicrotophos)
Bifen 2 AG Gold (bifenthrin)
Brigade 2EC, Brigade WSB (bifenthrin)
Capture LFR (bifenthrin)
Capture 3RIVE 3D (bifenthrin)
Comite, Comite II (propargite)
Counter 20G (terbufos)
Curacron (profenphos)
Danitol 2.4EC (fenpropathrin)
Delta Gold (deltamethrin)
Denim (emamectin benzoate)
Dibrom 8E (naled)
Dimilin 2L (diflubenzuron)
Divanem (abamectin)
Elevest (bifenthrin)
Endigo ZCX (lambda-cyhalothrin)
Ethos Elite LFR (bifenthrin)
Ethos XB (bifenthrin)
Fastac CS (alpha-cypermethrin)
Force 6.5G, Force 10G HL, Force Evo (tefluthrin)
Grizzly Too (lambda-cyhalothrin)
Hero (zeta-cypermethrin + bifenthrin)
Index (bifenthrin + chlorethoxyfos)
Lambda-Cy Ag (lambda-cyhalothrin)
Lannate LV, Lannate SP (methomyl)
Leverage 360 (cyfluthrin)
Minecto Pro (abamectin)
Mocap EC, Mocap 15G (ethoprop)
Mustang, Mustang Maxx (zeta-cypermethrin)
Omite-6E (propargite)
Proclaim (emamectin benzoate)
Regent 4 SC (fipronil)
Renestra (alpha-cypermethrin)
Seeker (lambda-cyhalothrin)
SmartChoice HC (bifenthrin + chlorethoxyfos)
Tempo Ultra GC (cyfluthrin)
Thimet 20G (phorate)
Triumph (isazophos)
Tundra EC (bifenthrin)
Tundra LFC (bifenthrin)
Vydate C-LV, Vydate L (oxamyl)
Warrior II (lambda-cyhalothrin)
Xpedient Plus V (bifenthrin)

FUMIGANTS[1]

Agri Tin Flowable (triphenyltin hydroxide)
InLine (chloropicrin, dichlorpropene)
Methyl Bromide
PH3 (aluminum phosphide)
Telone II (dichloropropene)

OTHER[1]

Avitrol (avitrol)
Nox-Fish (rotenone)
Rid-A-Bird (fenthion)
Rozol (chlorophacinone)
Vendex (fenbutalin-oxide)
Zinc Phosphide

[1] Only the active ingredient that is restricted is included by the trade name.

For more information:
https://www.clemson.edu/extension/pest-ed/
http://www.kellysolutions.com
http://www.epa.gov/pesticides

PESTICIDES FOR IMPREGNATION, LIQUID FERTILIZER OR IRRIGATION

CROP PROTECTION PRODUCTS WHICH CAN BE IMPREGNATED IN DRY FERTILIZER, MIXED WITH LIQUID FERTILIZERS, OR APPLIED WITH AN IRRIGATION SYSTEM

The following lists **DO NOT** include all products labeled for each use. Some labels prohibit POST use on crops. **CHECK INDIVIDUAL LABELS FOR APPLICATION INSTRUCTIONS.**

PESTICIDES FOR IMPREGNATION

- Acuron
- Acuron Flexi**
- Anthem Flex
- Anthem Maxx
- Arctic
- Authority Edge
- Authority Elite
- Authority Supreme
- Axiom DF
- Balance Flexx**
- Bicep II Magnum
- Bicep II Magnum FC
- Bicep Lite II Magnum
- Boundary
- Charger Basic
- Charger Max
- Charger Max ATZ
- Charger Max ATZ Lite
- Confidence
- Confidence Xtra
- Confidence Xtra 5.6L
- Corvus**
- Degree Xtra
- Dimetric Charged/ Dimetric EXT/ Dimetric Liquid
- Dimetric EXT
- Drive XLR*
- Dual II Magnum
- DuraCor
- Eptam 7E
- EverpreX
- Far-Go
- FirstRate
- Framework 3.3 EC
- FulTime NXT
- Harness
- Harness MAX
- Harness XTRA
- Harness XTRA 5.6L
- Hornet
- Keystone NXT/LA NXT
- Maverick
- Nortron SC
- Oust Extra
- Outlook
- Panther SC
- Pennant Magnum
- PREsidual
- Prowl H2O
- Python
- Resicore, Resicore REV
- Sharpen
- Sonalan 10G
- Spartan 4F
- Storen
- SureStart II
- Surpass NXT
- Surtain
- Taegro 2
- Threesidual
- Topguard
- Tower
- Treflan HFP
- Tremor ATZ Lite NXT
- Tremor ATZ NXT
- Tremor NXT
- TripleFLEX II
- Trust
- Tuscany SC
- Ultra Flourish
- Valor EZ
- Velpar AlfaMax
- Velpar AlfaMax Gold
- Velpar L, Velpar L VU
- Verdict/Testify
- Zidua SC

PESTICIDES FOR LIQUID FERTILIZER

- AAtrex[4]
- Acuron Flexi[7]
- Advise Four
- Affinity TankMix
- Affinity BroadSpec
- Agent 1.88
- Agility
- Aim EC[7]
- Ally XP[4]
- Ally Extra SG[4]
- Alluvex
- Amber[4]
- Anthem Flex
- Anthem Maxx
- Aproach
- Aproach Prima
- Atrazine
- Audit 1:1
- Audit 4:1
- Audit 75WDG
- Authority Assist
- Authority Edge
- Authority First DF
- Authority Supreme
- Authority XL
- Autumn Super 51
- Axial Bold
- Axial Star[9]
- Axial XL[9]
- Axiom
- Balance Flexx[5]
- Basis Blend
- Beyond Xtra*
- Bicep II Magnum
- Bicep II Magnum FC
- Bicep Lite II Magnum
- Bifen 2 AG Gold
- Bison
- Boundary
- Brigade 2EC
- Broadworks
- Callisto[7,10]
- Capture LFR
- Chaparral[5]
- Charger Basic
- Charger MAX
- Charger MAX ATZ
- Charger MAX ATZ Lite
- Cimarron Plus
- Clarifier
- Clarity
- Classic
- Cleanse
- Closer SC
- Command 3ME
- Compact 6X
- Confidence
- Confidence Xtra
- Confidence Xtra 5.6L
- Cornerstone brands[1]
- Corvus
- Cotoran 4L
- Crusher
- Curtail
- Curzate 60 DF
- Defendor
- Degree Xtra
- DiFlexx DUO
- Dimetric Charged/ Dimetric EXT/ Dimetric Liquid
- Drive XLR[8]
- Dual II Magnum
- Enlite
- Enversa
- Eptam 20-G
- Eptam 7E
- Ethos Elite LFR ‡/ Ethos XB
- Everest 3.0
- Everlon
- EverpreX
- Express
- Far-Go
- Finesse Cereal and Fallow[4]
- FirstRate[4]
- FirstShot
- Force Evo
- Framework 3.3 EC
- FulTime NXT*
- Fusilade II
- Glean XP
- GR2
- Gramoxone SL 3.0
- Harmony Extra SG4
- Harness
- Harness MAX
- Harness X-TRA
- Harness X-TRA 5.6L
- Hornet[4]
- Huskie/Huskie FX*
- Incinerate[7,10]
- Intrepid Edge
- Keystone NXT/ LA NXT
- Leadoff
- Leverage 360
- Linex 4L
- Lorox DF
- Lumax EZ/Lexar EZ[7,10]
- Maverick
- MCPA Amine[6]
- Merivon
- Milestone
- Minecto Pro
- NextStep NG[9]
- Nortron SC
- NovaGraz
- OpenSky
- Olympus
- Optify
- Orondis Gold 200
- Orondis Gold B
- Orondis Opti
- Osprey/Osprey Xtra
- Outreach SC
- Panoflex
- Pastora
- Peak[4]
- Pennant Magnum
- PerfectMatch
- Permit, Permit Plus
- PowerFlex HL[9]
- Prefix
- Pre-Pare[9]
- PREsidual
- Princep 4L/Princep Caliber 90
- Prowl H2O
- Provysol
- Pulsar[9]
- Pursuit[4]
- Pylex
- Python[4]
- Rave
- Regent 4 SC
- Remedy Ultra
- Renestra
- Resicore, Resicore REV
- Resolute
- Revytek
- Rezuvant
- Roundup WeatherMAX[1]
- RT 3[1]
- Rugged
- Saddle-Up
- Scoparia
- Sefina
- Sendero
- Sequoia
- Shark EW[7]
- Sharpen
- Simazine 4L/ Simazine 90DF
- Sonalan HFP
- Sonic
- Sonic Boom
- Spartan 4F
- Spartan Charge
- Sphaerex
- Starane NXT
- Sterling Blue
- Storen
- Strada Pro
- Subdue Maxx
- SureStart II
- Surmount
- Surpass NXT
- Surtain
- 2,4-D ester[6] (see labels)
- Taegro 2
- Tanos
- Targa
- Tarzec
- Threesidual
- Topguard
- Tordon 22K
- Transform WG
- Treflan HFP
- Tremor ATZ Lite NXT
- Tremor ATZ NXT
- Tremor NXT
- TripleFLEX II
- Trivapro
- Trust
- Tundra EC
- Tundra LFC
- Ultra Flourish
- Valor SX
- Varisto
- Veltyma
- Verdict/Testify
- Versys
- WeedMaster
- WeedMaster XHL
- Weld[9]
- WideARmatch
- Xyway LFR
- Yukon
- Zidua SC

PESTICIDES FOR IRRIGATION SYSTEMS

- Abound
- Absolute Maxx
- Absolute 500 SC
- Advise Four*
- Aframe Plus*
- Agent 1.88[13]
- Agri Tin Flowable*
- Alto
- Aproach
- Aproach Prima
- Aprovia Top
- Arctic
- Asana XL
- Authority Elite
- Baythroid XL
- Belay Insecticide
- Beleaf
- Bio-Tam 2.0
- Bison
- Blackhawk
- Brigade 2EC
- Cabrio EG
- Cannonball WG
- Carbine 50WG
- Certador*
- Champ Dry Prill/ Champ Formula 2 Flowable/ Champ WG/ Champ ION++
- Charger Basic/ Charger Max
- Chateau EZ*
- Cleanse*
- Coragen
- Curzate 60 DF
- Daconil Ultrex
- Delaro 325 SC
- Delaro Complete
- Delegate
- Delta Gold
- Dimate
- Dimetric EXT/ Dimetric Liquid*
- DiPel DF/XenTari
- Dithane F-45 Rainshield
- Dual/Dual II Magnum
- Durivo
- Elatus
- Endigo ZCX
- Entrust SC*
- Eptam 20-G
- Eptam 7E
- Everlon
- EverpreX
- Excalia
- Express*
- Far-Go
- Fastac CS
- Floxcor
- Fontelis
- Framework 3.3 EC*
- Fulfill
- Gavel 75 DF
- Grizzly Too
- Headline/Headline SC
- Headline AMP
- Hero
- Incinerate
- Indar 2F
- Insignia brands
- Inspire XT
- Lambda-Cy Ag
- Lannate LV, Lannate SP
- Leverage 360
- Lucento
- Maestro 2EC
- Maestro Advanced
- Maestro MA
- Mainspring GNL
- Mauler
- Merivon
- Mettle 125 ME
- Miravis
- Movento
- Movento HL
- Movento MPC
- Mustang/Mustang Maxx
- Nexicor
- Omega Top MP
- Optify*
- Orondis Gold 200
- Orondis Opti
- Orondis Ultra
- Outlook
- Outreach SC*
- Panther SC
- Pennant Magnum
- Phostrol
- Praiz
- Presidio
- Previcur Flex
- Prosaro 421 SC*
- Prosaro Pro 400 SC
- Protegam YLD
- Provysol
- Prowl H2O*
- Quadris Top
- Quadris Top SBX
- Quilt Xcel*
- Radiant
- Rally 40WSP
- Reflex
- Renestra
- Revus
- Revus Top
- Revytek
- Rhyme
- Ridgeback
- RustEase
- Scala SC
- Sefina
- Serenade ASO
- Serenade OPTI
- Serifel
- Sivanto prime
- Sonata
- Spartan 4F
- Sphaerex
- Stratego YLD
- Subdue Maxx
- T-Methyl 4.5 F/T-Methyl 70 WSB
- Taegro 2
- Tanos
- Tilt
- Top MP
- Topaz*
- TopGuard
- Transform WG
- Treflan HFP
- Trust
- Tundra EC
- Tuscany SC
- Trivapro
- Ultra Flourish
- Valor EZ*
- Valor SX*
- Vangard*
- Vantacor
- Veltyma
- Velum One
- Velum Prime
- Venom
- Verdict/Testify
- Versys
- Viatude
- Vydate C-LV
- Warrant
- Warrior II
- Xyway LFR
- Zampro
- Zing!
- Zorina

[1] May use with other glyphosate herbicides: Cornerstone brands/Roundup brands/Credit Xtreme/Honcho K6 and other glyphosate formulations; use only with liquid 28-32% Nitrogen fertilizer (UAN). Limit to 50 lb N/A. Do not apply with P or K. Use Gramoxone SL 3.0 only with clear liquid N or complete fertilizers—do not use with suspensions or clay-containing fertilizer. With high phosphate, clear liquids use the higher rate of herbicide and nonionic surfactant.

[4] Soluble packet formulations should first be preslurried in water.

[5] Preslurry recommended particularly if cold.

[6] Most amine formulations are not compatible; see the label for precautions.

[7] Do not apply POST.

[9] Up to 50% liquid nitrogen fertilizer.

[10] Do not use suspension fertilizer.

[13] Only center pivot irrigation systems.

* Certain crops or types of irrigation systems only. See label or supplemental label.

** Certain states or areas.

REGISTERED TRADEMARKS

Crop protection products listed below each company are trademarks of that company.

ADAMA
Bravo Ultrex®
Bravo Weather Stik®
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INGREDIENTS AND FORMULATION CONVERSIONS*

ACURON

RATE/ACRE =	CHARGER MAX +	ATRAZINE 4L +	CALLISTO +	BICYLOPRYONE A.I.
2.5 qt	1.4 pt	1.25 pt	4.8 fl oz	0.04 lb a.i
3 qt	1.7 pt	1.5 pt	5.76 fl oz	0.05 lb a.i.

ACURON FLEXI

RATE/ACRE =	CHARGER MAX +	CALLISTO +	BICYLOPRYONE A.I.
2 qt	1.5 pt	5.12 fl oz	0.04 lb a.i.
2.25 qt	1.7 pt	5.76 fl oz	0.045 lb a.i.

ACURON GT

RATE/ACRE =	CHARGER MAX +	CALLISTO +	BICYLOPRYONE A.I. +	CORNERSTONE 5 PLUS
3.75 pt	15.71 fl oz	3 fl oz	0.045 lb a.i.	30 fl oz

AFFINITY TANKMIX

RATE/ACRE	=	HARMONY SG +	EXPRESS
0.6 oz		0.48 oz	0.12 oz
1 oz		0.8 oz	0.2 oz

AFFINITY BROADSPEC

RATE/ACRE	=	HARMONY SG +	EXPRESS
1 oz		0.5 oz	0.5 oz

AFFORIA

RATE/ACRE =	VALOR SX +	HARMONY +	EXPRESS
2.5 oz	2 oz	0.25 oz	0.25 oz
3.0 oz	2.4 oz	0.3 oz	0.3 oz
3.75 oz	3 oz	0.38 oz	0.38 oz

AGILITY

RATE/ACRE =	DICAMBA MAX 4 +	HARMONY SG +	EXPRESS +	ALLY XP
1.6 oz	8 fl oz	0.15 oz	0.077 oz	0.051oz
2.4 oz	14.5 fl oz	0.23 oz	0.115 oz	0.076 oz
3.2 oz	19.5 fl oz	0.3 oz	0.154 oz	0.1 oz

ALLUVEX

RATE/ACRE	=	MATRIX SC +	HARMONY SG
1.5 oz		1.00 oz	0.5 oz

ALLY EXTRA SG

RATE/ACRE	=	ALLY XP +	HARMONY EXTRA SG
0.3 oz		0.0545 oz	0.25 oz
0.5 oz		0.09 oz	0.41 oz

ANTHEM FLEX

RATE/ACRE	=	AIM EC +	ZIDUA
1.8 fl oz		0.24 fl oz	0.98 oz
2.7 fl oz		0.36 fl oz	1.5 oz
3.8 fl oz		0.5 fl oz	2.09 oz

ANTHEM MAXX

RATE/ACRE	=	ZIDUA 85WDG +	CADET
2 fl oz		1.2 fl oz	0.28 fl oz
6.5 fl oz		3.9 fl oz	0.9 fl oz

ARMEZON PRO

RATE/ACRE	=	OUTLOOK +	ARMEZON
14 fl oz		12.25 fl oz	0.5 fl oz
16 fl oz		14 fl oz	0.57 fl oz
20 fl oz		17.5 fl oz	0.71 fl oz
24 fl oz		21 fl oz	0.86 fl oz

AUDIT 1:1

RATE/ACRE	=	HARMONY SG +	EXPRESS
0.4 oz		0.2 oz	0.2 oz
1 oz		0.5 oz	0.5 oz

AUDIT 4:1

RATE/ACRE	=	HARMONY SG +	EXPRESS
0.6 oz		0.48 oz	0.12 oz
1 oz		0.8 oz	0.2 oz

AUDIT 75WDG

RATE/ACRE	=	HARMONY SG +	EXPRESS
0.3 oz		0.38 oz	0.4 oz
0.4 oz		0.45 oz	0.15 oz
0.6 oz		0.68 oz	0.23 oz

AUTHORITY ASSIST

RATE/ACRE	=	SPARTAN 4F +	PURSUIT
4 fl oz		3.33 fl oz	1.34 fl oz
5 fl oz		4.16 fl oz	1.68 fl oz
6 fl oz		5 fl oz	2.01 fl oz
12 fl oz		10 fl oz	4.02 fl oz

AUTHORITY EDGE

RATE/ACRE	=	SPARTAN 4F +	ZIDUA SC
7 fl oz		4.78 fl oz	2.55 fl oz
8 fl oz		5.46 fl oz	2.92 fl oz
9 fl oz		6.14 fl oz	3.28 fl oz
10 fl oz		6.83 fl oz	3.65 fl oz
11 fl oz		7.51 fl oz	4.01 fl oz
12 fl oz		8.19 fl oz	4.37 fl oz

AUTHORITY ELITE/BROADAXE XC

RATE/ACRE	=	SPARTAN 4F +	CHARGER MAX
19 fl oz		3.33 fl oz	15.67 fl oz
21 fl oz		3.68 fl oz	17.32 fl oz
26 fl oz		4.55 fl oz	21.44 fl oz
32 fl oz		5.36 fl oz	26.39 fl oz
38.7 fl oz		6.78 fl oz	32 fl oz

AUTHORITY FIRST DF/SONIC

RATE/ACRE	=	SPARTAN 4F +	FIRSTRATE
3 oz		3.7 fl oz	0.28 oz
4 oz		4.97 fl oz	0.38 oz
5 oz		6.21 fl oz	0.47 oz
6.45 oz		8.01 fl oz	0.61 oz

AUTHORITY SUPREME

RATE/ACRE	=	ZIDUA SC +	SPARTAN 4F
5.8 fl oz		2.9 fl oz	3.01 fl oz
7.7 fl oz		3.84 fl oz	4.04 fl oz
8.15 fl oz		4.06 fl oz	4.24 fl oz
9.7 fl oz		4.83 fl oz	5.04 fl oz
11.6 fl oz		5.79 fl oz	6.03 fl oz
13.05 fl oz		6.51 fl oz	6.79 fl oz

AUTHORITY XL

RATE/ACRE	=	SPARTAN 4F +	CLASSIC
5 oz		6.25 fl oz	1.6 oz
9.6 oz		12 fl oz	3 oz

AUTUMN SUPER 51

RATE/ACRE	=	IODOSULFURON A.I. +	VARRO
0.5 oz		0.03 oz	21.69 fl oz

AXIAL BOLD

RATE/ACRE	=	TACOMA 1EC +	AXIAL XL
15 fl oz		6.9 fl oz	8.14 fl oz

AXIAL STAR

RATE/ACRE	=	AXIAL XL +	STARANE ULTRA/ STAREDOWN
16.4 fl oz		16.4 fl oz	4.28 fl oz

AXIOM DF

RATE/ACRE	=	FLUFENACET A.I. +	DIMETRIC EXT
20 oz		10.8 oz a.i.	3.6 oz

BASIS BLEND

RATE/ACRE	=	HARMONY SG +	RESOLVE SG
0.825 oz		0.165 oz	0.66 oz
1.25 oz		0.25 oz	1 oz

BICEP LITE II MAGNUM/CHARGER MAX ATZ LITE

RATE/ACRE =	DUAL II	OR	DUAL II MAGNUM +	ATRAZINE 4L
1.15 qt	1.50 pt		1.00 pt	0.77 qt
1.27 qt	1.67 pt		1.11 pt	0.85 qt
1.53 qt	2.00 pt		1.33 pt	1.02 qt
1.72 qt	2.25 pt		1.50 pt	1.15 qt
1.90 qt	2.50 pt		1.66 pt	1.27 qt

BICEP II MAGNUM/CHARGER MAX ATZ

RATE/ACRE =	DUAL II	OR	DUAL II MAGNUM +	ATRAZINE 4L
1.60 qt	1.50 pt		1.00 pt	1.20 qt
1.77 qt	1.67 pt		1.11 pt	1.34 qt
2.10 qt	2.00 pt		1.33 pt	1.62 qt
2.40 qt	2.25 pt		1.50 pt	1.80 qt
2.64 qt	2.50 pt		1.66 pt	2.00 qt

BISON/MAESTRO MA

RATE/ACRE	=	MAESTRO 2EC +	MCPA ESTER
0.75 pt		0.75 pt	0.41 pt
1 pt		1 pt	0.5 pt

BOUNDARY 6.5EC/PRESIDUAL

RATE/ACRE	=	CHARGER BASIC +	DIMETRIC EXT
1.50 pt		1.03 pt	5.0 oz
1.75 pt		1.2 pt	5.83 oz
2.00 pt		1.37 pt	6.67 oz
2.40 pt		1.64 pt	8 oz

BRASH/WEEDMASTER

RATE/ACRE	=	DICAMBA MAX 4 +	2,4-D AMINE 4 LB
1 pt		4 fl oz	12 fl oz
2 pt		0.5 pt	1.5 pt

HERBICIDE PREMIX CONVERSIONS *continued*

BROADAXE XC - SEE AUTHORITY ELITE

BUCKLE

RATE/ACRE	=	FAR-GO	+	TRUST
10 lb		2.0 fl oz		0.6 fl oz
12.5 lb		2.5 fl oz		0.75 fl oz

BUTTE

RATE/ACRE	=	BENZOBICYCLON A.I.	+	HERBIVORE
7.5 oz		0.23 oz a.i.		0.064 oz
9 oz		0.27 oz a.i.		0.077 oz

CALLISTO XTRA

RATE/ACRE	=	CALLISTO	+	ATRAZINE 4L
20 fl oz		2.5 fl oz		1 pt
24 fl oz		3 fl oz		1.2 pt

CAPRENO

RATE/ACRE	=	LAUDIS	+	VARRO
3 fl oz		2.47 fl oz		20.6 fl oz

CAPSTONE

RATE/ACRE	=	MILESTONE	+	GARLON 3A
6 pt		5.25 fl oz		1 qt

CARNIVORE/CLEANSWEEP M

RATE/ACRE	=	MCPE	+	MAESTRO 2EC	+	STARANE ULTRA/ STAREDOWN
1.5 pt		10.8 fl oz		20 fl oz		5.7 fl oz

CHAPARRAL

RATE/ACRE	=	MILESTONE	+	ESCORT XP
1.5 oz		3.15 fl oz		0.24 oz
2 oz		4.2 fl oz		0.315 oz
3 oz		6.3 fl oz		0.47 oz

CHARGER MAX BRANDS – SEE BICEP BRANDS

CIMARRON MAX

Use 5 oz Part A with 2.5 gal Part B

Acres Treated	Rate/A		Equivalent Product Rate/A		
	Part A	Part B	ALLY XP	DICAMBA MAX 4	2,4-D 4 LB
20	0.25 oz	1 pt	0.31 oz	0.25 pt	0.72 pt
10	0.50 oz	2 pt	0.62 oz	0.50 pt	1.44 pt
5	1.00 oz	4 pt	1.25 oz	1.00 pt	2.86 pt

CIMARRON PLUS

RATE/ACRE	=	CIMARRON	+	GLEAN XP
0.5 oz		0.4 oz		0.1 oz

CIMARRON X-TRA

Rate II = 20 acres/20 oz pack

RATE/ACRE	=	CIMARRON	+	GLEAN XP
1 oz/A		0.5 oz		0.5 oz

CLEANSWEEP D

RATE/ACRE	=	2,4-D	+	MAESTRO 2EC	+	STARANE ULTRA/ STAREDOWN
1 pt		8.46 fl oz		12.80 fl oz		3.66 fl oz

CLEANSWEEP M - SEE CARNIVORE

CLEANTRAXX

RATE/ACRE	=	GRASP SC	+	GOAL 2XL
3 pt		2 fl oz		5.9 pt
4.5 pt		3 fl oz		8.84 pt

CLEARPATH

RATE/ACRE	=	NEWPATH	+	FACET L
0.5 lb		4 oz		26.4 fl oz

CLOAK EX

RATE/ACRE	=	CLASSIC	+	EXPRESS
1.1 oz		1 oz		0.15 oz

CONFIDENCE XTRA/HARNESS XTRA/KEYSTONE LA NXT/TREMOR ATZ LITE NXT

RATE/ACRE	=	HARNESS	+	ATRAZINE
1.8 qt		2.21 pt (1.94 lb a.i.)		0.77 lb a.i.
1.9 qt		2.33 pt (2.04 lb a.i.)		0.81 lb a.i.
2.0 qt		2.46 pt (2.15 lb a.i.)		0.85 lb a.i
2.1 qt		2.58 pt (2.26 lb a.i.)		0.89 lb a.i.
2.2 qt		2.71 pt (2.37 lb a.i.)		0.93 lb a.i
2.3 qt		2.82 pt (2.47 lb a.i.)		0.98 lb a.i.

CONFIDENCE XTRA 5.6L/HARNESS XTRA 5.6L/ KEYSTONE NXT/TREMOR ATZ NXT

RATE/ACRE	=	HARNESS	+	ATRAZINE
2.1 qt		1.86 pt (1.63 lb a.i.)		1.31 lb a.i.
2.2 qt		1.95 pt (1.71 lb a.i.)		1.37 lb a.i.
2.3 qt		2.03 pt (1.78 lb a.i.)		1.44 lb a.i
2.4 qt		2.12 pt (1.85 lb a.i.)		1.50 lb a.i.
2.5 qt		2.22 pt (1.94 lb a.i.)		1.56 lb a.i.
2.6 qt		2.30 pt (2.02 lb a.i.)		1.62 lb a.i.
2.7 qt		2.39 pt (2.09 lb a.i.)		1.69 lb a.i.

CONFRONT

RATE/ACRE	=	GARLON	+	STINGER
1.5 pt		1 pt (0.42 lb a.i.)		0.38 pt (0.14 lb a.i.)
2 pt		1.3 pt (0.56 lb a.i.)		0.5 pt (0.19 lb a.i.)

CORVUS

RATE/ACRE	=	BALANCE FLEXX	+	VARRO
3.33 fl oz		3.13 fl oz		30.1 fl oz
5.6 fl oz		5.26 fl oz		50.6 fl oz

CROSSBOW

RATE	=	GARLON 4	+	2,4-D 4 LB
1 qt		0.50 pt		1.05 pt

CRUSHER

RATE/ACRE	=	RESOLVE SG	+	HARMONY SG
1.0 oz		1 oz		0.5 oz
1.3 oz		1.3 oz		0.65 oz
1.8 oz		1.8 oz		0.9 oz

CURTAIL

RATE/ACRE	=	STINGER	+	2,4-D LV 4 LB
2.00 pt		0.25 pt (0.095 lb a.i.)		1.00 pt (0.50 lb a.i.)
2.67 pt		0.33 pt (0.126 lb a.i.)		1.34 pt (0.67 lb a.i.)

CURTAIL M

RATE/ACRE	=	STINGER	+	MCP ESTER
1.75 pt		3.92 fl oz		1.03 pt
2.00 pt		4.48 fl oz		1.18 pt
2.33 pt		5.22 fl oz		1.37 pt

DEGREE XTRA/FULTIME NXT

RATE/ACRE	=	CONFIDENCE	+	ATRAZINE 4L
2.9 qt		2.24 pt		0.97 qt
3.0 qt		2.31 pt		1.01 qt
3.2 qt		2.47 pt		1.08 qt
3.5 qt		2.70 pt		1.18 qt
3.7 qt		2.86 pt		1.28 qt

DIFLEXX DUO

RATE/ACRE	=	STERLING BLUE	+	LAUDIS
24 fl oz		7.56 fl oz		1.85 fl oz
40 fl oz		12.6 fl oz		3.09 fl oz

DIMETRIC CHARGED

RATE/ACRE	=	VALOR SX/VALOR EZ/ CHATEAU EZ	+	DIMETRIC EXT OR LIQUID
9 fl oz		1.5 oz		4.5 oz or 9 fl oz
12 fl oz		2 oz		6 oz or 12 fl oz
15 fl oz		2.5 oz		7.5 oz or 15 fl oz
16 fl oz		2.75 oz		8 oz or 16 fl oz
18 fl oz		3 oz		9 oz or 18 fl oz
20 fl oz		3.5 oz		10 oz or 20 fl oz

DISTINCT

RATE/ACRE	=	DIFLUFENZOPYR A.I.	+	DICAMBA (4 LB)
6 oz		1.2 oz a.i.		6 fl oz (3 oz a.i.)

ENLITE

RATE/ACRE	=	CLASSIC	+	VALOR SX	+	HARMONY SG
2.8 oz		0.32 oz		2 oz		0.49 oz

ENVIVE

RATE/ACRE	=	CLASSIC	+	VALOR SX	+	HARMONY SG
3 oz		1.1 oz		1.7 oz		0.17 oz
3.5 oz		1.29 oz		2 oz		0.2 oz
4 oz		1.47 oz		2.29 oz		0.23 oz
5.3 oz		1.9 oz		3 oz		0.3 oz

FIERCE EZ

RATE/ACRE	=	VALOR SX	+	ZIDUA
6 fl oz		2 oz		1.5 oz
7.5 fl oz		2.5 oz		1.9 oz

FIERCE MTZ

RATE/ACRE	=	VALOR SX	+	ZIDUA SC	+	DIMETRIC LIQUID
1 pt		1.96 oz		2.46 fl oz		8 fl oz
1.25 pt		2.45 oz		3.075 fl oz		10 fl oz

FIERCE XLT

RATE/ACRE	=	VALOR SX	+	ZIDUA	+	CLASSIC
4 oz		2 oz		1.46 oz		1 fl oz

FINESSE CEREAL AND FALLOW

RATE/ACRE	=	GLEAN XP	+	ALLY XP
0.2 oz		1.67 oz		0.0417 oz
0.25 oz		0.209 oz		0.052 oz
0.3 oz		0.25 oz		0.0625 oz
0.4 oz		0.33 oz		0.08 oz
0.5 oz		0.42 oz		0.1 oz

FIRSTSHOT SG

RATE/ACRE	=	HARMONY SG	+	EXPRESS
0.5 oz		0.25 oz		0.25 oz
0.6 oz		0.3 oz		0.3 oz
0.8 oz		0.4 oz		0.4 oz

FLEXSTAR GT 3.5

RATE/ACRE	=	FLEXSTAR	+	CORNERSTONE 5 PLUS
2.68 pt		12.8 fl oz		24.19 fl oz
3.5 pt		16.7 fl oz		31.59 fl oz
4.5 pt		21.4 fl oz		40.66 fl oz
5.3 pt		25.3 fl oz		47.96 fl oz

FRAMEWORK 3.3 EC

Framework	=	Prowl H2O
1.71 pt	=	1.5 pt
2.28 pt	=	2 pt
2.85 pt	=	2.5 pt
3.42 pt	=	3 pt

FREEHAND

RATE/ACRE	=	OUTLOOK	+	PENDULUM 2G
100 lb		1 pt		50 lb

FULTIME NXT - SEE DEGREE XTRA

FUSION 2.66EC

RATE/ACRE	=	PUMA	+	FUSILADE DX
6 oz		3.36 fl oz		6 fl oz

GAMEON

RATE/ACRE	=	2,4-D AMINE 4	+	VISTA XRT	+	ELEVORE
48 fl oz		24.6 fl oz ae		4.6 fl oz ae		1.68 fl oz ae
64 fl oz		32.8 fl oz ae		6.17 fl oz ae		2.24 fl oz ae

GOLDSKY

RATE/ACRE	=	STARANE ULTRA/ STAREDOWN	+	DEFENDOR	+	POWERFLEX HL
1 pt		4.06 fl oz		0.69 fl oz		1.68 oz

GRASLAN L/GRAZONPD3

RATE/ACRE	=	TORDON 22K	+	2,4-D LV4
0.66 pt		0.29 pt		0.09 pt
1.25 pt		0.54 pt		0.17 pt
2 pt		0.87 pt		0.27 pt
5 pt		2.17 pt		0.67 pt

GRASP XTRA

RATE	=	GRASP SC	+	GRANDSTAND R
16 fl oz		2 fl oz		8 fl oz

GRAZON P + D

RATE/ACRE	=	TORDON 22K	+	2,4-D 4 LB AMINE
1 qt		0.54 pt		1.0 pt

HALEX GT

RATE/ACRE	=	CORNERSTONE 5 PLUS	+	DUAL MAGNUM	+	CALLISTO
3.6 pt		30 fl oz		15.8 fl oz		3 fl oz
4 pt		33.38 fl oz		17.5 fl oz		3.34 fl oz

HARMONY EXTRA SG

RATE/ACRE	=	HARMONY SG	+	EXPRESS
0.45 oz		0.3 oz		0.15 oz

HARNESS XTRA – SEE CONFIDENCE BRANDS

HARNESS MAX

RATE/ACRE	=	HARNESS	+	CALLISTO
40 fl oz		20.11 fl oz		3.3 fl oz
55 fl oz		27.66 fl oz		4.54 fl oz
64 fl oz		32.18 fl oz		5.28 fl oz
75 fl oz		37.71 fl oz		6.19 fl oz
88 fl oz		44.25 fl oz		7.26 fl oz

HORNET*

PYTHON* + STINGER

RATE	PYTHON WDG	FLUMETSULAM EQUIVALENT	STINGER	CLOPRYALID EQUIVALENT
(oz/acre)	(oz/acre)	(lb a.i./acre)	(fl oz/acre)	(lb a.i./acre)
2.00	0.46	0.02	2.67	0.06
2.50	0.58	0.03	3.33	0.08
3.00	0.69	0.04	4.00	0.09
4.00	0.93	0.05	5.33	0.13
5.00	1.16	0.06	6.67	0.16
6.00	1.39	0.07	8.00	0.19

HUSKIE COMPLETE

RATE/ACRE	=	HUSKIE	+	VARRO
13.65 fl oz		11 fl oz		6.9 fl oz

IMPACT CORE

RATE/ACRE	=	HARNESS	+	IMPACT/ARMEZON
20 fl oz		20.23 fl oz		0.51 fl oz
22 fl oz		22.25 fl oz		0.56 fl oz
24 fl oz		24.27 fl oz		0.61 fl oz
28 fl oz		28.32 fl oz		0.71 fl oz
30 fl oz		30.34 fl oz		0.76 fl oz
34 fl oz		34.369 fl oz		0.86 fl oz
36 fl oz		36.41 fl oz		0.91 fl oz

KEYSTONE NXT - SEE CONFIDENCE XTRA 5.6L

KEYSTONE LA NXT - SEE CONFIDENCE XTRA

KOCHIAVORE

RATE/ACRE	=	2,4-D LV4	+	MAESTRO 2EC	+	STARANE ULTRA/ STAREDOWN
0.25 pt		1.76 fl oz		3.34 fl oz		0.96 fl oz
0.5 pt		3.52 fl oz		6.68 fl oz		1.91 fl oz
1 pt		7.03 fl oz		13.36 fl oz		3.83 fl oz

KYBER PRO

RATE/ACRE	=	VALOR SX	+	ZIDUA SC	+	DIMETRIC LIQUID
1 pt		1.96 oz		2.46 fl oz		8 fl oz
1.25 pt		2.45 oz		3.075 fl oz		10 fl oz
1.5 pt		2.94 oz		3.68 fl oz		12 fl oz

KYRO

RATE/ACRE	=	SURPASS NXT	+	ARMEZON	+	STINGER
35 fl oz		13.9 fl oz		0.57 fl oz		2.88 fl oz
45 fl oz		17.87 fl oz		0.74 fl oz		3.71 fl oz
60 fl oz		23.82 fl oz		0.99 fl oz		4.94 fl oz

LANDMARK XP

RATE/ACRE	=	OUST XP	+	GLEAN XP
5 oz		1.67 oz		3.33 oz

LEADOFF

RATE/ACRE	=	RESOLVE SG	+	HARMONY SG
1.5 oz		1 oz		0.5 oz

LEAGUE MVP

RATE/ACRE	=	LEAGUE	+	BOLERO ULTRAMAX
30 lb		0.17 lb		20 lb
35 lb		0.2 lb		23 lb

LEXAR EZ

RATE/ACRE	=	ATRAZINE 4L	+	DUAL II MAGNUM	+	CALLISTO
1 gal		1.74 lb a.i.		1.74 lb a.i.		0.224 lb a.i.
3 qt		1.3 qt		1.4 pt		5.3 oz
3.5 qt		1.5 qt		1.6 pt		6.2 oz

LUMAX EZ

RATE/ACRE	=	ATRAZINE	+	DUAL II MAGNUM	+	CALLISTO
2.7 qt		1.25 pt		1.8 pt		5.4 oz
3.25 qt		1.5 pt		2.1 pt		6.4 oz

MAESTRO ADVANCED

RATE/ACRE	=	MAESTRO 2EC	+	RHOMENE MCPA
0.8 pt		1 pt		0.54 pt
1.2 pt		1.5 pt		0.81 pt
1.6 pt		2 pt		1.08 pt

MAESTRO MA - SEE BISON

MAVERICK

RATE/ACRE	=	CALLISTO	+	ZIDUA SC	+	STINGER
14 fl oz (Post Only)		2.90 fl oz		2.33 fl oz		2.45 fl oz
18 fl oz		3.73 fl oz		2.99 fl oz		3.15 fl oz
24 fl oz		4.97 fl oz		3.99 fl oz		4.20 fl oz
32 fl oz		6.63 fl oz		5.32 fl oz		5.60 fl oz

METRIBUZIN

75DF	=	4L
0.33 lb		0.50 pt
0.50 lb		0.75 pt
0.67 lb		1.00 pt

NATIVEKLEAN

RATE/ACRE	=	2,4-D AMINE 4	+	MILESTONE
19 fl oz		16.65 fl oz ae		3.9 fl oz ae
24 fl oz		21 fl oz ae		4.92 fl oz ae
34 fl oz		29.8 fl oz ae		6.97 fl oz ae

OPENSKY

RATE/ACRE	=	STARANE ULTRA/ STAREDOWN	+	TEAMMATE
1 pt		5.4 fl oz		1 oz
1.25 pt		6.8 fl oz		1.25 oz

ORION

RATE/ACRE	=	DEFENDOR	+	MCP ESTER
17 fl oz		1.34 fl oz		10.75 fl oz

HERBICIDE PREMIX CONVERSIONS *continued*

OSPREY XTRA				
RATE/ACRE	=	OSPREY	+	VARRO
3.2 oz		3.2 oz		4.63 fl oz
4.5 oz		4.5 oz		6.51 fl oz

OUST EXTRA				
RATE/ACRE	=	OUST	+	ALLY
1 oz		0.75 oz		0.25 oz
5.67 oz		4.25 oz		1.42 oz

PANOFLEX				
RATE/ACRE	=	EXPRESS	+	HARMONY SG
0.3		0.24 oz		0.06
0.6		0.48 oz		0.12

PASTORA				
RATE/ACRE	=	ACCENT	+	ALLY XP
1 oz		0.75 oz		0.25 oz

PASTUREGARD HL				
RATE/ACRE	=	REMEDY ULTRA	+	STARANE ULTRA/ STAREDOWN
1.5 pt		1.12 pt		0.54 pt

PERFECTMATCH						
RATE/ACRE	=	STINGER	+	STARANE ULTRA/ STAREDOWN	+	POWERFLEX HL
1 fl oz		0.11 fl oz		0.19 fl oz		0.11 oz

PERSPECTIVE				
RATE/ACRE	=	AMINOCYCLOPYRACHLOR	+	GLEAN XP
3 oz		1.185 oz a.i.		0.63 oz

PIXXARO EC				
RATE/ACRE	=	STARANE ULTRA/ STAREDOWN	+	ELEVORE
6 fl oz		5.0 fl oz		1.05 fl oz

PREFIX				
RATE/ACRE	=	DUAL II MAGNUM	+	REFLEX
2 pt		1 pt		1 pt

PROWL H2O - SEE FRAMEWORK 3.3 EC

PULSAR				
RATE/ACRE	=	CLARITY	+	STARANE ULTRA/ STAREDOWN
8.3 fl oz		1.5 fl oz		2.80 fl oz
12.5 fl oz		2.27 fl oz		4.22 fl oz

QUELEX				
RATE/ACRE	=	ELEVORE	+	DEFENDOR
0.75 fl oz		0.13 fl oz ae		0.18 fl oz

RAVE				
RATE/ACRE	=	AMBER	+	DICAMBA (4LB)/ GAL*
4.0 oz		0.47 oz		4 fl oz (2 oz a.i.)
* Sodium salt of dicamba				

REALM Q				
RATE/ACRE	=	RESOLVE SG*	+	CALLISTO
4 oz		1.2 oz		2.5 oz
* 1.2 oz = 0.3 oz a.i. rimsulfuron				

REBEL EX				
RATE/ACRE	=	GRASP SC	+	CLINCHER SF
16 fl oz		2 fl oz		12 fl oz

RESICORE						
RATE/ACRE	=	SURPASS NXT	+	CALLISTO	+	STINGER
2.25 qt		1.8 pt		5.4 fl oz		4.56 fl oz
2.5 qt		2.0 pt		6.0 fl oz		5.07 fl oz
2.75 qt		2.2 pt		6.6 fl oz		5.57 fl oz
3 qt		2.4 pt		7.2 fl oz		6.08 fl oz

RESICORE REV						
RATE/ACRE	=	SURPASS NXT	+	CALLISTO	+	STINGER
2.25 qt		1.8 pt		4.86 fl oz		4.56 fl oz
2.5 qt		2.0 pt		5.40 fl oz		5.07 fl oz
2.75 qt		2.2 pt		5.94 fl oz		5.57 fl oz
3 qt		2.4 pt		6.48 fl oz		6.08 fl oz

RESOLVE Q				
RATE/ACRE	=	RESOLVE SG*	+	HARMONY SG
1.25 oz		0.92 oz		0.1 oz
* 0.92 oz = 0.23 oz a.i. rimsulfuron				

REVULIN Q				
RATE/ACRE	=	ACCENT	+	CALLISTO
3.4 oz		0.653 oz		2.50 fl oz
4 oz		0.768 oz		2.94 fl oz

REZUVANT						
RATE/ACRE	=	ELEVORE	+	STARANE ULTRA	+	AXIAL XL
16.4 fl oz		1 fl oz		5.9 fl oz		16.4 fl oz

RIMFIRE MAX				
RATE/ACRE	=	OLYMPUS	+	SILVERADO*
3 oz		0.2 oz		2.87 oz
* 2.87 oz = 0.00574 oz a.i. mesosulfuron				

SADDLE-UP				
RATE/ACRE	=	DICAMBA MAX 4	+	2,4-D AMINE 4 LB
1 pt		4 fl oz		12.6 fl oz

SCORCH						
RATE/ACRE	=	CLARIFIER	+	2,4-D LV4	+	STAREDOWN
1 pt		4.0 fl oz		12.72 fl oz		4.29 fl oz

SCORCH EXT						
RATE/ACRE	=	CLARIFIER	+	2,4-D LV4	+	DUPLOSAN
24 fl oz		8.0 fl oz		8.4 fl oz		24.0 fl oz
36 fl oz		12.0 fl oz		12.6 fl oz		36.0 fl oz.

SENDERO				
RATE/ACRE	=	STINGER	+	MILESTONE
1.5 pt		1.2 pt		6 fl oz
1.75 pt		1.3 pt		7 fl oz

SEQUENCE				
RATE	=	CORNERSTONE 5 PLUS	+	DUAL II MAGNUM
3 pt		27.11 fl oz		1.2 pt

SINATE				
RATE/ACRE	=	LIBERTY 280 SL	+	IMPACT/ARMEZON
21 fl oz		22.17 fl oz		0.75 fl oz
28 fl oz		29.56 fl oz		1.00 fl oz

SONIC - SEE AUTHORITY FIRST DF

SONIC BOOM				
RATE/ACRE	=	SPARTAN 4F	+	DIMETRIC EXT OR DIMETRIC LIQUID
12 fl oz		3.4 fl oz		4.5 oz or 8.9 fl oz
18 fl oz		5 fl oz		6.7 oz or 13.4 fl oz
24 fl oz		6.7 fl oz		8.9 oz or 17.8 fl oz
30 fl oz		8.4 fl oz		11.2 oz or 22.3 fl oz
36 fl oz		10.1 fl oz		13.4 oz or 26.8 fl oz
42 fl oz		11.8 fl oz		15.6 oz or 31.2 fl oz

SPARTAN CHARGE				
RATE/ACRE	=	AIM EC	+	SPARTAN 4F
3.75 fl oz		0.66 fl oz		2.95 fl oz
5.75 fl oz		1.01 fl oz		4.53 fl oz
8.5 fl oz		1.49 fl oz		6.69 fl oz

SPITFIRE				
RATE/ACRE	=	DICAMBA MAX 4	+	2,4-D LV4
0.25 pt		0.03 pt		0.25 pt
1 pt		0.13 pt		1 pt

STARANE FLEX				
RATE/ACRE	=	DEFENDOR	+	STARANE ULTRA/ STAREDOWN
13.5 fl oz		1.35 fl oz		4 fl oz

STARANE NXT				
RATE/ACRE	=	STARANE ULTRA/ STAREDOWN	+	MAESTRO 2EC
14 fl oz		2.94 fl oz		16.31 fl oz

STARANE + MCPA				
RATE/ACRE	=	STARANE ULTRA/ STAREDOWN	+	MCPA
1.5 pt		0.36 pt		1pt

STARANE + 2,4-D				
RATE/ACRE	=	STARANE ULTRA/ STAREDOWN	+	2,4-D
1.33 pt		0.36 pt		1pt

STARANE 1.5 = STARANE ULTRA 2.8		
RATE/ACRE	=	RATE/ACRE
0.67 pt		0.4 pt
10.67 fl oz		5.76 fl oz

STATUS				
RATE/ACRE	=	CLARITY	+	DIFLUFENZOPYR
5 oz		4 fl oz		0.8 oz a.i

STEADFAST Q				
RATE/ACRE	=	ACCENT Q	+	RESOLVE SG*
1.5 oz		0.69 oz		0.75 oz
*0.75 oz = 0.1875 oz a.i. rimsulfuron				

STOREN

RATE/ACRE	=	CHARGER MAX	+	BICYCLOPYRONE A.I.	+	INCINERATE	+	ZIDUA SC
2.1 qt		23.66 fl oz		0.039 fl.oz a.i.		5.21 fl oz		2.4 fl oz
2.4 qt		27.04 fl oz		0.045 fl.oz a.i.		5.95 fl oz		2.8 fl oz

STORM

RATE/ACRE	=	BASAGRAN 4L	+	AVALANCHE ULTRA
1.5 pt		1 pt		1 pt

STRADA PRO

RATE/ACRE	=	STRADA WG	+	PERMIT
2.08 oz		1.75 oz		0.33 oz
2.5 oz		2.1 oz		0.40 oz

STREAMLINE

RATE/ACRE	=	AMINOCYCLOPYRACHLOR	+	ALLY XP
4.75 oz		1.88 oz a.i.		1 oz

STRIKE 3

RATE/ACRE	=	2,4-D AMINE 4LB	+	DICAMBA 4LB	+	MCPP-P 4 AMINE
2 pt		1.28 pt		13.1 fl oz		10.5 fl oz

SUPREMACY

RATE/ACRE	=	STARANE ULTRA/ STAREDOWN	+	HARMONY SG	+	EXPRESS
4 oz		2.85 fl oz		0.36 oz		0.12 oz
5 oz		3.57 fl oz		0.45 oz		0.15 oz

SURESTART II/TRIPLEFLEX II/THREESIDUAL

RATE/ACRE	=	SURPASS NXT	+	STINGER	+	PYTHON
1.5 pt		0.89 pt		2.3 fl oz		0.45 oz
1.75 pt		1.03 pt		2.7 fl oz		0.52 oz
2 pt		1.17 pt		3.1 fl oz		0.59 oz
2.5 pt		1.46 pt		3.9 fl oz		0.74 oz
3.0 pt		1.78 pt		4.6 fl oz		0.90 oz

SURMOUNT

RATE/ACRE	=	TORDON 22K	+	STARANE ULTRA/ STAREDOWN
4 pt		1.34 pt		0.95 pt

SURTAIN

RATE/ACRE	=	ZIDUA SC	+	SHARPEN
9.2 fl oz		2.2 fl oz		2.0 fl oz
11 fl oz		2.6 fl oz		2.4 fl oz
14 fl oz		3.4 fl oz		3.1 fl oz
17 fl oz		4.1 fl oz		3.7 fl oz
27 fl oz		6.5 fl oz		5.9 fl oz

SURVEIL

RATE/ACRE	=	VALOR SX	+	FIRSTRATE
2.8 oz		2 oz		0.4 oz
3.5 oz		2.5 oz		0.5 oz
4.2 oz		3 oz		0.6 oz

SYNCHRONY XP

RATE/ACRE	=	CLASSIC	+	HARMONY SG
0.375 oz		0.32 oz		0.05 oz
1 oz		0.86 oz		.14 oz

TALINOR

RATE/ACRE	=	MAESTRO 2EC	+	BICYCLOPYRONE A.I.
13.7 fl oz		10 fl oz		1.76 oz a.i.
18.2 fl oz		13.3 fl oz		2.24 oz a.i.

TESTIFY - SEE VERDICT

TENDOVO

RATE/ACRE	=	DUAL MAGNUM	+	DIMETRIC EXT	+	FIRSTRATE
1.20 qts		1.09 pts		4.11 oz		0.37 oz
1.50 qts		1.37 pts		5.14 oz		0.46 oz
1.75 qts		1.59 pts		5.99 oz		0.54 oz
2.10 qts		1.91 pts		7.19 oz		0.65 oz
2.35 qts		2.14 pts		8.05 oz		0.73 oz

TOLVERA

RATE/ACRE	=	MAESTRO 2EC	+	SHIELDEX
11.0 fl oz		8.6 fl oz		.5 fl oz
14.7 fl oz		11.4 fl oz		.7 fl oz

THREESIDUAL - SEE SURESTART II

TREMOR BRANDS - SEE CONFIDENCE BRANDS

TRIPLEFLEX II – SEE SURESTART II

TRIVENCE

RATE/ACRE	=	CLASSIC	+	VALOR SX	+	DIMETRIC EXT
6 oz		0.94 oz		1.51 oz		3.57 oz
7.25 oz		1.13 oz		1.82 oz		4.31 oz
8 oz		1.25 oz		2.01 oz		4.76 oz
10 oz		1.56 oz		2.51 oz		5.95 oz

TRIVOLT

RATE/ACRE	=	BALANCE FLEXX	+	VARRO	+	FLUFENACET A.I.
10 fl oz		2.85		27.71		0.22 lb a.i.
10.75 fl oz		3.06		29.79		0.24 lb a.i.
12 fl oz		3.42		33.25		0.27 lb a.i.
20 oz		5.7		55.42		045 lb a.i.

VALOR XLT

RATE/ACRE	=	VALOR SX	+	CLASSIC
3 oz		1.76 fl oz		1.24 oz

VARISTO

RATE/ACRE	=	BEYOND XTRA	+	BASAGRAN 4L	OR	BASAGRAN 5L (REZULT B)
11 fl oz		2 fl oz		11 fl oz		9 fl oz
16 fl oz		3 fl oz		16 fl oz		13 fl oz
21 fl oz		3.9 fl oz		21 fl oz		17 fl oz
27 fl oz		5 fl oz		27 fl oz		22 fl oz

VELPAR ALFAMAX

RATE/ACRE	=	VELPAR DF CU	+	KARMEX DF
1 lb		7.5 oz		8.5 oz

VELPAR ALFAMAX GOLD

RATE/ACRE	=	VELPAR DF CU	+	KARMEX DF
1 lb		4.9 oz		11.1 oz
2.2 lb		10.8 oz		24.4 oz

VERDICT/TESTIFY

RATE/ACRE	=	SHARPEN	+	OUTLOOK
10 fl oz		2 fl oz		8.4 fl oz
13 fl oz		2.6 fl oz		10.9 fl oz
16 fl oz		3.2 fl oz		13.4 fl oz

VIEWPOINT

RATE/ACRE	=	AMINOCYCLO-PYRACHLOR	+	ARSENAL AC	+	ALLY XP
20 oz		4.56 oz a.i.		12.6 fl oz		2.4 oz

VIOS FX

RATE/ACRE	=	VARRO	+	STARANE ULTRA / STAREDOWN
13.7 fl oz		6.8 fl oz		4.8 fl oz

WARRANT ULTRA

RATE/ACRE	=	CONFIDENCE	+	FLEXSTAR
48 fl oz		19.34 fl oz		16.09 fl oz
60 fl oz		24.17 fl oz		20.11 fl oz
70 fl oz		28.20 fl oz		23.46 fl oz

WEEDMASTER - SEE BRASH

WEEDMASTER XHL

RATE/ACRE	=	DICAMBA MAX 4	+	2,4-D AMINE 4 LB
0.4 pt		2 fl oz		0.38 pt
1.2 pt		6 fl oz		1.13 pt
2.4 pt		12 fl oz		2.25 pt
4.0 pt		20 fl oz		3.75 pt

WELD

RATE/ACRE	=	MCPE	+	STARANE ULTRA/ STAREDOWN	+	STINGER
1 pt		7.56 fl oz		3.66 fl oz		2.67 fl oz

WIDEMATCH

RATE/ACRE	=	STINGER	+	STARANE ULTRA/ STAREDOWN
1.33 pt		5.32 oz		0.36 pt

WOLVERINE ADVANCED

RATE/ACRE	=	TACOMA 1EC	+	PYRASULFATOLE	+	BUCTRIL 4EC
1.7 pt		0.658 pt		0.027 lb a.i.		0.3118 pt

YUKON

RATE/ACRE	=	HERBIVORE	+	STERLING BLUE
4 oz		0.64 oz		4.4 fl oz
8 oz		1.28 oz		8.8 fl oz

YUKON

RATE/ACRE	=	STERLING BLUE	+	PERMIT
4 oz		4.4 oz		0.67 oz
6 oz		6.6 oz		1 oz
8 oz		8.8 oz		1.3 oz

ZIDUA PRO

RATE/ACRE	=	SHARPEN	+	PURSUIT	+	ZIDUA
4.5 fl oz		0.75 fl oz		3 fl oz		1.5 oz
6 fl oz		1.0 fl oz		4 fl oz		2.0 oz

2,4-D LV 4 TO LV6

1 pt LV4	=	0.67 pt or 10.7 oz LV6
2 pt LV4	=	1.33 pt or 21.3 oz LV6

NOTES

Herbicide	Pounds a.i./gallon	Pounds a.e./gallon	Form*	Equivalent Rates Based on a.e. (fl oz)**						
CORNERSTONE PLUS	4	3	I	16	20	24	32	40	48	64
CORNERSTONE 5 PLUS	5.5,5.4	4	I	12	15	18	24	30	36	48
CREDIT XTREME	5.5	4.5	K/I	11	13.5	16	22	27	32	44
HONCHO K6	5.5	4.5	K	11	13.5	16	22	27	32	44
ROUNDUP POWERMAX 3	5.8	4.8	K	10	11.5	14	20	24	30	40
ROUNDUP WEATHERMAX	5.5	4.5	K	11	13.5	16	22	27	32	44
RT 3	5.5	4.5	K	11	13.5	16	22	27	32	44

*Formulation of the glyphosate: DMA - dimethylamine salt, I-isopropylamine salt, K-potassium salt
**Use rates on the label are generally rounded.

FUNGICIDE AND INSECTICIDE PREMIX CONVERSIONS

INGREDIENTS AND FORMULATION CONVERSIONS*

ABSOLUTE 500 SC				
RATE/ACRE	=	ONSET 3.6L	+	FLINT EXTRA
3.5 fl oz		1.75 fl oz		1.52 fl oz

ABSOLUTE MAXX				
RATE/ACRE	=	ONSET	+	FLINT EXTRA
5 fl oz		3.03 fl oz		2.69 fl oz
6 fl oz		3.63 fl oz		3.23 fl oz

AFFIANCE				
RATE/ACRE	=	DOMARK 230 ME	+	TETRABAN
10 fl oz		3.51 fl oz		4 fl oz
14 fl oz		4.91 fl oz		5.6 fl oz
17 fl oz		5.97 fl oz		6.82 fl oz

AGRI-FLEX				
RATE/ACRE	=	ABAMEX	+	ACTARA
5.5 fl oz		8.77 fl oz		3.5 oz
8.5 fl oz		15.7 fl oz		6.75 oz

ALTIPRO				
RATE/ACRE	=	TETRABAN	+	PROLINE 480 SC
4 fl oz		2.44 fl oz		1.5 fl oz
6 fl oz		3.66 fl oz		2.2 fl oz
8 fl oz		4.88 fl oz		3.0 fl oz
12 fl oz		7.33 fl oz		4.4 fl oz
13.5 fl oz		8.24 fl oz		5.0 fl oz
15.4 fl oz		9.40 fl oz		5.7 fl oz

AMISTAR TOP				
RATE/ACRE	=	TETRABAN	+	INSPIRE
8 fl oz		6.4 fl oz		4.03 fl oz
10 fl oz		8.03 fl oz		5.05 fl oz
11.6 fl oz		9.3 fl oz		5.86 fl oz
14 fl oz		11.2 fl oz		7.07 fl oz
15 fl oz		12 fl oz		7.6 fl oz
15.4 fl oz		12.4 fl oz		7.8 fl oz

APROACH PRIMA				
RATE/ACRE	=	APROACH	+	ALTO 100SL
3.4 fl oz		2.72 fl oz		0.25 fl oz
6.8 fl oz		5.45 fl oz		0.51 fl oz

APROVIA TOP				
RATE/ACRE	=	DIFENOCONAZOLE A.I.	+	BENZOVINDIFLUPYR A.I.
10 fl oz		0.08 lb a.i.		0.05 lb a.i.
13.5 fl oz		0.102 lb a.i.		0.047 lb a.i.

BESIEGE				
RATE/ACRE	=	CORAGEN	+	WARRIOR Z
5 fl oz		2.5 fl oz		2.09 fl oz

CAPTEVATE				
RATE/ACRE	=	ELEVATE	+	CAPTAN 50WP
3.5 lb		0.5 lb		1.876 lb

CONCERT II				
RATE/ACRE	=	BANNER MAXX II	+	DACONIL WEATHER STIK
1.5 fl oz		0.35 fl oz		1 fl oz
8.3 fl oz		1.92 fl oz		5.53 fl oz

CONTEND A				
RATE/ACRE	=	DIFENOCONAZOLE A.I.	+	BENZOVINDIFLUPYR A.I.
44 fl oz		0.23 lb a.i.		0.07 lb a.i.

CONTEND B				
RATE/ACRE	=	HERITAGE	+	BANNER MAXX II
12.25 pt		1.9 lb		9.8 pt

DACONIL ACTION				
RATE/ACRE	=	DACONIL WEATHER STIK	+	ACTIGARD
5.4 pt		87.8 fl oz		0.26 oz

DELARO 325 SC				
RATE/ACRE	=	PROLINE 480 SC	+	FLINT EXTRA
4 fl oz		1.49 fl oz		1.25 fl oz
6 fl oz		2.24 fl oz		1.88 fl oz
11 fl oz		4.1 fl oz		3.45 fl oz

DELARO COMPLETE						
RATE/ACRE	=	PROLINE 480 SC	+	FLINT EXTRA	+	VELUM PRIME
4 fl oz		1.47 fl oz		1.27 fl oz		1.03 fl oz
6 fl oz		2.21 fl oz		1.91 fl oz		1.54 fl oz
11 fl oz		4.04 fl oz		3.5 fl oz		2.83 fl oz

DURIVO				
RATE/ACRE	=	ACTARA	+	CORAGEN
6 fl oz		0.52 oz		5 fl oz
11 fl oz		0.68 oz		6.5 fl oz

ELATUS				
RATE/ACRE	=	TETRABAN	+	BENZOVINDIFLUPYR A.I.
5 oz		5.77 fl oz		0.05 lb a.i.
7.3 oz		8.42 fl oz		0.07 lb a.i.
9.5 oz		10.96 fl oz		0.09 lb a.i.

ELEVEST				
RATE/ACRE	=	CORAGEN	+	BRIGADE 2EC
6 fl oz		3.2 fl oz		4.0 fl oz
7 fl oz		3.7 fl oz		4.7 fl oz
8 fl oz		4.3 fl oz		5.3 fl oz
9 fl oz		4.8 fl oz		6.0 fl oz
9.6 fl oz		5.1 fl oz		6.4 fl oz

ENDIGO ZCX				
RATE/ACRE	=	CENTRIC 40WG	+	WARRIOR II
3.5 fl oz		1.97 oz		1.51 fl oz
4.0 fl oz		2.25 oz		1.73 fl oz
4.5 fl oz		2.53 oz		1.95 fl oz

EVERLON - SEE PRIAXOR

EVITO T				
RATE/ACRE	=	EVITO 480 SC	+	ONSET 3.6L
6 fl oz		2.5 oz		3.9 fl oz

GRADUATE A+				
RATE	=	GRADUATE	+	ABOUND
1 qt		1 lb		30.6 fl oz

HEADLINE AMP				
RATE/ACRE	=	HEADLINE SC	+	CARAMBA
10 fl oz		5.84 fl oz		6.13 fl oz

HERO				
RATE/ACRE	=	MUSTANG MAXX	+	BRIGADE 2EC
4 fl oz		1.55 fl oz		1.86 fl oz
10.3 fl oz		4 fl oz		4.79 fl oz

INSPIRE SUPER				
RATE/ACRE	=	DIFENOCONAZOLE A.I.	+	VANGARD WG
16 fl oz		0.091 lb a.i.		5.6 oz
20 fl oz		0.114 lb a.i.		7 oz

INSPIRE XT				
RATE/ACRE	=	DIFENOCONAZOLE A.I.	+	TILT
7 fl oz		0.114 lb a.i.		4.04 fl oz

INSTRATA						
RATE/ACRE	=	DACONIL WEATHER STIK	+	BANNER MAXX II	+	GRADUATE
5 fl oz		2.5 fl oz		1.8 fl oz		0.15 oz

INTERFACE				
RATE/ACRE	=	26GT	+	COMPASS
4 fl oz*		4.28 fl oz		0.13 oz
*Rate per 1000 sq. ft.				

INTREPID EDGE				
RATE/ACRE	=	INTREPID	+	RADIANT
4 fl oz		5 fl oz		2 fl oz
18 fl oz		22.5 fl oz		9 fl oz

LEVERAGE 360				
RATE/ACRE	=	ADMIRE PRO	+	BAYTHROID XL
2.8 fl oz		1.22 fl oz		2.8 fl oz

LUNA EXPERIENCE				
RATE/ACRE	=	ONSET 3.6L	+	FLUOPYRAM
17 fl oz		7.9 fl oz		3.5 oz a.i.

LUNA FLEX				
RATE/ACRE	=	INSPIRE	+	VELUM ONE
8.0 fl oz		4.0		4.02
11.0 fl oz		5.5		5.53
12.8 fl oz		6.4		6.43
13.6 fl oz		6.8		6.83

LUNA PRO				
RATE/ACRE	=	PROLINE	+	VELUM
10		4.2		4.0

LUNA SENSATION				
RATE/ACRE	=	FLINT EXTRA	+	FLUOPYRAM
7.6 fl oz		3.8 fl oz		2 oz a.i.

LUNA TRANQUILITY				
RATE/ACRE	=	SCALA SC	+	FLUOPYRAM
11.2 fl oz		7 fl oz		1.5 oz a.i.

MERIVON				
RATE/ACRE	=	HEADLINE SC	+	FLUXAPYROXAD
5.5 fl oz		6.9 fl oz		0.96 oz a.i.
11 fl oz		13.8 fl oz		1.91 oz a.i.

MINECTO PRO				
RATE/ACRE	=	AGRI-MEK SC	+	EXIREL
10 fl oz		3.43 fl oz		13.6 fl oz
12 fl oz		4.11 fl oz		16.3 fl oz

MIRAVIS ACE				
RATE/ACRE	=	MIRAVIS	+	TOPAZ
13.7 fl oz		10.29 fl oz		3.98 fl oz

MIRAVIS NEO						
RATE/ACRE	=	MIRAVIS	+	TOPAZ	+	TETRABAN FUNGICIDE
13.7 fl oz		5.17 fl oz		3.96 fl oz		5.47 fl oz

1.5 FL OZ				
2.2 FL OZ	=	MIRAVIS	+	FLUDIOXONIL A.I.
3.0 fl oz		6.89 fl oz		2.4 oz
4.4 fl oz		7.71 fl oz		2.69 oz
5.0 fl oz		8.53 fl oz		2.98 oz
5.7 fl oz		10.03 fl oz		3.5 oz

MIRAVIS TOP				
RATE/ACRE	=	MIRAVIS	+	TOP MP
13.7 fl oz		5.17 fl oz		6.85 fl oz

MURAL				
RATE/ACRE	=	TETRABAN	+	APROVIA TOP
3 oz		3.46 fl oz		4.34 fl oz
4 oz		4.6 fl oz		5.8 fl oz
5 oz		5.77 fl oz		7.23 fl oz
6 oz		6.92 fl oz		8.67 fl oz
7 oz		8.08 fl oz		10.12 fl oz

NEXICOR						
RATE/ACRE	=	HEADLINE SC	+	FLUXAPROXAD	+	3.6 LB/G AL PROPINCONAZOLE
7 fl oz		5.67 fl oz		0.7 fl oz		2 fl oz
13 fl oz		10.5 fl oz		1.3 fl oz		3.8 fl oz

ORONDIS GOLD				
RATE/ACRE	=	ORONDIS GOLD 200	+	ORONDIS GOLD B
28 fl oz		4.86 fl oz		6.16 fl oz
55 fl oz		9.55 fl oz		9.1 fl oz

ORONDIS OPTI				
RATE/ACRE	=	BRAVO WEATHER STIK	+	ORONDIS GOLD 200
1.75 fl oz		0.97 fl oz		0.05 fl oz
2.5 fl oz		1.38 fl oz		0.075 fl oz

PILLAR G/PILLAR G INTRINSIC				
RATE/ACRE	=	INSIGNIA	+	TRITICONAZOLE
3 lb		91.2 oz		1.29 lb a.i.

PRIAXOR/EVERLON				
RATE/ACRE	=	HEADLINE SC	+	FLUXAPYROXAD
4 fl oz		5.3 fl oz		0.70 oz a.i.
8 fl oz		10.7 fl oz		1.4 oz a.i.

PRISTINE				
RATE/ACRE	=	ENDURA	+	HEADLINE SC
8 oz		2.88 oz		4 fl oz

PROPULSE				
RATE/ACRE	=	PROLINE 480SC	+	FLUOPYRAM
10.3 fl oz		4.3 fl oz		2.2 oz a.i.
13.6 fl oz		5.7 fl oz		2.9 oz a.i

PROSARO 421 SC				
RATE/ACRE	=	PROLINE 480 SC	+	ONSET 3.6L
6.5 fl oz		2.85 fl oz		3.18 fl oz
8.5 fl oz		3.73 fl oz		4.16 fl oz

PROSARO PRO 400 SC						
RATE/ACRE	=	PROLINE 480 SC	+	ONSET 3.6L	+	VELUM PRIME
10.3 fl oz		4.12 fl oz		2.4 fl oz		2.08 fl oz
13.6 fl oz		5.44 fl oz		3.17 fl oz		2.75 fl oz

QUADRIS OPTI				
RATE/ACRE	=	TETRABAN	+	BRAVO WEATHER STIK
2.4 pt		9.2 fl oz		32 oz

QUADRIS TOP				
RATE/ACRE	=	TETRABAN	+	DIFENOCONAZOLE A.I.
10 fl oz		8 fl oz		0.08 lb a.i.
14 fl oz		11.2 fl oz		0.16 lb a.i.

QUADRIS TOP SBX				
RATE/ACRE	=	TETRABAN	+	DIFENOCONAZOLE A.I.
7 fl oz		6.33 fl oz		0.103 lb a.i.
7.5 fl oz		6.78 fl oz		0.11 lb a.i.

QUILT XCEL/AFRAME PLUS				
RATE/ACRE	=	TETRABAN	+	TILT
7 fl oz		3.97 fl oz		1.98 fl oz
10.5 fl oz		5.96 fl oz		2.98 fl oz
26 fl oz		14.75 fl oz		7.37 fl oz

REVUS TOP				
RATE/ACRE	=	REVUS	+	DIFENOCONAZOLE A.I.
5.5 fl oz		5.5 fl oz		0.09 lb a.i.
7 fl oz		7 fl oz		0.11 lb a.i.

REVYTEK						
RATE/ACRE	=	PROVYSOL	+	FLUXAPYROXAD A.I.	+	HEADLINE SC
8 fl oz		2.66 fl oz		0.046 lb a.i.		5.66 fl oz
15 fl oz		4.98 fl oz		0.087 lb a.i.		10.62 fl oz

RIDOMIL GOLD BRAVO SC				
RATE/ACRE	=	BRAVO WEATHER STIK	+	RIDOMIL GOLD SL
2.5 pt		1.39 pt		3.2 oz

RIDOMIL GOLD MZ WG				
RATE/ACRE	=	DITHANE F-45 RAINSHIELD	+	RIDOMIL GOLD GR
2.5 lb		4.32 lb		4 lb

RUSTEASE				
RATE/ACRE	=	ALTO	+	TETRABAN
4 fl oz		3.23 fl oz		3.2 fl oz
5 fl oz		4.04 fl oz		4.01 fl oz
6.8 fl oz		5.49 fl oz		5.46 fl oz

STRATEGO YLD /PROTEGAM YLD				
RATE/ACRE	=	PROLINE 480SC	+	FLINT EXTRA
4 fl oz		1.05 fl oz		3 fl oz
5 fl oz		1.3 fl oz		3.75 fl oz

SWITCH 62.5WG				
RATE/ACRE	=	VANGARD WG	+	SCHOLAR SC
11 oz		5.5 oz		5.5 oz

TANOS				
RATE/ACRE	=	FAMOXADONE	+	CYMOXANIL
8 oz		2 oz ai		2 oz a.i.

TARTAN				
RATE/ACRE	=	BAYLETON FLO	+	FLINT EXTRA
43.5 fl oz		21 fl oz		4.3 fl oz
87.2 fl oz		42 fl oz		8.6 fl oz

TOPGUARD EQ				
RATE/ACRE	=	RHYME	+	TETRABAN
4 oz		3.5 fl oz		4.75 fl oz
5 oz		4.38 fl oz		5.93 fl oz
6 oz		5.25 fl oz		7.13 fl oz
7 oz		6.12 fl oz		8.31 fl oz
8 oz		7 fl oz		9.5 fl oz

TRIVAPRO						
RATE/ACRE	=	APROVIA	+	TETRABAN	+	TOPAZ
16 fl oz		4.82 fl oz		7.08 fl oz		4.62 fl oz

UNIFORM				
Rate/Acre 22" rows	=	Tetraban	+	Ridomil Gold SL
0.32 oz/1000' row		0.4 oz/1000' row		0.08 oz/1000' row

VIATUDE				
RATE/ACRE	=	PROLINE	+	APROACH
8 fl oz		1.0 fl oz		6.0 fl oz
10 fl oz		1.3 fl oz		7.6 fl oz
12 fl oz		1.6 fl oz		9.1 fl oz
14 fl oz		1.8 fl oz		10.6 fl oz
16 fl oz		2.1 fl oz		12.1 fl oz

VELTYMA				
RATE/ACRE	=	PROVYSOL	+	HEADLINE SC
5 fl oz		2.5 fl oz		4 fl oz
6 fl oz		3.0 fl oz		4.8 fl oz
7 fl oz		3.5 fl oz		5.6 fl oz
8 fl oz		4.0 fl oz		6.4 fl oz
9 fl oz		4.5 fl oz		7.2 fl oz
10 fl oz		5 fl oz		8.0 fl oz

VOLIAM FLEXI				
RATE/ACRE	=	ACTARA	+	ALTACOR
4 oz		3.2 oz		2.29 oz
6 oz		4.8 oz		3.43 oz
7 oz		5.6 oz		4 oz

ZAMPRO				
RATE/ACRE	=	FORUM	+	AMECTOCTRADIN
14 fl oz		6.3 fl oz		4.4 oz a.i.

ZING!				
RATE/ACRE	=	DACONIL WEATHER STIK	+	ZOXIMIDE
30 fl oz		20.95 fl oz		30 fl oz
36 fl oz		25.14 fl oz		36 fl oz

ZORINA				
RATE/ACRE	=	PROVYSOL	+	ENDURA
10 fl oz		2.5 fl oz		3.0 oz
15 fl oz		3.7 fl oz		4.4 oz
18.5 fl oz		4.6 fl oz		5.5 oz
20 fl oz		5.0 fl oz		5.9 oz

IMPORTANT NOTE: Weights of liquid products are provided as a guide only. Actual weight can change with temperature or modifications in formulation by the manufacturer. Calibrate bulk product metering pumps regularly to avoid significant metering errors. Some chemical suppliers provide calibration devices. Product labels should be consulted regarding special storage precautions. Data from manufacturers and believed to be reliable.

For specific labels and SDSs:
http://www.greenbook.net or
http://www.cdms.net or
http://www.agrian.com

STORAGE TEMPERATURES AND WEIGHTS (ALWAYS CHECK WEIGHT ON BILL OF LADING)

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
10% MOLYBDENUM LIQUID	32*	9.9
120 HERBICIDE	32	12.95
2,4-DB 175	32*(70)	8.86
2,4-DB 200	32*(70)	9.05
2,4-DB 200	NSP	9.05
2,4-D AMINE 4	32*(70)	9.65
2,4-D LV4	32*(45)	8.75
2,4-D LV6	32*(45)	9.49
3336 F	NSP	9.71
AATREX 4L	32*(60)	9.15
ABAMEX	NSP	8.6
ABBA ULTRA	NSP	8.03
ABOUND	NSP	9.18
ABSOLUTE 500 SC	32	9.63
ABSOLUTE MAXX	32	9.68
ACCENT Q	NSP	Dry
ACCUDROP	40*	7.93
ACTAPHOS 0-0-25	32	12.2
ACTINOVATE AG	32	Dry
ACTELLIC	32	8.9
ACURON	NSP	9.138
ACURON FLEXI	-10	9.08
ACURON GT	NSP	10.1-10.34
ADASTRIO	NSP	9.51
ADIOS	NSP	8.93
ADMIRE PRO	NSP	10.76
ADURO	32	10.17
ADVISE FOUR	32	9.35-9.85
ADVION	NSP	Dry
AERIS	NSP	10.51
AFFECT GC	40	8.33
AFFIANCE	NSP	8.93
AFLA-GUARD	NSP	Dry
AFFORIA	NSP	Dry
AFRAME PLUS	NSP	8.75
AGENT 1.88	32*(68)	9.35-9.68
AGILITY	NSP	Dry
AGRI-FLEX	NSP	9.01-9.35
AGRI-MEK SC	NSP	8.60-8.93
AGRI TIN FLOWABLE	32	10.1
AIM EC	NSP	9
ALION	40	8.76
ALLEGIANCE-FL	32	9.16
ALLUVEX	NSP	Dry
ALTACOR	32	Dry
ALTIPRO	NSP	9.3
ALTO	NSP	9.34
ALUMNI	32	9.71

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
AMISTAR TOP	NSP	9.18
AMS 2000	NSP	Dry
AMSURF XTRA	0	10
ANTHEM FLEX	NSP	10.06
ANTHEM MAXX	NSP	10.02
APPEAR	NSP	12.2
APROACH	NSP	8.5-9.5
APROACH PRIMA	NSP	9.35
APRONMAXX RFC	NSP	9
APRON MAXX RTA	NSP	8.68
APRON MAXX RTA + MOLY	NSP	9.77
APRON XL	NSP	9.29
APRON XL 350ES	NSP	Dry
APROVIA TOP	NSP	8.67
ARCHER	NSP	7.07
ARCTIC	40	8.62
ARMEZON	25	9.43
ARSENAL POWERLINE	10	9.18
ASANA XL	NSP	7.9
ASSURE II	32	8.51
ASULAM 3.3	20	9.83
ATRAZINE 4L	32*	9.2
ATRAZINE 90DF	NSP	Dry
AUDIT 1:1	NSP	Dry
AUDIT 4:1	NSP	Dry
AUDIT 75WDG	NSP	Dry
AUTHORITY ASSIST	32	10
AUTHORITY EDGE	NSP	10.2
AUTHORITY FIRST DF	NSP	Dry
AUTHORITY SUPREME	NSP	10.1
AUTHORITY XL	32	Dry
AUTUMN SUPER 51	NSP	Dry
AVALANCHE ULTRA	32	9.68-10.14
AVAUNT	32	Dry
AVAUNT EVO	32	Dry
AVEO EZ	NSP	10.06
AVICTA 500 FS	NSP	9.01
AVICTA COMPLETE BEANS 500	NSP	9.28
AVICTA COMPLETE CORN 250	NSP	9.35
AVICTA DUO 250 CORN	NSP	9.3
AVICTA DUO CORN	NSP	9.97
AVICTA DUO COTTON	NSP	9.97
AXIAL STAR	NSP	8.46
AXIAL BOLD	NSP	8.3
AXIAL XL	NSP	8.24
AXIOM DF	NSP	Dry
AZTEC 4.67G, AZTEC HC	NSP	Dry
BADGE SC	NSP	11.35

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
BADGE X2	NSP	9.26
BALANCE FLEXX	NSP	10.01
BANNER MAXX II	NSP	9.41
BANOL	NSP	9.1
BASAGRAN	32	9.9
BASAGRAN 5L	32	10.24
BASIS BLEND	NSP	Dry
BAYLETON 50 T&O	NSP	Dry
BAYTHROID XL	0	8.49
BELAY INSECTICIDE	32*(50)	9.26
BELEAF	NSP	Dry
BESIEGE	32	9.01
BEXFOND	65	8.6
BEYOND XTRA	32	8.75
BICEP II MAGNUM/BICEP II MAGNUM FC	NSP	9.31
BICEP LITE II MAGNUM	NSP	9.31
BIDRIN 8	NSP	9.9
BIFEN 2 AG GOLD	NSP	8.15
BION 500FS	NSP	9.93
BIO-TAM 2.0	NSP	6.51
BISON	32*(32)	9.49
BLACKHAWK	NSP	Dry
BLOCKER 10G	NSP	Dry
BOLERO ULTRAMAX	NSP	Dry
BOLL'D	NSP	10.85
BOUNDARY 6.5EC	NSP	9.01
BRACKET 97	NSP	Dry
BRASH	32	9.75
BRAVO WEATHER STIK	NSP	11.18
BRIGADE 2EC	40	7.97
BRISKWAY	NSP	9.34
BROADWORKS	-20	10.014
BUTTE	NSP	Dry
BUTYRAC 200	32*(60)	9.01
CABRIO EG	NSP	Dry
CADRE	NSP	8.9-9.1
CALLISTO	-20	10.02
CALLISTO XTRA	-20	9.27
CANNONBALL WG	NSP	Dry
CAPAROL 4L	32*(60)	8.95
CAPRENO	14	10.18
CAPSTONE	32*(40)	8.76
CAPTURE LFR	32*	8.75
CAPTURE 3RIVE 3D	NSP	9.05
CARAVAN G	NSP	6.03
CARBINE 50WG	NSP	Dry
CARNIVORE	32*	9.46

STORAGE TEMPERATURE AND WEIGHT *continued*

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
CELL-TECH	39,<54	-
CENTYNAL	NSP	9.51
CERTADOR	NSP	8.93
CHAMP DRY PRILL	NSP	Dry
CHAMP FORMULA 2 FLOWABLE	NSP	11.93
CHAMP WG	NSP	Dry
CHAMPION++	NSP	Dry
CHAPARRAL	NSP	Dry
CHARGER BASIC	NSP	9.08
CHARGER MAX	NSP	9.27
CHARGER MAX ATZ	32*(60)	9.25
CHARGER MAX ATZ LITE	32*(60)	9.33
CHATEAU EZ	NSP	9.6
CHEETAH	32*(32)	9.05
CHEMSURF/90	32,<104	9.6-10.4
CHIPCO 26019 FLO/26GT	NSP	8.6
CHOPPER GEN2	10	9.18
CIMARRON X-TRA/PLUS	NSP	Dry
CLARIFIER	NSP	10.27
CLARITY	32	10.23
CLASS ACT FLEX	36*	10.37
CLASS ACT NG	40*	10.39
CLASS ACT RIDION	32	9.91
CLASSIC	NSP	Dry
CLEANSE	NSP	8.9
CLEANSWEEP D	32*	9.65
CLEANSWEEP M	32*	9.46
CLEANTRAXX	NSP	9.82
CLEARCAST	32	8.76
CLEARPATH	NSP	Dry
CLIPPER	NSP	Dry
CLINCHER SF	NSP	8.02
CLOAK EX	NSP	Dry
CLOSER SC	NSP	9.23
COBRA	32*(50)	8.31
COMITE	32*(60)	9.01
COMITE II	NSP	8.72
COMMAND 3ME	-4	9.65
COMPACT 6X	32,<100	8.47
COMPASS	NSP	Dry
COMPLETE COMPATIBILITY	32	8.91
COMPLEX	32*(60)	8.34
CONCERT II	NSP	8.63
CONFIDENCE	NSP	9.21
CONFIDENCE XTRA	32*(60)	9.24
CONFIDENCE XTRA 5.6L	32*(60)	9.26
CONFIRM 2F	32	8.76
CONTANS WG	39	Dry
CONTEND A	NSP	8.8
CONTEND B	NSP	8.62
CORAGEN	32	9.13
CORNERSTONE PLUS (1381 label)	10*(68)	9.84
CORNERSTONE PLUS (524 label)	NSP	9.73
CORNERSTONE 5 PLUS	10*(50)	10.204
CORONET	32	9.43
CORRAL POLY	45	8.61
CORVUS	32	10
COTORAN 4L	32*(60)	9.6
CREDIT XTREME	NSP	10.81
CREW	NSP	Dry
CROSSBOW	10	8.45
CRUISER 5FS	<90	10.86
CRUISER 70WS	50	Dry
CRUISERMAXX	NSP	9.5
CRUISERMAXX APX	NSP	9.35
CRUISERMAXX CEREALS	32*, <90	9.58
CRUISERMAXX PEANUTS	NSP	Dry
CRUISERMAXX POTATO	<90	9.96
CRUISERMAXX POTATO EXTREME	<90	9.89
CRUISERMAXX VIBRANCE PULSES	NSP	9.1
CRUISERMAXX RICE	<90	9.93
CRUISERMAXX SUGARBEETS	NSP	Dry
CRUISERMAXX SUNFLOWER	NSP	Dry
CRUISERMAXX VIBRANCE	NSP	9.6
CRUISERMAXX VIBRANCE CEREALS	NSP	9.23
CRUISERMAXX VIBRANCE POTATO	NSP	9.59
CRUISERMAXX VIBRANCE PULSES	NSP	9.1
CRUSHER	NSP	Dry
CURTAIL	≤45	9.6
CURTAIL M	<10 or *	10.54
CURZATE 60 DF	NSP	Dry
CUTOUT	NSP	8.95
DACONIL ACTION	NSP	11.27
DACONIL ULTREX TURF CARE	NSP	6.18
DACONIL WEATHER STIK	NSP	11.1
DACTHAL FLOWABLE	NSP	11
DANITOL 2.4 EC	32*(50)	8.2
DAZE 4SC	NSP*	9.79
DEFENDOR	23	8.61
DEGREE XTRA	32*(60)	9.242
DELARO 325 SC	NSP	9.18
DELARO COMPLETE	32	9.85
DELTA GOLD	50	8.99
DENIM	NSP	7.5
DERMACOR X-100	32	10.5
DESTINY HC	32*	8.42
DETAIL	32	9.6
DEVRINOL DF-XT	NSP	Dry
DICAMBA MAX 4	NSP	9.73
DIFLEXX	14	10.41
DIFLEXX DUO	45, <70	9.43
DIMATE 4EC	32	9.09
DIMETRIC CHARGED	NSP	8.85
DIMETRIC EXT	NSP	Dry
DIMETRIC LIQUID	NSP	9.1
DIPEL ES	0	8.01
DIQUAT 2L	32	10.01
DISCOVER NG	NSP	7.89
DISPLAY	32	9
DISTINCT	NSP	Dry
DIVANEM	NSP	8.6-8.9
DIVIDEND EXTREME	NSP	9.88
DOMARK 230 ME	NSP	9.35
DRIVE	NSP	Dry
DRYACIDE 100	NSP	Dry
DUAL MAGNUM	-30	9.13
DUAL II MAGNUM	-30	9.28
DUET	NSP	9.71
DURACOR	NSP	Dry
DURIVO	NSP	9.51
DYNAMARK UV-BLUE	36	NA
DYNASTY	NSP	8.55
DYNASTY CST	32	9.33
DYNASTY PD	NSP	Dry
EAGLE 20EW	NSP	8.6
ECHO 720	NSP	10.3
ECHO 90 DF	NSP	Dry
ELATUS	NSP	Dry
ELEMENT 3A	28*	9.47
ELEMENT 4	28*	9.1
ELEVEST	32	9.33
ELEVORE	23	8.82
EMERALD	NSP	Dry
EMESTO SILVER	14	8.93
EMINENT VP	NSP	Dry
ENABLE 2F	32	8.76
ENDIGO ZCX	NSP	9.42
ENDURA	NSP	Dry
ENLITE	NSP	Dry
ENLIST DUO	NSP	9.74
ENLIST ONE	NSP	9.96
ENVERSA	NSP	9.11
ENVIVE	NSP	Dry
ENVOKE	NSP	Dry
EPTAM 20-G	NSP	5.47-7.48
EPTAM 7E	-50	7.94
ESPLANADE 200 SC	32	9.17
ESTEEM 0.86 EC	NSP	7.6
ETHOS ELITE LFR ‡	NSP	9.68
ETHOS XB	<90	9.6
ETHOS 3D	<95	9.03
EVERPREX	NSP	9.1
EVEREST 3.0	32	8.52
EVERGOL ENERGY	NSP	8.92
EVERGOL ENERGY SB	NSP	8.92
EVERLON	32	9.68
EVIK DF	NSP	2.42

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See notes and footnotes at end of table.

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
EVITO 480 SC	NSP	9.87
EVITO T	NSP	9.26
EXCALIA	NSP	9.01
EXCALIBRE SA	NSP	22.12
EXIREL	32	7.51-9.18
EXURO	NSP	7.49
FACET L	NSP	9.44
FAR-GO	32	8.63
FAST BREAK	40	8.34
FASTAC CS	NSP	8.43
FERENCE	NSP	8.345
FIERCE EZ	NSP	9.5
FIERCE MTZ	NSP	9.34-9.43
FIERCE XLT	NSP	Dry
FINALE	NSP	8.85
FINESSE CEREAL and FALLOW	NSP	Dry
FIRSTSHOT	NSP	Dry
FLEXSTAR	32	9.08
FLEXSTAR GT 3.5	10*	10.08
FLINT	NSP	Dry
FLINT EXTRA	14	9.5
FLOXCOR	NSP*	9.26
FOAM BREAKER	32	8.41
FOAMINATOR DRY	NSP	NA
FOLEX 6 EC	NSP	8.5
FONTELIS	NSP	8.17
FORCE 6.5G/FORCE 10G HL	NSP	Dry
FORCE EVO	NSP	8.62
FORCIVO	NSP	9.51
FORE 80WP RAINSHIELD	NSP	Dry
FORTENZA	NSP	10.18-10.6
FORUM	NSP	9.68
FRAMEWORK 3.3 EC	40	8.86
FREEFALL SC	NSP*	9.68
FREEHAND	NSP	Dry
FREQUENCY/PYLEX	*	9.43
FULFILL	NSP	Dry
FULTIME NXT	32*(60)	9.4
FUSILADE DX/FUSILADE II	NSP	8.12
FUSION	NSP	8.3
GAMEON	NSP	9.22
GARLON 3A	28	9.4
GARLON 4 ULTRA	NSP	9.2
GAUCHO 600	NSP	10.25
GAVEL 75DF	NSP	Dry
GIN OUT	32	8.33
GOAL 2XL	NSP	9.01
GOALTENDER	32	9.76-9.93
GOLDSKY	50	8.76
GR2	NSP	Dry
GRADUATE	NSP	Dry
GRADUATE A+	NSP	9.76
GRAMOXONE SL 3.0	NSP	9.3-9.6
GRANDSTAND R	NSP	9.5
GRAPH-EX, GRAPH-EX SA	NSP	22.12
GRASLAN L	NSP	10.05
GRASP SC	NSP	9.2
GRASP XTRA	NSP	9.1
GRAZONPD3	NSP	10.05
GRAZON P+D	40	9.58
GRAZONNEXT HL	NSP	9.79
GRIZZLY TOO	32	8.84
HALEX GT	–10	10.18
HARNESS	NSP	9.189
HARNESS MAX	32	8.96
HARNESS XTRA	-50	9.23
HARNESS XTRA 5.6	-50	9.27
HEADLINE	NSP	8.8
HEADLINE AMP	NSP	8.82
HEADLINE SC	NSP	9.01
HEAT WAVE	40	8.44
HELIX VIBRANCE	NSP	10.85
HELIX XTRA	NSP	10.76
HERBIVORE	NSP	Dry
HERO	32	8.27
HI-DEP	32	9.92
HONCHO K6	*	11.326
HONOR	NSP	Dry
HOT N' DRY	40	8.49
HUSKIE	14, <105	9.51
HUSKIE COMPLETE	14, <105	9.26
HUSKIE FX	NSP	9.6
IMPACT	NSP*	8.76
IMPACTZ	NSP*	9.35
IMPACT CORE	NSP	8.3-9.2
INCINERATE	NSP	10.02
INDAR 2F	NSP	8.76
INDEX	NSP	9.35
ILEVO	32	10.35
INLINE	NSP	11.02
INSIGNIA	NSP	Dry
INSIGNIA SC	NSP	8.91
INSPIRE SUPER	NSP	8.68
INSPIRE XT	NSP	8.93-9.26
INSTINCT	NSP	9.28
INSTINCT HL	NSP	9.64
INSTINCT II	NSP	9.36
INSTRATA	NSP	10.1
INTEGO SUITE SOYBEAN	32	9.51
INTERFACE	32	9.26
INTERLOCK	*	7.29
INTREPID 2F	32	9.16
INTREPID EDGE	32	8.92
JAVELIN	32, <90	Dry
JUMPSTART	32, <68	Dry
KEYSTONE NXT	-50	9.27
KEYSTONE LA NXT	-50	9.23
KNACK	32*	7.65
KOCHIAVORE	10	9.5-9.68
KRENITE S	10	9.6-9.93
KROVAR I DF	NSP	Dry
KYBER PRO	NSP	9.43
KRYO	NSP	9.2
LAMBDA-CY AG	NSP	7.63
LANNATE LV	32	7.44
LANNATE SP	NSP	Dry
LAUDIS	14*	10.17
LEADOFF	NSP	6.7
LEAGUE	NSP	Dry
LEAGUE MVP	NSP	Dry
LEVERAGE 360	NSP	9.68
LEXAR EZ	NSP	9.01-9.34
LEXICON INTRINSIC	32	9.68
LIBERTY ULTRA	32, <125*	9.43
LIBERTY 280 SL/RELY 280	32, <125*	9.6
LINEX 4L	NSP	9.8
LONDAX	NSP	Dry
LOYANT	NSP	7.72
LUCENTO	NSP	9.9
LUMAX EZ	-10	9.09
LUMIDERM	32	10.43
LUMISENA	NSP	8.93
LUNA EXPERIENCE	32	9.43
LUNA FLEX		9.76
LUNA SENSATION	32	9.76
LUNA TRANQUILITY	32	9.26
MAESTRO 2EC	32*	8.58
MAESTRO ADVANCED	32*	9.72
MAESTRO MA	32*	9.48
MAINSPRING GNL	NSP	8.35-0.02
MALATHION 5	NSP	8.81
MALATHION 5EC	9	8.81
MALATHION 8 FLOWABLE	<77	10.097
MANKOCIDE DF	<284	Dry
MANZATE MAX	NSP	10.6-11.10
MANZATE MAX PRO-STICK	NSP	-
MASTERLOCK	32*	7.43
MATCHPOINT	NSP	Dry
MAULER	32*	9.68
MAVERICK	NSP	9.35
MAXIM 4FS	NSP	9.96
MAXIM QUATTRO	NSP	9.39
MAXIM XL	NSP	9.17
MAXTIMA	NSP	9.6
MCPA	32*(70)	9.29
MCPA ESTER	NSP	8.32
MCPE	32*(70)	8.35
MENTOR	NSP	Dry
MENTOR EC	NSP	9.06
MERIDIAN 0.33G	NSP	Dry
MERIDIAN 25WG	NSP	Dry
MERIT 0.5 G	NSP	Dry
MERIVON	32	Dry
MERTECT 340-F	NSP	9.68
METHOD 50SG	NSP	Dry

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PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
METTLE 125 ME	NSP	9.01
MICROTHIOL DISPERSS	NSP	Dry
MINECTO PRO	NSP	8.85
MINUET	NSP	9.18
MIRAVIS	NSP	9.1
MIRAVIS ACE	NSP	9.18
MIRAVIS NEO	NSP	8.93
MIRAVIS PRIME	NSP	9.76
MIRAVIS TOP	NSP	9.1
MOLYBDENUM 10%	32	9.9
MONCUT	NSP	Dry
MOVENTO	32	8.97
MOVENTO HL	32	9.33
MOVENTO MPC	32	8.85
MURAL	NSP	4.67
MUSTANG	20	8.77
MUSTANG MAXX	20	8.72
NAVICON	NSP	9.51
N-PAK AMS LIQUID	32	10
NATIVEKLEAN	NSP	9.79
NEALTA	32	8.93
NEEMIX 4.5	-20	7.54-8.33
NEWPATH	32	9.25
NEXICOR	NSP	8.93
NEXTSTEP NG	NSP	7.86
NIPSIT INSIDE	NSP	10.52-10.6
NIPSIT SUITE CEREALS	32	8.76
NOBLE	40	7.45
NORTRON SC	32	9.43
NOVAGRAZ	NSP	9.16
N-PAK AMS LIQUID	*	10
N-SERVE 24, 24E	28	8.1
NUPRID 4F MAX	NSP	10.1
NURIZMA	32	9.68
OBERON 2 SC, OBERSON 4 SC	32	9.08
OBSERVE	NSP	7.89
OBVIUS	<104	8.85
OBVIUS PLUS	NSP	9.35
OLYMPUS	NSP	Dry
OMEGA 500F	NSP	10.42
OMEGA TOP MP	NSP	10.51
OMITE-6E	NSP	8.72
ONAGER	NSP	8.74
ONSET 3.6L	25	9
ONTARGET	NSP	8.9
OPENSIGHT	NSP	Dry
OPENSKY	55	8.41
OPTIFY 4X	>45	10
OPTIFY A	>32	10.3
OPTIFY D30	>32*	10
OPTIFY HSCOC	NSP	7.51
OPTIFY HSMSO	NA	7.65
OPTIFY L27	>32*	10.18
OPTIFY Z37	>32*	7.8
OPTIMIZE	39, <77	

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
ORION	14	8.6
ORONDIS	NSP	8.69
ORONDIS GOLD	NSP	9.1
ORONDIS GOLD 200	NSP	8.9
ORONDIS GOLD B	NSP	8.76-8.93
ORONDIS OPTI	NSP	10.13
ORONDIS ULTRA	NSP	8.35
OSPREY	NSP	Dry
OSPREY XTRA	NSP	Dry
OUST	NSP	Dry
OUST EXTRA	NSP	Dry
OUTLOOK	NSP	9.41
OUTRIDER	NSP	Dry
OUTREACH SC	55,<95	8.87
OVERDRIVE	NSP	Dry
PALISADE EC	32	8.31
PALISADE MAXX	NSP	8.6
PANOFLEX	NSP	Dry
PANTHER SC	NSP	9.66
PASTORA	NSP	Dry
PASTUREGARD HL	32*(40)	9.27
PATRIOT	NSP	11.66
PAYOFF PLUS	NSP	Dry
PEAK	NSP	Dry
PENDULUM 2G	NSP	Dry
PENDULUM 3.3 EC	32*	8.93
PENNANT MAGNUM	NSP	9.18
PENNCOZEB 75DF	NSP	Dry
PERFECTMATCH	NSP	8.74
PERMEATE	NSP	8.48
PERPETUO	NSP	9.3
PERSPECTIVE	NSP	Dry
PH-D	NSP	Dry
PHOENIX	32*(50)	8.23
PHOSTROL	NSP	11.93
PILLAR G, PILLAR G INTRINSIC	NSP	Dry
PINDAR GT	NSP	9.82
PIX WSG	NSP	Dry
PIXXARO EC	20,<100	8.7
PLATINUM 75 SG	NSP	Dry
PLENARIS 200 FS	NSP	8.9
POAST	32	7.77
PONCHO BETA	23	9.68
PONCHO VOTIVO	32	10.5
PONCHO XC	NSP	10.43
POTATO SEED PIECE TRT 6%	NSP	Dry
POWERFLEX HL	NSP	Dry
POWERLOCK	*	7.82
PRAIZ	NSP	11.3
PRAMITOL 25E	32	7.8
PREFAR 4E	42	10.21
PREFERENCE	*	8.35
PREFIX	5*	9.32
PRE-PARE	NSP	Dry

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
PRESIDIO	32*(50)	10.1
PRESIDUAL	NSP	8.9-9.1
PREVICUR FLEX	*	9.05
PREVISTO	NSP	8.68
PRIAXOR	32	9.68
PRIMO MAXX	NSP	8.93
PRINCEP 4L	NSP	9.47
PRINCEP CALIBER 90	NSP	Dry
PROCURE 480SC	NSP	9.6
PROLINE 480SC	32*	9.85
PROPULSE	32	9.6
PROSARO 421 SC	32*	9.25
PROSARO PRO 400 SC	NSP	9.6
PROSPER EVERGOL	14	10.8
PROSTAR 70 WP	NSP	Dry
PROTEGAM YLD	14	9.68
PROTANK LIQUID CLEANER	55	9.1
PROVAUNT	32	Dry
PROVOST SILVER	32	9.51
PROVYSOL	NSP	9.6
PROWL H20	NSP	9.81
PURSUIT	32	9.2
PYGANIC EC 1.4$_{II}$	NSP	7.69
PYGANIC EC 5.0$_{II}$	NSP	7.78
PYLEX	40	9.29
QUADRIS OPTI	NSP	10.89
QUADRIS TOP	NSP	9.01
QUADRIS TOP SBX	NSP	9.49
QUASH	NSP	Dry
QUELEX	NSP	Dry
QUILT XCEL	NSP	8.75
QUINSTAR	NSP	Dry
RADIANT	NSP	9.75
RADIANT SC	32	8.55
RALLY 40WSP	32	Dry
RANCONA CREST	32	9.12
RANCONA PINNACLE	32	8.86
RANCONA SUMMIT	32	8.9
RANMAN	NSP	7.972
RAVE	NSP	Dry
RAXIL PRO MD	32	8.67
RAXIL PRO SHIELD	32	9.01
REALM Q	NSP	Dry
REBELEX	NSP	8.43
REFLEX	32	9.24
REGENT 4 SC	32	10.34
REGIMENT	NSP	Dry
REGLONE/REWARD	32	10.12
RELY 200	32*	9.18
REMEDY ULTRA	28	9.25
RENESTRA	14	8.85
RENOWN	NSP	10.85
RENOVATE	28*	9.47
REQUIEM EC	32	7.59
RESICORE	NSP	9.06

BULK PRODUCTS: Always check the weight listed on the manufacturer's bill of lading.

See notes and footnotes at end of table.

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
RESOLUTE 4L	NSP	9.77
RESOLUTE 65WG	NSP	Dry
RESOLVE Q	NSP	Dry
RESOURCE	32	8.1
REVULIN Q	NSP	Dry
REVUS	NSP	8.9
REVUS TOP	NSP	9.48
REVYTEK	NSP	9.51
REZUVANT	NSP	8.17
RHYME	<70	-
RICESTAR HT	32	8.67
RIDGEBACK	NSP	8.38
RIDOMIL GOLD BRAVO SC	NSP	10.08
RIDOMIL GOLD COPPER	NSP	Dry
RIDOMIL GOLD GR	NSP	Dry
RIDOMIL GOLD MZ WG	<86	Dry
RIDOMIL GOLD SL	NSP	8.76-8.92
RIMFIRE MAX	NSP	Dry
RIZOLEX	NSP	9.98
RODEO	NSP	10.09
ROUNDUP CUSTOM	*	10.09
ROUNDUP POWERMAX 3	*	11.51
ROUNDUP WEATHERMAX	*	11.292
ROVRAL 4F	NSP	12.77
RT 3	*	11.277
RUGGED	32	9.18
RUSTEASE	NSP	9.18
SADDLE-UP	NSP	9.26
SALIBRO	NSP	10.06
SALTRO	NSP	9.76-10.1
SAPPHIRE	NSP	8.6
SCALA SC	NSP	8.9
SCHOLAR SC	NSP	9.43
SCIMITAR CS	NSP	8.65
SCOPARIA	32	10.014
SCORCH	NSP	9.6
SCORCH EXT	NSP	9.61
SECTION THREE	NSP	8.16
SECURE	NSP	10.4
SECURE ACTION	NSP	10.35
SEED SHIELD SOYBEAN	<90	9.65
SEFINA	NSP	8.6
SELECT MAX	32*(50)	7.69
SENATOR 600 FS	NSP	10.64
SENSAT	NSP	8.59
SENSTAR	NSP	8.72
SEPRESTO	NSP	Dry
SEQUENCE	NSP	10.24
SEQUOIA	NSP	9.23
SERENADE ASO	NSP	8.76
SERENADE OPTI	NSP	Dry
SERIFEL	41	
SHARK EW	NSP	8.8
SHARPEN	NSP	9.57
SHREDDER E-99	*	10

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
SILKIN	NSP	8.7
SIMAZINE 4L	NSP	9.5
SIMAZINE 90DF	NSP	Dry
SINATE	NSP	8.3-9.13
SIVANTO PRIME/SIVANTO 200 SL	14, <105	9.76
SMARTCHOICE HC	NSP	Dry
SONALAN 10G	40	Dry
SONALAN HFP	40	8.512
SONIC	NSP	DRY
SONIC BOOM	NSP	9.56
SPARTAN CHARGE	32	9.92
SPARTAN 4F	NSP	10.06
SPEEDWAY NF	NSP	9.7
SPHAEREX	NSP	8.6
SPITFIRE	32*	9.26
SPOTRETE F	NSP	9.6
STALKER	10	8.84
STAM 80 EDF	NSP	Dry
STAM M4	NSP	Dry
STAMINA	NSP	9.1
STAMINA F4 CEREALS	NSP	8.93
STANCE	32*	8.76
STAPLE LX	NSP	-
STARANE FLEX	14*	8.21
STARANE NXT	14	9.11
STARANE ULTRA/ STAREDOWN	10	8.77
STATUS	NSP	Dry
STEADFAST Q	NSP	Dry
STERLING BLUE	NSP	10.23
STEWARD EC	32	8.66
STINGER	28	9.67
STORCIDE II	NSP	8.26
STOREN	NSP	9.12
STORM	40	10.15
STRADA PRO	NSP	-
STRADA WG	NSP	Dry
STRADA XT2	NSP	Dry
STRATEGO YLD	14	9.68
STREAMLINE	NSP	Dry
STRIKELOCK	32	7.76
STRONGARM	NSP	Dry
SUBDUE GR	NSP	Dry
SUBDUE MAXX	NSP	8.51
SUPERB HC	NSP	8.28
SUPERLOCK	32*	7.09-7.59
SUPERWHAM!	NSP	-
SUPREMACY	NSP	Dry
SURESTART II	NSP	8.99
SURMOUNT	32*(40)	9.02
SURPASS NXT	NSP	9.18
SURTAIN	NSP	9.18
SURVEIL	NSP	Dry
SYSTIVA XS	32	9.46

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
T-METHYL 4.5 F	NSP	10.1
T-METHYL 70 WSB	NSP	WSB
TACOMA 1EC	32	8.65
TAEGRO 2	32	5.99
TANDEM	NSP	9.06
TANK CLEANER	40	8.45
TARTAN	NSP	9.6
TARZEC	NSP	Dry
TEAMMATE	NSP	Dry
TELAR XP	NSP	Dry
TENACITY	-20	10.02
TENDOVO	(32)	9.06
TERAXXA	-10	9.68
TERAXXA F4	NSP	9.01
TERMINATE	32*	11.6
TERRAZOLE 35%WP	NSP	Dry
TESARIS	32	9.43
TESTIFY	NSP	9.11
TETRABAN	NSP	8.76-9.10
THREESIDUAL	NSP	8.99
THIMET 20-G	NSP	Dry
THISTROL	32*	9.22
TILT	NSP	8.13-8.30
TOLVERA	NSP	8.85
TOP MP	NSP	8.98
TOPAZ	NSP	8.6-8.76
TOPGUARD	NSP	8.84
TOPGUARD EQ	NSP	9.84
TORDON 22K	32*(60)	9.67
TORDON RTU	32*(60)	9.09
TORINO	NSP	8.68
TOTAL	NSP	9.6
TOTAL 2.3	32*	9.43-9.76
TOTAL SL	32*	9.05
TOTAL TNV	NSP	9.6
TOWER	14	9.4
TRADEWIND	NSP	Dry
TRANSFIX	40	7.96
TRANSFORM WG	NSP	Dry
TRANSLATE	NSP	7.72
TREBUSET	NSP	9.76-10.1
TREEVIX	NSP	Dry
TREFLAN HFP	40	9.31
TREFLAN TR 10	NSP	Dry
TREMOR ATZ LITE NXT	32*(60)	9.24
TREMOR ATZ NXT	32*(60)	9.26
TREMOR NXT	NSP	9.21
TRINITY	32	8.802
TRIPLEFLEX II	10	9.06
TRIVAPRO	NSP	8.75
TRIVENCE	NSP	Dry
TRIVOLT	NSP	10.01
TRUNEMCO	NSP	8.73
TRUST	40	9.3
TUNDRA EC	40	7.96

BULK PRODUCTS: Always check the weight listed on the manufacturer's bill of lading.

See notes and footnotes at end of table.

STORAGE TEMPERATURE AND WEIGHT *continued*

PRODUCT	STORE ABOVE °F	LBS. PER GALLON**
TUNDRA LFC	32*	8.45
TURFSIDE 400	NSP	10.5
TUSCANY SC	NSP	9.66
ULTOR	32	8.85
ULTRALOCK	32	7.43-7.59
ULTRA FLOURISH	40*(68)	8.2
UNIFORM	NSP	9.43
VALCHECK 80/20	40	8.85
VALCHECK AMS	32	9.75-10.26
VALCHECK AMS + DRT	0	9.7
VALCHECK III	32	10.01-10.6
VALCHECK COC	NSP	7.25
VALCHECK FOAM MARKER	39	8.53
VALOR SX	NSP	Dry
VALOR EZ	NSP	9.6
VALOR XLT	NSP	Dry
VANGARD WG	NSP	Dry
VANTACOR	NSP	10.53
VARISTO	23	9.26
VARRO	14, <105	8.34
VASTLAN	NSP	10.31
VAULT IP/VAULT IP PLUS	NSP	-
VAYANTIS	NSP	9.18
VELISTA	NSP	Dry
VELPAR ALFAMAX, VELPAR ALFAMAX GOLD	NSP	Dry
VELPAR L	32	8.15
VELTYMA	NSP	9.51
VELUM PRIME/VELUM ONE	32	10.01
VELUM RISE	NSP	9.43
VENOM	NSP	Dry
VERDICT	NSP	9.11
VERIMARK	32	8.34-10.01
VERSYS	NSP	8.51
VIATUDE	NSP	9.5
VIEWPOINT	NSP	Dry
VIBRANCE	NSP	9.76
VIBRANCE CINCO	NSP	9.43
VIBRANCE CST	NSP	9.33
VIBRANCE EXTREME	NSP	9.38
VIBRANCE MAXX	NSP	8.89
VIBRANCE MAXX PULSES RTA	NSP	8.76-9.10
VIBRANCE RST	NSP	9.18-9.51
VIBRANCE TRIO	NSP	8.85
VIBRANCE ULTRA POTATO	NSP	9.13
VINDICATE	NSP	9.35
VIOS FX	-14, ,105	9.01
VISTA XRT	10	8.8
VOLIAM FLEXI	NSP	9.46
VOLT-EDGE	-20	10.6
VORTEX	NSP	9-9.5
VYDATE C-LV	32	9.01
WARDEN CEREALS II	NSP	9.31
WARDEN CEREALS HR	32	9.12
WARDEN CEREALS WRII	NSP	8.95
WARDEN CX II	NSP	8.35
WARDEN RTA	*	9.35
WARRANT	32	9.137
WARRANT ULTRA	32, <104	9.34
WARRIOR II	32	9.16
WATER	32	8.345
WEEDAR 64	32*(40)	9.64
WEEDAR XHL	32*(40)	10.35
WEEDMASTER	32	9.72
WEEDMASTER XHL	32	10.26
WEEDONE 638	NSP	8.81
WELD	10*	8.64-8.70
WESTAR	NSP	Dry
WIDEARMATCH	NSP	9
WIDEMATCH	-44	8.74
WINDCHECK	35	8.35
WOLVERINE ADVANCED	32*	8.66
XPEDIENT PLUS V	NSP	8.26
XXPIRE	NSP	Dry
XYWAY 3D	<75	9.46
XYWAY LFR	<5	9.19
XZEMPLAR	32	9.43
YUKON	NSP	Dry
ZEAL SC	32	8.93-9.26
ZELTERA	NSP	9.35
ZIDUA PRO	NSP	9.93
ZIDUA SC	NSP	10.1
ZING!	NSP	10.431
ZIRONAR	40	9.85
ZORINA	NSP	9.26
WINFIELD UNITED PLANT NUTRITION		
SEE WINFIELD UNITED PRODUCTS SECTION		

BULK PRODUCTS: Always check the weight listed on the manufacturer's bill of lading.

NSP = No special precautions.

* If stored below freezing or below indicated temperature, then recondition by warming to temperature listed in parentheses ( ) and agitate. If no temperature is given, then recondition by warming and agitation.

** Weight at 68° F. Weight will change with temperature and with formulation changes.

[1] If good agitation or recirculation is not possible, store above freezing.

[2] If stored below 45° F or above 90° F, product may phase. Allow temperature to moderate then agitate or recirculate before using.

[4] Cornerstone 5 Plus 10.2 - 42750 label; 10.14 - 1381=240 label.

MINIMUM RAIN-FREE INTERVAL

MINIMUM INTERVAL FROM APPLICATION TO RAINFALL FOR HERBICIDES

HERBICIDE	TIME INTERVAL (HRS)
ACCENT Q	4
ADIOS	12
AFFINITY BROADSPEC	3+
AFFINITY TANKMIX	3+
AFFORIA	1
AGILITY SG	6
ALION	48
ALLY EXTRA SG	6
ALLY XP	4
AMBER	4
ANTHEM FLEX	1
ANTHEM MAXX	1
ARMEZON	1
ARMEZON PRO	1
ARSENAL	1
ARSENAL POWERLINE	1
ASSURE II	1
AUDIT 1:1	3+
AUDIT 4:1	3+
AUTHORITY XL	1
AUTUMN SUPER 51 WDG	2
AVALANCHE ULTRA	4
AXIAL BOLD	0.5
AXIAL XL	0.5
AXIALSTAR	1
BASAGRAN	4
BASAGRAN 5L	4
BEYOND XTRA	1
BOLERO 8 EC	24
BOLERO ULTRAMAX	24
BOLL'D	0-4
BRASH	4
BRUSHMASTER	24
CADRE	3
CAPRENO	1
CARNIVORE	1
CERTAINTY	2
CHATEAU EZ	1
CHEETAH	4
CIMARRON MAX	4
CIMARRON PLUS	4
CIMARRON X-TRA	4
CLARIFIER	4
CLARITY	4
CLASSIC	1
CLEANSE 2EC	1
CLEANSWEEP D	1
CLEANSWEEP M	1
CLEARPATH	1
CLINCHER SF	2
CLOAK EX	2
COBRA	0.5
COMPACT 6X	8*
CONFIDENCE	RE
CONFRONT	6
CORNERSTONE 5 PLUS	RE
CORNERSTONE PLUS	RE
CREDIT XTREME	4 RE
CURTAIL	6
CURTAIL M	6
DAZE 4SC	24
DEFENDOR	4
DETAIL	1
DIFLEXX	4
DIFLEXX DUO	4
DIMETRIC CHARGED	1
DIQUAT 2L	0.5
DISCOVER NG	0.5
DISPLAY	6
DISTINCT	4
DRIVE XLR8	24
DUET	8
ELEVORE	1
ENLIST DUO	4
ENLIST ONE	4
ENLITE	1
ENVIVE	1
ENVOKE	3
ET	1
EVEREST 3.0	1
EXPRESS	3+
FACET L	6
FIERCE EZ	1
FIERCE MTZ	1
FIERCE XLT	1
FINALE	4
FINESSE CEREAL and FALLOW	6
FINISH 6 PRO	6
FIRSTRATE	2
FLEXSTAR	1
FLEXSTAR GT 3.5	RE
FOLEX 6 EC	1
FREEFALL SC	24
FREQUENCY	1
FUSILADE DX	1
FUSILADE II	1
FUSION	1
GIN OUT	4*
GOLDSKY	4
GR2	4
GRAMOXONE SL 3.0	0.25-0.5
GRASP SC	1
GRASP XTRA	1
GRAZONNEXT HL	2
HABITAT	1
HARMONY EXTRA SG	3+
HARNESS	RE
HERBIVORE	4
HONCHO K6	RE
HORNET	2
HUSKIE/HUSKIE COMPLETE/HUSKIE FX	1
IMPACT CORE	1
IMPACT	1
IMPACTZ	4
KOCHIAVORE	1
KRENITE S	24
KYBER PRO	1
LAUDIS	1
LEAGUE	6
LIBERTY ULTRA	4
LIBERTY 280 SL	4
LONDAX	4
LONTREL	2
LOYANT	2
MATRIX SG	4
MAVERICK	6
METHOD 240SL	1
METHOD 50SG	1
MONUMENT 75WG	3
NATIVEKLEAN	2
NEXTSTEP NG	0.5
NORTRON SC	6
OLYMPUS	4
OPENSKY	4
ORION	4
OSPREY/OSPREY XTRA	4
OUTRIDER	2
OVERDRIVE	4
PANOFLEX	4
PANTHER SC	1
PASTORA	4
PEAK	4
PENTIA	1-2*
PERFECTMATCH	4
PERMIT, PERMIT PLUS	4
PERPETUO	1
PERSPECTIVE	4
PHOENIX	2
PIX WSG	4-8*
PIXXARO EC	1
PLATEAU	1
POAST	1
POWERFLEX HL	4
PURSUIT	1
PYLEX	24
PYTHON	6
QUELEX	4
RAVE	4
REALM Q	4
REBELEX	2
REFLEX	1
REGIMENT	8
REGLONE	0.5
RELY 280	4
RESOLVE Q	4
RESOURCE	1
REVOLVER	2
REVULIN Q	4
REWARD	0.5
REZUVANT	1
RICESTAR HT	1
RIMFIRE MAX	4
RODEO	RE
ROUNDUP POWERMAX 3	RE
ROUNDUP PRO	RE
ROUNDUP PRO CONCENTRATE	RE
ROUNDUP WEATHERMAX	RE
RT 3	RE
RUGGED	6
SADDLE-UP	4
SANDEA	4
SAPPHIRE	1
SCORCH	4
SECTION THREE	1
SELECT MAX	1
SEQUENCE	RE
SHADOW	1
SHADOW 3EC	1
SHARPEN	1
SINATE	4,RE
SPIRIT	4
SPITFIRE	4
STAM 80 EDF	8
STAM M4	8
STANCE	4-8*
STAPLE LX	4
STARANE FLEX	4
STARANE NXT	1
STARANE ULTRA/ STAREDOWN	1
STATUS	4
STEADFAST Q	4
STERLING BLUE	4
STINGER	6
STORM	4
STRADA	6
STRADA PRO	6
STRADA XT2	6
STREAMLINE	4
STRIKE 3	4
SUPERWHAM!	48
SUPREMACY	2
SURVEIL	2

See notes and footnotes at end of table.

MINIMUM INTERVAL FROM APPLICATION TO RAINFALL FOR HERBICIDES

HERBICIDE	TIME INTERVAL (HRS)
SYNCHRONY XP	1
TACOMA 1EC	1
TALINOR	1
TARGA	1
TARZEC	4
TEAMMATE	4
TESTIFY	1
TOTAL	4
TOTAL 2.3	4
TOTAL SL	4
TOTAL TNV	4
TOWER	24
TRANSLINE	2
TREEVIX	1

HERBICIDE	TIME INTERVAL (HRS)
TRIVENCE	1
TUSCANY SC	1
UPBEET	6
VALOR EZ	1
VALOR SX	1
VALOR XLT	1
VARISTO	4
VARRO	1
VERDICT	1
VIDA	1
VIEWPOINT	4
VIOS FX	1
VISTA XRT	1
WARRANTULTRA	1

HERBICIDE	TIME INTERVAL (HRS)
WEEDMASTER	4
WEEDMASTER XHL	4
WELD	6
WESTAR	24
WIDEARMATCH	1
WIDEMATCH	6
WOLVERINE ADVANCED	1
YUKON	4
ZIDUA PRO	1

MINIMUM INTERVAL FROM APPLICATION TO RAINFALL FOR POST INSECTICIDES AND FUNGICIDES

INSECTICIDE OR FUNGICIDE	TIME INTERVAL
ACTARA	Until dry
AFFIANCE	2
AGENT 1.88	1 hr
APROACH	1 hr
APROACH PRIMA	1 hr
ASSAIL	Until dry
BAYLETON	30 minutes
BAYTHROID XL	1 hr
BESIEGE	Until dry
BIFEN 2 AG GOLD	Until dry
CENTRIC 40WG	Until dry
CONFIRM 2F	6
CORAGEN	1 hr
CUPROFIX ULTRA 40 DISPERSS	8 hr
CURZATE 60DF	2 hr
DOMARK 230 ME	2 hr

INSECTICIDE OR FUNGICIDE	TIME INTERVAL
EMINENT VP	2
EVITO T	2-4 hr
EXCALIA	2 hr
FLOXCOR	15 minutes
FONTELIS	1 hr
FULFILL	Until dry
HERO	1 hr
INTREPID 2F	Until dry
INTREPID EDGE	Until dry
METTLE 125 ME	2
NEALTA	1 hr
PENNCOZEB 75DF	24 hr
PRESIDIO	2 hr
PROLINE 480 SC	2-4 hr
QUASH	2 hr
RENESTRA	1 hr
REQUIEM EC	2 hr

INSECTICIDE OR FUNGICIDE	TIME INTERVAL
RHYME	2 hr
SCALA SC	4 hr
SCIMITAR CS	12-24 hr
SEFINA	1 hr
SIVANTO PRIME/ SIVANTO 200 SL	1 hr
STREAMLINE	4 hr
TANOS	12 hr
TILT/TOPAZ	Until dry
TOPGUARD	2 hr
VERSYS	1
VOLIAM FLEXI	Until dry

* Add an adjuvant to shorten rainfast interval

RE - Heavy rainfall shortly after application may reduce performance and require retreatment.

HERBICIDE ROTATIONAL RESTRICTIONS

Months

** Indicates that the product label should be referenced.*

Multiple numeric entries for a crop indicate that unique intervals depend on various factors described on the label.

HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
AATREX 4L or NINE-0	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	0	NCS	2CS	2CS	2CS	NCS	*[2]CS
ACCENT Q*	10,12	4,8	10	10,12	5	10	10	18	4,8	18	10,18	18	10,18	0.5	10,18	10,18	8	4	[18]
ACURON	18	4	18	18	0	10	10	18	4	10	10	10	10	10	18	18	4	4	18
ACURON FLEXI	10	4	18	18	0	10	10	18	4	10	10	10	10	10	18	18	4	4	18
ACURON GT*	10	4.5	18	18	0	10	18	18	4.5	10	10	10	10	10	18	18	4.5	4.5	18
ADIOS/CUTOUT	2	2	12	2	2	12	2	12	2	2	12	12	2	2	2	12	2	2	*
AFFINITY TANK MIX/BROAD SPEC*	1.5	0	2	1.5	0.5,0.66	0.5,0.66	1.5	1.5	0.03,0.3	1.5	1.5	0	0.5,0.66	0.03,0.3	2	1.5	0	0	1.5
AFFORIA*	4,10	3,4	4,12	4,10	0.5,1	1,2	3,4	3,4	4,10	1.5	4,12	1,2	1	0	4,10	1.5,2	1,2	1,2	*
AGILITY*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
AGENT 1.88*	18	4	18	18	10	0	0	18	4	10	0	10	10,18	0	18	18	4	4	*
AIM EC/SHARK EW*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	*
ALION	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
ALLUVEX	18	18	18	18	0	18	10	10	18	18	1	18	10	10	18	10	9	3	18
ALLY XP/ALLY EXTRA SG/PATRIOT*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
AMBER*	4	6,18	4	4	4,22	4	4	4	6,18	4	4	4	14,24	11,36	24	24	5	5	*BA
ANTHEM FLEX*	10	11,18	18	18	0	0,4	11	18	11,18	4	4	10,24	18	0,4	12,15	4	0,6	0,6	*
ANTHEM MAXX*	10	11,18	18	18	0	4	11	18	11,18	4	4	10,24	11,18	0	15	4	4,6	4,6	18
ARMEZON*	9	3	[9,18]	18	0	9	9,18	18	3	9	9	3	3	9,18	9,18	9	3	3	18
ARMEZON PRO*	9	4	9,18	18	0	9	9,18	18	4	9	9	9	9	9	9,18	9	4	4	18
ARSENAL POWERLINE*	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA
ASSURE II	4	4	0	4	4	0	0	4	4	4	4	4	4	0	0	4	4	4	4
ASULAM/ASULOX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ATRAZINE*	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	0	NCS	2CS	2CS	2CS	2CS	2CS
AUDIT 1:1*	1.5	0	2	1.5	1.5	0.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	1.5	0	0	*
AUDIT 4:1*	1.5	1.5	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	1.5	1.5	0	*
AUDIT 75WDG	1.5	0	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	1.5	0	0	1.5
AUTHORITY ASSIST*	12	9.5	40BA	30BA	4,10,18	18	10	26	18	30BA	26	40	18	0	40BA	18	4	4	*
AUTHORITY EDGE*	12	11	24	18	4	12	9	4	12	4	4	12	10	0	24	0	4	4	*
AUTHORITY ELITE	12	4.5	12BA	12BA	10	18	12BA	12BA	12	4	4	10	10	0	36	0	4.5	4.5	12BA
AUTHORITY FIRST DF/SONIC*	12	12	24	30BA	18,10	18,12	9,12	30BA	12	12	18	10	12	0	30BA	30BA	4	4	*
AUTHORITY SUPREME	10	12,18	24	18	4	12	18	18	12,18	4	4	10,24	10,12	0,4	24	4	4,6	4,6	18
AUTHORITY XL*	12,18	4	36	18	10,18	18	12,18	18	12,18	36	36	10,18	10,18	0	36	18	4	4	*
AUTUMN SUPER 51*	18	9	18	18	1,9	10	18	18	18	18	18	18	18	2	18	18	3	3	*
AVALANCHE ULTRA	3	1	3	3	3	3	3	3	1	0	3	0	3	0	3	3	1	1	3
AXIAL BOLD*	3	0	3	3	3	3	3	3	0	3	3	3	3	3	1	3	0	0	*
AXIAL STAR	4	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0	4
AXIAL XL	3	0	3	3	3	3	3	3	3	3	1	3	3	3	1	3	0	0	3
AXIOM	12	12	12	12	0	12	12	12	12	12	1	12	12	0	18	12	12	12	12
BALANCE FLEXX*	10	6	18	18	0	10	10,18	18	18	10	6	10	6	6	10,18	6	4	4	18
BASAGRAN/BASAGRAN 5L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASIS BLEND*	10,18	3,9	10,18	10,18	5	1,10	10	10	3,9	10,18	1	10,18	10,18	0.5,10	10,18	10	9	3	*
BEYOND XTRA*	3	18	0,18	18	8.5	9	5	18	9	9	9,18	18	9	0	6,18	0,9	0,9	0,9	*
BICEP/LITE II MAGNUM*	2CS	2CS	2CS	2CS	0	NCS	2CS	2CS	2CS	NCS	2CS	2CS	5	NCS	2CS	2CS	2CS	[NCS]	2CS
BISON/MAESTRO ADVANCED/ MAESTRO MA*	1,2	[1,2]	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	*
BOLL'D	1	1	1	1	1	NR	1	1	1	1	1	1	1	1	1	1	1	1	1
BOLERO	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
BOUNDARY 6.5EC/PRESIDUAL*	4.5	4.5,8	12	12	4	12	12	12	12	12	12	8	12	12	18	12	8	4.5	*

See notes and footnotes at end of table.

Months

** Indicates that the product label should be referenced.*

Multiple numeric entries for a crop indicate that unique intervals depend on various factors described on the label.

HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
BRASH/WEEDMASTER*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
BROADAXE XC	12	4.5	12BA	12BA	4	12,18	4	12BA	12	4	4	10	10	0	24,36	0	4.5	4.5	*BA
BUCKLE*	NCS	0	NCS	NCS	16	NCS	NCS	NCS	16	NCS	NCS	16	16	NCS	14	NCS	NCS	0	NCS
BUTTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CADRE*	26	18	40	26	9	18,26	9	26	18	0	40	26	18	9	40	26	4	4	26
CALLISTO/BROADWORKS/ INCINERATE*	10	4	10	18	0	10	18	0	0	10	10	10	0	10	18	10	4	4	*
CALLISTO XTRA	NS	NS	NS	18	0	NS	18	NS	18	NS	NS	18	0	NS	18	NS	NS	NS	18
CAPAROL 4L*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CAPRENO*	18,24	10	18,24	18,24	0	10	18,24	18,24	18,24	18,24	18,24	18,24	10,18	10	18,24	18,24	4	4	18
CAPSTONE	12BA	12	12BA	12BA	12	12BA	12BA	12BA	12	12BA	12BA	12	12	12BA	12BA	12BA	12	12	12BA
CARNIVORE/CLEANSWEEP M*	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4	0	0	*
CHAPARRAL	BA	12	12	BA	12	BA	BA	BA	12	BA	BA	BA	12	BA	BA	BA	12	12	BA
CHARGER MAX/CHARGER BASIC*	4	4.5	0	9	0	0	0	0	4.5	0	0	NCS	*	0	*	*	4.5	4.5	*
CHARGER MAX ATZ/CHARGER MAX ATZ LITE*	2CS	2CS	2CS	2CS	0	NCS	2CS	2CS	2CS	NCS	2CS	2CS	*	NCS	2CS	2CS	2CS	NCS	2CS
CIMARRON MAX/CIMARRON PLUS*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CLASSIC*	9,12	3	18	9,12	7,9	8,9	9	18	3	6	30	9,15	9,15	0	30	9,18	3	3	30
CLEANSE*	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	*
CLEANSWEEP D*	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3	0	0	*
CLEARPATH*	10	10	40	40	10	18	10	26	18	10	26	0,18	10	10	40	10	10	10	40
CLINCHER SF	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3
CLOAK EX (midwest)*	9,12	3	18	12	9	9	9	18	3	8,15	30	10,15	9,12	0	30	18	3	3	30
CLOAK EX (southern)*	9	3	18	9	8	8	9	18	3	6	30	9,18	9	0	30	18	3	3	30
COBRA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COMMAND 3ME*	12,16	16	16	16	9	0	9	16	16	9	9	0	9	0	9	16	12	12	16
COMPACT 6X	2.5	2.5	2.5	2.5	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
CONFIDENCE*	9	NCS	2CS	9	0	2CS	NCS	2CS	NCS	2CS	NCS	2CS	NCS	NCS	NCS	NCS	4	4	*
CONFIDENCE XTRA/ CONFIDENCE 5.6L	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	NCS	NCS10	2CS	2CS	2CS	2CS	2CS
CORNERSTONE BRANDS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CORVUS*	17,24	4,9	17,24	17,24	5	17,24	17,24	17,24	17,24	17,24	17,24	17,24	9,17	9	17	17,24	4,9	4,9	*
COTORAN 4L	6	6	6	6	6	0	6	6	6	6	6	6	6	6	6	6	6	6	6
CREDIT XTREME	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CREW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRUSHER*	18	3,9	10,18	10,18	0	1,10	10	10	3,9	1.5,18	1	10,18	10,18	0,10	10,18	10	3,9	3,9	*
CURTAIL*	10.5,18	1	5	18BA	1	18BA	10.5,18	5	1	18BA	18	10.5,18	10.5,18	10.5,18	5	10.5,18	1	1	*
CURTAIL M*	10.5	1	10.5	18	1	18	10.5,18	12	1	18	18	18	10.5,18	10.5,18	5	10.5,18	1	1	*
DACTHAL W-75/DACTHAL FLOWABLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DAZE 4SC	2	0.5	0	2	0.5	0	0	0	0.5	2	0	0	0.5	2	4	0	0.5	0.5	0
DEGREE XTRA*	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	NCS	NCS	2CS	2CS	2CS	2CS	2CS
DEVRINOL DF-XT*	12	6	12	12	12	12	12	12	6	12	12	6	12	12	12	12	6	6	*
DIFLEXX*	4,6	3,6	4,6	4,6	0,3	2,4	4,6	4,6	3,6	4,6	4,6	4,6	2,4	2	4,6	4,6	3,6	3,6	*
DIFLEXX DUO*	10	4	10	18BA	0	10	10,18BA	18BA	4	11	10	10	18BA	8	19,10	10	4	4	*
DIMETRIC CHARGED*	5,18	4	18	18	4	18	18	18	18	18	12	12	18	4	18	18	4,9	4,9	*
DIMETRIC EXT/DIMETRIC LIQUID*	4	4,8	18	18	4	18	18	18	18	18	12	12	18	4	18	18	4,8	4,8	*

See notes and footnotes at end of table.

HERBICIDE ROTATIONAL RESTRICTIONS *continued*

Months

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HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
DIQUAT 2L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DISCOVER NG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
DISTINCT*	1,4	1,4	4	4	0.23	1,4	4	4	1,4	4	4	1,4	1,4	1,4	4	4	1,4	1,4	4
DIREX 4L*	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	12,24	*
DUAL II MAGNUM/DUAL MAGNUM*	4	4.5	12	9	12	12	12	12	4.5	12	29	NCS	12	12	12	12	4.5	4.5	*
DUET	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4
DURACOR	BA	12	BA	BA	12	BA	BA	BA	12	BA	BA	12	BA	BA	BA	BA	12	12	BA
ELEVORE*	9	0.5	0.5	9	0.5	1	9	9	0.5	9	15	0.5	0.5	0.5	15	0.5	0.5	0.5	*
ENLIST ONE/DUO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLITE*	10,12	4	18	12	9	9	9	18	12	6,15	30	9,15	9	0	30	9,18	4	4	*
ENVERSA	4	NS	2CS	4	0	0	NS	2CS	NS	0	NS	NS	0	0	*	NS	4	4	*
ENVIVE*	10,12	4	18,30	12,18	10	10,18	12	18	18,30	6,15	18,30	9,10	10	0	18,30	18	4	4	*
ENVOKE*	18	18	18	18	*	*	18	18	18	*	12	*	*	*	18	18	18	3	18
EVEREST 3.0*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EVERPREX*	4	4.5	12	9	12	12	12	12	4.5	12	29	NCS	12	12	12	12	4.5	4.5	*
EVIK DF	11	3	11	11	11	11	11	3	3	11	10	11	11	11	11	11	3	3	11
EXPRESS	1.5	0	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	1.5	0	0	1.5
FACET L*	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	0	10.3	10.3	10.3	10.3	10.3	10.3	10.3
FAR-GO	NCS	0	NCS	NCS	NCS	NCS	NCS	NCS	2CS	NCS	NCS	NCS	NCS	NCS	NCS	NCS	0	0	NCS
FIERCE EZ; FIERCE MTZ*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FIERCE XLT*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FINESSE CEREAL and FALLOW*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FINISH 6 PRO/TERMINATE *	4	1	4	4	4	0	4	4	1	4	4	4	4	4	4	4	1	1	4
FIRSTRATE	9	12	18 BA	18 BA	9	9	9	18	9	9	18	9	9	0	30 BA	30 BA	4	4	18 BA
FIRSTSHOT*	1.5	0	1.5	1.5	0.5	0.5	1.5	1.5	1.5	1,1.5	1.5	0	0.5	0.23	1.5	1.5	0	0	1.5
FLEXSTAR GT 3.5*	18	4	18	18	10	0	0	18	4	10	0	10	10,18	0	18	12	4	4	18
FOLEX 6 EC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FRAMEWORK 3.3 EC*	NCS	4	NCS	NCS	NCS	0	0	NCS	NCS	0	NCS	NCS	10,18	0	12	0	4	4	*
FREEFALL SC*	2	0.5	9	9	0.5	0	2	9	0.5	9	9	9	0.5	9	4	9	0.5	0.5	*
FULTIME NXT*	NCS	NCS	NCS	NCS	0	0	NCS	NCS	NCS	NCS	NCS	NCS	NCS	0	NCS	NCS	0	0	*
FUSION/FUSILADE DX/II*	0	2	0	0	2	0	0	0	2	0	0	2	2	0	0	0	2	2	*
GIN OUT	2.5	2.5	2.5	2.5	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
GINSTAR EC*	2	1	0	2	1	0	2	0	1	2	2	0	1	2	2	0	1	1	*
GLEAN XP*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
GOAL 2XL*	2	10	2	2	10	0.23	2	10	10	2	2	10	10	0.23	2,3	2	10	10	*
GOALTENDER	2	10	2	2	10	0	2	2	10	2	2	10	10	2	2	2	10	10	2
GOLDSKY24*	9,10	9,10	9,10	12,18	9,10	9,10	9,18	9,10	9,10	9,10	9,18	12,18	9,10	9,10	9,10	9,10	1	1	*
GR2*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
GRAMOXONE SL 3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRANDSTAND R	4	4	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4
GRASLAN L*/GRAZONPD3*	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	*
GRASP SC/GRASP XTRA	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3
GRAZON P+D*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

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Multiple numeric entries for a crop indicate that unique intervals depend on various factors described on the label.

HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
GRAZONNEXT HL	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
HALEX GT*	10	4.5	12	18	0	10	18	12	4.5	10	10	10	5	10	18	10	4.5	4.5	*
HARMONY EXTRA SG	1.5	0	2	1.5	0.5	0.5	1.5	1.5	0	1.5	1.5	1.5	0.5	0.25	2	1.5	0	0	1.5
HARNESS XTRA 5.6*	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	NCS	NCS	2CS	2CS	2CS	2CS	2CS
HARNESS XTRA*	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	NCS	NCS	2CS	2CS	2CS	2CS	2CS
HARNESS*	9	NCS	2CS	9	0	2CS	NCS	2CS	NCS	2CS	NCS	2CS	NCS	NCS	NCS	NCS	4	4	*
HARNESS MAX*	10	NS	18	18	0	10	18	18	NS	10	18	18	0	10	18	18	4	4	*
HERBIVORE*	9	2	15	9	1	4	9	36	2	6	9	2	2	2	21,36	18	2	2	*
HORNET*	10.5	4	26 BA	10.5	0	18	10.5	26 BA	4	18	18	10.5	12	10.5	26 BA	18	4	4	26 BA
HUSKIE/HUSKIE FX*	4	0.23	9	BA	4	BA	9	9	1	BA	9	BA	0.23	4	9	9	0.23	0.23	[23] BA
HUSKIE COMPLETE*	9	9 [2]6	9	BA	9	BA	9	9	9 [2]6	BA	18	BA	9 BA	9	9	9	3	3	BA
IMPACT*	9	3	9	18	0	9	9,18	9	3	9	9	18	9	9	9,18	9	3	3	*
IMPACTZ*	9	9	9,18	18	0	9	18	9,18	18	9	9	18	9	9	18	9	9	9	*
IMPACT CORE	9	9	18	18	0	10	18	18	9	10	10	18	9	10	18	10	4	4	18
KARMEX DF*	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	*
KERB SC*	0	12	0	0	12	3,5	3,5	0	12	0	0	12	12	0	0	0	12	12	*
KEYSTONE NXT/LA NXT*	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	NCS	NCS	2CS	2CS	2CS	2CS	2CS
KOCHIAVORE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KROVAR I DF	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
KYBER PRO *	10	11,12	18	18	.25,1	18	12	18	11,12	18	18	12	18	0	18	12	8	8	18
KYRO*	*	*	18	18	*	12	18	18	*	18	18	*	*	*	18	*	4	4	18
LAUDIS	10	4	10	18	0	10	10,18	18	4	18	10	4	10	8	10	10	4	4	18
LEADOFF*	10,18	3,9	10,18	10,18	0	1,10	10	10	3,9	1.5,18	1	10,18	10,18	0,10	10,18	10	3,9	3,9	*
LEAGUE	24	24	24	24	12	8	24	24	24	24	8	0	12	12	24	24	12	12	24
LEAGUE MVP	24	24	24	24	12	8	24	24	24	24	24	6	12	12	24	24	12	12	24
LEXAR EZ*	18	NCS	18	18	0	NCS	18	18	NCS	NCS	18	NCS	5	NCS	18	18	NCS	NCS	*
LIBERTY ULTRA	6	2.33	0	6	0	0	6	6	2.33	6	6	6	6	0	6	6	2.33	2.33	6
LIBERTY 280 SL/RELY 280	6	2.33	0	6	0	0	6	6	2.33	6	6	6	0	0	0	6	2.33	2.33	6
LINEX 4L	4	4	4	4	0	0	4	4	4	4	0	4	0	0	4	4	4	0	12
LONDAX	4	4	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4
LOYANT	3	3	3	3	3	3	3	3	3	3	3	0	3	3	3	3	3	3	3
LUMAX EZ*	18	4.5	18	18	0	NCS	18	18	NCS	NCS	18	18	5	NCS	18	18	NCS	4.5	18
MAESTRO 2EC	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1
MATRIX	4	9	18	18	0	10	10	18	9	18	0	18	18	10	18	10	9	4	18
MAULER*	4	4,8	18	18	4	18	18	18	18	4	12	12	18	4	18	18	4,8	4,8	4,18
MAVERICK*	10.5	18	18	18	0	12	18	8	18	18	18	18	10.5	10.5	18	10.5	4,6	4,6	18
MCPA AMINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
MCPA ESTER*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
METHOD 240S/METHOD 50SG	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
MILESTONE	BA	12	12	BA	12	BA	BA	BA	12	BA	BA	BA	12	BA	BA	BA	12	12	BA
MSMA 6 PLUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEXTSTEP NG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
NEWPATH	4	9.5	40 BA	40 BA	0,8.5	18	4	26	18	0	26	0,18	18	0	40 BA	18	4	4	40 BA
NORTRON SC*	6,12	6,12	6,12	6,12	6,12	6,12	6,12	6,12	6,12	6,12	6,12	6,12	6,12	6,12	0	6,12	6,12	6,12	*
NOVAGRAZ	1	3	3	1	3	3	BA	3	3	BA	BA	3	3	BA	BA	BA	3	3	3

See notes and footnotes at end of table.

HERBICIDE ROTATIONAL RESTRICTIONS *continued*

Months

** Indicates that the product label should be referenced.*

Multiple numeric entries for a crop indicate that unique intervals depend on various factors described on the label.

HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
OLYMPUS*	BA	18	22	BA	18,22	12	BA	BA	24BA	BA	22	BA	12	4,12	24BA	12	14	0	BA
OPENSIGHT	12BA	12BA	12BA	12BA	12	12BA	12BA	12BA	12	12BA	12BA	12	12	12BA	12BA	12BA	12	12	12BA
OPENSKY*	9,10	9,10	9,10	12,18	9,10	9,10	9,18	9,10	9,10	9,10	9,10	9,10	9,10	9,10	9,10	9,10	1	1	*
ORION	9	1	9	12	3	12	9	9	1	12	9	12	3	9	9	9	1	1	12
OSPREY	10	1	10	10	12	3	3	10	10	3	10	3	10	3	10	1	0.23	0.23	10
OSPREY XTRA*	10	9	10	BA	9	4BA	9	10	10	4BA	18	3BA	BA	3	10	9	3	3	3BA
OUST EXTRA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OUTLOOK*	4,6	4	4,6	6.9	6.9	4	6.9	6.9	4	6.9	6.9	6.9	6.9	6.9	6.9	6.9	4	4	6.9
OUTRIDER*	BA	22	3,22	BA	3,22	12	BA	BA	BA	BA	12	BA	22	3,22	BA	22	0	0	BA
OVERDRIVE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PANOFLEX*	1.5	0	2	1.5	0.5,0.7	0.5	1.5	1.5	0.03,0.26	1.5	1.5	0	0.5,0.7	0.2,0.5	2	1.5	0	0	1.5
PASTORA*	12	10	BA	12	12	BA	BA	BA	10	BA	BA	BA	BA	*	BA	BA	4,10	4	BA
PASTUREGARD HL	NCS	45	NCS	NCS	NCS	NCS	NCS	NCS	45	NCS	NCS	NCS	NCS	NCS	NCS	NCS	45	45	NCS
PEAK*	22	0	22,34	22	15	10	10,22	22,34	0	10	22	10	1	10,22	22	22	0	0	22
PENTIA	2.5	2.5	2.5	2.5	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PERFECTMATCH*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
PERMIT, PERMIT PLUS*	9	2	15	9	0,1,2,3	4	9	36	2	6	9	0	2	9	30,36	18	2	2	*
PERPETUO*	10	11	12	18	0	2,4	11	4,6	11	2,4	4	12,18	6,8	0	12,15	2,3	1,4	1,4	*
PERSPECTIVE*	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
PHOENIX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PINDAR GT*	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
PIX WSG	2.5	2.5	2.5	2.5	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
PIXXARO EC*	9	0	4	9	0.5	4	9	9	0.5	9	15	4	0.5	4	9	9	0	0	*
PLATEAU*	26BA	18	40BA	26BA	12,26BA	18,24	26BA	26,36BA	18	12	40BA	26,36BA	18	12	40BA	26BA	12	12	*BA
POAST*	0	1	0	0	1	0	0	0	1	0	0	1	1	0	0	0	1	1	*
POWERFLEX HL*	9	9	9	12	9	3,9	9	9	9	9	9	12	3,9	3,9	9	3,9	15	15	12
PREFIX*	18	4.5	18	18	10,12	1	0	18	4.5	10	18	10	10,18	0	18	18	4.5	4.5	18
PRE-PARE*	2CS	9	9	*	11,18	NCS	9	9	*	NCS	9	NCS	*	6,9[2]2	9	9	0,4	0	24
PRINCEP 4L/PRINCEP CALIBER 90/SIMAZINE	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS
PROWL H2O*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
PULSAR	9	0.75	9	12	5	9	9	9	0.75	12	9	12	4	9	9	9	0.75	0.75	12
PURSUIT*	4	9.5	40BA	40BA	0,8.5	18	4	26	18	0	26	40BA	18	0	40	18	4	4	40BA
PYLEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PYTHON	4	4	0,26BA	26BA	0	18	4	26BA	4	4	12	6	12	0	26BA	18	4	4	26BA
QUELEX*	9	0	5	15	3	3	9	9	3	15	15	3	3	3	9	3	0	0	*
RAVE*	24BA	4,18	4BA	24BA	4,36	4BA	4BA	4BA	6,18	4BA	4BA	4BA	4,24	4,36BA	4BA	24BA	0.4	0.4	*
REALM Q*	10,18	9	10,18	18	0	10,18	18	10	9	18	10	18	10,18	10	18	10	9	4	18
REBELEX	3	3	3	3	3	3	3	3	3	3	3	0	3	[3]	3	3	[3]	3	3
REFLEX/FLEXSTAR*	18	4	18	18	10	0	0	18	4	10	0,18	0	10,18	0	18	18	4	4	18
REGIMENT*	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	0	10.3	10.3	10.3	10.3	10.3	10.3	*
REGLONE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RELY 280	6	2.3	0	6	0	0	6	6	2.3	6	2.3	0	6	0	0	6	2.3	2.3	6
RESICORE/RESICORE REV*	10.5	10.5	18	18	0	18	18	18	10.5	18	18	10.5	10.5	10.5	18	10.5	4	4	18
RESOLVE Q*	4,18	9	10,18	10,18	5	1,18	10	10	9	10,18	0	10,18	10,18	1,10	10,18	10	9	3	*
RESOURCE	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1

See notes and footnotes at end of table.

Months

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HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
REVULIN Q	10	10	10	10	0	10	10	10	10	10	10	10	10	10	10	10	8	4	10
REZUVANT*	9	0	4	9	4	4	9	9	4	9	10	4	4	4	9	4	0	0	*
RICESTAR HT	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0
RIMFIRE MAX*	10	10	10,12	0	10,18	0	10	10	0	0	0	12	0	10	10	10	0	0	*
ROUNDUP BRANDS/HONCHO K6/RT 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RUGGED	1	1	1	1	1	1	0.6	1	1	1	1	1	1	1	1	1	1	1	1
SADDLE-UP/SPITFIRE*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SCEPTER 70 DG*	18	11,18	18,26	18	[1]0,18	18	11	18	11,18	11	18,26	NCS	11	0	40	18	3,18	3,18	*
SCOPARIA*	10	6	18	18	6	10	18	18	6	11	6	10	6	6	10,18	6	4	4	18
SCORCH*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SECTION THREE*	0	1	0	0	1	0	0	1	1	0	0	1	1	0	0	0	1	1	*
SELECT MAX	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	*
SENDERO	24	12	24	24	12	24	24	24	24	24	24	24	24	24	24	24	12	12	24
SEQUENCE	4	4.5	NCS	9	0	0	0	NCS	4.5	0	NCS	NCS	0	0	NCS	NCS	4.5	4.5	NCS
SHARPEN*	4,9	0,3	4,9	4,9	0	1.5,9	4,9	4,9	0,3	4,9	4,9	4,9	0,15	0,6	4,9	4,9	0,3	0,3	*
SIMAZINE 4L/SIMAZINE 90D*	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	2CS	*
SINATE*	9	3	9,18	18	0	9	9,18	9,18	3	9	9	3	9	9	9,18	9	3	3	*
SINBAR WDG	12	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
SONALAN 10G, SONALAN HFP*	NCS	NCS	NCS	NCS	NCS	NCS	0	NCS	NCS	0	NCS	NCS	NCS	0	2CS	0	NCS	NCS	NCS
SONIC BOOM*	12	4	24	18	4	18	12	18	18	18	12	10	18	0	24	12	4	4	18
SPARTAN 4F	12	4	24	12	10	18	0	0	12	12	12	10	10,18	0	36	0	4	4	12
SPARTAN CHARGE*	12	4	24	12	4	12,18	4	4	12	0,4	4	10	10,18	0	24BA	0	4	4	12BA
SPIRIT*	18	3	10,18	18	15	10	10,18	10,18	3	18	10,18	10	10	10,18	18,36	18,36	3	3	18
STAM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STAMPRO	4	4	4	4	4	4	4	4	4	4	4	0	4	4	4	4	4	4	4
STANCE	2.5	2.5	2.5	2.5	2.5	0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
STAPLE*	10BA	10BA	10BA	10BA	9,10	0	10BA	10BA	10BA	10	10BA	9	2CS	10	10BA	10BA	4	4	10BA
STARANE FLEX	9	0	9	12	3	12	9	9	0	12	9	12	3	9	9	9	0	0	12
STARANE ULTRA/STAREDOWN	4	0	4	4	4	4	4	4	0	4	4	4	0	429	4	4	0	0	4
STARANE NXT	4	1	4	4	1	4	4	4	1	4	4	4	1	4	4	4	1	1	4
STATUS*	1,4	1,4	4	4	0.25	1,4	4	4	1,4	4	4	1,4	1,4	1,4	4	4	1,4	1,4	4
STEADFAST Q*	10,18	4,8	10,18	10,18	0	10	10	10,18	4,8	10,18	10,18	10,18	10,18	0.5	10,18	10,18	8	4	*
STERLING BLUE/CLARIFIER/ CLARITY/DICAMBA MAX 4 (<24 oz/A)*	4	4	4	4	0,4	4	4	4	4	4	4	4	0.5,4	4	4	4	4	4	*
STINGER*	10.5	0	0	18	0	18	10.5	0	0	18	18	10.5	10.5	10.5	0	10.5	0	0	18
STOREN*	10	11	18	18	0	10	11	18	11	10	10	12	10	10	18	18	4.5	4.5	18*
STORM	3.3	1.3	3.3	3.3	3.3	3.3	3.3	3.3	1.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	1.3	1.3	3.3
STRADA PRO*	36	3	36	36	3	6	36	36	3	36	36	0	36	9	36	36	3	3	*
STRADA WG	12	3	12	12	3	6	12	12	3	12	12	0	12	6	12	12	3	3	12
STREAMLINE	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA
STRONGARM*	30BA	4	30BA	30BA	18	10	30BA	30BA	6	0	30BA	18	18	0	30BA	30BA	4	4	30BA
SUPER BOLL	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
SUPERWHAM!	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

See notes and footnotes at end of table.

HERBICIDE ROTATIONAL RESTRICTIONS *continued*

Months

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HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
SUPREMACY	4	0	4	4	1.5	4	4	4	0	4	4	4	1.5	4	4	4	0	0	4
SURESTART II/TRIPLEFLEX II/ THREESIDUAL*	NS	NS	26BA	NS	0	26BA	NS	26BA	NS	26BA	18	26BA	12	NS	26BA	18	4	4	26BA
SURMOUNT	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA
SURPASS NXT*	9	NCS	2CS	9	0	2CS	NCS	2CS	NCS	2CS	NCS	2CS	NCS	NCS	NCS	NCS	4	4	*
SURTAIN *	10	11,18 *	12,15 *	18	0	3,4,6,9 *	11	18	11,18 *	5,6,7, 8,9 *	5,6,7, 8,9 *	10,12, 18,28 *	6,10,12 *	1,2,3, 4,6 *	12,15,*	5,6,7,9 *	1,4,6,*	1,4,6 *	18
SURVEIL	10	30BA	30BA	30BA	9	9	9	30BA	9	9	18	9	9	0	30BA	30BA	3	3	30BA
SYNCHRONY XP*	9,12	3	18	9,12	7,9	8,9	8,9	18	3	6,15	30	9,15	9	0	30	9,18	3	3	30
TACOMA 1EC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TALINOR	9,12	1	9,12	18	0	10	9,12,15	9	3	10	9	10	10	10,12	15,18	9*	1	1	18
TARZEC*	9,10	9,10	9,10	15,18	9,10	9,10	9,10	9,10	9,10	9,10	15,18	15,18*	9,10	5,10	9,10	9,10	1	1	*
TEAMMATE*	9,10	9,10	9,10	12,18	9,10	9,10	9,10	9,10	9,10	9,10	9,10	15	3,10	3,10	9,10	3,10	0,15	0,15	*
TENDOVO	9	12	18	18	9	12	12	18	12	12	18	9	12	0	30	30	9	4.5	18
THISTROL*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
TOLVERA	9	0	9	15	0	9	9	9	3	9	9*	9	9	9	18	9	0	0	15
TORDON RTU*	2CS	NCS	2CS	2CS	2CS	2CS	2CS	2CS	NCS	2CS	2CS	2CS	8[5]	2CS	2CS	2CS	NCS	NCS	*
TOTAL/TOTAL SL/TOTAL TNV/ CHEETAH*	6	2.3	0	6	0	0	6	6	2.3	6	6	0	6	0	0	6	2.3	2.3	*
TOTAL 2.3*	6	2.3	0	6	0	0	6	6	2.3	6	6	6	6	0	6	6	2.3	2.3	*
TREFLAN	NCS	NCS	0	NCS	NCS	0	0	NCS	18	0	NCS	18	18	0	2CS	0	NCS	NCS	NCS
TREMOR ATZ LITE NXT/ATZ NXT*	2CS	2CS	2CS	2CS	0	2CS	2CS	2CS	2CS	2CS	2CS	2CS	NCS	NCS	2CS	2CS	2CS	2CS	2CS
TREMOR NXT*	9	NCS	2CS	9	0	2CS	NCS	2CS	NCS	2CS	NCS	2CS	NCS	NCS	NCS	NCS	4	4	*
TRIVENCE*	10	4	18,30	18	10	18	18,30	18	18	18	18,30	12*	18	4	18,30	18	4	4	*
TRIVOLT*	17,24	12	17,24	17BA	0	10,24	17,24	17,24BA	17,24BA	12,24	17,24	12,24	17,24	9,24	17,24BA	17,24	4	4	*
TRUST/TRIFLURALIN*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ULTRA BLAZER	3	1	3	3	3	3	3	3	1	0	3	0	3	0	3	3	1	1	3
UPBEET	0.5	0.5	0.5	0.5	0.75	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0.5	0.5	0.5	0.5
VALOR S; EZ/PANTHER SC/ TUSCANY SC*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
VALOR XLT*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
VARISTO*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
VARRO*	9	9	9	BA	9	BA	9	9	9	BA	18	BA	9	3	9	9	3	3	*
VIEWPOINT	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA	12BA
VIOS FX	9	9	9	BA	9	BA	9	9	9	BA	18	BA	9	4	9	9	3	3	*
VELPAR L	2CS	2CS	2CS	2CS	12[5]	2CS	2CS	2CS	2CS	2CS	12[5]	2CS	2CS	2CS	12[5]	2CS	2CS	2CS	2CS
VELPAR ALFAMAX/ALFAMAX GOLD*	*	24	24	24	12	24	24	24	24	24	12	24	24	24	12	24	24	24	24
VERDICT/TESTIFY*	NCS	NCS	NCS	NCS	0	NCS	NCS	NCS	NCS	NCS	NCS	NCS	0	0,4	NCS	NCS	NCS	4	NCS
WARRANT*	9	NCS	NCS	9	0	0	NCS	NCS	NCS	NCS	NCS	NCS	0	0	NCS	NCS	4	4	NCS
WARRANT ULTRA*	18	4	0	0	10	1	NCS	0	4	10	0	10	18	0	18	18	4	4	*
WEEDMASTER XHL	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
WELD*	10.5,18	0	4	10.5,12	2	10.5,18	10.5,18	4	0	10.5,12	18	10.5,12	10.5,12	10.5,18	4	10.5,18	0	0	*
WIDEARMATCH*	10.5,12	0	4	18	0.5	18	10.5,12	9	18	18	18	18	10.5,12	10.5,12	9	10.5,12	0	0	*
WIDEMATCH*	10.5,12	0	4	12BA	0	18	10.5,12	4	0	12BA	18	12BA	10.5,12	10.5,12	4	10.5,12	0	0	*

See notes and footnotes at end of table.

HERBICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
	Months																		
	** Indicates that the product label should be referenced.*																		
	Multiple numeric entries for a crop indicate that unique intervals depend on various factors described on the label.																		
WOLVERINE ADVANCED*	9	0.25	BA	BA	9	BA	9	9	0.25	BA	9	BA	4	4	9	9	0.25	0.25	23 BA
YUKON*	9	2	15	9	0,3	4	9	0	2	6	9	3	2	9	36	18	2	2	*
ZIDUA SC*	10	18	12,15,18*	18	0	1,2,4*	11	2,4,6,8*	11,18*	1,2,4*	1,2,3*	10,12,18,24*	18	0,4	12,15	1,2,3*	1,4,6*	1,4,6*	18
ZIDUA PRO*	10	11	12	18	0,8.5	18	11	40 BA	18	4	26	12	18	0,15	40 BA	18	4	4	40 BA
2, 4-DB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2, 4,D AMINE*	NCS	1,3	NCS	NCS	0.25,0.5	NCS	NCS	NCS	1	NCS	NCS	NCS	1	0.5,1	NCS	NCS	1	1	NCS
2, 4,D ESTER*	1,3	0.5,1	1,3	1,3	0.25,0.5	1,3	1,3	1,3	0.5,1	1,3	1,3	4	0.5,1	0.5,1	1,3	1,3	0.5,1	0.5,1	*

* See product label for more specific information. Label updates may change intervals. Variations in rates, soil pH, weather, precipitation, and tillage practices may change intervals. Intervals may depend on crop variety and genetics. Also, there may be state, regional differences and exceptions based on other factors.
** See label for applicability to seed corn, popcorn, or sweetcorn.
NCS – Next cropping season after crop in which herbicide was applied. For atrazine containing products, some are listed as NCS. However, crop injury may occur. See specific label.
NS – Next spring following application.
2CS – Second cropping season after crop in which herbicide was applied.
BA – Successful soil bioassay must be performed prior to planting.

HERBICIDE CARRYOVER AND RESIDUE TESTING

Herbicides can persist in the soil, limiting your rotation or replant options, or even cause injury to a subsequent crop. Carryover potential depends on a number of factors including: amount of herbicide applied, timing of application, herbicide characteristics, soil pH and organic matter, location within the field and more. Carryover is commonly observed on headlands due to overlaps. The following information shows the relative sensitivity of major crops to certain herbicides. The laboratories listed can help in testing in herbicide residues. The analytical tests performed by these labs are generally very accurate; however, it can be difficult to get consistent, accurate soil samples. A bioassay can be more accurate and is recommended or required on many herbicide labels.

Also, see Herbicide Properties Affecting Performance earlier in the Technical Section.

SUSCEPTIBILITY OF CERTAIN CROPS TO:

Chlorimuron: canola > alfalfa > sunflower > sorghum > corn > oat > wheat > soybean.

Clomazone: oat = wheat = alfalfa > sunflower = sorghum = corn > soybean.

Dinitroaniline: annual rye > oat > sorghum > corn > wheat > alfalfa > soybean.

Imazaquin: canola > alfalfa = corn = sunflower > sorghum > oat > wheat > soybean.

Imazethapyr: canola > sorghum > sunflower > oat > wheat > corn > alfalfa > soybean.

Triazine: ryegrass > alfalfa > oat > wheat > soybean > sorghum > corn

GENERAL GUIDELINES FOR LABORATORY ANALYSIS: SAFE LEVEL*

HERBICIDE	PARTS PER BILLION	PARTS PER MILLION	CROP
CHLORIMURON	1-2	0.001-0.002	Corn
	2-5	0.002-0.005	Wheat
CLOMAZONE	50-200	0.050-0.200	Corn
	15-100	0.015-0.100	Wheat, Alfalfa
DINITROANILINE	50-100	0.050-0.100	Sugar beet
	100-200	0.100-0.200	Corn
	200-300	0.200-0.300	Wheat
IMAZAQUIN	2-10	0.002-0.010	Corn
	10-30	0.010-0.030	Wheat
IMAZETHAPYR	10-30	0.010-0.030	Corn
	4-15	0.004-0.015	Sorghum
TRIAZINE **	150-250	0.150-0.250	Soybean
	40-100	0.04-0.100	Alfalfa
	60-150	0.06-0.150	Oat
	75-180	0.075-0.180	Wheat
	25-50	0.025-0.050	Sugar beet

*Due to differences in herbicide availability from the soil, "safe" values for herbicide residues differ according to soil type. Low-range values are for coarsely textured soils with low levels of organic matter; higher-range values are for finely textured soils with higher levels of organic matter. 1 ppm = 1,000 ppb.

** Also, see guidelines on the upper right for triazines.

Source: Univ. Illinois and NDSU.

Sampling depth has a big effect on the lab results. If the herbicide is relatively immobile, sample 0-3" or to the depth of incorporation. For mobile herbicides, it may be advisable to include a deeper sample.

TRIAZINE RESIDUE LEVEL*	"SAFE" TO PLANT	
3-inch sample (no-till)	6 inch sample (moldboard plow)	
< 0.17 ppm	< 0.08 ppm	oat, alfalfa
0.17 to 0.35 ppm	0.08 to 0.17 ppm	soybean
> 0.35 ppm	> 0.17	corn

* - Triazine residues are more active if soil pH >7.

LABORATORIES THAT TEST FOR HERBICIDE RESIDUES

The following list has just a few of the labs that can analyze for pesticide residues.

A & L Great Lakes Laboratories, Inc.
3505 Conestoga Drive, Fort Wayne, IN 46808
www.algreatlakes.com
(260) 483-4759

AgSource Laboratories
300 Speedway Circle, Lincoln, NE 68502
www.agsource.com
(402) 476-0300

Agvise Laboratories
www.agvise.com
PO Box 510, 604 Highway 15,
Northwood, ND 58267
(701) 587-6010
and
902 13th St N
Benson, MN 56215
(320) 843-4109

Columbia Food Laboratories
12423 NE Whitaker Way
Portland, OR 97230
(503) 254-1794
www.columbialaboratories.com

Environmental Micro Analysis, Inc.
460 N. East Street
Woodland, CA 95776
www.emalab.com
(530) 666-6890

Midwest Laboratories
13611 B Street, Omaha, NE 68144
www.midwestlabs.com
(402) 334-7770

Minnesota Valley Testing Laboratories, Inc.
Iowa, Minnesota, North Dakota
www.mvtl.com
(800) 782-3557

Montana State Analytical Laboratory
McCall Hall, Montana State University,
Bozeman, MT 59717
https://agr.mt.gov/Analytical-Lab
(406) 994-3383

Pacific Agricultural Laboratory
12505 N.W. Cornell Rd.
Portland, OR 97229
www.pacaglab.com
(503) 626-7943

SGS Labs at Brookings
241 34th Avenue
Brookings, SD 57006
www.sgs.com
(605) 692-7611

Soil - Plant Analysis Lab
University of Louisiana at Monroe
Chemistry and Natural Sciences Building
Room 117
Monroe, LA 71209
www.ulm.edu/spal
(318) 342-1948

South Dakota Ag Labs
1006 32nd Ave #103
Brookings, SD 57006
www.sdaglabs.com
(605) 692-7325

Ward Laboratories
4007 Cherry Ave
PO Box 783
Kearney, NE 68847
www.wardlab.com
(308) 234-2418

INSECTICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
	Days																		
	** Indicates that the product label should be referenced.*																		
ABAMEX, ABBA ULTRA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ACTARA	120	0	0	120	0	0	0	0	120	120	0	120	0	120	120	0	0	0	120
ADMIRE PRO*	365	0	0	365	0	0	365	365	30	365	365	30	0	30	0	365	0	0	*
ADVION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADVISE FOUR/NUPRID 4F MAX*	365	0	0	365	0	0	0	365	30	365	0	30	0	0	0	365	0	0	*
AGRI-MEK SC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALTACOR	30	30	365	30	30	0	30	365	30	30	0	30	30	30	0	365	30	30	365
ARCTIC 3.2 EC	0	60	60	60	0	60	60	60	60	60	0	60	60	0	60	60	60	60	60
ARENA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ASANA XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ASSAIL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVEO EZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVAUNT	0	30	30	30	30	0	30	30	30	0	30	30	30	0	30	30	30	30	30
AVUANT EVO*	0	*	*	*	0	0	0	*	*	0	0	*	*	0	*	*	*	*	*
AZTEC 4.67G/AZTEC HC	30	30	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30
BAYTHROID XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BELAY INSECTICIDE	30	0	0	30	0	0	30	0	0	365	0	30	0	0	0	365	0	0	365
BELEAF 50SG*	30	30	30	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30	*
BESIEGE*	0	0	0	365	0	0	0	365	0	0	0	0	0	0	0	0	0	0	*
BIFEN 2 AG GOLD*	*	*	0	*	0	0	0	*	*	0	0	*	*	0	*	*	*	*	*
BLACKHAWK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRACKET 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRIGADE 2EC*	30	30	0	30	0	0	0	30	30	30	0	30	30	30	30	30	30	30	*
CAPTURE LFR/TUNDRA LFC*	*	*	*	*	0	0	0	*	*	*	0	*	*	0	*	*	*	*	*
CAPTURE 3RIVE 3D*	*	*	*	*	30	*	30	*	*	*	*	*	*	30	*	*	*	*	*
CARBINE 50WG*	30	30	30	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30	*
CENTRIC 40WG	120	0	0	120	120	0	120	120	120	120	120	120	120	120	120	120	0	0	120
CERTADOR*	120	120	120	120	120	120	120	120	120	120	0	120	120	120	120	120	120	120	*
CLOSER SC	30	30	30	30	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30
COMITE/COMITE II*	61	61	61	61	61	61	61	61	61	61	183	61	61	61	183	61	61	61	*
CONFIRM 2F*	30	30	0	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30	*
CORAGEN/VANTACOR*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*
CORONET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COUNTER 20G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DANITOL 2.4 EC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DELEGATE*	30	0	30	30	0	0	0	30	0	0	30	30	30	0	0	30	0	0	*
DELTA GOLD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DENIM 0.16S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DIBROM 8E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DIMATE 4E/DIMETHOATE 4EC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DIMILIN*	30	30	30	30	30	0	30	30	30	30	30	0	30	0	30	30	30	30	*
DIPEL ES or DF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DURIVO*	30	*	365	365	365	0	30	365	365	30	0	365	30	30	365	365	30	30	*
ELEVEST*	30	30	0	365	0	0	0	30	30	0	0	30	30	0	30	30	30	30	*
ENDIGO ZCX*	0	0	0	0	0	0	0	0	120	0	0	0	0	0	120	0	0	0	*
ETHOS ELITE LFR ‡ *	*	*	*	*	0	0	0	*	*	*	0	*	*	*	*	*	*	*	*
ETHOS XB*	*	*	*	*	0	0	0	*	*	*	0	*	*	*	*	*	*	*	*

See notes and footnotes at the end of the table.

INSECTICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
	Days																		
	** Indicates that the product label should be referenced.*																		
ETHOS 3D*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EXIREL	30	30	30	30	30	0	30	30	30	30	30	365	30	30	30	365	30	30	365
FASTAC CS*	0	0	30	30	0	0	0	30	0	30	0	0	0	0	0	30	0	0	*
FERENCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FORCE 6.5G/FORCE 10G HL/FORCE EVO	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
FULFILL	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
GRIZZLY TOO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HERO*	30	30	0	30	0	0	0	30	30	30	0	0	0	0	0	30	0	0	*
IMIDAN 70-W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INDEX	30	30	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30
INTREPID 2F*	7	7	7	7	0	0	7	7	7	7	7	7	7	7	7	7	7	7	*
INTREPID EDGE	30	30	30	30	30	0	30	30	30	0	30	30	30	0	30	30	30	30	30
INTRUDER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LAMBDA-CY AG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LANNATE LV, LANNATE SP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEVERAGE 360*	365	0	0	365	0	0	0	365	30	0	0	30	0	0	0	0	0	0	*
MALATHION 5, 5EC or 8 FLOWABLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MATCHPOINT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MINECTO PRO*	30	30	0	30	0	0	0	0	30	0	0	30	30	0	30	0	30	30	*
MOVENTO*	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	*
MUSTANG*	0	30	0	30	0	0	0	30	30	0	30	0	0	0	0	0	0	0	*
MUSTANG MAXX*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*
NEALTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEEMIX 4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NURIZMA*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*
OBERON 2 SC, OBERON 4 SC	30	30	365	365	0	0	365	365	30	365	0	365	365	365	30	365	30	30	365
OMITE-6E*	61	0	61	61	61	61	61	61	61	0	0	61	61	61	0	61	61	61	*
ONAGER*	0	120	120	120	0	0	0	120	120	120	0	120	0	120	0	120	0	0	*
ORTHENE 97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLATINUM 75 SG	120	0	0	120	0	0	0	0	120	120	0	120	0	0	120	0	0	0	120
PYGANIC EC 1.4$_{II}$/PYGANIC EC 5.0$_{II}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RADIANT*	30	0	30	30	0	0	0	30	0	0	0	30	30	0	0	30	0	0	*
REGENT 4 SC*	365	365	365	365	365	365	365	365	365	365	365	365	365	365	150	365	365	365	*
RENESTRA*	30	30	30	30	30	0	30	30	30	30	0	30	30	0	30	30	30	30	*
REQUIEM EC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIDGEBACK*	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	*
SALIBRO*	14	14	14	14	14	14	14	14	14	14	0	14	14	14	*	14	14	14	365
SEFINA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SENSTAR*	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	*
SEQUOIA	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
SIVANTO PRIME/SIVANTO 200 SL	0	0	365	0	0	0	0	365	0	0	0	365	0	0	14	365	0	0	365
SMARTCHOICE HC	30	30	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30
STEWARD EC*	0	30	30	30	30	0	30	30	30	0	0	30	30	0	30	30	30	30	*
TRANSFORM WG*	0	0	0	30	0	0	0	0	0	30	0	0	0	0	0	0	0	0	*
TRIGARD 75WP*	300	300	300	300	300	30	300	300	300	300	0	300	300	300	300	300	300	300	*
TRILOGY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TUNDRA EC*	*	*	0	*	0	0	0	*	*	0	0	*	*	0	*	*	*	*	*
ULTOR*	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	*

See notes and footnotes at the end of the table.

INSECTICIDE	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
	Days																		
	** Indicates that the product label should be referenced.*																		
VELUM PRIME/VELUM ONE	Nematicide-Fungicide: See Fungicide and Seed Treatment Rotational Restrictions																		
VELUM RISE	Nematicide-Fungicide: See Fungicide and Seed Treatment Rotational Restrictions																		
VENOM*	120	120	120	120	120	0	120	120	120	120	0	120	120	120	120	120	120	120	*
VERIMARK	30	30	30	30	30	0	30	30	30	30	30	365	30	30	30	365	30	30	365
VERSYS	30	30	30	30	30	0	30	30	30	30	0	30	30	0	0	30	30	30	30
VOLIAM FLEXI*	0	*	365	365	0	0	0	365	120	0	0	0	30	30	365	365	30	30	*
VYDATE L*	120	120	120	120	120	0	120	120	120	0	0	120	120	120	120	120	120	120	*
WARRIOR II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XENTARI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XPEDIENT PLUS V*	*	*	*	*	0	*	0	*	*	*	0	*	0	*	*	*	*	*	*
XXPIRE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZEAL SC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

* See product label for more specific information. Label updates may change intervals. Variations in rates, soil pH, weather, precipitation, and tillage practices may change intervals. Intervals may depend on crop variety and genetics. Also, there may be state, regional differences and exceptions based on other factors.

** See label for applicability to seed corn, popcorn, or sweetcorn.

FUNGICIDE AND SEED TREATMENT ROTATIONAL RESTRICTIONS

Days

** Indicates that the product label should be referenced.*

Multiple numeric entries for a crop indicate that unique intervals depend on various factors described on the label.

PRODUCT	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
ABOUND*	45	0	45	45	45	45	45	45	0	0	45	0	45	0	0	45	0	0	*
ABSOLUTE 500 SC/ABSOLUTE MAXX	120	0	120	120	0	0	120	120	120	0	120	120	120	0	120	120	0	0	120
ACTIGARD 50WG*	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	*
ACTIOVATE AG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADASTRIO*	365	0	*	*	0	365	*	*	*	365	*	365	0	365	0	*	0	0	*
AERIS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AFFIANCE	120	45	120	120	0	120	120	120	45	0	120	45	45	0	0	120	45	45	120
AGRI-FLEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALIETTE WDG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALLEGIANCE-FL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALTIPRO	30	30	30	30	0	30	0	0	30	0	30	30	30	0	0	30	0	0	30
ALTO	270	180	270	270	0	270	270	270	180	270	270	180	180	0	270	270	0	0	270
AMISTAR TOP*	60	30	60	60	60	0	0	60	30	60	0	0	60	0	0	60	30	30	*
APROACH	180	0	0	180	0	180	0	180	0	180	180	0	0	0	180	180	0	0	180
APROACH PRIMA	180	180	270	270	0	180	270	270	180	270	270	180	270	0	270	270	0	0	270
APRON TL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APRON XL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APRON XL 350ES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APRONMAXX RFC; RTA; RTA + MOLY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APROVIA TOP	180	30	0	180	60	0	0	180	30	60	0	180	180	0	180	180	30	30	180
AVICTA 500FS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVICTA COMPLETE BEANS 500	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120
AVICTA COMPLETE CORN 250*	0	0	30	120	0	30	0,30	30	0	120	120	30	30	0	30	120	0	0	*
AVICTA DUO 250 CORN*	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*
AVICTA DUO CORN/COTTON*	120	0	0	120	0	0	120	0	120	120	0	120	0	120	120	0	0	0	*
AVODIGEN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BADGE SC, BADGE X2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BASICOP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BEXFOND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BIO-TAM 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BION 500FS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BLOCKER 10G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BRAVO ULTREX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CABRIO EG*	14	0	14	14	14	14	0	14	14	0	0	14	14	14	14	14	0	0	*
CANNONBALL WG*	30	30	30	30	30	30	0	30	30	30	0	30	30	30	30	30	30	30	*
CAPTAN 4L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COMPASS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONCERT II	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONTANS WG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COPPER HYDROXIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CORONET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRUISER 5FS*	120	0	0	120	0	0	0	0	120	120	0	120	0	0	120	0	0	0	*
CRUISER 70WS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRUISERMAXX*	0	0	0	120	0	0	0	0	120	0	120	0	0	0	120	0	0	0	*
CRUISERMAXX APX*	30	30	30	120	0	30	30	30	30	120	30	30	120	0	30	30	30	30	*
CRUISERMAXX CEREALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRUISERMAXX PEANUTS*	0	0	0	120	0	0	120	120	0	0	0	0	0	0	120	0	0	0	*
CRUISERMAXX POTATO EXTREME	240	30		240	30	0		240	30	240	0	30	30	0	0	240	30	30	240
CRUISERMAXX RICE	120	0	0	120	0	0	120	0	120	120	120	0	0	120	120	0	0	0	*

See notes and footnotes at end of table.

continued

PRODUCT	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
	Days																		
** Indicates that the product label should be referenced.*																			
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CRUISERMAXX VIBRANCE*	30	0	0	120	0	0	0	0	0	30	0	30	0	0	0	30	0	0	*
CRUISERMAXX VIBRANCE CEREALS*	30	0	0	120	0,30	0	30	30	0	120	0	30	30	0	0	30	0	0	*
CRUISERMAXX VIBRANCE POTATO*	0	0	0	60	60	0	0	0	0	0	360	60	60	0	0	60	0	0	*
CRUISERMAXX VIBRANCE PULSES*	30	0	30	120	0	30	0	30	0	30	30	30	30	0	30	120	0	0	*
CUPROFIX ULTRA 40 DISPERSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CURZATE 60 DF*	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	*
DACONIL ULTREX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DELARO 325 SC*	*	*	*	*	0	*	*	*	*	*	*	*	*	0	0	*	*	*	*
DELARO COMPLETE*	14	0	30	0	0	0	0	0	0	0	30	0	30	30	30	30	0	0	*
DERMACOR X-100*	365	365	365	365	0	0	0	365	365	0	0	0	365	30	365	365	365	365	*
DITHANE F-45 RAINSHIELD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DIVIDEND EXTREME*	30	0	0	30	30	0	0	30	0	30	0	30	30	0	0	30	0	0	*
DOMARK 230 ME	120	45	120	120	120	120	120	120	45	0	120	45	120	0	0	120	45	45	120
DYNASTY	45	0	45	45	0	45	0	45	45	45	45	0	45	45	45	0	0	0	45
DYNASTY CST or PD*	365	365	0	365	0	0	0	0	365	0	365	365	365	0	36	0	365	365	*
ELATUS	180	0	0	180	0	0	0	180	0	0	0	180	360	0	180	180	0	0	180
ELITE*	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	*
ELUMIN*	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	*
EMINENT VP*	120	45,120	120	120	0	120	120	120	45,120	120	120	45,120	120	0	0	120	45,120	45,120	*
ENABLE 2F	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	355
ENDURA*	14	14	0	14	14	14	0	14	14	0	0	14	14	14	14	14	14	14	*
ETHOS XB*	*	*	*	*	0	*	0	*	*	*	0	*	*	0	*	*	*	*	*
ETHOS 3D*	*	*	*	*	0	*	0	*	*	*	*	*	*	0	*	*	*	*	*
EVERGOL ENERGY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVITO 480 SC	30	30	365	365	30	30	30	365	30	0	0	30	30	30	30	365	30	30	365
EVITO T*	120	120	365	365	0	120	120	365	120	0	365	120	120	0	120	365	120	120	*
EXCALIA*	270	270	270	270	0	270	270	270	270	0	270	0	270	0	0	270	270	270	*
FLINT*	30	30	30	30	30	30	30	30	30	30	0	0	30	30	0	30	0	0	*
FLINT EXTRA	30	30	30	30	30	30	30	30	30	30	0	0	30	30	0	30	30	30	30
FONTELIS	0	0	0	120	0	0	0	120	0	0	0	120	120	0	0	0	0	0	120
FORCIVO	365	0	*	*	0	365	*	*	*	365	*	365	0	0	365	*	0	0	*
FORTENZA*	30	30	0	30	0	0	0	0	0	0	0	30	30	0	30	0	30	30	*
FORUM*	90	30	90	90	30	90	*	90	30	90	0	30	30	90	30	90	30	30	90
GAUCHO 600; XT/SENATOR 600 FS	365	0	0	365	30	0	30	365	30	365	0	30	0	30	365	0	365	0	365
GAVEL 75DF	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	30
GRADUATE/A+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEADLINE/HEADLINE SC*	14	0	14	14	0	14	0	14	14	0	0	14	14	0	0	0	0	0	*
HEADLINE AMP	120	0	0	120	0	0	0	120	0	0	120	120	0	0	0	0	0	0	120
HELIX VIBRANCE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HELIX XTRA	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
ILEVO*	14	210	30	0	210	0	0	0	210	0	0	0	0	210	0	0	210	210	*
INDAR 2F*	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	35,210	*
INSPIRE SUPER*	240	30	0	240	240	30	240	240	240	240	30	240	240	30	30	240	30	30	*
INSPIRE XT*	240	0	105	240	240	105	240	240	240	240	105	240	240	0	0	240	0	0	*
INTEGO SUITE SOYBEAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KOCIDE 3000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LEXICON INTRINSIC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LUCENTO	365	365	365	365	0	365	365	365	365	0	365	365	365	0	0	365	0	0	365
LUMIDERM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LUMISENA®	180	0,30	0	180	0,30	0	180	0	0,30	180	0	0,30	180	180	180	0	0,30	0,30	*
LUNA EXPERIENCE®	120	*	*	*	*	14	120	*	*	*	*	*	*	*	120	*	*	*	*
LUNA* FLEX	60	30	*	*	60	0	60	*	30	60	0	*	*	0	60	60	30	30	*

See notes and footnotes at end of table.

FUNGICIDE AND SEED TREATMENT ROTATIONAL RESTRICTIONS

continued

PRODUCT	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
	Days																		
** Indicates that the product label should be referenced.*																			
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LUNA SENSATION*	30	305	305	*	*	30	30	*	305	*	*	*	*	*	30	*	305	305	*
LUNA TRANQUILITY*	30	305	305	*	*	30	30	*	305	30	0	*	*	*	30	*	305	305	*
MANKOCIDE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MANCOZEB/PENCOZEB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MANZATE MAX/MANZATE PRO-STICK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAXIM 4FS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAXIM QUATTRO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAXIM XL/MAXIM 4FS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
METTLE 125 ME*	15,120	15,40	15,120	15,120	0	15,120	15,120	15,120	15,40	0	15,120	15,40	15,120	0	0	15,120	15,40	15,40	*
MENTOR*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*
MERIVON	0	0	0	365	0	0	0	0	0	0	0	14	0	0	0	0	0	0	365
MERTECT 340F*	0	0	30	0	0	30	0	30	0	30	0	30	30	0	30	30	0	0	*
MICROTHIOL DISPERSS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MINUET	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MIRAVIS*	365	0	0	365	0	365	0	365	0	0	0	365	0	0	0	0	0	0	*
MIRAVIS ACE*	75	0	0	0	0	365	0	365	0	0	105	30	0	0	30	365	0	0	*
MIRAVIS NEO*	75	0	0	0	0	105	0	105	0	0	105	30	0	0	0	105	0	0	*
MIRAVIS PRIME*	365	30	30	365	30	30	0	30	30	30	0	365	30	30	30	30	30	30	*
MIRAVIS TOP*	365	30	0	365	60	0	0	365	30	60	0	365	60	0	30	60	30	30	*
MONCUT	365	150	0	240	240	240	365	365	150	0	0	0	240	0	365	365	30	30	365
MURAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEXICOR*	75	0	0	365	0	105	0	0	0	0	105	14	0	0	0	105	0	0	*
NIPSIT INSIDE*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
NIPSIT SUITE CEREALS OF*	240	0	0	240	0	0	30	30	0	240	0	30	240	0	240	240	0	0	*
OBVIUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OBVIUS PLUS*	*	*	*	*	*	*	*	*	*	*	*	*	*	0	*	*	*	*	*
OMEGA 500F*	70	70	70	70	70	70	70	70	70	0	0	70	70	70	30	70	70	70	*
OMEGA TOP MP	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	30
ONSET 3.6L	120	0	120	120	0	0	0	120	120	0	120	120	120	0	120	0	0	0	120
ORONDIS*	180	30	0	180	180	180	180	0	30	180	0	30	180	180	180	0	30	30	*
ORONDIS GOLD*	365	30	365	365	30	365	180	365	30	180	0	30	30	180	365	0	30	30	*
ORONDIS GOLD 200	180	30	0	180	30	0	180	30	30	180	0	30	30	180	180	0	30	30	180
ORONDIS GOLD B*	365	14	365	0	0	365	365	365	14	365	365	14	14	365	365	365	14	14	*
ORONDIS OPTI*	180	30	0	180	30	180	180	0	30	180	0	30	30	180	0	0	30	30	*
ORONDIS ULTRA*	180	30	0	180	30	0	180	0	30	180	0	30	180	180	180	30	30	30	*
PENNCOZEB 75DF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCNB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PH-D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENARIS 200FS/LUMISENA*	0	30	0	30	30	180	180	0	30	180	0	30	30	180	180	0,30	30	30	*
PONCHO BETA*	*	30	0	*	0	0	30	*	30	*	*	30	0	30	*	*	30	30	*
PONCHO VOTIVO*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
PRAIZ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRESIDIO*	54	54	54	54	54	54	54	54	54	54	0	54	54	54	0	54	30	30	*
PREVICUR FLEX*	120	120	120	120	120	120	120	120	120	120	0	120	120	120	30	120	120	120	*
PREVISTO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRIAXOR/EVERLON	365	0	0	365	0	0	0	0	0	0	0	14	0	0	0	0	0	0	365
PROCURE*	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	*
PROCURE 480SC*	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	*
PROLINE 480SC	30	0	0	30	30	30	0	30	30	0	30	30	30	30	30	30	0	0	30
PROPULSE*	30	30	30	NCS	NCS	30	0	NCS	30	0	30	NCS	NCS	30	0	NCS	30	30	*
PROSARO 421 SC	120	0	120	120	120	120	120	120	120	120	120	120	120	120	120	120	0	0	120
PROSARO PRO 400 SC*	120	0	120	*	0	120	0	*	120	0	120	120	*	0	120	120	0	0	*
PROSPER EVERGOL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROTEGAM YLD	30	0	30	30	0	30	30	30	30	0	30	30	30	0	0	30	0	0	30
PROVOST SILVER*	120	120	120	120	120	120	0	120	120	0	120	120	120	0	120	120	120	120	*
PROVYSOL*	*	0	0	*	0	*	0	*	0	0	0	*	0	0	0	*	0	0	*

See notes and footnotes at end of table.

PRODUCT	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
	Days																		
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QUADRIS OPTI*	45	45	45	45	45	45	0	45	45	45	0	45	45	45	45	45	45	45	*
QUADRIS RIDOMIL GOLD SL*	365	14	365	365	270	0	365	365	14	0	0	14	365	0	0	365	14	14	*
QUADRIS TOP/QUADRIS TOP SBX*	60	30	60	60	60	0	60	60	30	60	0	0	60	0	0	60	30	30	*
QUASH*	120	0	120	120	120	120	120	120	0	0	120	120	120	0	0	120	0	0	*
QUILT XCEL/AFRAME PLUS	75	0	105	105	0	105	105	105	0	0	105	0	0	0	0	105	0	0	105
RALLY 40WSP*	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	*
RANCONA CREST*	12	0	0	12	0	0	0	12	0	12	0	12	0	0	0	12	0	0	*
RANCONA PINNACLE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RANCONA SUMMIT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RANMAN	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	30
RAXIL PRO MD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RAXIL PRO SHIELD*	365	0	0	365	0	0	0	0	0	365	0	30	0	0	0	0	0	0	*
RESONATE 480 ST*	365	30	0	365	0	0	0	0	0	365	0	30	0	0	0	0	0	0	*
REVUS*	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	*
REVUS TOP	60	30	60	60	60	60	60	60	30	60	0	60	60	30	30	60	30	30	60
REVYTEK*	*	0	0	*	0	*	0	*	0	0	0	*	0	0	0	*	0	0	*
RHYME*	*	*	*	*	5	5	*	*	*	5	*	*	5	5	5	*	5	5	*
RIDOMIL GOLD BRAVO SC*	0	40	365	365	0	0	0	365	40	0	0	40	365	0	0	365	40	40	*
RIDOMIL GOLD COPPER*	0	40	365	365	0	0,365	0	365	40	0	0	40	365	0	0	365	40	40	*
RIDOMIL GOLD GR*	0	360	360	360	0	0	0	360	360	0	0	360	360	0	0	360	360	360	*
RIDOMIL GOLD MZ WG*	0	40	365	365	0	0	0	365	40	0	0	40	365	0	0	365	40	40	*
RIDOMIL GOLD SL*	0	14	365	0	14	0,365	365	0,365	14	0	0	14	365	0	0	0	14	14	*
RIVAL FL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIZOLEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROVRAL 4F*	*	*	*	*	*	0	0	*	*	0	0	0	*	*	*	*	*	*	*
RUSTEASE	270	180	270	270	0	270	270	270	180	270	270	180	180	0	270	270	0	0	270
SALTRO*	365	0	0	365	0	0	0	365	0	0	0	365	0	0	0	0	0	0	*
SCALA SC	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	30
SCHOLAR SC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEPRESTO*	365	0	0	365	0	0	30	365	0	365	0	365	0	30	0	365	0	0	*
SERENADE ASO/SERENADE OPTI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SERIFEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPHAEREX*	120	0	0	120	0	0	0	120	0	0	30	120	30	0	0	30	0	0	*
STAMINA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STAMINA F4 CEREALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STRATEGO YLD	30	0	30	30	0	30	30	30	30	0	30	30	30	0	0	30	0	0	30
SUBDUE GR/SUBDUE MAXX	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365	365
SWITCH 62.5 WG	30	30	30	30	30	30	0	30	30	30	30	30	30	30	30	30	30	30	30
SYSTIVA XS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAEGRO 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAOS	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	30
TARTAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TERAXXA/TERAXXA F4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TESARIS*	0	0	0	0	0	365	0	0	0	0	0	0	0	0	0	0	0	0	365
TETRABAN*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*
TOPAZ/TILT*	75,105	0	105	105	0	105	105	105	0	0	105	0	105	0	105	105	0	0	*
TOPGUARD*	*	*	*	*	0	0	*	*	*	0	*	*	0	0	0	*	0	0	*
TOPGUARD EQ*	*	*	*	*	0	0	*	*	*	1	*	*	0	0	0	*	0	0	*
TOP MP*	60	30	0	60	60	0	0	60	60	60	0	0	60	0	0	60	30	30	*
TOPSIN M WSB/TOPSIN 4.5FL*	30	30	30	30	30	30	0	30	30	0	0	30	30	0	0	30	0	30	*
TORIO*	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	*
TREBUSET*	30	0	0	30	0	0	0	365	0	0	0	30	0	*	0	0	0	0	*
TRIVAPRO*	180	0	0	180	0	105	0	180	0	0	105	180	180	0	180	180	0	0	*
TRUNEMCO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNIFORM	365	14	365	365	0	0	0	365	14	0	0	14	14	0	0	365	14	14	365
VANGARD WG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

See notes and footnotes at end of table.

FUNGICIDE AND SEED TREATMENT ROTATIONAL RESTRICTIONS

continued

Days

** Indicates that the product label should be referenced.*

Multiple numeric entries for a crop indicate that unique intervals depend on various factors described on the label.

PRODUCT	ALFALFA	BARLEY	CANOLA	CLOVER	CORN, FIELD **	COTTON	FIELD (DRY) BEAN	FLAX	OAT	PEANUT	POTATO	RICE	SORGHUM	SOYBEAN	SUGARBEET	SUNFLOWER	WHEAT, SPRING	WHEAT, WINTER	OTHER
VAULT IP/VAULT IP PLUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VAYANTIS	30	30	30	30	0	30	30	30	30	30	30	30	30	0	30	30	30	30	30
VELISTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VELTYMA*	*	0	0	*	0	*	0	*	0	0	0	*	0	0	0	*	0	0	*
VELUM PRIME*/VELUM ONE *	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*
VELUM RISE	14	0	*	*	*	0	0	*	0	14	0	*	*	0	0	0	0	0	*
VIATUDE	180	180	0	180	180	180	180	180	180	180	180	180	180	0	180	180	180	180	180
VIBRANCE*	30,60	0	0	30,60	0	0	0	30,60	0	0	30,60	30	0	0	0	30	0	0	*
VIBRANCE CINCO*	30	0	30	30	0	30	0	30	0	30	30	30	30	0	30	30	0	0	*
VIBRANCE CST*	30	0	0	30	0	0	0	0	0	30	0	30	0	0	0	30	0	0	*
VIBRANCE EXTREME	30	0	0	30	30	30	30	30	0	30	30	30	30	0	30	30	0	0	30
VIBRANCE MAXX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIBRANCE MAXX PULSES RTA*	30	0	30	30	0	30	0	30	30	30	30	30	30	0	30	30	30	30	*
VIBRANCE RST*	30	0	0	30	0	0	0	30	30	0	0	0	30	0	0	30	30	30	*
VIBRANCE TRIO	30	0	0	30	0	0	0	30	0	30	0	30	30	0	0	30	0	0	30
VIBRANCE ULTRA POTATO	60	60	30	60	30	30	30	60	60	60	60,365	60	60	30	30	60	60	60	60
VORTEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WARDEN CEREALS II	30	0	0	30	30	30	30	30	0	30	30	30	30	0	30	30	0	0	30
WARDEN CEREALS HR*	365	0	0	365	0	0	0	365	0	365	0	365	0	0	0	365	0	0	*
WARDEN CEREALS WRII*	30	0	0	120	0,30	30	30	30	0	30	30	30	120	0	30	30	0	0	*
WARDEN CX II*	30	30	30	120	0	30	120	120	30	30	120	120	30	0	120	30	30	30	*
WARDEN RTA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
XYWAY 3D/XYWAY LFR*	0	0	*	*	0	0	*	*	*	0	*	0	0	0	0	*	0	0	*
XZEMPLAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZAMPRO	90	30	90	90	30	90	90	90	30	90	0	30	30	90	90	90	30	30	90
ZELTERA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZING!	30	30	30	30	30	30	30	30	30	30	0	30	30	30	30	30	30	30	30
ZIRONAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ZORINA	0	14	0	14	14	0	0	0	0	0	0	0	*	0	14	14	14	0	*

* See label.

** See label for applicability to seed corn, popcorn, or sweetcorn.

NCS - Next Cropping Season.

GENERAL CONVERSIONS

http://www.smartconversion.com

LINEAR

1 mile = 1760 yd = 5280 ft = 1.61 km
1 yard = 3 ft = 0.9144 m
1 foot = 12 in = 30.48 cm
1 cm = 0.3937 in
1 km = 0.6124 mi
1 meter = 100 cm = 3.281 ft = 39.937 in = 1.094 yd
1 rod = 16.5 ft
40 rods = 1 furlong

AREA

1 square mile = 640 acres
1 square acre = 4840 sq yd = 43,560 sq ft = 0.45 hectare
1 square inch = 6.45 sq cm2
1 square yard = 9 sq ft = 0.914 sq m
1 hectare = 2.471 acres

VOLUME

Vertical round tank = 3.1416 x radius2 x height = cubic feet
Volume (cu ft) x 7.4805 = gallons
Cylinder = 3.1416 x radius2 x height
Sphere = diameter3 x 0.5236
Cone = area of base x 0.33(height)
1 bushel = 4 pecks = 32 qt (dry) = 1.25 cu ft
1 cord (wood) = 128 cu ft = 4′ x 4′ x 8′
1 cubic yd = 27 cu ft
1 cubic ft = 1,728 cu in = 7.48 gal or 0.8 bu
1 gallon = 0.1337 cu ft = 231 cu in

LIQUID OR FLUID VOLUME

1 Teaspoon = 1/6 fluid ounce (oz) ≈ 0.17 fl oz ≈ 5 cc
3 Teaspoons (level) = 1 tablespoon = 0.5 fl oz ≈ 15 ml
1 Tablespoon = 3 tsp = 0.5 fl oz ≈ 15 cubic centimeters
2 Tablespoons = 1 fluid ounce
1 fluid ounce = 1/8 cup = 29.57 cc
8 Fluid ounces = 1 cup
16 Fluid ounces = 2 cups = 1 pint
32 Fluid ounces = 2 pints = 1 quart
128 fluid ounces = 1 gal
1 cup = 16 tablespoons = 8 fl oz = 0.5 pt
1 Pint = 2 cups = 16 oz
2 Pints = 1 qt
1 Quart = 32 oz = 0.9463 L
4 Quarts = 1 gal
1 Gallon = 128 fl oz = 3.785 L =3785 ml
1 Liter = 1.057 qt
1 Cubic Foot = 7.48 Gallons

WEIGHT

1 ounce = 28.35 g
1 pound = 16 oz = 453.6 g = 0.454 kg
1 gallon water = 8.345 lb
2.205 lb = 1 kg = 1000 g
1 Ton = 2000 lb = 907 kg
1 acre soil (plow depth) = 2,000,000 lb (on average)
1 quintal/hectare = 89.216 lb/acre
1 pound/acre = 1.12 kilogram/hectare
1 ton (short) = 0.91 metric tons

WATER FACTS

1 gallon = 0.1337 cu ft = 8.345 lb
1 cubic foot = 62.427 lb = 7.4805 gal
1 acre inch = 27,150 gal
1 liter = 1.057 qt

MIXING OF HAND SPRAYERS

1.5 tbsp. or 0.75 fl oz /gallon = 1 quart of product/acre (assumes 32 gal/acre of water). To accurately determine the actual carrier volume/1,000 sq ft used, measure off a 1,000 sq ft area and spray with water.

1% soluti° 1% v/v = 10,000 ppm = 1.28 fl oz/gallon

SPRAY CONCENTRATION

Mix Size	0.5% v/v	1% v/v	2% v/v
1 gal	0.64 fl oz, 19 ml	1.28 fl oz, 38 ml	2.56 fl oz, 76 ml
2 gal	1.28 fl oz, 38 ml	2.56 fl oz, 76 ml	5.12 fl oz, 151 ml
3 gal	1.92 fl oz, 57 ml	3.84 fl oz, 114 ml	7.68 fl oz, 227 ml

QUICK CONVERSIONS

1 pint/acre = 0.46 fl oz/1,000 ft^2
1 quart/acre = 0.73 oz/1,000 ft^2 = 1.5 tbsp or 4.5 tsp/1,000 sq ft = 22 cc or ml/1,000 sq ft
1 pound/acre = 0.37 oz/1,000 ft^2 = 1.12 kg/hectare
1 ton/acre = 45.9 lb/1,000 sq ft
1 kilogram/hectare = 0.892 lb/acre
1 oz/1,000 sq ft = 2.72 lb/acre
1 pt/100 gal = 0.25 tsp/gal
1% v/v = 1 gal/100 gal
1 lb/100 gal = 16 oz/gal
1 mph = 88 ft/min
1 knot = 1.1516 mph

MISCELLANEOUS FACTS

1 ppm = 1,000 ppb = 1 mg/liter = 1.3 oz/10,000 gal water
or approximately equivalent to:
= 1 inch in 16 miles or
= 1 minute in 2 years or
= 1 oz/31 tons
1 ppb = 1 inch in 16,000 miles or
= 1 second in 32 years
1% solution = 1% v/v = 10,000 ppm = 1.28 fl oz/gal

TEMPERATURE CONVERSIONS

Temperature (°F) = (°C X 1.8) + 32
Temperature (°C) = (°F - 32) x 0.555

FERTILITY CONVERSIONS

P x 2.29 = P_2O_5
P_2O_5 x 0.44 = P
K x 1.20 = K_2O
K_2O x 0.83 = K
Parts per million (ppm) x 2 = pounds/acre

CALIBRATION INFORMATION

ABBREVIATIONS

MPH = Speed in Miles Per Hour
GPA = Gallons Per Acre
W = Spray Width Per Nozzle or nozzle spacing in Inches
GPM = Gallons Per Minute (per nozzle)
OPM = Ounces Per Minute

LIQUID MEASURES

1 Gallon = 128 Ounces
1 Quart = 32 Ounces
1 Pint = 16 Ounces

DRY MEASURES

1 Pound - 16 Ounces

AREA MEASURE

Acre = 43,560 sq ft

TO DETERMINE

1) SPEED IN MPH

Travel a known distance and measure the time. The following formula calculates speed in MPH based on time in seconds and distance in feet. The formula is based on the fact that one MPH = 88 feet per minute.

$$\text{MPH} = \frac{\text{Distance x 60}}{\text{Time (sec) x 88}} \qquad 1\ \text{MPH} = \frac{\text{5280 ft x 88 ft/sec}}{\text{60 sec}}$$

$$\text{Acres/Minute} = \frac{\text{MPH x Swath Width}}{495}$$

$$\text{MPH} = \frac{\text{5940 x GPM}}{\text{GPA x W}} \qquad \text{GPM} = \frac{\text{GPA x MPH x W}}{5940}$$

$$\text{GPA} = \frac{\text{GPM x 5940}}{\text{MPH x W}} \qquad \text{GAL/1000 Ft}^2\text{+} = \frac{\text{136 x GPM}}{\text{MPH x W}}$$

GPA = gallons per acre; GPM = gallons per minute; MPH = miles per hour; W - row width

2) FLOW RATE/NOZZLE

$$\text{GPM} = \frac{\text{GPA x MPH x W}}{5{,}940}$$

3) DELIVERY RATE/ACRE

$$\text{GPA} = \frac{\text{GPA x 5,940}}{\text{MPH x W}}$$

HOW CONVERSION FACTOR (5940) IS DEVELOPED

The constant 5940 is derived by converting GPA, MPH, and W into one unit (GPM) as follows:

$$\frac{\text{GAL}}{\text{Min}} = \frac{\text{GAL}}{\text{Acre}} \times \frac{\text{Miles}}{\text{Hour}} \times \frac{\text{W (in)}}{1} \times \frac{\text{5280 (ft)}}{\text{Mile}} \times \frac{\text{ft}}{\text{12 in}} \times \frac{\text{Acre}}{\text{43560 ft}} \times \frac{\text{Hour}}{\text{60 min}} = \frac{5280}{\text{1 x 12 x 43560 x 60}} = \frac{1}{5940}$$

CALIBRATING HAND SPRAYERS

One quart of product/acre = 0.75 oz or 1.5 tbsp/gal (assumes 32 GPA). Apply to 1000 sq ft. Actual rate depends on spray pressure, walking speed, and tip size. To accurately determine the application rate, measure off and spray a 1000 sq ft area. On a volume/volume basis, 1% v/v = 1.3 fl oz/gal.

SPRAYER CALIBRATION RECOMMENDATIONS TO ACHIEVE A UNIFORM PATTERN

Accurate application of the intended rate per acre is only the first part of proper calibration. Uniform application from nozzle to nozzle and at the boom tips (swath overlap) is equally important. The following recommendations are based on the results of on-site calibration of numerous custom application machines by WinField United agronomists.

CHECK NOZZLE PATTERN OVERLAP

For custom application, 100% or double overlap of patterns is recommended as the minimum for most nozzles including flat fans. The reason for this recommendation is that under field conditions and with long booms it is difficult to maintain the minimum 30-50% nozzle pattern overlap generally recommended by most nozzle manufacturers.

CHECK FOR INTERNAL PLUGGING OF NOZZLES

Most new nozzles have a preorifice that is considerably smaller than the final tip orifice. As a result, when plugging occurs, it is often in the preorifice. Unlike plugging of the final tip, partial plugging of the preorifice is rarely visible to the naked eye. As a result, nozzle output can be cut in excess of 50% without any obvious visible effect on the pattern.

Preorifice or venturi nozzles must be removed on a regular basis in order to detect partial plugging. Likewise, nozzle screens also require regular inspection to detect plugging.

NOTE: Drift retardants that thicken the spray can drastically reduce the spray angle, particularly with venturi nozzle styles. InterLock, PowerLock, UltraLock and Volt-Edge can be used with many nozzles without concern for reduced spray angle.

CHECK BOOM PRESSURE

Boom pressure can be considerably different from the in-cab pressure monitor. Periodically, check the pressure of each boom section with a pressure gauge (a quick connect fitting on the gauge is recommended).

ADJUVANT APPLIED (PINTS PER ACRE) BASED ON %V/V SPRAY SOLUTION

Adjuvant Rate/ 100 Gallons	Equivalent %v/v	Spray Solution - Gallons Per Acre Applied						
		5	7.5	10	12.5	15	20	25
		pints						
0.5 pt	0.0625	0.025	0.0375	0.05	0.0625	0.075	0.1	0.125
1 pt	0.125	0.05	0.075	0.1	0.125	0.15	0.2	0.25
1.5 pt	0.1875	0.075	0.1125	0.15	0.1875	0.225	0.3	0.375
2 pt or 1 qt	0.25	0.1	0.15	0.2	0.25	0.3	0.4	0.5
3 pt or 1.5 qt	0.375	0.15	0.225	0.3	0.375	0.45	0.6	0.75
4 pt or 2 qt or 0.5 gal	0.5	0.2	0.3	0.4	0.5	0.6	0.8	1
5 pt	0.625	0.25	0.375	0.5	0.625	0.75	1	1.25
6 pt or 3 qt	0.75	0.3	0.45	0.6	0.75	0.9	1.2	1.5
7 pt	0.875	0.35	0.525	0.7	0.875	1.05	1.4	1.75
8 pt or 4 qt or 1 gal	1	0.4	0.6	0.8	1	1.2	1.6	2
5 qt	1.25	0.5a	0.75	1	1.25	1.5	2	2.5
6 qt or 1.5 gal	1.5	0.6	0.9	1.2	1.5	1.8	2.4	3
7 qt	1.75	0.7	1.05	1.4	1.75	2.1	2.8	3.5
8 qt or 2 gal	2	0.8	1.2	1.6	2	2.4	3.2	4
10 qt or 2.5 gal	2.5	1	1.5	2	2.5	3	4	5
5 gal	5	2	3	4	5	6	8	10

COMPUTING PLANT POPULATIONS AND YIELDS

Row Spacing	Length of Row For 1/1000 Acre
40 inches	13 ft, 1 in
38 inches	13 ft, 9 in
36 inches	14 ft, 6 in
30 inches	17 ft, 5 in
22 inches	23 ft, 9 in
20 inches	26 ft, 2 in
15 inches	34 ft, 10 in
7.5 inches	69 ft, 8 in
6 inches	87 ft, 1 in

DETERMINING PLANT POPULATION*

1. Measure off 1/1000 acre row
   (43.56/row width in ft. = length of row to = 1/1000 acre).
2. Count number of plants; then multiply by 1000 to determine plants per acre.

DETERMINING CROP YIELDS* - 1/1000 ACRE METHOD

1. Harvest grain from 1/1000 acre row.
2. Weigh harvested grain; then multiply by 1000 to get pounds of grain per acre.
3. Determine moisture content, then divide pounds per acre by pounds per bushel for adjusted moisture.

**Average three or more 1/1000 acre rows for a more accurate estimate.*

DETERMINING CROP YIELDS** - CONVERSION FACTOR METHOD

$$\frac{\text{Wet weight (lbs) x conversion factor x (100 - \% moisture)}}{\text{row length (ft) x row width (in) x row number}}$$

** At standard moisture listed below.

Conversion factors with standard moisture:

Corn 15% – 109.815	Sunflower 10% – 5808
15.5% – 110.465	Wheat 13.5% – 100.717
Soybean 13% – 100.138	Sorghum 14% – 108.538

DETERMINING CROP YIELDS - STANDARD FORMULA

$$\frac{\text{Wet weight (lb) x (100 - \% grain moisture)}}{\text{(100 - \% standard moisture) x lb/bu x acres}}$$

DETERMINING CROP YIELDS - STANDARD FORMULA

a 40″ diameter hoop = 1/5000 A, 5 locations = 1/1000 A (10′7″ hose = 40″ diameter) or to estimate plants/A multiply the following factors x plants in the hoop:

Hoop diameter	Factor
30″	8878
32″	7808
34″	6912
36″	6165
40″	5000

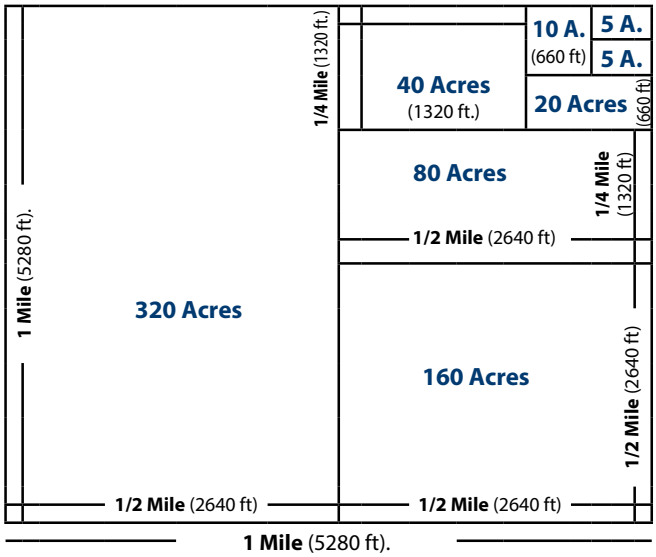
DETERMINING CROP YIELDS - CORN EAR METHOD

A rough estimate of corn yield is made by counting ears/acre and kernels/ear. Do not measure kernels on tips or butt that are less than half size. This method assumes a "typical" kernel weight. Yield will tend to be overestimated in a year with poor grain fill but underestimated in a very good year. Accuracy is also influenced by the number of random samples taken in the field. The following formula assumes 15.5% grain moisture.

$$\text{Bu/A} = \frac{\text{(ear No/1,000 A) x (ave Row No) x ave Kernel No/row)}}{90}$$

MAP OF A SECTION OF LAND 640 ACRES

Segmented by acreage divisions and the distance (in feet) of each portion.



STANDARD WEIGHT AND MOISTURE CONTENT OF VARIOUS CROPS

	Lbs./Bu.	Std. Moisture (%)
Alfalfa, clovers, vetch, birdsfoot	60	
Barley	48	14.5
Beans, dry/field	60	
Buckwheat	48	
Canola	50	
Corn	56	15.5
Cotton	32	
Fescue	20	
Flax	56	9
Grass-orchard, brome, red top, blue	14	
Millet	50	
Oats	32	14
Peanut	22	
Peas	60	
Potato	60	
Rice	45	
Rye	56	14
Sorghum	56	14
Soybeans	60	13
Sudangrass	40	
Sunflower - oil	27-28	10
- non-oil	22-24	
Timothy	45	
Wheat	60	13.5

Material Density: http://www.simetric.co.uk/si_materials.htm

- Cubic Feet x 0.8 = Bushels
- Bushels x 1.25 = Cubic Feet

GROWING DEGREE DAYS – CORN

$$\text{GDD} = \frac{\text{(Max. Temperature (°F) - Min. Temperature (°F) 1/2}}{50}$$

Use 86 if maximum daily temperature exceeds 86.

Use 50 if minimum daily temperature is less than 50.

GRAIN CALCULATIONS

RECTANGLE

Volume = Length x Width x Height

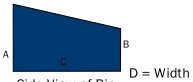


Side view of bin

$$\frac{\text{Volume (Cu. Ft.) x Wt. (Per Cu. Ft.)}}{2{,}000} = \text{Tons}$$

TRAPEZOID

$$\text{Volume} = \frac{A + B}{2} \times C \times D$$

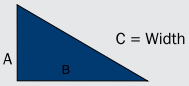


Side View of Bin

$$\frac{\text{Volume (Cu. Ft.) x Wt. (Per Cu. Ft.)}}{2{,}000} = \text{Tons}$$

TRIANGLE

$$\text{Volume} = \frac{A \times B \times C}{2}$$



Side View of Bin

$$\frac{\text{Volume (Cu. Ft.) x Wt. (Per Cu. Ft.)}}{2{,}000} = \text{Tons}$$

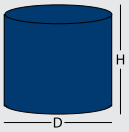
CONE

$$\text{Volume} = \frac{3.1416 \times R^2 \times H}{3}$$



$$\frac{\text{Volume (Cu. Ft.) x Wt. (Per Cu. Ft.)}}{2{,}000} = \text{Tons}$$

CYLINDER



Cylinder Bin

Volume (Cu. Ft.) = Diameter^2 (Ft.) x .7854 x Height of Product (Ft.)



Cone of Grain

$$\text{Volume (Cu. Ft.)} = \frac{\text{Diameter}^2\text{ (Ft.) x .7854 x Height of Cone (Ft.)}}{3}$$

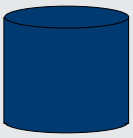
Volume (Cu. Ft.) x .8 = Bushels

Circumference = diameter x 3.14159

Area of a Circle = 3.14159 x radius^2

LIQUID VOLUME CALCULATIONS

VERTICAL TANK



Volume (Gals.) = Diameter^2 (Ft.) x 5.875 x Height of Product (Ft.)

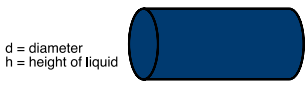
SPHERE VOLUME

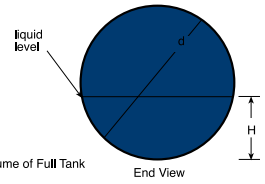


Volume = 4/3 * Pi * r^3 or 1/6 * Pi * diameter^3

VOLUME CALCULATIONS FOR HORIZONTAL TANKS

h/d	S/P	h/d	S/P	h/d	S/P
.01	.0017	.35	.3119	.69	.7360
.02	.0048	.36	.3241	.70	.7477
.03	.0087	.37	.3364	.71	.7593
.04	.0134	.38	.3487	.72	.7708
.05	.0187	.39	.3611	.73	.7822
.06	.0245	.40	.3735	.74	.7934
.07	.0308	.41	.3860	.75	.8045
.08	.0375	.42	.3986	.76	.8155
.09	.0446	.43	.4112	.77	.8262
.10	.0520	.44	.4238	.78	.8369
.11	.0598	.45	.4364	.79	.8473
.12	.0680	.46	.4491	.80	.8576
.13	.0754	.47	.4618	.81	.8677
.14	.0851	.48	.4745	.82	.8776
.15	.0941	.49	.4873	.83	.8873
.16	.1033	.50	.5000	.84	.8967
.17	.1127	.51	.5127	.85	.9059
.18	.1224	.52	.5255	.86	.9149
.19	.1323	.53	.5382	.87	.9236
.20	.1424	.54	.5509	.88	.9320
.21	.1527	.55	.5636	.89	.9402
.22	.1631	.56	.57.62	.90	.9480
.23	.1733	.57	.5888	.91	.9554
.24	.1845	.58	.6014	.92	.9625
.25	.1955	.59	.6140	.93	.9692
.26	.2066	.60	.6265	.94	.9755
.27	.2178	.61	.6389	.95	.9813
.28	.2292	.62	.6513	.96	.9866
.29	.2407	.63	.6636	.97	.9913
.30	.2523	.64	.6759	.98	.9952
.31	.2640	.65	.6881	.99	.9983
.32	.2759	.66	.7002	1.00	1.0000
.33	.2878	.67	.7122		
.34	.2998	.68	.7241		





V = Total Volume of Full Tank

End View

Volume of liquid at any given measurement is found by dividing the height of liquid in inches by the diameter of the tank in inches (h/d) finding the closest figure to the result in the (h/d) column.

Take the factor opposite the (S/P) column and multiply by the total volume of the tank (V).

The result will be the amount of liquid measured.

Thus:

Suppose total volume of tank to be 14,000 gallons and its diameter is 84 inches. If 31 inches of liquid is measured in tank, we have 31/84 = 0.369 or closest to 0.37.

Reading 0.37 in (h/d) we find .03364 in (S/P). Then 0.3364 x 14,000 = 4709.6 gallons.

SOIL SAMPLING GRID SIZE AND ACRES/GRID SAMPLE

Grid Size (ft)	Acres/Grid Sample	Grid Size (ft)	Acres/Grid Sample
100 x 100	0.23	300 x 300	2.07
104 x 104	0.25	318 x 318	2.32
120 x 120	0.33	330 x 330	2.50
148 x 148	0.50	361 x 361	3.00
150 x 150	0.52	400 x 400	3.67
181 x 181	0.75	417 x 417	4.00
200 x 200	0.92	467 x 467	5.00
209 x 209	1.00	500 x 500	5.74
250 x 250	1.43	660 x 660	10.00
295 x 295	2.00	933 x 933	20.00

The following are Internet addresses and phone numbers for some crop protection companies. These may be useful for obtaining information on crop protection products. Many companies recommend contacting your local representative first.

Crop Protection Companies, Labels and SDS

COMPANY	INTERNET SITE	PHONE NUMBER
Adama	www.adama.com/us/en/	866.406-6262
Albaugh	www.albaughllc.com	800.247.8013
AMVAC	www.amvac.com	888.462.6822
BASF	www.agriculture.basf.com	919.547.2000
Bayer CropScience	www.cropscience.bayer.us	866.992.2937
CROPLAN	www.croplan.com	888.295.3011
Corteva	www.corteva.com	800.992.5994
FMC	www.fmc.com	215.299.6000
Gowan	www.gowanco.com	800.883.1844
Helm Agro US, Inc.	www.helmcrop.com	901.312.1525
Nichino America, Inc.	www.nichino.net	888.740.7700
NuFarm Americas, Inc.	www.nufarm.com/us/	800.345.3330
Sipcam AgroUSA	www.sipcamagrousa.com	800.295.0733
Syngenta	www.syngenta-us.com	866.796.4368
United Phosphorus, Inc.	www.upl-ltd.com	800.438.6071
Valent	https://valent.com	800.682.5368
WinField United	www.winfieldunited.com	855.494.6343
WinField United Portal	www.winfieldunited.com/login	866.270.4706

Crop Protection Labels and SDS

Agrian	www. agrian.com
C&P Press Greenbook + Bluebook	www.greenbook.net
CDMS	www.cdms.net

USE AND HANDLING PESTICIDES

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- Drift Reduction 786
- Mixing Pesticides 788
- Cleaning Sprayers 790
- Herbicide Application with Fertilizers 791
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- First Aid 794
- Poison Control Centers 796
- Active Ingredient and Trade Names Reference 797
- Product Dictionary 800

USE/HANDLING PESTICIDES

Overlaps and skips are bad "advertising" for the custom operator and his employer. Unfortunately, achieving proper swath overlap with wider booms and faster ground speeds common with modern applicators is often more difficult than in the past. As a result, markers are recommended for many applications.

Electronic marking (Parallel swathing) is an option to foam. However, most equipment with parallel swathing also uses foam markers. Foam is used to border fields, mark irregular areas, navigate contour rows and serves as a backup.

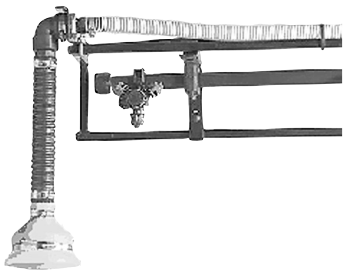
Overlapping can cause crop injury particularly with herbicides that have low crop tolerance. Excessive overlap also wastes product. For example, a 2-foot overlap treats an extra quarter acre for each mile traveled. Skips or gaps result in increased pest pressure and reduced crop yields.

COMMON MARKERS INCLUDE:

1. **Electronic Markers: GPS guidance/parallel Swathing.** Global Position Systems (GPS) or differential GPS can provide guidance via radio beacons and/or satellite reference. The maximum distance from towers is a limitation, especially with FM systems. A sensitivity of less than one meter is preferred for herbicides and fungicides. One-meter accuracy is adequate for application of most fertilizer or insecticides. Advantages of electronic markers over foam include: 1) less stress on the operator to see and follow and 2) the system is not affected by light and factors that dissipate foam.

2. **Foams.** This is the most commonly used marker on customer application equipment. Synthetic, petroleum-based foaming agents such as Valcheck Foam Marker or Heat Wave, produce foam in a tank as compressed air produces air bubbles in foam product.

TIPS FOR PRODUCING QUALITY FOAM:



The major limitation of foam is longevity. Hot, dry winds, low humidity, sunlight and hard water contribute to rapid deterioration of foam. Some procedures that improve results with foam include:

a. **Keep the foam generating tanks CLEAN.** This is the most overlooked means of avoiding poor foam performance. Scale and rust can form in the bottom of the tank as a "sandy grit" that severely reduces the performance of the foam. Stainless steel tanks are not immune to this buildup in the bottom.

   Even the foam product contains solid materials that can build up in the tank. When changing foam products, clean the tank and lines well since the previous foam can be antagonistic to a new foam formulation.

   Clean tanks with commercial tank cleaner/degreasers. Do not use spray tank cleaners with petroleum or silicone bases.

b. **Use recommended concentrations of foam.** Poor foam is often the result of over dilution. On the other hand, if foam is too thick and heavy it may not stick to vegetation. Dilution with water can range from 80:1 to 160:1 for different products. It may be necessary to increase the foam concentration under dry, hot conditions. Do not overfill the tank — leave air space at top.

   Use one gallon WinField United Valcheck Foam Marker or Heat Wave, foam marking concentrate, per 100 gallons of water (100:1 dilution) when water source contains between 300 and 1000 ppm hardness. In soft water, or to produce less voluminous foam, increase dilution rate up to a maximum of 160:1. Water temperatures between 25-80 °F will not affect foam quality; do not adjust the dilution ratio in this temperature range. In extremely difficult situations such as water hardness above 1000 ppm or water temperature greater than 80 °F, reduce the ratio to 80:1 or less if required.

   The foaming power of this unique formulation is virtually unaffected by water hardness, making expensive water softeners unnecessary. For the grower, this means consistent and reliable results without concern for changing weather or water conditions.

c. **Use adequate but not excessive sparging.** Excessive pressure produces thinner, lower quality foam. Air leaks in the system lower pressure and can reduce foam production.

d. **Minimize hard water effects.** Some foam products require soft water; others do not. Some foam contains softening agents. Others require the use of special water softening agents. Do not use Calgon, which leaves too much grit. Check the label.

e. **Use a drop hose** at the end of boom to release the foam nearer to the soil surface. The hose will keep wind from blowing foam off the mark. Various modifications of the hose end can be used to concentrate foam in "globs" rather than a continuous line.

f. **Use dyes** to improve visibility. Dye remains visible if the foam dissipates. Pink color has good visibility on crop residue. Blue or purple is visible on small grain stubble and on snow. Yellow is good in low light conditions. Only blue/purple dye is nonstaining. Valcheck Foam Marker is available in yellow, or with blue or red dye.

g. **Avoid freezing of foam:**

   Pipe insulation: Most freezing begins in the lines rather than in the tank. Placing pipe insulation on the lines slows the rate of cooling in the winter or heating in the summer. Also, reduce foam freeze up in the lines by turning on the foam while traveling from field to field to flush out foam that is nearing freezing temperatures.

   Foam Antifreeze. Use commercial products or add 200 proof methanol (not rubbing alcohol). The methanol:water ratio can vary from 1:25 to 1:5. Double the rate for 100 proof methanol. Experiment with the rate as too much can reduce the formation of foam. Methanol evaporates with time and may need to be replenished.

   One pint/20 gallons of windshield washer can also be used but it is generally considered less effective than methanol.

   UAN. Some operators have found that the addition of a small amount of UAN can prevent freezing. However, UAN can break down foam and is corrosive.

PROCEDURE FOR CLEANING A FOAM SPARGE TANK

1. Empty the tank. Remove and check the sparge tube or nozzle which may be rusted out or plugged.
2. Add a commercial foam tank cleaner/degreaser designated specifically for foam tanks. Do not use spray tank cleaners with petroleum or silicone bases. Leave the cap off the tank to prevent foam from building up pressure. Allow foam to flow over top for 10-15 minutes.
3. Remove plug and drain tank. Flush with water.
4. Check the air supply — be certain there is no oil leaking past the pump. Any air leak in the system reduces foam production. Inspect by plugging the end of the hose and watch for foam leakage.
5. To prepare for storage, drain tanks and coat with diesel fuel.

DRIFT REDUCTION AND SPRAY COVERAGE

Spray drift has been defined as the movement of pesticides away from the target area to non-target sites such as neighboring crops, gardens and ornamentals, or waterways. It is the responsibility of the applicator to apply a pesticide so that it remains within the target area.

TYPES OF DRIFT

1. **Particle drift** also called primary drift occurs right after application and usually requires wind to occur.
2. **Vapor drift** also called secondary drift occurs when a pesticide volatilizes or "fumes off" during or after application. (Vapor drift can move with or without wind.)

FACTORS AFFECTING DRIFT

Spray droplet size is the main factor affecting the potential for particle drift. Small droplets drift farther than larger droplets. Proper sprayer set up and maintenance can reduce the production of drift-prone droplets. The following equipment factors affect spray droplet size:

1. **Nozzle type and size*** 3. **Boom height**
2. **Spray pressure** 4. **Nozzle condition (wear or damage)**

* AI XR and many other low drift nozzles have been shown to greatly reduce drift in many situations.

For maximum drift reduction, use InterLock or UltraLock with AI, AIXR, or other drift reducing nozzles when spraying glyphosate or other herbicides.

The main approach to reducing drift is reducing the amount of fine droplets or enlarging spray droplet size to offset the effects of wind. This approach is valid but we also must address the importance of correct spray droplet size for good coverage. It is important to select equipment carefully to provide adequate coverage especially for contact herbicides, insecticides and fungicides.

The table below illustrates the effect of spray droplet size (coverage) on the performance of a contact herbicide, paraquat + atrazine + a non-ionic surfactant.

Note that extremely coarse droplets resulted in the lowest control.

Treatment	Nozzle*	Droplet Size**	Kochia	Wheat
1	XR11005	Medium	97%	97%
2	DG11005	Coarse	96%	95%
3	TF - VS 2.5	Extremely Coarse	79%	80%

*All nozzles on 30 inch spacings; 30 psi; 8.6 mph and 10 gpa
**Medium = 242 - 358; Coarse = 359 - 451; Extremely Coarse = 741 microns

RECOMMENDED DROPLET SIZES

Different pesticides require different spray droplet sizes in order to provide proper coverage for various weed sizes and pests being targeted. The chart below lists ideal droplet sizes for various pesticides.

Pesticides	Avg. Droplet Size *(Diameter in microns)*
Fungicide	150-250
Insecticide	200-300
Contact Herbicides	250-400
Systemic Herbicides	400 and above

HOW TO REDUCE DRIFT

Even with the most current technologies and good spraying conditions we cannot completely eliminate spray drift but we can certainly do our best to manage it by utilizing the following:

BEST SPRAY MANAGEMENT PRACTICES

1. **Use Good Judgment**

   a. Consider wind speed and direction relative to non-target areas.

   b. Consider climatic conditions such as temperature, relative humidity, and temperature inversions.

2. **Select The Proper Equipment**

   a. Manage spray droplet size by selecting the correct nozzle type, size and pressure to produce the largest droplets that still give the desired coverage for the pesticide being applied.

   b. Keep boom height low as possible.

3. **Use INTERLOCK, ULTRALOCK, MASTERLOCK, STRIKELOCK, POWERLOCK, SUPERLOCK, OR ACCUDROP**

   a. Maximize spray deposition and pesticide performance.

   b. Reduce spray drift.

ENVIRONMENTAL CONDITIONS

If environmental conditions are such that adjustments in equipment and application techniques cannot adequately control drift, DO NOT SPRAY. Environmental conditions commonly affecting drift include:

- **Wind speed and direction**
- **Relative humidity**
- **Temperature**
- **Inversions**

WINFIELD UNITED DRIFT CONTROL AGENTS AND DEPOSITION AIDS

INTERLOCK, ULTRALOCK, MASTERLOCK, STRIKELOCK, POWERLOCK, SUPERLOCK, AND ACCUDROP

These adjuvants help optimize pesticide performance by improving deposition of spray droplets, improving coverage, and reducing drift and evaporation. All can be applied with pesticides by ground or air. They have a unique crop-based technology that reduces the number of fine droplets. However, spray pattern is not negatively affected and both can be used with AI nozzles.

InterLock, UltraLock, MasterLock, StrikeLock, PowerLock, Superlock, AccuDrop:

- Improve deposition and maximize pesticide performance.
- Reduce the percent of fine droplets but do not adversely affect spray droplet size.
- Can be used with air induction (AI) nozzles.
- Are the products of choice for deposition and drift control.

OTHER DRIFT CONTROL AGENTS

The other or remaining drift control products may be polymer based "thickeners."

- Polymers work by thickening the spray solution.
- Polymers affect the spray droplet size by making the droplets much larger. May reduce coverage.
- Polymers do not work well at low pressures.
- Polymers may plug air-induction spray nozzles.
- Polymers or thickeners only treat the water.



GENERAL USE RATES	INSECTICIDES	FUNGICIDES
INTERLOCK 4-6 fl oz/A for most herbicides	**INTERLOCK** 2-4 fl oz/A + 1 qt Preference/100 gal	**INTERLOCK** 2-4 fl oz/A + 1 qt Preference/100 gal
MASTERLOCK 6.4 fl oz/A: ground* *1% v/v, but not <4 oz/A by air	**MASTERLOCK** 6.4 fl oz/A: ground* *1% v/v, but not <4 oz/A by air	**MASTERLOCK** 6.4 fl oz/A: ground* *1% v/v, but not <4 oz/A by air
POWERLOCK 5-8 fl oz/A	**ACCUDROP** 3 fl oz/A	**ACCUDROP** 3 fl oz/A
ACCUDROP 3 fl oz/A		
STRIKELOCK 0.5% v/v		
SUPERLOCK 8 - 16 fl oz.A		
ULTRALOCK 4-6 fl oz/A for most herbicides		

INTERLOCK, ULTRALOCK, MASTERLOCK, STRIKELOCK, POWERLOCK, SUPERLOCK AND ACCUDROP MIXING

Add after pesticides or other adjuvants are added but prior to complete filling of the spray tank.

For Direct Injection: These adjuvants can be applied through injection systems where INTERLOCK, ULTRALOCK, MASTERLOCK, STRIKELOCK, POWERLOCK, or ACCUDROP is added to one of the system's chemical injection tanks. An in-line mixing chamber is recommended.

- Step 1 Add INTERLOCK, ULTRALOCK, MASTERLOCK, STRIKELOCK, POWERLOCK, SUPERLOCK, or ACCUDROP to the chemical injection tank.
- Step 2 Pump the correct amount of these adjuvants into the line.
- Step 3 Pump the proper amount of water, pesticide, and other adjuvants into the line for mixing with INTERLOCK, ULTRALOCK, MASTERLOCK, STRIKELOCK, POWERLOCK or ACCUDROP and chemicals before going into the spray boom.

Do not mix INTERLOCK, ULTRALOCK, MASTERLOCK, STRIKELOCK, POWERLOCK, SUPERLOCK, or ACCUDROP with anything in an induction system or container when all the products are undiluted. Once mixed in water, all the products above are compatible in any mixing order.

Always read and follow label directions.

DRIFTWATCH

A registry of sensitive areas for certain states.

For more information:
http://www.driftwatch.org/

MIXING PESTICIDES

MIXING ORDER

Many mixing problems start when carrier temperature is cold, products have not been recirculated or agitated, or with the wrong order of adding pesticides and additives.

Dry products, including ammonium sulfate, are generally added before liquids or flowables. If liquids are added first, the oils or emulsifiers they contain can coat dry products and prevent contact with water. The proper sequence of adding chemicals to the tank can be easily remembered with the words **W-A-L-E-S** or **D-A-L-E-S**.

"W" refers to dry formulations such as wettable powders (WP, W) and water-dispersible granules (WDG). WDG and DF are used synonymously.

"D" refers to dry flowables (DF). Some DF products are packaged in water-soluble packets. These formulations should be added first to a tank which is 1/4-1/3 full of carrier. Always allow these packets to disperse fully before adding liquid formulations, oils or surfactants.

"A" means agitation to fully disperse the chemicals. Create a rolling surface action. Begin agitation before adding any chemicals. Excessive agitation can create foam or "gunk."

"L" means Liquids or Flowables. Add microencapsulated formulations after ECs. Add Suspension Concentrates (SC) before ECs.

"E" means Emulsifiable Concentrates (EC).

"S" means Surfactants or oils and are generally added last. Adjuvant formulation should also be considered. They can be added in the same order as pesticides. AMS is a dry formulation; COC and MSO are ECs, and surfactants are solutions that go last.

Organo-silicone surfactants may cause excessive foaming. Add to tank last or use an anti-foamer.

Add **compatibility agents**, if needed, first.

Nitrogen additives such as ammonium sulfate and UAN should be added before some herbicides but after the addition of others. For example, add ammonium sulfate before glyphosate products and before products containing FlexStar, Poast, Cleanse or Select Max. Other herbicide labels recommend addition of nitrogen after the herbicides. For example: Accent Q, Basis Blend, Callisto, Capreno, Distinct, Drive XLR8, Incinerate, Laudis, OpTill, Peak, Permit, Pursuit, Reflex, Sharpen, Status, Steadfast Q, Treevix, Verdict are examples of labels that specifically recommend adding the herbicide to the tank before the N additive. In any case, dry ammonium sulfate should be completely dissolved before adding herbicides, particularly soluble packets.

InterLock, UltraLock, MasterLock, StrikeLock, PowerLock and AccuDrop drift control and deposition aids can be added after pesticides and other adjuvants, injected, or used in inductors. Do use undiluted in inductors with certain products. See the label for instructions.

PRECAUTIONS

When an EC or crop oil is mixed with a WP or WDG in water, it is important to spray as much of the mixture as possible before adding water and WP or WDG for the next load. Any EC or crop oil remaining in the tank can coat the WP or WDG being added, thus not allowing it to wet or disperse properly. To prevent this intermittent "balling up" of WP or WDG in some tank mixes:

1) Empty the tank before filling. Then fill tank at least 1/4 full of water before adding the WP or WDG. If "balling up" still occurs, empty tank completely. Hose down the sides of the tank.
2) Clean tank with commercial tank cleaner, detergent, household ammonia or solvent such as kerosene to remove the scum, and flush with clean water.
3) Mix the next batch of spray, adding water; then the WP or WDG.
4) Add the EC or crop oil.

PREMIXING OR PRESLURRY

Pesticides contain emulsifiers or wetting agents which allow the product to react with water and go into solution or suspension. When compatibility of products is marginal, the carrier temperature cold, or when mixing with fluid fertilizer — premixing with water can minimize mixing problems. Preslurry WP, WDG or DF with water at a ratio of 5 pounds of product per gallon of water. Premix flowable suspensions and EC formulations at a ratio of 2 parts product to 1 part water.

WATER SOLUBLE PACKETS, WDGS, DFS

1) Be sure spray tank is clean, not contaminated.
2) Fill tank 1/4 - 1/3 full with clean water.
3) Be sure that agitation system creates a rippling or rolling surface action.
4) Add water soluble packet or dry product into inductor or tank. (preslurry in water if required).
5) Continue filling tank until 90% full. Increase agitation if necessary to maintain surface action.
6) Add other tank mix chemicals.
7) Complete filling tank, maintaining sufficient agitation to ensure surface action. This applies to both spray and nurse tanks.
8) Empty tank as completely as possible before refilling to prevent buildup of oil or EC residue. Always maintain agitation to avoid separation.
9) Clean sprayer thoroughly immediately after use by flushing system with water and detergent.

FLOWABLE SUSPENSION CONCENTRATES AND EMULSIFIABLE CONCENTRATES IN WATER

No special instruction when mixing in water; however, shake the container well before mixing; then pour material directly into the spray tank containing water. Be sure spray tank is clean and not contaminated.

MIXING PESTICIDES WITH FERTILIZER

The compatibility of pesticides with fluid fertilizers is affected by product pH, salt content, free ammonia concentration and nutrient analysis. Variability from product to product in these properties as well as carrier temperature can create compatibility problems that are difficult to predict. Fluid fertilizers also contain little "free" water needed to activate emulsifiers and wetting agents in pesticides. Most mixing problems with fluid fertilizer carriers can be avoided by using pre-slurrys in water and/or compatibility tests.

DO NOT add water soluble packets directly to fluid fertilizer. Always preslurry in water until completely dissolved.

With EC's, use special formulations for liquid fertilizer when available.

In general, liquid fertilizers such as 28% or 32% N solutions cause relatively few problems except with 2,4-D amine, whereas more viscous clear liquid fertilizers such as 7-21-7 and 10-34-0 may be less compatible with pesticides. Check compatibility using the test procedure described in the COMPATIBILITY TEST section. Premix in water if the compatibility test indicates the need. Follow steps 1-9 described with water carrier.

MICRONUTRIENTS

Do not mix micronutrients in the inductor with other products. Rinse before and after the micronutrients. Mix order is important for micronutrients. Add the AMS source before the micronutrients.

COMPATIBILITY TEST

To determine the tank mix compatibility of pesticides with liquid fertilizer, crop oil or surfactants, or other recommended pesticides, use this compatibility test. It is designed for 25 gallons of spray per acre with the maximum labeled rate of product.

MATERIALS NEEDED

1) Sample of pesticide to be tested.
2) Sample of water, liquid fertilizer, crop oil or other pesticide that will be used in the field spray.
3) Compatibility agent.
4) Two one-quart jars with tight lids.
5) A set of measuring spoons.

GENERAL RULE OF THUMB FOR 25-GALLON TOTAL CARRIER PER ACRE ADD:

1) Two teaspoons of WP or WDG to the pint of carrier for each pound per acre of product required.
2) One-half teaspoon of spray tank additive to the pint of carrier for each 1.0% additive desired in the final spray.
3) One teaspoon of EC to the pint of carrier for each 1.0 quart per acre of EC required.
4) WPs or WDGs should be added first; then flowables; water soluble pesticides; spray tank additives; and ECs last. Be certain each ingredient is wetted and dispersed before adding the rest.

PROCEDURE

1) Pour 1 pint of liquid fertilizer or water into each of the two quart jars.
2) Add ½ teaspoon of the compatibility agent to one jar and stir.
3) Add ingredients to each quart jar in order listed above (WP or WDG, flowable, soluble pesticides, spray tank additive, EC) making certain each ingredient is wetted and dispersed before adding the next.
4) After all ingredients are added to the jars, put the lids on and tighten well.
5) Invert each jar 10 times.
6) Let jars stand five minutes.

INTERPRETATION

1) If both jars show signs of WP, WDG or flowable balling up, or an oily scum on the surface, the materials are not compatible and should not be applied together.
2) If the jar containing no compatibility agent shows none of the conditions in 1) above, the materials are compatible and can be mixed without a compatibility agent.
3) If the jar containing no compatibility agent shows any of the conditions in 1) above, but the jar containing the compatibility agent does not, the materials are compatible provided 1 to 3 pints of the compatibility agent are added for each 100 gallons of carrier. Always add the compatibility agent first.

WATER PH AND MAINTAINING PESTICIDE EFFECTIVENESS.

Many pesticides, especially carbamate and organophosphate insecticides, are sensitive to the pH of water. Water that has a high pH (>7) can cause alkaline hydrolysis of pesticides, resulting in a reduction of the active ingredient effectiveness. Measuring water pH before mixing can prevent alkaline hydrolysis. Testing can be performed by a professional laboratory, with a pH meter, or test paper. Water for all pesticide applications should be between pH 4 and 7; a pH of 5.5 to 6.5 is ideal. Acidifying and buffering agents can be used to adjust the water pH. If water is known to have a high pH, an acidifying agent can lower the pH. A buffering agent can maintain the pH of a spray solution. Consider using acidifying and/or agents if a sensitive pesticide is to be applied or if the spray solution will be left to stand for several hours. The amount of acidifying or buffering agent will vary for each application. Products containing fixed copper should not be acidified as unacceptable plant injury may occur. Consult product labels before using an acidifying or buffering agent.

RECOMMENDATIONS FOR AVOIDING MIXING PROBLEMS

1) Prior to field spraying, evaluate new or unfamiliar mixtures on a small scale.
2) Follow label instructions.
3) Make certain spray tank and equipment are clean and in good condition. Never add a pesticide to an empty tank.
4) Provide adequate agitation but avoid high volume and pressure.
5) Do not delay agitation after pesticide addition.
6) Follow the W-A-L-E-S/D-A-L-E-S rule for sequence of adding materials.
7) Avoid water contamination of ECs, and storage at temperature extremes.
8) Use a compatibility agent such as Complete Compatibility to lessen problems with liquid fertilizer where the dispersion uniformity of a pesticide is poor.
9) Use pesticides specifically modified for liquid fertilizer carriers or high bicarbonate water when available.

RESUSPENSION AFTER SETTLING OUT

Compatible mixes may become unstable if left mixed together overnight, or some pesticides may degrade if mixed too long. This is particularly true in water with a high pH or bicarbonate content. A suspension aid will improve resuspendability when a spray solution must be held overnight. Try to spray all of any mixture the day it is mixed.

If tank mixture is to be left for any extended period without agitation:

a) Add a compatibility agent like Complete Compatibility (preferred), or
b) add 6 lb Epsom salts/100 gal. (recommended by DuPont for DFs and ECs). Certain dish soaps may also help, or
c) with micro-encapsulated Monsanto products add a suspension aid.

EXCESSIVE FOAMING

Foam is generated when air gets into the spray system because of 1) an air leak on the suction side of the pump, 2) strong or excessive agitation, 3) the liquid bypass or filling lines being above the level of the liquid, 4) whirlpooling caused by strong suction, or 5) use of organo-silicone surfactants.

Foam is more apt to develop when soft water, an EC or SC is used, or when EC or SC residue remains in the tank from prior mixes. When a WP or WDG is used in combination with an EC, under conditions where foam can develop, an inversion material like mayonnaise can develop.

Commercial defoamers or antifoamers such as Fast Break or Foaminator Dry are effective and do not have adverse qualities that diesel fuel has (grease-like buildup). Aerosol spray defoamers are available which offer a quick dispersion of foam. However, the effect is generally only temporary if foaming is severe.

RECIRCULATION AND AGITATION PRIOR TO USE

Prior to dispensing and when adding liquid products to a partial tank, recirculation is critical to ensure a uniform product. Cold conditions or extended storage can result in separation of product components. Non-bulk containers, like 2.5 gallon jugs, can be agitated by hand.

CLEANING SPRAYERS

Proper cleaning of sprayer equipment can prolong the life of equipment, reduce downtime in the busy season and avoid crop injury from contaminated tanks when switching to susceptible crops.

FACTORS AFFECTING THE RISK OF CROP INJURY FROM CONTAMINATED TANKS

Herbicide Mode of Action: Certain chemicals present greater potential than others for crop injury from contaminated tanks. In general, growth regulating hormone-type herbicides present the great risk because relatively small amounts of herbicide will cause crop injury. Growth regulators include group 4 and group 19 herbicides. In addition, many herbicides are systemic in action and active at extremely low rates. This means a very small amount can impact plant growth and yield, which makes keeping pesticides on the target by using the right adjuvants extremely important.

Application Method: POST application directly on crop foliage presents higher potential for crop injury than does soil application.

Sprayer Components: Fiberglass and polyethylene tanks and rubber hoses are particularly troublesome in that they require more extensive cleaning than stainless steel to remove small quantities of pesticides. Screens, strainers and pumps are also a major source of pesticide residues.

GENERAL CLEANING GUIDELINES WHEN SWITCHING TO SUSCEPTIBLE CROPS

(CLEAN AS SOON AS POSSIBLE AFTER USE — DRIED MATERIAL IS DIFFICULT TO REMOVE. Residues build up over time and trap additional residues.)

1. Drain tank of ALL herbicide solution. Rinse down the inside and outside walls of the tank and flush out booms.
2. Fill tank half full of water (preferably warm) and add cleaners called for on the herbicide label — commercial tank cleaner, detergent or ammonia. For oil-soluble herbicides use the kerosene/fuel oil rinse described above. Circulate for a few minutes and let a small amount go through the nozzles. Allow the remainder of the solution to stand in the tank for the period of time recommended for the herbicide (overnight is desirable). Pump the solution out through the nozzles.
3. Flush out tank, line and nozzles once more with water only. REMOVE AND CLEAN strainers, nozzle tips and screens.

TANK CLEANING AGENTS

Cleaning agents should penetrate and dissolve pesticide residues and remove them through dilution. All cleaners use dilution through repeated rinses. Some also provide deactivation or decomposition.

Commercial tank cleaners such as Protank provide both dilution and neutralization of acidic pesticides and are recommended on many pesticide labels. Use rate for Protank is 1 pt in 50 gallons of water for 100-300 gallon tanks. It is an effective cleaning and neutralizing product that is on the approved list of DuPont, Syngenta and others for cleaning sulfonylurea or imidazolinones herbicides.

Ammonia is very good at penetrating and loosening deposits and residues which can form in the tank. Ammonia does not decompose herbicides such as sulfonylureas. Instead, it has a high pH which improves their solubility. Use 1 gallon household ammonia for each 100 gallons of water. Ammonia can corrode aluminum parts.

Chlorine bleach (1/2%) can decompose residues of sulfonylurea and certain other herbicides into inactive compounds. However, bleach is not generally recommended. Some disadvantages of bleach are a) bleach should never be added to ammonia or liquid fertilizers containing ammonia because the two materials react to form chlorine gas which can cause eye, nose, throat and lung irritation, b) bleach is less efficient than other cleaners at penetrating and removing residue, and c) rinsate containing bleach is not registered for spraying on cropland.

Detergent at the rate of 1 cup/20 gallons is recommended on some herbicide labels.

Kerosene or fuel oil is a solvent for oil-soluble herbicides such as 2,4-D esters. After an oil rinse, rinse with detergent or ammonia.

NOTE: Use of surfactants and fertilizer additives such as 28% UAN in subsequent tank fillings are particularly adept at pulling dicamba out of fiberglass/poly tanks, rubber hoses or strainers, etc. As little as 0.0001 lb./acre of some dicamba products applied POST to beans can cause crop injury. Consider flushing system with a small amount of fertilizer or crop oil. Avoid POST applications to susceptible crops after using dicamba in a tank.

SAFETY NOTE: Tank cleaners may cause eye injury. Read and follow label directions for safety equipment requirements and handling procedures.

HERBICIDE APPLICATION WITH FERTILIZER CARRIERS

Combining fertilizer and pesticide applications can save time, labor and application costs. Liquid fertilizer can also provide burndown activity on emerged weeds. Listed below are several factors to consider in order to maximize the efficiency of both the fertilizer and the herbicide when they are applied together.

TIMING

A herbicide must be applied at a time when weeds are susceptible to control. Fertilizer must be applied to provide nutrients at a time when plant nutrient requirements are high. Most preplant or preemergence applications provide favorable timing for both the fertilizer and the herbicide. Postemergence applications are generally timely for nutrients such as nitrogen and sulfur but late for best utilization of phosphorus.

PLACEMENT

Soil-applied herbicides are generally most effective if placed in the top 1-3 inches of soil where weed seeds and roots are most active. Some fertilizer materials such as phosphorus and potassium may be more available to crop roots when placed deeper in the soil. Deep incorporation of these nutrients is most important when soil test levels are low or surface soil is very dry. Topdressing forages or surface application in reduced tillage systems for row crops is generally effective, particularly if soil tests are near optimum levels.

CALIBRATION AND UNIFORMITY OF APPLICATION

The requirements for uniform spray and spread patterns and accurate calibration are generally higher for pesticides than for fertilizer. With liquid application, the effect of poor patterns resulting from worn nozzles, incorrect nozzle spacing, or improper boom heights on fertilizer response is important, but it is often less visible than the effect on weed control or crop injury from herbicides. With dry fertilizer, spreader calibration and driving intervals require more precision when herbicides are impregnated on the dry fertilizer.

HERBICIDE-FERTILIZER COMPATIBILITY

Most herbicide mixing or compatibility problems occur when liquid fertilizer is used as a carrier. Compatibility tests should be conducted even though a herbicide product is labeled for mixing with fertilizer. Changes in temperatures or variability in fertilizer batches or herbicide formulation are factors which can create incompatibility problems. Some tips to avoid fertilizer-herbicide mixing problems include:

a) Premixing 2 parts water to 1 part herbicide before adding the herbicide to the liquid fertilizer. Most liquid fertilizers have little of the "free" water needed to emulsify or dissolve the herbicide. A premix or slurry will avoid many fertilizer-herbicide mixing problems.

b) Use compatibility agents where needed.

c) Run compatibility tests on a regular basis.

d) Do not allow fertilizer-herbicide mixes to stand unagitated for extended periods of time.

e) Micronutrient fertilizers, particularly those containing sulfur and micronutrients, are often less compatible with herbicides than straight nitrogen grades.

FLOWRATE ADJUSTMENT WITH FLUID FERTILIZERS

Since all tabulations are based on spraying water, which weighs 8.345 lb per gallon, conversion factors must be used when spraying solutions which are heavier or lighter than water. To determine the proper size nozzle for the solution to be sprayed, first multiply the desired GPM or GPA of solution by the water weight conversion factor. Then use the new converted GPM or GPA rate to select the proper size nozzle.

Example: Desired application rate is 20 GPA of 28%N. Determine the correct nozzle size as follows:

GPA (solution) x Conv factor = GPA (from catalog tables, based on water).

20 GPA (28%) x 1.13 = 22.6 GPA (water).

The applicator should choose a nozzle size that will supply 22.6 GPA of water at the desired pressure.

Weight of Solution	Specific Gravity	Conversion Factors*
7.0 lb per gallon	0.84	0.92
8.0 lb per gallon	0.96	0.98
8.345 lb per gallon - WATER	1.00	1.00
9.0 lb per gallon	1.08	1.04
10.0 lb per gallon	1.20	1.10
10.65 lb per gallon - 28% nitrogen	1.28	1.13
11.0 lb per gallon	1.32	1.15
12.0 lb per gallon	1.44	1.20
14.0 lb per gallon	1.68	1.30

*For flood nozzles, do not use with Raindrop®.

Approximate Weight of Fluid Fertilizer Grades Also, see "Crop Nutrients" page in the last section	
Fertilizer	**Weight (lb/gal)**
UAN 28%	10.6 to 10.7
UAN 32%	11.06 to 11.09
10-34-0	11.6 to 11.8
7-21-7	10.6 to 10.8
10-30-0	11.5 to 11.8
11-33-0	11.7 to 12.0
12-0-0-26S	11
4-10-10	10.7 to 10.8

CROP INJURY FROM POSTEMERGENCE TREATMENTS

Liquid fertilizer can cause leaf burn to emerged crops. It also increases foliar uptake of herbicides in a fertilizer-herbicide combination, which can increase crop injury from the chemical.

On corn and sorghum several herbicide labels permit delayed, early postemergence applications with water as a carrier. However, these labels do not permit early postemergence applications in fertilizer carriers.

On small grains, several postemergence herbicides are labeled for combination with topdress fertilizer application. Observe crop stage and fertilizer rate restrictions. In general, crop injury increases with advancing growth stages and higher fertilizer rates.

See the table "Pesticides for Impregnation, Liquid Fertilizer, or Irrigation" in the Technical Section for labeled pesticides.

HERBICIDE IMPREGNATION ON DRY FERTILIZER

Double spreading with spinner spreaders is usually accomplished by spreading at a normal driving interval followed by a second pass which splits the middles of the first pass. If the spreader is accurately calibrated and driven at the correct driving interval, a second pass is not necessary. Double spreading is time-consuming and reduces much of the cost-reduction advantage of impregnation. One-pass application with pneumatic spreaders is adequate.

APPLICATION TIPS INCLUDE:

1. At least 200-300 pounds/acre of dry fertilizer are required for adequate adsorption of the herbicide on the fertilizer and adequate distribution on the soil.
2. Phosphate fertilizers generally absorb more liquid than potash and about twice as much as nitrogen.
3. Drying agents can prevent excessively wet material. The need for a drying agent depends on rate and type of fertilizer, rate and type of herbicide (formulation, viscosity, "stickiness," etc.), air relative humidity and spreading equipment (spinner, or air). In some cases, granular herbicides can function as a drying agent. Do not allow batches to sit overnight.
4. Fertilizer impregnated with volatile herbicides should be tarped and spread as soon as possible.
5. Dual or Bicep may require use of mineral oil.
6. Do not use straight ammonium or potassium nitrate which can cause explosions or fire. Some labels restrict use of straight limestone or triple superphosphate. Blends of these materials are allowed.
7. For best mixing, spray the chemical directly on the dry fertilizer, not onto the side of the blender.
8. Do not dry blend dry flowable (DF) herbicides with dry fertilizer. The small-sized DF granules will segregate from fertilizer. Dry flowables can be used if they are preslurried in water, or if a liquid herbicide or mineral oil is used to bond to the fertilizer granule. However, in some cases, liquid herbicides in the mix do not provide adequate adhesion of the DF to the fertilizer.

LIQUID FERTILIZER CARRIERS

Liquid fertilizers are labeled as carriers for PPI or PRE soil application of many herbicides. POST application of many liquid fertilizer-herbicide mixes are labeled on small grains. However, most labels prohibit or do not support POST use on corn, sorghum, soybean and other row crops because of the potential for crop injury. Crop injury can occur from fertilizer burning of foliage or from enhanced uptake of the herbicide. The potential for crop injury is highest with herbicide with foliar activity. Crop injury is less with early POST application of herbicides which have primarily soil activity such as chloroacetamide or dinitroaniline herbicides.

WATER PH AND INSECTICIDE DEGRADATION

In many areas, water pH can be quite high. Some pesticides, especially insecticides, may degrade or breakdown much faster in high pH water than in water with lower pH's. This means that the effective control period of the insecticide is shortened considerably. Once the degradation has occurred, it is irreversible.

A product called a spray buffer can be added to the spray tank to create a more favorable environment for the pesticide. The amount of spray buffer to add depends on the pH and the buffering capacity of the water.

Some buffering agents are liquid 10-34-0 fertilizer and Complete Compatibility (a WinField United spray additive). These products can be added to spray tanks to lower water pH and preserve the expected control of the insecticide. Below are recommendations from product manufacturers on the needs for buffering to a pH 7 or below.

BUFFERING AGENT ALWAYS RECOMMENDED

Dimethoate*
Imidan*
Malathion*
Sevin

*Do not mix until ready to begin spraying, if possible, since half-life (even when buffered) is less than 24 hours.

ADD BUFFERING AGENT IF IT CANNOT BE SPRAYED ON THE DAY IT'S MIXED

Lannate

SHOULD NOT NEED BUFFERING IF SPRAYED WITHIN 48 HOURS OF MIXING -

LONGER IN MANY CASES

Asana XL
Dibrom 8E
Lorsban
Orthene 97/Bracket 97

*Best to spray as soon as mixed because of possible settling problems.

CALIBRATION

There are several factors essential for proper calibration. Among them are: 1) circumference of a circle; 2) acres to be irrigated; 3) speed of the pivot; 4) rate of application of the pesticide delivered by the injection pump. Excepting the last factor (item 4), all others are usually given in the instruction booklet that comes with the system. However, one of the most important aspects of proper calibration is the determination of the speed of travel as the pivot completes a full circle. Book values of speed at various settings may not relate exactly to your conditions. Therefore, it is essential that an actual measurement of distance of travel of the outside wheel be obtained with the aid of a stopwatch while the system is running wet.

Measuring the rate of application of the pesticide delivered by the injection pump can be obtained in several ways. The rate of metering is best determined by the use of a graduated cylinder in line between the nurse tank and the injection pump. The cylinder is filled and the line from the tank is closed and material is pumped only from the cylinder over a specified time period. This is superior to pumping into a catch basin or container because pressure is maintained against the pump. Coarse adjustments are usually based on 1-minute time checks. A final check should be made at extended time periods (at least a 5-minute period).

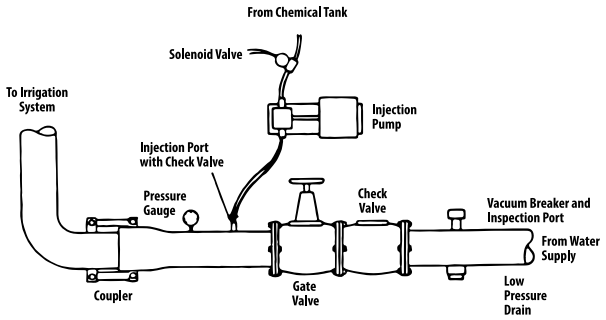


Figure 24: Backflow prevention device using check valve with vacuum relief and low pressure drain.

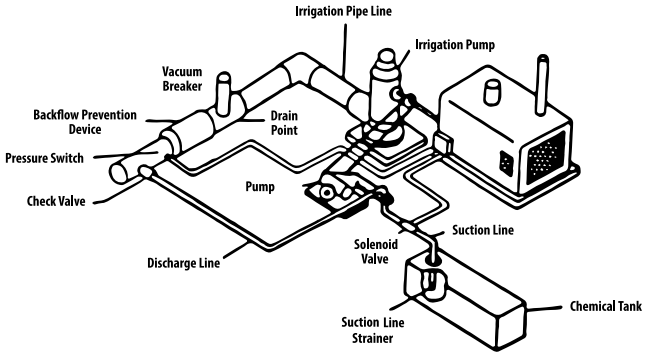


Figure 25: Safety devices for injection of chemicals in irrigation systems using a belt driven injection pump and engine power units.

The following is an example of calibration:

1) **Circumference in the field**
   Calculate the circumference by the formula:
   2 x 3.14165 x R = circumference
   R = distance from pivot point to last wheel track
   EXAMPLE: 2 x 3.1416 x 1200 = 7540

2) **Acres treated**
   Calibrate treated acres by formula:

$$\frac{3.1416 \times R \times R}{43560} = \text{Acres}$$

   Where R = distance from pivot point to last wheel track plus throw of end gun
   EXAMPLE: R = 1200 + 60 = 1260

$$\text{Acres} = \frac{3.1416 \times 1260}{43560} \times 1260 = 115 \text{ acres}$$

3) **Rate of travel**

   Calculate the speed of the pivot point at the time setting required to deliver the desired volume of water by measuring the distance traveled (at the last wheel track) by the pivot while irrigating. Time in 10 minutes.
   EXAMPLE: 60 feet/10 minutes = 6 feet/minute

4) **Revolution time**
   Calculate the time to complete a revolution by:

$$\frac{\text{Circumference in feet}}{\text{Feet/minute}} = \text{Time per revolution}$$

   EXAMPLE: 7540 ft/6 ft min = 1257 minutes

5) **Acres treated per minute**
   Calculate acres treated per minute by:

$$\frac{\text{Number of acres treated}}{\text{minutes per revolution}}$$

$$\text{EXAMPLE: } \frac{115 \text{ acres}}{1257 \text{ minutes}} = 0.09 \text{ acres/minutes}$$

Application rate

Calculate the amount of material to be pumped per minute by: millimeters of material per acre multiplied by acres irrigated per minute
EXAMPLE: 1 qt/acre = 946 Milliters/acre
(946 ml/A) x (0.09 A/min) = 84 ml/minute

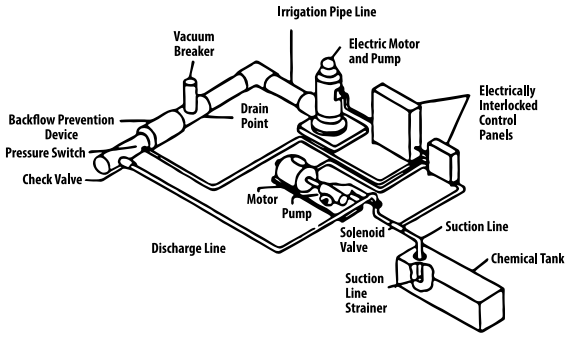


Figure 26: Safety devices for injection of chemicals into irrigation systems having electric power.

See the table "Pesticides for Impregnation, Liquid Fertilizer, or Irrigation" in the Technical Section for labeled pesticides.

FIRST AID FOR PESTICIDE POISONING

To ensure that pesticides continue to be beneficial to mankind, careful thought should be given to their safe use. Pesticides are used mainly for the protection of food and fiber so a continuously growing population can be adequately fed and clothed. Pesticides also suppress insects and other pests that carry human diseases such as malaria, typhus and sleeping sickness. Pesticides protect forests from insect damage; they control brush; and they make indoor living relatively free of biting and other nuisance insects. Pesticides are effective and useful products that make our lives better and help keep us healthy — when used properly.

Most pesticide poisonings result from careless use, improper storage or ignorance by the user. Of the 569 cases treated at Missouri poison control centers during 1975, 415 were children under five years of age. Pesticide accidents can be reduced if a few basic safety rules are followed by those using these chemicals.

READ AND FOLLOW INSTRUCTIONS

By law, everything you need to know to apply pesticides safely is on the label. Therefore, the most important rule to follow when using pesticides is: Read and Follow the Instructions and Precautions on the label. Read the label before buying the product, before opening the container, before mixing the solution, before applying the solution and before disposing of unused portions of the solution or empty containers.

Besides giving instructions and precautions, the label has one of three "signal words" that show how dangerous or toxic the contents are to man (Table 1). Signal words and toxicity levels are determined by the LD50 (the dose that will produce death in 50 percent of exposed test animals) of the pesticide. The lower the LD50, the higher the toxicity of the pesticide. Therefore, a pesticide with an oral LD50 of 500 would be much less toxic than a pesticide with an LD50 of 5.

Since accidental pesticide poisoning sometimes happens despite precautions, now is the time to make a list of emergency telephone numbers so they will be readily available, if needed. Include in this list numbers for physician, hospital, ambulance and poison control center.

SYMPTOMS OF PESTICIDE POISONING

All family members, even if they are not applying pesticides, should be aware of early symptoms and signs of pesticide poisoning. Unfortunately, all pesticide poisoning symptoms are not the same. Each chemical family, that is, organophosphates, carbamates and chlorinated hydrocarbons, attacks the human body in a different way.

Mild poisoning or early symptoms of acute poisoning. Headache, fatigue, weakness, dizziness, restlessness, nervousness, perspiration, nausea, diarrhea, loss of appetite or weight, thirst, moodiness, soreness in joints, skin and eye irritation, nose and throat irritation.

Moderate poisoning or early symptoms of acute poisoning. Nausea, diarrhea, excessive saliva, stomach cramps, excessive perspiration, trembling, no muscle coordination, muscle twitches, extreme weakness, mental confusion, blurred vision, difficulty in breathing, cough, rapid pulse, flushed or yellow skin, weeping.

Severe or acute poisoning. Fever, intense thirst, increased rate of breathing, vomiting, uncontrollable muscle twitches, pinpoint pupils, convulsions, inability to breathe, unconsciousness.

If in doubt whether poisoning has occurred, let a doctor decide!

Categories of Acute Toxicity

Categories	Signal Word Required on Label	LD-50* mg/kg Oral	LD-50* mg/kg Dermal
Highly Toxic	"Danger" Poison (printed in red) with skull and crossbones	0-50	0-200
Moderately Toxic	"Warning"	51-500	201-2,000
Slightly Toxic	"Caution"	501-5,000	2,001-20,000
Relatively Non-Toxic	None	over 5,000	over 20,000

The dose required to produce death in 50 percent of exposed test animals.

FIRST AID FOR PESTICIDE POISONING

First aid is the initial effort to help a victim while medical help is on the way. Doing the right thing immediately could prevent serious illness — even death. What should you do?

The first step you should take in any poisoning emergency, except when you are alone with the victim, is to call an ambulance or physician, or both. If you are alone with the victim, see that he or she is breathing and that no further exposure occurs. Wash the poison off the victim to reduce exposure before leaving to make a phone call.

If at all possible, take the pesticide container or label with you for the physician. If this is impossible, make sure you know what pesticides the victim has been using.

While you wait for the doctor or ambulance to arrive, give first aid as follows:

Poison on the skin: The faster the poison is washed off the patient, the less injury will result.

- Remove clothing.
- Drench skin with water (shower, hose, faucet, pond).
- Cleanse skin and hair thoroughly with detergent and water.

  (Detergents and commercial cleansers are better than soap.)
- Dry and wrap the victim in a blanket.
- WARNING: If at all possible, do not allow any pesticide to get on you while you are helping the victim.

Chemical burns of the skin:

- Remove contaminated clothing.
- Wash with large quantities of running water.
- Immediately cover loosely with a clean, soft cloth.
- Avoid use of ointments, greases, powders and other drugs in first aid treatment of burns.

Poison in eye:

- It is most important to wash the eye out as quickly, but as gently as possible.
- Hold eyelid open and wash eyes with a gentle stream of clean running water.
- Continue washing for 15 minutes or more.
- Do not use chemicals or drugs in wash water. They may increase the extent of the injury.

INHALED POISONS (DUST, VAPORS, GASES):

- If victim is in an enclosed space, do not go in after him without an air supplied respirator.
- Carry patient (do not let him walk) to fresh air immediately.
- Open all doors and windows.
- Loosen all tight clothing.
- Apply artificial respiration if breathing has stopped or is irregular. Keep patient as quiet as possible.
- If patient is convulsing, watch his breathing and protect him from falling and striking his head. Keep his chin up so his air passage will remain free for breathing.
- Prevent chilling (wrap patient in blankets, but don't overheat).

- Do not give alcohol in any form.

SWALLOWED POISONS: The most important choice you must make when aiding a person who has swallowed a pesticide is whether you should make the victim vomit. The decision must be made quickly and accurately; the victim's life may depend on it. Usually it is best to get rid of the swallowed poison fast. . .

But there are exceptions.

- Never induce vomiting if the victim is unconscious or in convulsions. The victim could choke to death.
- Never induce vomiting if the victim has swallowed a corrosive poison. A corrosive poison will burn the throat and mouth as severely coming up as it did going down. Find out what poison the person has ingested. A corrosive poison is a strong acid or alkali such as dinoseb, and the victim will complain of severe pain and have signs of severe mouth and throat burns.
- Never induce vomiting if the person has swallowed petroleum products (kerosene, gasoline, oil, lighter fluid). Most pesticides that come in liquid formulations are dissolved in petroleum products. The words "emulsifiable concentrate" or "solution" on the pesticide label are signs NOT to induce vomiting in the poison victim if he has swallowed the concentrates.

Concentrated petroleum products (like corrosive poisons) cause severe burns. They will burn as severely when vomited back up. If the victim has swallowed a diluted form of these products, however, he should be forced to vomit immediately.

HOW TO INDUCE VOMITING

Do not waste a lot of time inducing vomiting. Use it only as first aid until you can get the victim to a hospital. Make sure the victim is lying face down or kneeling forward while retching. Do not let him lie on his back because vomited matter could enter the lungs and do more damage.

- First give the patient large amounts of milk or water — one to two cups for victims up to five years old; up to a quart for victims five years or older.
- Induce vomiting by using syrup of ipecac (use only on physician's orders) or by putting your finger or the blunt end of a spoon at the back of the victim's throat. Do not use anything that is sharp or pointed! A glass of soapy water or salt water will also cause the victim to vomit.

DILUTE POISON QUICKLY

The best first aid for a person who has swallowed a poison is to dilute the poison as quickly as possible and to neutralize the acid or alkali causing the burns. Also, get the victim to a hospital without delay.

- For acid- or alkaline-based pesticides, give the victim water or preferably, milk — one or two cups for victims under five years: up to a quart for patients over five years. Milk is better than water because it dilutes and helps neutralize the poison. Water only dilutes the poison.
- If you are sure the poison is an acid, give the victim milk of magnesia (one tablespoon to one cup of water), baking soda or chalk in water.
- If you are sure the poison is an alkali, give the patient lemon juice or vinegar.

WARNINGS

- Never try to give anything by mouth to an unconscious victim.
- In an emergency, use any source of fairly clean water such as irrigation canals, lake, ponds, watering troughs, etc. Don't let the victim die while you worry about how dirty the water is.

"UNIVERSAL SPONGE"

Use these "sponges" to absorb excess poisons only after first aid suggestions for the corrosive or non-corrosive poisons are followed.

Activated charcoal. It absorbs many poisons at a high rate. Mix it with water into a thick soup for the victim to drink. Activated char-coal is found in aquarium filters or is available from a drug store.

Homemade absorber. A homemade "absorber sponge" for poison is a mixture of four tablespoons of toast (burnt black), two tablespoons strong tea (instant ice tea mix will do), and two tablespoons of milk of magnesia. This is used to absorb and neutralize most poisons.

SHOCK

Sometimes poison victims go into shock. If untreated or ignored, shock can kill a victim even if the poisoning injuries would not have been fatal.

Symptoms: The skin will be pale, moist, cold and clammy. The eyes will be vacant and lackluster with dilated pupils. Breathing will be shallow and irregular. The pulse will be very weak, rapid and irregular. The victim may be unconscious or in a faint. First aid steps follow:

- Unless he is vomiting, keep the victim flat on his back with his legs raised 1 to 1½ feet above his head level.
- Keep the victim warm enough to prevent shivering. Do not overheat.
- If the victim is conscious and has not swallowed any poison, give small amounts of water or a dilute salt solution (1/2 teaspoon of table salt to 1 quart of water). Give as often as the victim will accept it.
- Keep the victim quiet and reassure him often.

FIRST AID KIT FOR FIELD AND ON-THE-JOB USE

A well equipped first-aid kit that is always readily available can be important in a pesticide emergency. Make up your own Pesticide First-Aid Kit from a lunch pail, tool box or sturdy wooden box. It should have a tight fitting cover with a latch so it won't come open or allow pesticides to leak inside. Label it clearly with paint or a water proof marker.

Contents:

1. A small plastic bottle of common detergent, use to wash pesticides quickly off skin.
2. A small plastic container of salt or syrup of ipecac. Salt is used with water to induce vomiting or to aid a person in shock.
3. A box or plastic container of baking soda or a bottle of milk of magnesia. These mixed with water will neutralize acidic chemicals that have been swallowed.
4. A plastic bottle of lemon juice or vinegar. These are used with water to neutralize basic or alkaline chemicals that have been swallowed.
5. A small package or bag of activated charcoal. Mixed with water and swallowed, activated charcoal acts as an absorber of all pesticides.
6. A shaped plastic airway for mouth-to-mouth resuscitation.
7. A thermos or large plastic bottle (at least one pint) of clean water. If there is no clean water, use any pond or stream water available.
8. Simple adhesive bandages, a roll of gauze and tape. All cuts and scrapes should be covered to prevent pesticides from easily entering the body.
9. Change for an emergency phone call should always be taped to the inside of the cover of the first aid kit.
10. A small, plastic empty jar with a tight fitting lid is useful as a drinking glass for inducing vomiting or feeding activated charcoal. It also can be used for collecting vomited matter to take to a doctor.

Source: Baker, UMO and Smith, USDA.

POISON CONTROL CENTERS

THE FOLLOWING NUMBER FROM THE AMERICAN ASSOCIATION OF POISON CONTROL CENTERS LINKS YOU DIRECTLY TO THE FACILITY IN YOUR STATE.

800-222-1222 OR WWW.AAPCC.ORG

MEDICAL ANTIDOTES

Medical antidotes are available to neutralize the poisoning effects of some pesticides. Taken improperly, however, these antidotes can be more dangerous than the effects of the pesticide itself. Medical antidotes should be prescribed or given only by a physician. There are no known antidotes for some pesticides. Once a lethal dose has been ingested, the effects are irreversible and terminal.

Any pesticide applicator working with highly toxic carbamate and organophosphate pesticides should have his cholinesterase level tested at regular intervals throughout the spray season. The enzyme cholinesterase regulates the chemical transmission of nerve impulses, and the poison victim will die without it. Both carbamate and organophosphate pesticides attack this enzyme in the blood and make it useless.

After a physician has determined the applicator's base level of cholinesterase, a simple blood test will show if this level has decreased. If the cholinesterase level has decreased, the applicator has been overexposed to either organophosphate or carbamate pesticide. He should avoid further contact with these pesticides until his cholinesterase level has returned to normal. In severe cases, medical antidotes must be given.

Atropine sulfate and protopam chloride (2-PAM) can be given to counteract the effects of organophosphates. Atropine sulfate can also be used to treat poisoning from carbamates; however 2-PAM cannot be used for this purpose. These materials should not be taken unless actual poisoning has occurred.

POISON CONTROL CENTERS

Poison control centers have been established to give pertinent information on all types of poisonings, including pesticide poisonings. On a 24-hour daily basis, the centers provide to the medical profession current and accurate information concerning the prevention and treatment of pesticide poisonings. The centers also will prescribe a course of action to be taken if local physicians are unavailable or unacquainted with antidotes for specified pesticides or other poisonous and potentially poisonous materials.

SPILLS

FOR HELP IN CHEMICAL EMERGENCIES INVOLVING SPILLS, LEAKS, FIRES OR EXPOSURE, PHONE TOLL FREE, DAY OR NIGHT:

CHEMTREC: 800-424-9300 OR WWW.CHEMTREC.COM

Common Name/Active Ingredient - Trade Name*

HERBICIDES

Acetochlor — Confidence, Confidence Extra, Confidence Extra 5.6L, Degree Xtra, FulTime NXT, Harness, Harness MAX, Harness Xtra, Harness Xtra 5.6L, Impact Core, Keystone NXT, Keystone LA NXT, Kyro, Resicore, Resicore REV, SureStart II, Surpass NXT, Threesidual, Tremor NXT, Tremor ATZ NXT, Tremor ATZ Lite NXT, TripleFLEX II, Warrant, Warrant Ultra

Acifluorfen — Avalanche Ultra, Storm

Alachlor — Alachlor

Amicarbazone — Xonerate

Aminocyclopyrachlor — Method 240SL, Method 50SG, Perspective, Viewpoint, Streamline

Aminopyralid — Capstone, Chaparral, DuraCor, NativeKlean, Opensight, Sendero

Asulam — Asulam, Asulox

Atrazine — AAtrex, Atrazine 4L, Atrazine 90DF and numerous formulations and premixes

Benoxacor Safener — Dual II Magnum

Bensulfuron — Londax, Duet, SuperWHAM!

Bensulide — Betasan, Bensumec, Prefar

Bentazon — Basagran, Basagran 5L, Lescogran, Storm, Varisto

Benzobicyclon — Butte

Bicyclopyrone — Acuron, Acuron Flexi, Acuron GT, Storen, Talinor

Bispyribac-sodium — Regiment, Tradewind

Bromacil — Krovar I DF

Bromoxynil — Bison, Bromox, Bromoxynil, Carnivore, Cleansweep D, Cleansweep M, Huskie, Huskie Complete, Huskie FX, Kochiavore, Maestro 2EC, Maestro Advanced, Maestro MA, Starane NXT, Talinor, Wolverine Advanced, Tolvera

Carfentrazone — Aim EC, Anthem Flex, Display, Power Zone, Shark EW, Spartan Charge, Speed Zone

Chlorimuron-ethyl — Authority XL, Classic, Cloak EX, Enlite/Envive, Fierce XLT, Synchrony XP, Trivence, Valor XLT

Chlorsulfuron — Cimarron Plus, Cimarron X-tra, Finesse Cereal and Fallow, Glean XP, Landmark XP, Perspective, Telar XP

Clethodim — Cleanse, Prism, Section Three, Select Max, Shadow

Clodinafop-propargyl — Discover NG, NextStep NG

Clomazone — Command 3ME

Clopyralid — Confront, Curtail, Hornet, Kyro, Lontrel, Maverick, Millenium, PerfectMatch, Resicore, Resicore REV, Sendero, Stinger, Stinger HL, Threesidual, SureStart II, Transline, TripleFLEX II, Weld, WideMatch, WideARmatch

Cloransulam-methyl — Authority First DF, Battery One, FirstRate, Sonic, Surveil, Tendovo

Cyclanilide — Finish 6 Pro, Stance, Terminate

Cyhalofop — Clincher, Rebel EX

Cyprosulfamide safener — Balance Flexx, Corvus

DCPA — Dacthal W-75, Dacthal Flowable

Desmedipham — Sugarbeet Mix

Dicamba — Agility, Brushmaster, Clarifier, Clarity, Dicamba Max 4, DiFlexx, DiFlexx DUO, Distinct, Overdrive, Saddle-Up, Scorch, Scorch EXT, Spitfire, Status, Sterling Blue, Strike 3, WeedMaster, WeedMaster XHL, and numerous premixes

Dichlobenil — Casoron

Dichlorprop-P — Scorch EXT

Diclosulam — StrongArm

Dimethenamid-P — Armezon Pro, Freehand 1.75G, Outlook, Testify, Tower, Verdict

Dimethipin — Lintplus

Diquat Dibromide — Diquat 2L, Reglone, Reward

Dithiopyr — Crew, Dimension 2EW, Dimension Ultra 40WP

Diuron — Adios, CutOut, Direx 4L, GinStar, Karmex DF, Krovar I DF, Sahara, Velpar AlfaMax

Endothall — Aquathol, Super K, Hydrothal 191

EPTC — Eptam 20-G, Eptam 7E

Ethalfluralin — Sonalan 10G, Sonalan HFP

Ethephon — Boll'D, Finish 6 Pro, Proxy, Super Boll, Terminate

Ethofumesate — Ethotron, Nortron SC

Fenoxaprop — Axial Bold, Fusion, Ricestar HT, Tacoma 1EC, Wolverine Advanced

Florasulam — Defendor, Flex, GoldSky, Orion, Quelex

Florpyrauxifen — DuraCor, Loyant, NovaGraz

Fluazifop — Fusilade

Flucarbazone — Everest 3.0, Pre-Pare

Flufenacet — Axiom DF, TriVolt

Flumetsulam — Hornet, SureStart II, Threesidual, TripleFLEX II

Flumiclorac — Perpetuo, Resource

Flumioxazin — Afforia, Chateau EZ, Clipper, Enlite/Envive, Fierce EZ, Fierce MTZ, Fierce XLT, Kyber Pro, Panther SC, Surveil, Trivence, Tuscany SC, Valor EZ, Valor SX, Valor XLT

Fluometuron — Cotoran 4L

Fluroxypyr — Axial Star, Carnivore, Cleansweep D, Cleansweep M, GameOn, GoldSky, Huskie FX, Kochiavore, OpenSky, PastureGard HL, PerfectMatch, Pixxaro EC, Rezuvant, Scorch, Starane Flex, Starane NXT, Starane Ultra, StareDown, Supremacy, Surmount, Vios FX, Vista XRT, Weld, WideARmatch, WideMatch

Fluthiacet-methyl — Anthem Maxx, Display

Fomesafen — Agent 1.88, Flexstar, Flexstar GT 3.5, Reflex, Prefix, Warrant Ultra

Foramsulfuron — Revolver

Fosamine — Krenite S

Glufosinate P-Ammonium — Liberty Ultra

Glufosinate-ammonium — Cheetah, Finale, Liberty 280 SL, Rely 280, Sinate, Total, Total 2.3, Total SL, Total TNV

Glyphosate — Acuron GT, Cornerstone brands, Enlist Duo, Flexstar GT 3.5, Rodeo, Roundup brands, RT 3, Sequence

Halauxifen — Elevore, GameOn, Pixxaro EC, Quelex, Rezuvant, Tarzec, WideARmatch

Halosulfuron — Butte, Herbivore, Permit, Permit Plus, Sandea, Sedgehammer, Strada Pro, Yukon

Hexazinone — Outstar, Westar, Velpar L, Velpar L VU, Velpar AlfaMax and AlfaMax Gold

Imazamox — Beyond Xtra, Clearcast, Varisto

Imazapic — Cadre, Plateau

Imazapyr — Arsenal, Arsenal PowerLine, Chopper, Chopper Gen2, Habitat, One Step, Sahara, Stalker, Viewpoint

Imazaquin — Image, Scepter 70 DG

Imazethapyr — Authority Assist, ClearPath, Newpath, Pursuit, Zidua PRO

Imazosulfuron — League, League MVP

Indaziflam — Alion, EsplAnade 200 SC, Specticle Flo

Iodosulfuron — Autumn Super 51

Isoxaben — Crew, Gallery SC and 75DF, Showcase, SnapShot

Isoxadifen-ethyl safener — Accent Q, Capreno, Laudis, Steadfast Q

Isoxaflutole — Balance Flexx, Corvus, Scoparia, TriVolt

Lactofen — Cobra, Phoenix

Linuron — Linex 4L, Lorox DF

MCPA — MCPA salts and esters *(numerous)*, Maestro Advanced, Maestro MA, Orion, Rhomene MCPA, Solve, Weld and numerous premixes

MCPB — Thistrol

MCPE — Carnivore, Cleansweep M, Weld, numerous

MCPP or Mecoprop — Strike 3

Mefenpyr-diethyl — Tacoma 1EC, Wolverine Advanced

Mepiquat Chloride — Compact 6X, Gin Out, Pix WSG, Stance

Mepiquat Pentaborate — Pentia

Mesosulfuron-Methyl — Osprey, Osprey Xtra, Rimfire Max

Mesotrione — Acuron, Acuron Flexi, Acuron GT, Broadworks, Callisto, Callisto Xtra, Halex GT, Harness MAX, Incinerate, Lexar EZ, Maverick, Lumax EZ, Realm Q, Resicore, Resicore REV, Revulin Q, Storen, Tenacity

Metolachlor — Me-Too-Lachlor, Prefix

Metribuzin — Axiom DF, Boundary 6.5EC, Dimetric Charged, Dimetric EXT, Dimetric Liquid, Fierce MTZ, Kyber Pro, Mauler, PREsidual, Sonic Boom, Trivence, Tendovo

Metsulfuron — Agility, Ally XP, Ally Extra SG, Chaparral, Cimarron Max, Cimarron Max/X-tra, Cimarron Plus, Escort XP, Finesse Cereal and Fallow, Opensight, Oust Extra, Pastora, Patriot, Streamline, Viewpoint

MSMA — MSMA 6 Plus

Napropamide — Devrinol DF-XT

Nicosulfuron — Accent Q, Pastora, Revulin Q, Steadfast Q

Norflurazon — Solicam

Orthosulfamuron — Strada Pro, Strada WG, Strada XT2

Oryzalin — Surflan A.S.

Oxadiazon — Ronstar G, Ronstar 50 WSP

Oxyfluorfen — Cleantraxx, Galigan, Goal 2XL, GoalTender, Pindar GT

Paraquat — Gramoxone SL 3.0

Pebulate — Tiller

Pendimethalin — Framework 3.3 EC, Freehand 1.75G, Pendulum 2G, Pendulum 3.3 EC, Prowl H2O

Penoxsulam — Cleantraxx, Grasp SC, Grasp Xtra, Pindar GT, Rebel Ex, Sapphire

Picloram — Graslan L, GrazonPD3, Grazon P+D, Surmount, Tordon Formulations

Pinoxaden — Axial Bold, Axial Star, Axial XL, Rezuvant

Primisulfuron — Spirit

Prometon — Pramitol 25E, Pramitol 5PS

Prodiamine — Barricade 4FL, Barricade 65WG, Endurance, Resolute

Prometryn — Caparol 4L

Pronamide — Kerb SC

Propanil — Duet, Stam M4, Stam 80 EDF, SuperWHAM!

Propoxycarbazone-sodium — Olympus, Rimfire Max

Prosulfuron — Peak, Spirit

Pyraflufen ethyl — ET, Vida

Pyrasulfatole — Huskie, Huskie Complete, Huskie FX, Wolverine Advanced

Pyrithiobac Sodium — Staple LX

* Trade named products include premixes and co-paks that contain the indicated active ingredient

Pyroxasulfone — Anthem Flex, Anthem Maxx, Authority Edge, Authority Supreme, Fierce EZ, Fierce MTZ, Fierce XLT, Kyber Pro, Maverick, Perpetuo, Storen, Surtain, Zidua PRO, Zidua SC
Pyroxsulam — GR2, GoldSky, OpenSky, PerfectMatch, PowerFlex HL, Tarzec, TeamMate
Quinclorac — Clear Path, Facet L, Drive XLR8, Strada XT2
Quizalofop — Assure II, Targa
Rimsulfuron — Alluvex, Basis Blend, Crusher, Leadoff, Matrix, Realm Q, Resolve Q, Steadfast Q
S-Metolachlor — Acuron, Acuron Flexi, Acuron GT, Authority Elite, Bicep Magnum formulations, Boundary 6.5EC, BroadAxe XC, Charger Basic, Charger Max formulations, Dual Magnum, Dual II Magnum, EverpreX, Halex GT, Lexar EZ, Lumax EZ, Pennant Magnum, Prefix, PREsidual, Sequence, Storen, Tendovo
Saflufenacil — Detail, Sharpen, Surtain, Testify, Treevix, Verdict, Zidua PRO
Sethdoxydim — Poast
Siduron — Tupersan
Simazine — Simazine 4L, Simazine 90DF, Princep 4L, Princep Caliber 90
Sodium Chlorate — Leafex 2
Sulfentrazone — Authority Assist, Authority Edge, Authority Elite, Authority First DF, Authority Supreme, Authority XL, Battery One, BroadAxe XC, Sonic, Sonic Boom, Spartan 4F, Spartan Charge
Sulfometuron — Landmark XP, Oust, Oust Extra, Oustar, Weststar
Sulfosulfuron — Outrider, Certainty
Tebuthiuron — Spike 20P
Tembotrione — Capreno, DiFlexx DUO, Laudis
Terbacil — Sinbar WDG
Thiazopyr — Visor
Thidiazuron — Adios, CutOut, Daze 4SC, FreeFall SC
Thiencarbazone — Autumn Super 51, Capreno, Corvus, Huskie Complete, Osprey Xtra, TriVolt, Vios FX, Varro
Thifensulfuron — Affinity, Afforia, Agility, Alluvex, Ally Extra SG, Audit 75 WDG, Audit 1:1, Audit 4:1, Basis Blend, Crusher, Enlite/Envive, FirstShot, Harmony Extra SG, Leadoff, Panoflex, Permit Plus, Resolve Q, Supremacy, Synchrony XP
Thiobencarb — Bolero, Bolero Ultramax, League MVP
Tolpyralate — Tolvera
Topramezone — Armezon, Armezon Pro, Frequency, Impact, ImpactZ, Impact Core, Kyro, Pylex, Sinate
Triallate — Far-Go, Buckle
Triasulfuron — Amber, Rave
Tribenuron — Affinity, Afforia, Agility, Ally Extra SG, Audit 75 WDG, Audit 1:1, Audit 4:1, Cloak EX, Express, FirstShot, Harmony Extra SG, Panoflex, Supremacy
Tribufos — Folex 6 EC
Triclopyr — Capstone, Confront, Crossbow, Element 3A/4, Garlon 3A/4A, Grandstand R, Grasp Xtra, PastureGard HL, Pathfinder II, Remedy Ultra, Triclopy, Turflon, Vastlan
Trifloxysulfuron-Sodium — Envoke, Monument
Trifluralin — Buckle, Treflan, Trust, Preen, Showcase, Snapshot
Triflusulfuron — UpBeet
Trinexapac-ethyl — Primo MAXX
2,4-D — Numerous including Amine 4, LV4, LV6, Shredder E-99, Brash, Brushmaster, Cleansweep D, Crossbow, Curtail, Enlist Duo, Enlist One, GameOn, Graslan L, GrazonPD3, Grazon P+D, Hi-Dep, Kochiavore, NativeKlean, NovaGraz, Rugged, Saddle-Up, Scorch, ScorchEXT, Spitfire, Strike 3, Weedar 64, Weedar XHL, WeedMaster, WeedMaster XHL, Weedone 638
2,4-DB — 2,4-DB 200, 2,4-DB 175, Butoxone, Butyrac 175, Butyrac 200
2,4-DP-p — Brushmaster, Duplosan

INSECTICIDES

Abamectin — Abamex, AbbA Ultra, Avicta products, Agri-Mek SC, Divanem, Minecto Pro
Acephate — Orthene 97, Bracket 97
Acetamiprid — Assail, Intruder
Afidopyropen — Renestra, Sefina, Versys
Aldicarb — Temic
Aluminum Phosphide — PH3
Azadirachtin — Neemix
Bacillus amyloliquefaciens — Aveo EZ, Trunemco, Outreach SC
Bacillus firmus — Poncho VOTiVO
Bacillus licheniformis — Zironar
Bacillus subtilis — Zironar
Bifenthrin — Bifen 2 AG Gold, Brigade, Capture LFR, Capture 3RIVE 3D, Elevest, Ethos Elite LFR ‡ , Ethos XB, Ethos 3D, Hero, Index, Ridgeback, SmartChoice HC, Tundra, Tundra LFC, Xpedient Plus V
Broflanilide — Nurizma, Teraxxa, Teraxxa F4
Bt — Agree, DiPel ES and DF, Javelin, Xentari
Chenopodium ambrosioides near ambrosioides — Requiem EC
Chlorantraniliprole — Altacor, Besiege, Coragen, Dermacor X-100, Durivo, Elevest, Vantacor, Voliam Flexi
Chlorethoxyfos — Index, SmartChoice HC
Chlorfenapyr — Pylon
Clothianidin — Arena, Belay Insecticide, Intego Suite Soybeans, NipsIt INSIDE, NipsIt SUITE Cereals OF, Poncho Beta, Poncho VOTiVO, Poncho XC, Prosper EverGol, Sepresto
Conionthyrium minitans — Contans WG
Cyantraniliprole — Exirel, Ference, Fortenza, Lumiderm, Mainspring GNL, Minecto Pro, Verimark
Cyfluthrin, Beta- — Aztec 4.67G, Aztec HC, Baythroid XL, Leverage 360, Tempo
Cyflumetofen — Nealta
Cyhalothrin, Lambda- — Besiege, Endigo ZCX, Grizzly Too, Lambda-Cy AG, Tandem, Warrior II
Cypermethrin, Alpha- — Fastac CS, Renestra
Cypermethrin, Zeta- — Hero, Mustang, Mustang Maxx
Cyromazine — Trigard
Deltamethrin — Centynal, Delta Gold, Diacon-D IGR
Diatomaceous earth — Dryacide 200
Dicofol — Dicofol
Dicrotophos — Bidrin 8
Diflubenzuron — Dimilin
Dimethoate — Dimate 4E, Dimethoate 4EC
Dinotefuran — Certador, Venom
Dormant Oil — Many
Emamectin Benzoate — Denim, Proclaim
Esfenvalerate — Asana XL
Ethoprop — Mocap EC, Mocap 15G
Etoxazole — Zeal SC
Fenoxycarb — Award
Fenpropathrin — Danitol 2.4 EC
Fenpyroximate — Portal
Fipronil — Regent 4 SC
Flonicamid — Carbine 50WG, Beleaf 50 SG
Fluazaindolizine — Salibro
Flupyradifurone — Sivanto 200 SL, Sivanto Prime
Halofenazide — Mach
Hexythiazox — Onager
Imidacloprid — Admire Pro, Advise Four, Aeris, Defendis, Gaucho 600, Leverage 360, Merit 0.5 G, Nuprid 4F MAX, Rancona Crest, Raxil PRO Shield, Sepresto, Warden Cereals HR
Indoxacarb — Avaunt, Avaunt eVo, Provaunt, Steward EC
Lindane — Many
Malathion — Malathion 5, 5EC, 8 Flowable
Methomyl — Lannate LV, Lannate SP
Methoprene — Diacon IGR, Diacon-D IGR
Methoxyfenozide — Intrepid 2F, Intrepid Edge
Naled — Dibrom 8E
Neem Oil — Trilogy
Nicotine — Many
Novaluron — Diamond
Oil, Petroleum or Mineral — Many
Oxamyl — Vydate L, Vydate C-LV
Parrafinic Oil — Citrus Oil, Dormant Oil
Penflufen — Velum Rise
Permethrin — Arctic 3.2 EC
Phorate — Thimet 20-G
Phosmet — Imidan 70-W
Pirimiphos-methyl — Actellic
Pn1-Pasteuria nishizawae —
Propargite — Comite, Comite II, Omite-6E
Propoxur — Baygon
Pymetrozine — Fulfill
Pyrethrins — PyGanic EC[1].4II, PyGanic EC 5.0[II]
Pyriproxyfen — Archer, Esteem 0.86 EC, Knack, Senstar
Rotenone — Many
Spinetoram — Delegate, Intrepid Edge, Radiant
Spinosad — BlackHawk, Conserve, Entrust SC, GF-120, MatchPoint, Spintor, Sensat, Success
Spiromesifen — Oberon 2 SC, Oberson 4 SC
Spirotetramat — Movento, Movento HL, Movento MPC, Senstar, Ultor
Sulfoxaflor — Closer, Ridgeback, Sequoia, Transform WG, Xxpire
Sulfur — Microthiol Disperss
Sulprofus — Bolstar
Tebufenozide — Confirm 2F
Tebupirimfos — Aztec 4.67G, Aztec HC
Tefluthrin — Force 6.5G, Force 10G HL, Force Evo
Terbufos — Counter 20G
Tetradifon — Tedion
Thiamethoxam — Actara, Avicta Complete Beans 500, Avicta Complete Corn 250, Avicta Duo Corn, Avicta Duo 250 Corn, Avicta Duo Cotton, Caravan G, Centric 40WG, Cruiser, Cruiser 70 WS, CruiserMaxx, CruiserMaxx APX, CruiserMaxx Cereals, CruiserMaxx Peanuts, CruiserMaxx Potato, CruiserMaxx Potato Extreme, CruiserMaxx Rice, CruiserMaxx Sugarbeets, CruiserMaxx Vibrance, CruiserMaxx Vibrance Cereals, CruiserMaxx Vibrance Potato, CruiserMaxx Vibrance Pulses, Durivo, Endigo ZCX, Helix Vibrance, Helix Xtra, Platinum 75 SG, Tandem, Voliam Flexi, Warden CX II, Warden Cereals WRII
Thiodicarb — Aeris

* Trade named products include premixes and co-paks that contain the indicated active ingredient

Tralomethrin — Scout
Trichlorfon — Dylox

FUNGICIDES

Acibenzolar — Actigard, Bion 500 FS, Blockade, Daconil Action, Secure Action
Ametoctradin — Zampro
Aspergillus flavus — Afla-Guard GR
Azoxystrobin — Abound, Adastrio, Affiance, Aframe Plus, Altipro, Amistar Top, Avicta Complete Corn 250, Briskway, Caravan G, Contend B, Cruiser Extreme, CruiserMaxx Peanuts, CruiserMaxx Rice, Dynasty, Dynasty CST, Dynasty PD, Elatus, Forcivo, Graduate A+, Maxim Quattro, Miravis Neo, Mural, Quadris Opti, Quadris Ridomil Gold SL, Quadris Top, Quadris Top SBX, Renown, RustEase, Quilt Xcel, Tetraban, TopGuard EQ, Trivapro, Uniform, Vibrance Cinco, Vibrance CST, Vibrance RST
Bacillus spp. D747 — Ethos XB, Ethos 3D
Bacillus spp. FZB24 — Taegro 2
Bacillus spp. MBI 600 — Serifel, Vault IP/Vault IP Plus
Bacillus spp. QST 2808 — Sonata
Bacillus spp. QST 713 — Minuet, Serenade ASO, Serenade OPTI
Bacillus spp. RTI301 — Ethos Elite LFR ‡
Bacillus spp. RTI477 — Ethos Elite LFR ‡
Bacillus amyloliquefaciens — Bexfond
Bacillus licheniformis — Zironar
Bacillus Lichenformis, Subtillis — Avodigen
Bacillus subtilis — Zironar
Benzovindiflupyr — Aprovia Top, Contend A, Elatus, Mural, Trivapro
Bixafen — Lucento
Boscalid — Coronet, Emerald, Endura, Honor, Pristine, Zorina
Captan — Captan, Captec, Enhance, Rival FL
Chlorothalonil — Bravo Ultrex, Bravo Weather Stik, Concert II, Daconil Action, Daconil Ultrex Turf Care, Daconil Weather Stik, Echo 720, Echo 90 DF, Instrata, Manicure, Orondis Opti, Praiz, Previsto, Quadris Opti, Renown, Ridomil Gold Bravo SC, Zing!
Copper Hydroxide — Badge SC, Badge X2, Champ Dry Prill, Champ Formula 2 Flowable, Champ WG, ChampION++, Junction, Kocide 3000, Ridomil Gold Copper
Copper Sulfate — Cuprofix Ultra 40 Disperss
Copper Oxychloride — Badge SC, Badge X2
Cyazofamid — Ranman
Cyflufenamid — Torino
Cymoxanil — Curzate 60 DF, Tanos
Cyprodinil — Inspire Super, Switch 62.5WG, Vangard
Cyproconazole — Alto, Aproach Prima, RustEase
Daconil — see Chlorothalonil
Difenoconazole — Amistar Top, Aprovia Top, Briskway, Contend A, CruiserMaxx Cereals, CruiserMaxx Potato Extreme, CruiserMaxx Vibrance Cereals, , CruiserMaxx Vibrance Potato, Dividend Extreme, Helix Vibrance, Helix Xtra, Inspire Super, Inspire XT, Luna Flex, Miravis Top, Quadris Top, Quadris Top SBX, Revus Top, Top MP, Vibrance Extreme, Vibrance Ultra Potato, Warden Cereals II, Warden Cereals WRII
Dimethomorph — Forum, Zampro
Ethaboxam — Elumin, Intego Suite Soybean
Famoxodone — Tanos
Fenbuconazole — Enable 2F, Indar 2F
Fenhexamid — Captevate, Elevate
Fluazinam — Omega, Omega Top MP, Secure, Secure Action
Fluindapyr— Adastrio, Forcivo
Fludioxonil — ApronMaxx RFC, Apron Maxx RTA, Apron Maxx RTA + Moly, Avicta Complete Corn 250, Avicta Complete Beans 500, Cannonball WG, Cruiser Extreme, CruiserMaxx APX, CruiserMaxx Peanuts, CruiserMaxx Potato, CruiserMaxx Potato Extreme, CruiserMaxx Rice, CruiserMaxx Sugarbeets, CruiserMaxx Vibrance, CruiserMaxx Vibrance Potato, CruiserMaxx Vibrance Pulses, Dynasty CST, Dynasty PD, Graduate, Graduate A+, Helix Vibrance, Helix Xtra, Instrata, Maxim Quattro, Maxim 025FS, Maxim 4FS, Maxim XL, Medallion, Medallion SC, Miravis Prime, Scholar SC, Switch 62.5WG, Vibrance CST, Vibrance Cinco, Vibrance Maxx, Vibrance Maxx Pulses RTA, Vibrance RST, Vibrance Trio, Warden CX II, Warden RTA, Warden Cereals WRII
Fluopicolide — Presidio
Fluopyram — Delaro Complete, ILeVO, Luna Experience, Luna Flex, Luna Pro, Luna Sensation, Luna Tranquility, Propulse, Prosaro Pro 400 SC, Velum Prime, Velum One, Velum Rise
Fluoxastrobin — Acceleron, Evito, Evito T, Floxcor
Flutolanil — Moncut SC, ProStar 70 WP
Flutriafol — Adastrio, Forcivo, Rhyme, TopGuard, TopGuard EQ, Xyway 3D, Xyway LFR
Fluxapyroxad — Everlon, Lexicon Intrinsic, Merivon, Nexicor, Obvius, Obvius Plus, Priaxor, Revylok, Revytek, Stamina F4 Cereals, Systiva XS, Teraxxa F4, Tesaris, Xzemplar
Imazilil — Nuzone
Inpyrfluxam — Excalia, Zeltera
Ipconazole — Intego Suite Soybeans, Rancona Crest, Rancona Pinnacle, Rancona Summit, Warden Cereals HR
Iprodione — Chipco 26019 FLO, Interface, Rovral 4F
Kresoxin Methyl — Sovran
Mancozeb — Dithane F-45 Rainshield, Gavel 75DF, Junction, Ridomil Gold MZ WG, Fore 80WP Rainshield, Mancozeb, ManKocide, Manzate Max, Manzate Pro-Stick, Penncozeb 75DD
Mandipropamid — Revus, Revus Top, Orondis Ultra, Vibrance Ultra Potato
Mefentrifluconazole — Maxtima, Navicon, Provysol, Revylok, Revytek, Veltyma, Zorina
Metalaxyl-M/Mefenoxam — Allegiance-FL, ApronMaxx RFC, Apron Maxx RTA, Apron Maxx RTA + Moly, Apron XL, Apron XL 350ES, Avicta Complete Beans 500, Avicta Complete Corn 250, Cruiser, Cruiser Maxx, CruiserMaxx APX, CruiserMaxx Advanced, CruiserMaxx Cereals, CruiserMaxx Peanuts, CruiserMaxx Rice, CruiserMaxx Vibrance, CruiserMaxx Vibrance Cereals, CruiserMaxx Vibrance Pulses, Cruiser Extreme, CruiserMaxx Sugarbeets, Defendis, Dividend Extreme, EverGol Energy, EverGol Energy SB, Dynasty CST, Dynasty PD, Helix Vibrance, Helix Xtra, Intego Suite Soybeans, Maxim Quattro, Maxim XL, NipsIt SUITE Cereals OF, Obvius, Obvius Plus, Orondis Gold, Orondis Gold B, Prosper EverGol, Quadris Ridomil Gold SL, Rancona Crest, Rancona Pinnacle, Rancona Summit, Raxil PRO MD, Raxil PRO Shield, Ridomil Gold Bravo SC, Ridomil Gold Copper, Ridomil Gold GR, Ridomil Gold MZ WG, Ridomil Gold SL, Stamina F4 Cereals, Subdue GR, Subdue Maxx, Teraxxa F4, Ultra Flourish, Uniform, Vibrance Cinco, Vibrance CST, Vibrance Extreme, Vibrance Maxx, Vibrance Maxx Pulses RTA, Vibrance RST, Vibrance Trio, Warden CX II, Warden Cereals HR, Warden Cereals II, Warden RTA
Metconazole — Headline AMP, NipsIt SUITE Cereals OF, Quash, Sphaerex
Myclobutanil — Rally 40WSP, Eagle 20EW
Oxadixyl — Anchor
Oxathiapiprolin — Lumisena, Orondis, Orondis Gold, Orondis Gold 200, Orondis Opti, Orondis Ultra, Plenaris 200FS
PCNB — Blocker 4F, Blocker 10G, Ridomil Gold PC GR, Turfcide 400
Penflufen — Emesto Silver, EverGol Energy, EverGol Energy SB, Prosper EverGol
Penthiopyrad — Fontelis, Velista
Phosphite — Appear, Phostrol
Picarbutrazox — CruiserMaxx APX, Vayantis, Warden CX II
Picoxystrobin — Aproach, Aproach Prima, Defendis, Viatude
Polyoxin D zinc — Ph-D
Propamocarb — Banol, Previcur Flex
Propiconazole — Aframe Plus, Banner Maxx II, Concert II, Contend B, EverGol Energy, EverGol Energy SB, Inspire XT, Instrata, Mentor, Mentor EC, Miravis Ace, Miravis Neo, Nexicor, Propensity, Quilt Xcel, Tilt, Topaz, Trivapro
Prothioconazole — Altipro, Delaro 325 SC, Delaro Complete, Emesto Silver, EverGol Energy, EverGol Energy SB, Luna Pro, Proline 480 SC, Prosaro 421 SC, Prosaro Pro 400 SC, Propulse, Protegam YLD, Provost Silver, Raxil PRO MD, Raxil PRO Shield, Stratego YLD, Sphaerex, Viatude
Pydiflumetofen — Miravis, Miravis Ace, Miravis Neo, Miravis Prime, Miravis Top, Saltro, Trebuset
Pyraclostrobin — Cabrio EG, Coronet, Everlon, Headline, Headline AMP, Headline SC, Honor, Insignia, Insignia SC, Lexicon Intrinsic, Merivon, Nexicor, Obvius, Obvius Plus, Pageant Intrinsic, Pillar G, Pillar G Intrinsic, Priaxor, Pristine, Revytek, Stamina, Stamina F4 Cereals, Teraxxa F4, Veltyma
Pyrimethanil — Luna Tranquility, Scala SC
Quintozine — PCNB

* Trade named products include premixes and co-paks that contain the indicated active ingredient

Sedaxane — CruiserMaxx, CruiserMaxx APX, CruiserMaxx Vibrance, CruiserMaxx Vibrance Cereals, , CruiserMaxx Vibrance Potato, CruiserMaxx Vibrance Pulses, Helix Vibrance, Vibrance, Vibrance CST, Vibrance Cinco, Vibrance Extreme, Vibrance Maxx, Vibrance Maxx Pulses RTA, Vibrance RST, Vibrance Trio, Vibrance Ultra Potato, Warden CX II, Warden Cereals II, Warden Cereals WRII, Warden Cereals 360
Streptomyces lydicus WYEC 108 — Actinovate AG
Sulfur — Microthiol Disperss
Tebuconazole — Absolute 500 SC, Absolute Maxx, Adament, Elite, Evito T, Luna Experience, Onset, Prosaro 421 SC, Prosaro Pro 200 SC, Provost Silver, Raxil PRO MD, Raxil PRO Shield, Upper Cut
Tetraconazole — Affiance, Domark 230 ME, Eminent VP, Mettle 125 ME
Thiabendazole — Alumni, Avicta Complete Corn 250, CruiserMaxx Vibrance Pulses, Maxim Quattro, Mertect 340-F, Vibrance Cinco, Vibrance Maxx Pulses RTA
Thiram — Spotrete F
Triadimefon — Bayleton 50 T&O, Tartan
Thiophanate methyl — Obvius Plus, T-Methyl 4.5 F, T-Methyl 70 WSB, Topsin M WSB, Topsin 4.5FL, 3336 F
Tolclofos-methyl — Rizolex
Triaflumizole — Procure
Trichoderma spp. ICC 080 — Bio-Tam 2.0
Trichoderma spp. ICC 012 — Bio-Tam 2.0
Trifloxystrobin — Absolute 500 SC, Absolute Maxx, Adamant, Compass, Delaro 325 SC, Delaro Complete, Flint, Flint Extra, Interface, Luna Sensation, Prosper EverGol, Protegam YLD, Stratego YLD, Tartan
Triphenyltin hydroxide — Agri Tin Flowable
Triticonazole — Pillar G, Pillar G Intrinsic, Stamina F4 Cereals, Teraxxa F4, Trinity
Zoxamide — Gavel 75DF, Zing!

PRODUCT DICTIONARY

AAtrex 4L, AAtrex Nine-0 *(atrazine)* — Herbicide for corn, sorghum and other crops. 4L is a flowable form; Nine-0 is a 90% ai dry flowable
Abamex *(abamectin)* — Insecticide for many crops. Nufarm
AbbA Ultra *(abamectin)* — Insecticide for many crops. AMVAC
Abound *(azoxystrobin)* — Broad spectrum preventative fungicide with systemic and curative properties applied as a foliar spray on bananas, grapes, peaches, peanuts and pecans. Syngenta
Absolute 500 SC, Absolute Maxx *(tebuconazole + trifloxystrobin)* — Fungicide for various grain and nut crops, and grasses grown for seed. Bayer
Abundit Edge *(glyphosate)* — Herbicide. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont
Accelerate *(endothall)* — Harvest aid for cotton. Cerexagri-Nisso
Acceleron *(various a.i.s depending on product)* — Seed treatment brands. Bayer
Accent Gold WDG *(nicosulfuron + rimsulfuron + flumetsulam + clopyralid)* — POST herbicide in field corn. Discontinued by DuPont
Accent Q *(nicosulfuron + isoxadifen safener)* — POST herbicide for grass plus some broadleaves in corn. Corteva Agriscience
Accent SP *(nicosulfuron)* — POST herbicide for corn. Discontinued by DuPont
Acclaim Extra *(fenoxaprop-p-ethyl)* — Selective grass control in turf grass. Discontinued by Bayer
Accolade *(flumetsulam)* — PPI or PRE herbicide for control of broadleaf weeds in field corn and soybeans. Discontinued by FMC
Accolade-L — Inoculant for various non-legume crops. Discontinued by Verdesian Life Sciences
AccuDrop *(drift and deposition aid)* — Surfactant designed to reduce drift, improve deposition and optimize pesticide performance. WinField United
Acephate 90 SP and 75 SP *(acephate)* — Insecticide for cotton, peanuts, vegetables, seed treatment. Discontinued by WinField United though still registered by others
Achieve Liquid *(tralkoxydim)* — POST herbicide for wild oats and other grasses in small grains. Discontinued by Syngenta
Acquire *(metalaxyl)* — Fungicide seed treatment for many crops. Discontinued by BASF
Acrobat 50WP *(dimethomorph)* — Fungicide to manage late blight and tuber blight in potato and late blight on tomato. Discontinued by BASF
Acrobat MZ *(9% dimethomorph + 60% mancozeb)* — Protectant fungicide for potato late blight. Discontinued by BASF
Actara *(thiamethoxam)* — Insecticide for aphids, whiteflies, leafminers on cotton, potatoes, certain vegetables. Syngenta
Actellic 5E *(pirimiphos-methyl)* — Organophosphate insecticide used on stored field corn, popcorn and grain sorghum; controls most stored grain insects except lesser grain borer. WinField United
Actigard 50W DG *(acibenzolar-s-methyl)* — Systemic fungicide for downy mildew, leaf spot and blue mold on vegetables and tobacco. Syngenta
Actinovate AG *(Streptomyces lydicus WYEC 108)* — Fungicide for several row crops and vegetables. Novozymes
Activate Plus *(surfactant)* — 90/10 non-ionic surfactant. Discontinued by WinField United
Acuron *(atrazine + bicyclopyrone + mesotrione + s-metolachlor)* — PRE and POST herbicide for grass and broadleaf control in corn. Syngenta
Acuron Flexi *(bicyclopyrone + mesotrione + s-metolachlor)* — PRE and POST herbicide for grass and broadleaf control in corn. Syngenta
Acuron GT *(bicyclopyrone + mesotrione + s-metolachlor + glyphosate)* —POST herbicide for glyphosate tolerant corn. Syngenta
Adage 5FS *(thiamethoxam)* — Seed treatment for insect control. Discontinued by Syngenta
Adastrio *(azoxystrobin + fluindapyr + flutriafol)* — Fungicide for corn, soybeans, sorghum and small grains. FMC
Address 75WSP, 90S *(acephate)* — Insecticide used in cotton, peanuts, tobacco, vegetables. Discontinued by Dow AgroSciences
Adios *(thidiazuron + diuron)* — Cotton harvest aid. Arysta LifeScience
Admire 2 *(imidacloprid)* — Insecticide for cotton, potatoes and vegetables. Discontinued by Bayer
Admire Pro *(imidacloprid)* — Insecticide for cotton, potatoes and vegetables. Bayer
Aduro *(surfactant + AMS-replacement)* — Water conditioning, acidifier, and surfactant. WinField United
Advanced Coating Zn *(zinc)* — Seed applied for corn. Discontinued by WinField United
Advion *(indoxcarb)* — Insecticide for use on turf. Syngenta
Advise 2FL *(imidacloprid)* — Insecticide for cotton, potatoes and vegetables. Discontinued by WinField United
Advise Four *(imidacloprid)* — Insecticide for cotton, peanut, potatoes, soybean, tobacco and vegetables. WinField United
Advise Max *(imidacloprid)* — Insecticide for cotton and pecans. Discontinued by WinField United
AD 100 *(adjuvant)* — Non-ionic surfactant and oil. Discontinued by WinField United
Aeris *(thiodicarb + imidacloprid)* — Commercial seed treatment for nematodes and insects in cotton. Bayer
Affect GC *(polyvinyl polymer emulsion)* — Drift reduction agent. Discontinued by WinField United
Affiance *(azoxystrobin + tetraconazole)* — Fungicide for multiple crops. Gowan
Affinity BroadSpec *(thifensulfuron + tribenuron)* — Herbicide for burndown and POST broadleaf control in fallow, oat, triticale, fallow wheat and barley. FMC
Affinity TankMix *(thifensulfuron + tribenuron)* — Herbicide for burndown and POST broadleaf control in wheat, oat, triticale, fallow and barley. FMC
Afforia *(flumioxazin + thifensulfuron + tribenuron)* — Burndown and PP weed control herbicide. Corteva Agriscience
Afla-Guard GR *(Aspergillus flavus)* — Displaces aflatoxin producing fungi in peanuts and corn. Syngenta
Aframe Plus *(azoxystrobin + propiconazole)* — Same as Quilt Xcel; Foliar fungicide for many crops. Syngenta
Agent 1.88 *(fomesafen)* — Herbicide for cotton, dry & snap beans, potatoes and soybeans. WinField United
Agent GT *(fomesafen + glyphosate)* — Herbicide for soybeans and cotton. Discontinued by WinField United
Agility SG *(thifensulfuron + tribenuron + metsulfuron + dicamba)* — FMC
Agree WG *(Bt aizawai)* — Biological insecticide for caterpillars on fruits, vegetables, corn, soybeans and tobacco. Certis
Agri-Flex *(abamectin + thiamethoxam)* — Insecticide used on citrus, potato and fruit. Syngenta
Agri-Mek 0.15 EC *(abamectin)* — Insecticide used on cotton, potatoes, tomatoes, apples, citrus. Discontinued by Syngenta

Agri-Mek SC *(abamectin)* — Insecticide used on cotton, potatoes, tomatoes, apples, citrus. Syngenta

Agri Tin Flowable *(triphenyltin hydroxide)* — RUP fungicide for sugarbeet, potato. Nufarm

Agrosol Dry *(captan +thiabendazole)* — Seed treatment. Discontinued by WinField United

Agrosol Pour-On *(thiram + thiabendazole)* — Seed treatment. Discontinued by WinField United

Agrosol-T *(thiram + thiabendazole)* — Seed treatment. Discontinued by WinField United

Agrox D-L Plus *(captan + diazinon + lindane)* — Seed treatment containing 15% captan, 15% diazinon and 25% lindane. Discontinued by WinField United

Agrox Premiere *(captan + diazinon + lindane + metalaxyl)* — Seed treatment for corn. Discontinued by WinField United

Aim EC *(carfentrazone-ethyl)* — PP Burndown, PRE, POST herbicide for small broadleaf weeds in a number of grain and vegetable crops; harvest aid for select crops. FMC

Airforce *(oil-based adjuvant)* — Oil/silicone surfactant. Discontinued by WinField United

Alanap-L *(naptalam)* — Soil herbicide for broadleaf weeds in cucurbits and nursery stock. Discontinued by Chemtura

Aliette WDG *(fosetyl-aluminum)* — Foliar fungicide for use on fruits and vegetables. Bayer

Alion *(indaziflam)* — Citrus, fruit, and tree herbicide. Bayer

Alite 27 *(isoxaflutole)* — Preplant and PRE herbicide for GT27 soybeans. Discontinued by BASF

Allectus SC *(imidacloprid + bifenthrin)* — Insecticide for turfgrass and ornamentals. Bayer

Allegiance-FL *(metalaxyl)* — Commercial seed treatment for control of seed rot and damping-off diseases of certain crops. Bayer

Allegiance-LS *(metalaxyl)* — Seed treatment for control of seed rot and damping-off diseases of certain crops. Discontinued by Bayer

Alliance *(water conditioner)* — Water conditioner/AMS for high load glyphosate and other herbicides; CPDA certified. Discontinued by WinField United

Alluvex *(rimsulfuron + thifensulfuron)* — Herbicide for PRE or burndown use in field corn. Corteva Agriscience

Ally Extra SG *(thifensulfuron + tribenuron + metsulfuron-methyl)* — Post herbicide for broadleaves in wheat, durum, barley, triticale and fallow. FMC

Ally XP *(metsulfuron)* — POST herbicide for broadleaf weeds in wheat, barley, pastures, triticale, sorghum and CRP acres. FMC

Altacor *(chlorantraniliprole)* — Insecticide for citrus and other fruits. FMC

Altipro *(Azoxystrobin + Prothioconazole)* — Foliar and soil applied fungicide for corn, soybeans, wheat and various additional crops. WinField United

Alto 100SL *(cyproconazole)* — Fungicide for soybeans. Syngenta

Alumni *(thiabendazole)* — Fungicide for citrus dip. Syngenta

Amber *(triasulfuron)* — PRE and POST herbicide for control of some grasses in wheat, barley, pasture, CRP and fallow. Syngenta

Ambush 2E and 25W *(permethrin)* — Synthetic pyrethroid insecticide used for insect control in many crops. Discontinued by AMVAC

America's Best Inoculant *(ABI)***, ABI Plus 30 Extender** — Bacterial inoculant for soybean *(including Plus 30 Extender if desired)*, peanut and pulses. Advanced Biological Marketing

Amistar 20G *(azoxystrobin)* — Fungicide for vegetables. Discontinued by Syngenta

Amistar Top *(azoxystrobin + difenoconazole)* — Fungicide for citrus, cotton, soybean and rice. Syngenta

Amitrol-T *(amitrole)* — Non-selective POST systemic herbicide. Discontinued by Nufarm

Ammo *(cypermethrin)* — Insecticide used in cotton and vegetable crops. Discontinued by FMC

Amplify *(cloransulam methyl)* — POST herbicide for broadleaf weeds in soybeans. Discontinued by Monsanto

AMS 20/10 *(water conditioner + drift reduction)* — Sprayable AMS with drift reduction. Discontinued by WinField United.

AMS/2000 *(sprayable AMS + drift reduction)* — AMS combined with antifoam to enhance herbicide performance. WinField United

Amsol *(liquid AMS)* — 34% liquid designed to enhance herbicide performance. Discontinued by WinField United

Amsol/Dry *(spray grade AMS + antifoam)* — 99.1% dry ammonium sulfate milled/blended with antifoam. Discontinued by WinField United

Amsol Plus *(liquid AMS + drift reduction)* — Liquid ammonium sulfate designed to improve spray deposition. Discontinued by WinField United

Amsurf Xtra *(liquid AMS + surfactant, drift reduction)* — 34% liquid designed to enhance herbicide performance. WinField United

Ansar 8100 *(disodium methanearsonate)* — POST weed control in citrus, turf and non-crop areas. Discontinued by Syngenta

Anthem *(pyroxasulfone + fluthiacet-methyl)* — Herbicide for PP burndown/PRE/PPI and POST control in field, sweet, popcorn, soybean. Discontinued by FMC

Anthem ATZ *(atrazine + pyroxasulfone + fluthiacet-methyl)* — Herbicide for PP burndown/PRE/PPI and POST control in field, sweet, and popcorn. Discontinued by FMC

Anthem Flex *(carfentrazone + pyroxasulfone)* — Herbicide for corn, soy, wheat, cotton, lentils, chickpeas, peas, sunflower, peanuts. FMC

Anthem Maxx *(pyroxasulfone + fluthiacet-methyl)* — Herbicide for PP burndown/PRE/PPI and POST control in field, sweet, popcorn, soybean. FMC

Appear *(phosphite)* — Fungicide for control of Pythium diseases in turf. Syngenta

Aproach *(picoxystrobin)* — Fungicide for many crops. Corteva Agriscience

Aproach Prima *(picoxystrobin + cyproconazole)* — Fungicide for many crops. Corteva Agriscience

Apron Maxx RTA *(mefenoxam + fludioxonil)* — On-farm or commercial seed treatment and fungicide for soybeans. Syngenta

Apron Maxx RTA + Moly *(mefenoxam + fludioxonil + molybdenum)* — On-farm or commercial seed treatment and fungicide for soybeans. Syngenta

Apron XL 350ES *(mefenoxam)* — On-farm or commercial seed treatment for use on sunflower seed export only. Syngenta

ApronMaxx RFC *(mefenoxam + fludioxonil)* — On-farm or commercial seed treatment fungicide for soybeans, dry beans and other legumes. Syngenta

Aprovia Top *(difenoconazole + benzovindiflupyr)* — Fungicide for various vegetables. Syngenta

Aqua-Kleen *(2,4-D ester)*— Herbicide for aquatic plants. Discontinued

AquaMaster *(glyphosate)* — Herbicide for aquatic use. Discontinued by Bayer

AquaNeat *(glyphosate)* — Aquatic and non-crop herbicide. Discontinued by Nufarm

Aquashade — Controls algae and submersed weeds in ponds by coloring water to filter sunlight. Applied Biochemists

Aquathol, Aquathol K *(endothall)* — Aquatic herbicides. UPL

Archer *(pyriproxyfen)* — IGR, can be used to control insect pests outdoors adjacent to buildings and structures, on lawns, and in pet areas. Syngenta

Arctic 3.2 EC *(permethrin)* —Insecticide for corn. WinField United

Arena *(clothianidin)* — Insecticide for turf. Arysta LifeScience

Armezon *(topramezone)* — POST herbicide for corn. BASF

Armezon PRO *(dimethenamid-p + topramezone)* — Weed control in corn. BASF

Arrosolo 3-3E *(molinate + propanil)* — POST herbicide for rice. Discontinued by Syngenta

Arrow Four — Water condition and drift reduction and anti-foam. Discontinued by WinField United

Arsenal/Arsenal PowerLine *(imazapyr)* — Non-selective herbicide for PRE and POST soil application for grasses and weeds in non-crop areas. BASF

Asana XL *(esfenvalerate)* — Broad spectrum synthetic pyrethroid insecticide labeled for use on many crops. Valent

Ascend², Ascend Pro, Ascend SL, Ascend ST3, Ascend WSG *(kinetin + giberellic acid + IBA)* — On-farm or commercial plant growth regulator for several crops. WinField United

Assail 70WP/30SG *(acetamiprid)* — Insecticide used on cotton, vegetables, pome fruits. UPL

Assert *(imazamethabenz)* — POST herbicide for wild oats and some broadleaf weeds in sunflower, wheat and barley. Discontinued by Nufarm

Assure II *(quizalofop)* — POST herbicide for annual and perennial grasses in soybeans, canola, cotton, dry beans and sugarbeets. AMVAC

Astera *(propiconazole + harpin a protein)* — Fungicide co-pak for field, pop, and seed corn. Discontinued by Arysta LifeScience

Asulam 3.3 *(asulam, sodium salt)* — POST herbicide for grasses in sugar cane. WinField United

Asulox *(asulam)* — POST weed control in sugar cane and non-crop. UPL

Athena *(bifenthrin + avermectin B1)* — Insecticide for many crops. Discontinued by FMC

Atrazine 4L, Atrazine 90DF — PRE and POST herbicide for broadleaf and some grass weeds in corn, sorghum and fallow. WinField United, Syngenta, others

Audit 75 WDG, Audit 1:1, Audit 4:1 *(thifensulfuron + tribenuron)* — POST herbicide for wheat, triticale, and fallow. Arysta LifeScience

Authority *(sulfentrazone)* — Herbicide for PRE control of broadleaf weeds in soybeans. Discontinued by DuPont

Authority Assist *(imazethapyr + sulfentrazone)* — PPI, PRE herbicide for broadleaves and sedge in soybeans. FMC

Authority BL *(sulfentrazone + chlorimuron)* — Herbicide for soybeans. Discontinued by DuPont

Authority Edge *(sulfentrazone + pyroxasulfone)* — Herbicide for peas, chickpeas, soybeans and sunflowers. FMC

Authority Elite *(s-metolachlor + sulfentrazone)* — PP or PRE herbicide for soybean, peas and sunflower. FMC

Authority First DF *(sulfentrazone + cloransulam)* — PPI, PP surface or PRE herbicide for broadleaves in soybean. FMC

Authority Maxx *(sulfentrazone + chlorimuron)* — PP, PPI and PRE herbicide in soybeans. Discontinued by FMC

Authority MTZ DF *(sulfentrazone + metribuzin)* — PPI or PRE herbicide for soybean or sugar cane. Discontinued by FMC

Authority Supreme *(pyroxasulfone + sulfentrazone)* — Herbicide for dry shelled peas and garbanzos. FMC

Authority XL *(sulfentrazone + chlorimuron)* — PP and PRE herbicide for soybean. FMC

Autumn *(iodosulfuron)* — Fall or spring-applied and POST harvest burndown for corn and soybean. Discontinued by Bayer

Autumn Super 51 WDG *(iodosulfuron + thiencarbazone)* — POST- harvest burndown and residual herbicide for corn or soybean. Bayer

Avalanche *(carfentrazone-ethyl)* — POST herbicide. Discontinued by WinField United

Avalanche Ultra *(aciflorfen)* — POST contact herbicide for broadleaf weeds in soybean, peanuts, rice. WinField United

Avaunt, Avaunt eVo *(indoxacarb)* — Insecticide for control of codling moth, diamond back moth and European corn borer. FMC

Avenge *(difenzoquat)* — POST control of wild oats in wheat and barley. Discontinued by MicroFlo

Aveo EZ *(Bacillus amyloliquefaciens)* — Biological seed treatment for nematodes in soybean. Valent

Avicta 500 FS *(abamectin)* — Commercial seed treatment to protect soybean from early-season nematode. Syngenta

Avicta Complete Beans — Combination of Avicta 500 FS and CruiserMaxx Beans for commercial seed treatment of soybean. Discontinued by Syngenta

Avicta Complete Beans 500 *(Abamectin + Thiamethoxam + Mefenoxam + Fludioxinil)* — Commercial seed treatment combination for soybean. Syngenta

Avicta Complete Corn 250 *(thiamethoxam + abamectin + thiabendazole + fludioxonil + mefenoxam + azoxystrobin)* — Fungicide and insecticide commercial seed treatment for corn. Syngenta

Avicta Complete Cotton — Combination of Avicta Duo Cotton plus Cruiser 5FS plus Dynasty CST seed treatments. Syngenta

Avicta Duo 250 Corn *(abamectin + thiamethoxam)* — Insecticide/nematicide commercial seed treatment for corn. Syngenta

Avicta Duo Corn *(abamectin + thiamethoxam)* — Insecticide and nematode commercial seed treatment for corn. Syngenta

Avicta Duo Cotton *(abamectin + thiamethoxam)* — Insecticide and nematode commercial seed treatment for cotton. Syngenta

Avicta Duo COT202 *(abamectin + thiamethoxam)* — Insecticide and nematode commercial seed treatment for cotton. Discontinued by Syngenta

Avid 0.15EC *(abamectin)* — Miticide/insecticide for greenhouses, field-grown ornamentals, and Christmas trees. Discontinued by Syngenta

Avodigen *(bacillus spp.)* — Biological fungcide/nematicide seed treatement for various crops. FMC

Avonni *(B. amyloliquefaciens D747)* — On-farm and commercial seed treatment for various grain and seed crops, cotton and peanuts. Discontinued by FMC

Axcess *(imidacloprid)* — Insecticide seed treatment for various crops. Discontinued by BASF

Axial Bold *(pinoxaden + fenoxaprop)* — POST herbicide for wheat and barley. Syngenta

Axial Star *(pinoxaden + fluroxypyr)* — Herbicide for wheat and barley. Syngenta

Axial TBC *(pinoxaden + florasulam)* — POST herbicide for wheat and barley. Discontinued by Syngenta

Axial XL *(pinoxaden)* — Herbicide for POST grass control in wheat and barley. Syngenta

Axiom AT *(flufenacet + metribuzin + atrazine)* — A PRE herbicide for corn. Discontinued by Bayer

Axiom DF *(flufenacet + metribuzin)* — Herbicide for grasses and some broadleaves in wheat. Bayer

Azera *(azidrachtin + pyrethrins)* — Insecticide for several row crops and vegetables. Discontinued by Valent

Aztec 2.1G *(tebupirimphos + cyfluthrin)* — Insecticide for soil insects in corn. Discontinued by Bayer

Aztec 4.67G, Aztec HC *(tebupirimphos + cyfluthrin)* — Insecticide for soil insects in corn; Aztec HC for SmartBox system. AMVAC

Backdraft SL — For burndown in soybeans. Discontinued by BASF

Badge SC, Badge X2 *(copper hydroxide + copper oxychloride)* — Fungicide for many labeled crops. Gowan

Balance 75WDG *(isoxaflutole)* — PRE herbicide for corn. Discontinued by Bayer

Balance Flexx *(isoxaflutole + cyprosulfamide safener)* — PRE and early POST herbicide similar to Balance but with corn safener and wider application window. Bayer

Balance Pro *(isoxaflutole)* — Pre herbicide for corn. Discontinued by Bayer

Ballast — pH buffering agent to modify the alkalinity of spray solutions. Discontinued by WinField United

Banner MAXX II *(propiconazole)* — Broad spectrum and systemic disease control for turf and ornamentals. Syngenta

Banol *(propamocarb)* — Turf and ornamental fungicide. Bayer

Banvel *(dicamba)* — POST herbicide for emerged broadleaf weeds in corn, grain sorghum, small grains, sugar cane and pasture. Discontinued by Arysta LifeScience

Banvel + 2,4-D *(dicamba + 2,4-D)* — POST herbicide for broadleaf weeds in milo, sugar cane, wheat, pasture and non-cropland. Discontinued by Arysta LifeScience

Banvel SGF *(dicamba)* — POST herbicide small grains and fallow. Discontinued by BASF

Bareground BD *(sodium metaborate + sodium chlorate + diuron + bromacil)* — Pelleted herbicide for non-crop areas. Discontinued

Barricade 4FL, 64WG *(prodiamine)* — PRE herbicide for control of selected grass and broadleaf weeds in turf, Christmas trees and wild flower plantings. Syngenta

Basagran *(bentazon)* — POST contact broadleaf herbicide in soybeans, corn, grain sorghum, peanuts, rice, dry beans, peas. WinField United, Arysta LifeScience

Basagran 5L *(bentazon)* — POST contact broadleaf herbicide in soybeans, corn, grain sorghum, peanuts, rice, dry beans, peas. BASF

Basis *(rimsulfuron + thifensulfuron)* — POST herbicide for field corn. Discontinued by DuPont

Basis Blend *(rimsulfuron + thifensulfuron)* — Field corn herbicide. Corteva Agriscience

Basis Gold *(nicosulfuron + rimsulfuron + atrazine)* — POST herbicide for most small broadleaf weeds and grasses in field corn. Discontinued by DuPont

Battery 2.5EC *(cypermethrin)* — Insecticide for cotton and vegetable crops. Discontinued by WinField United

Battery One *(sulfentrazone + cloransulam)* — PPI, PP surface or PRE herbicide for broadleaves in soybean. Discontinued by WinField United

Bayleton 50 T&O *(triadimefon)* — Systemic fungicide for turf and ornamentals crops. Bayer

Baythroid 2 *(cyfluthrin)* — Nonsystemic synthetic pyrethroid insecticide. Discontinued by Bayer

Baythroid XL *(beta-cyfluthrin)* — Nonsystemic synthetic pyrethroid insecticide. Bayer

Beacon *(primisulfuron)* — POST herbicide for grass and some broadleaf weeds in corn. Discontinued by Syngenta

Belay Insecticide *(clothianidin)* — Insecticide. Valent

Beleaf 50 SG *(flonicamid)* — Insecticide for vegetables and other crops. FMC

Belt SC *(flubendiamide)* — Insecticide for corn, cotton, fruit and nut crops. Discontinued by Bayer

Benlate WP and SP *(benomyl)* — Systemic foliar-applied fungicide. Discontinued by DuPont

Benoxacor — Safener for corn in Dual II. Syngenta

Besiege *(lambda-cyhalothrin + chlorantraniliprole)* — Insecticide for cotton, pasture and range. Syngenta

Betamix *(phenmedipham + desmedipham)* — POST herbicide for broadleaves and foxtails in sugarbeets. Discontinued by Bayer

Betanex *(desmedipham)* — POST herbicide for broadleaves in sugarbeets. Discontinued by Bayer

Between *(oil-based spray penetrant)* — Spray penetrant and droplet evaporation reduction. Discontinued by WinField United

Bexfond *(Bacillus s)* — Biological fungicide and bactericide for soil-borne diseases and enhanced root development. Various crops labeled. Corteva Agriscience

Beyond *(imazamox)* — POST herbicide for Clearfield canola, sunflower, and winter wheat. Discontinued by BASF

Beyond Xtra *(imazamox)* — POST herbicide for Clearfield canola, sunflower, and winter wheat, beans, peas and other crops. BASF

Bicep 6L *(metolachlor + atrazine)* — PRE herbicide for grain and forage sorghum. Discontinued by Syngenta

Bicep II — Same as Bicep, but with an additive *(benoxacor)*. Discontinued by Syngenta

Bicep II Magnum, Bicep II Magnum FC *(s-metolachlor + atrazine)* — Herbicide for corn and sorghum. Syngenta

Bicep Lite II *(metolachlor + atrazine)* — Similar to Bicep II, but with less atrazine. Discontinued by Syngenta

Bicep Lite II Magnum *(s-metolachlor + atrazine)* — Similar to Bicep Lite II, but with s-metolachlor. Syngenta

Bicep Magnum TR *(s-metolachlor + atrazine + flumetsulam)* — A soil-applied herbicide for field corn. Discontinued by Syngenta

Bidrin 8 *(dicrotophos)* — Contact, systemic insecticide for cotton and rice. AMVAC

Bifen 2 AG Gold *(bifenthrin)* — Insecticide for corn, soybeans, cotton and vegetable crops. WinField United

Bio-Tam 2.0 *(Trichderma aperellum ICC 012 + T. gamsii ICC 080)* — Fungicide for protection in many crops. Isagro

Bion 500 FS *(acibenzolar)* — Commercial seed treatment for cotton, sorghum and sunflower. Syngenta

BioNik *(s-abscisic acid)* — Plant growth regulator. Discontinued by Valent

Bison *(bromoxynil + MCPA ester)* — POST herbicide for broadleaf weeds in small grains, CRP areas. WinField United

Bison Advanced *(bromoxynil + MCPA)* — 5 lb/gal formulation of Bison. Discontinued by WinField United

BlackHawk *(spinosad)* — Insecticide for many crops. Corteva Agriscience

Blazer *(acifluorfen)* — POST contact herbicide for broadleaves in soybeans, peanuts, rice. Discontinued by BASF

Blindside *(sulfentrazone + metsulfuron)* — Turf herbicide. Discontinued by FMC

Blizzard *(fluthiacet)* — Cotton harvest aid. Discontinued by Chemtura

Blockade *(acibenzolar)* — Plant activator for leafy vegetables. Syngenta

Blocker 4F, Blocker 10G *(PCNB)* — Soil fungicide for various crops. AMVAC

Bolero 8EC, 10G *(thiobencarb)* — Late PRE and early POST herbicide for rice. Valent

Bolero Ultramax *(thiobencarb)* — Late PRE and early POST herbicide for rice. Valent

Boll'd *(ethephon)* — Plant growth regulator to promote early maturity in cotton and tobacco. WinField United

Bolstar 6 *(sulprofos)* — Insecticide for cotton. Discontinued by Bayer

Botran 75-W *(dicloran)* — Fungicide used on many crops. Gowan

Boundary 6.5EC *(s-metolachlor + metribuzin)* — PRE herbicide in soybeans and potatoes. Syngenta

Bracket 90 WDG *(acephate)* — Insecticide used on cotton, mint, vegetables, tobacco, turf and ornamentals. Discontinued by WinField United.

Bracket 97 *(acephate)* — Insecticide used on cotton, mint, vegetables, tobacco, turf and ornamentals. WinField United

Brash *(dicamba + 2, 4-D, dimethylamine salts)* — POST broadleaf herbicide for pastures, non-crop, wheat. WinField United

Brash GFC *(dicamba + 2,4-D, dimethylamine salts)* — Similar to Brash. Discontinued by WinField United

Bravo 500 *(chlorothalonil)* — Broad-spectrum fungicide for many crops. Discontinued by Syngenta

Bravo Ultrex *(chlorothalonil)* — Fungicide for soybeans, peanuts, potatoes and many vegetables. ADAMA

Bravo Weather Stik *(chlorothalonil)* — Liquid fungicide for soybeans, potatoes, peanuts and many vegetables. ADAMA

Bravo Zn *(chlorothalonil + zinc oxide)* — Fungicide for potatoes, dry beans. Discontinued by Syngenta

Breakfree *(acetochlor)* — Herbicide for use in corn. Discontinued by DuPont

Breakfree ATZ *(acetochlor + atrazine)* — Herbicide for corn. Discontinued by DuPont

Breakfree NXT *(acetochlor)* — PPI and PRE herbicide for corn. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Breakfree NXT ATZ/Breakfree NXT Lite *(acetochlor + atrazine)* — PPI and PRE herbicide for corn. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Bridle *(mesotrione)* — PRE and POST herbicide for broadleaf weeds in corn and other crops. Discontinued by WinField United

Brigade 2EC *(bifenthrin)* — Control of insects and mites in various crops. FMC

Brigadier *(bifenthrin + imidacloprid)* — Insecticide for cotton and vegetable crops. Discontinued by FMC

Briskway *(azoxystrobin + difenoconazole)* — Fungicide for turfgrass in golf courses. Syngenta

Broadaxe *(sulfentrazone + s-metolachlor)* — PP or PRE herbicide for soybeans, peas, and sunflowers. Discontinued by FMC

BroadAxe XC *(sulfentrazone + s-metolachlor)* — PP or PRE herbicide for soybeans, dry beand and peas, and sunflowers. Syngenta

Broadhead *(carfentrazone + quinclorac)* — PRE or PREFLOOD herbicide for grass and broadleaf control in rice. Discontinued by FMC

Broadstar *(flumioxazin)* — Herbicide for trees and shrubs. Discontinued by Valent

Broadstrike + Dual *(flumetsulam + metolachlor)* — Soil applied herbicide in corn and soybeans. Discontinued by Syngenta

Broadstrike + Treflan *(flumetsulam + trifluralin)* — PPI herbicide in soybeans. Discontinued by Dow AgroSciences

Broadstrike SF + Dual *(flumetsulam + metolachlor)* — Soil applied herbicide in corn and soybeans. Discontinued by Syngenta

Broadworks *(mesotrione)* — POST herbicide for citrus. Syngenta

Bronate *(bromoxynil + MCPA)* — POST herbicide in small grains and CRP. Discontinued by Bayer

Bronate Advanced *(bromoxynil + MCPA)* — POST herbicide. Discontinued by Bayer

Bronate Pro *(bromoxynil + mcpA + fenoxaprop-p-ethyl)* — POST herbicide for wheat. Discontinued by Bayer

Bronco *(alachlor + glyphosate)* — POST herbicide for minimum-till corn, grain sorghum and soybeans. Discontinued by Monsanto

Brushmaster *(2,4-D + 2,4-DP-p + dicamba)* — Herbicide for trees, vines and broadleaf weeds. PBI Gordon

Buckle *(triallate + trifluralin)* — PPI herbicide for fall application in wheat and barley. Gowan

Buctril 2E *(bromoxynil)* — POST herbicide. Discontinued by Bayer

Buctril 4EC *(bromoxynil)* — POST herbicide for BXN cotton, small grains, alfalfa, corn, sorghum, other crops. Bayer

Buctril + Atrazine *(bromoxynil + atrazine)* — POST herbicide in corn and grain and forage sorghum. Discontinued by Bayer

Bueno 6 *(MSMA, surfactant)* — POST herbicide for cotton, turf, fruit, nuts and noncrop areas. Discontinued by Syngenta

Bullet *(alachlor + atrazine)* — PRE herbicide for no-till corn and grain sorghum. Discontinued by Monsanto

Butralin *(butralin)* — Control of suckers on tobacco. UPL

Butte *(benzobicyclon + halosulfuron)* — Herbicide for use in California water seeded rice. Gowan

Butyrac 175 *(2,4-DB)* — POST herbicide for seedling broadleaf weeds in peanuts, soybeans. Albaugh

Butyrac 200 *(2,4-DB)* — POST herbicide for broadleaves in forage legumes, peanuts, soybeans. Albaugh

Cabrio EG *(pyraclostrobin)* — Fungicide for vegetables, berries, and other crops. BASF

Cabrio Plus *(pyraclostrobin + metiram)* — Potato fungicide. Discontinued by BASF

Cadet *(fluthiacet)* — POST herbicide for velvetleaf and other broadleaf weeds in corn and soybean. Discontinued by FMC

Cadre *(imazapic)* — POST herbicide for broadleaves and grasses in peanuts. BASF

Callisto *(mesotrione)* — PRE and POST herbicide for broadleaf weeds in corn and other crops. Syngenta

Callisto GT *(mesotrione + glyphosate)* — POST herbicide for corn. Discontinued by Syngenta

Callisto Xtra *(mesotrione + atrazine)* — POST herbicide for corn and sugarcane. Syngenta

Calypso *(thiacloprid)* — Insecticide for fruit crops. Discontinued by Bayer

Camix *(s-metolachlor + mesotrione)* — Herbicide. Discontinued by Syngenta

Campaign *(glyphosate + 2,4-D)* — Herbicide for non-cropland. Discontinued by Monsanto

Cannonball *(fludioxonil)* — Fungicide for a variety of crops. Discontinued by Syngenta

Cannonball WG *(fludioxonil)* — Fungicide for a variety of crops. Syngenta

Canopy and Canopy Blend *(chlorimuron + metribuzin)* — PRE herbicide in soybeans. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Canopy EX *(chlorimuron + tribenuron)* — Herbicide for PPI and PRE control of broadleaf weeds in soybeans. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Canopy XL *(sulfentrazone + chlorimuron)* — Herbicide for PPI and PRE control of broadleaf weeds and suppression of some grasses in soybeans. Discontinued by Corteva Agriscience

Canvas *(thifensulfuron + tribenuron + metsulfuron)* — POST herbicide in wheat, barley and fallow. Discontinued by DuPont

Caparol 4L *(prometryn)* — PPI, PRE, or POST directed control of annual broadleaves and grasses in cotton. Syngenta

Capreno *(thiencarbazone-methyl + tembotrione + isoxadifen-ethyl safener)* — POST herbicide for broadleaves and grasses in corn. Bayer

Capstone *(aminopyralid + triclopyr)* — Non-crop and pasture herbicide. Corteva Agriscience

Captan *(captan)* — Fungicide ingredient in numerous products using "Captan" in brand name. Various

Capture *(bifenthrin)* — Broad spectrum insecticide and miticide; used on cotton, canola, melons, vegetables and corn. Discontinued by FMC

Capture 2EC-CAL and 2EC *(bifentrhin)* — Insecticide for application on various crops. Discontinued by FMC

Capture 3RIVE 3D *(bifenthrin)* — Insecticide for use in a 3RIVE 3D system only; corn, soybean, dried beans, sunflower and peas. FMC

Capture LFR *(bifenthrin)* — Insecticide for PRE, PPI application in liquid fertilizer in multiple crops; POST foliar. FMC

Caramba *(metconazole)* — Foliar fungicide for head scab, rust and other diseases in sugar beet and small grain. Discontinued by BASF

Caravan G *(azoxystrobin + thiamethoxam)* — Fungicide and insecticide for lawns and turf. Syngenta

Carbine 50WG *(flonicamid)* — Insecticide for cotton. FMC

Carnivore *(MCPA + bromoxynil + fluroxypyr)* — Small grain and CRP herbicide. WinField United

Carzol SP *(formetenate hydrochloride)* — Miticide/insecticide for citrus, fruits and alfalfa for seed. Gowan

Casoron 4G *(dichlobenil)* — Soil-applied herbicide used on certain fruits, berries, ornamentals and shelter belts. UPL

Catapult XL *(chloroneb + mefenoxam)* — Seed treatment fungicide. Discontinued by WinField United

Celebrity *(dicamba + nicosulfuron)* — POST herbicide in corn. Discontinued by BASF

Celebrity Plus *(nicosulfuron + dicamba + diflufenzopyr)* — POST herbicide in corn. Discontinued by BASF

Celero *(imazosulfuron)* — Turf herbicide for control of nutsedge and certain broadleaf weeds. Discontinued by Valent

Cell-Tech — Bacterial inoculant for soybean, pulses or peanut. Novozymes A/S

Celoxone *(surfactant)* — Organosilicone non-ionic surfactant. Discontinued by WinField United

Centric 40WG *(thiamethoxam)* — Insecticide for cotton. Syngenta

Centynal *(deltamethrin)* — Stored grain insecticide. Wellmark

Cercobin *(thiophanate methyl)* — Foliar and on-farm or commercial seed treatment fungicide with some soil uses, used on soybeans, beans, sugarbeets, wheat, peanuts, other crops and conifers. Discontinued by FMC

Ceramax *(natamycin)* — Biological seed treatment for soybeans. Ceradis Crop Protection

Cerone *(ethephon)* — Plant regulator for lodging control of barley and wheat. Discontinued by Bayer

Certador *(dinotefuran)* — Control of sucking/chewing insects on vegetable crops. BASF

Certainty *(sulfosulfuron)* — Post herbicide for grasses and broadleaves, turf in warm season. Bayer

Champ Dry Prill, Champ Formula 2 Flowable, Champ WG, ChampION++ *(copper hydroxide)* — Fungicide and bactericide for various grain and vegetable crops, citrus. Nufarm

Chaparral *(aminopyralid + metsulfuron)* — POST herbicide for pasture, CRP and non-crop. Corteva Agriscience

Charger Basic *(s-metolachlor)* — PRE herbicide for corn, sorghum, soybean, cotton, peanut, potato, pod crops and sunflower. WinField United

Charger Max *(s-metolachlor + benoxacor safener)* — PRE herbicide for corn, sorghum, soybean, cotton, peanut, potato, pod crops and sunflower. WinField United

Charger Max ATZ *(s-metolacholor + atrazine + benoxacor)* — Pre herbicide for corn and sorghum; similar to Bicep II Magnum and Bicep II Magnum FC. WinField United

Charger Max ATZ Lite *(s-metolachor + atrazine + benoxacor)* — Similar to Bicep Lite II Magnum. WinField United

Chariot *(zeta-cypermethrin + chlorpyrifos)* — Insecticide for citrus. Discontinued by FMC

Charter *(triticonazole)* — Fungicide for control of seed borne diseases in wheat and barley. Discontinued by BASF

Charter F2 *(metalaxyl + triticonazole)* — Fungicide seed treatment. Discontinued by BASF

Charter PB *(triticonazole + thiram)* — Seed treatment for wheat and barley. Discontinued by BASF

Chateau EZ *(flumioxazin)* — Residual, burndown and layby herbicide for various crops. Valent

Chateau SW *(flumioxazin)* — PRE herbicide on alfalfa, potato, onion, garlic, mint and other crops. Discontinued by Valent

Chateau WDG *(flumioxazin)* — PRE herbicide on potato, onion, garlic, mint and other crops. Discontinued by Valent

Cheetah *(glufosinate)* — Non-selective herbicide for broadleaf and grassy weeds; also for use in certain HT-tolerant crops. Nufarm

ChemSurf/90 *(wetting agent + defoamer)* — Includes sticker; use with herbicides, insecticides, fungicides, defoliants, desiccants, PGRs and nutritionals. WinField United

Cheyenne TP *(fenoxaprop + MCPA + tribenuron + thifensulfuron)* — POST herbicide. Discontinued by Bayer

Chipco 26019 FLO *(iprodione)* — Fungicide for turf and ornamentals. Bayer

Chlor-O-Pic *(chloropicrin)* — Fumigant for stored grain insects; its use is now limited to fumigation of empty bins and is recommended for aeration ducts and false floors. Discontinued by Douglas

Chopper *(imazapyr)* — Non-selective herbicide for non-crop sites. BASF

Chopper Gen2 *(imazapyr)* — Control of vegatation on forestry sites. BASF

Cimarron *(metsulfuron)* — Broadleaf herbicide for pasture, rangeland and CRP. Discontinued by DuPont

Cimarron Max *(metsulfuron + dicamba + 2,4-D)* — Broadleaf herbicide for pasture, rangeland and CRP. Bayer

Cimarron Plus *(metsulfuron + chlorsulfuron)* — Herbicide for pastures, range or CRP. Bayer

Cimarron X-tra *(metsulfuron + chlorsulfuron)* — Herbicide for pastures, rangeland or CRP. Bayer

Cinch *(s-metolachlor)* — Similar to Dual II Magnum. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Cinch ATZ *(s-metolachlor + atrazine)* — Similar to Bicep II Magnum and Bicep II Magnum FC. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Cinch ATZ Lite *(s-metolachlor + atrazine)* — Similar to Bicep Lite II Magnum. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Citri-CHE products *(nutrients chelated with EDTA and Citric Acid)* — Chelated micronutrients for correction of crop deficiencies. WinField United

Citrus Oil 435, 455— Emulsifiable paraffinic oils for control of insects in fruits, citrus and pecans. WinField United

Clarifier *(dicamba)* — Herbicide for a variety of field and vegetable crops, pasture, non-cropland and sod. WinField United

Clarion *(nicosulfuron + rimsulfuron)* — Post herbicide for corn. Discontinued by DuPont

Clarity *(diglycolamine salt of dicamba)* — Post control of emerged broadleaf weeds in field corn, popcorn, small grains, cotton, sorghum and pasture. BASF

Clariva Elite Beans *(thiamethoxam + mefenoxam + fludioxinil + sedaxane + Pn1-Pasteuria nishizawae)* — Commercial soybean seed treatment insecticide and nematicide with fungicides. Discontinued by Syngenta

Clariva pn *(Pn1-Pasteuria nishizawae)* — Commercial seed treatment for soybean cyst nematode. Discontinued by Syngenta

Class Act Flex *(AMS + surfactant)* — AMS and non-ionic surfactant formulated for glyphosate, glufosinate, paraquat, diquat and other herbicides. WinField United

Class Act NG *(AMS + surfactant)* — AMS and non-ionic surfactant with CornSorb; low foam adjuvant formulated for glyphosate, glufosinate, paraquat, diquat and other herbicides; CPDA certified. WinField United

Class Act Ridion *(non-AMS water conditioner)* — AMS-free with surfactant blend for use n agriculture, forestry, non-cropland and right-of-way. WinField United

Classic *(chlorimuron)* — POST herbicide for broadleaf weeds in soybeans and peanuts. AmVac

Cleanse *(clethodim)* — Herbicide for a variety of field and vegetable crops, ornamentals and non-crop areas. WinField United

Cleansweep D *(2,4-D + bromoxynil + fluroxypyr)* — Small grain and CRP herbicide. Nufarm

Cleansweep M *(MCPA + bromoxynil + fluroxypyr)* — Small grain and CRP herbicide. Nufarm

Cleantraxx *(penoxsulam + oxyfluorfen)* — PRE and POST weed control in non-cropland. Corteva Agriscience

CleanWave *(aminopyralid + fluroxypyr)* — POST broadleaf herbicide for wheat. Discontinued by Dow AgroSciences

Clearcast *(imazamox)* — Aquatic herbicide. BASF

Clearmax *(imazamox + MCPA ester)* — Co-pack for Clearfield wheat. Discontinued by BASF

ClearPath *(imazethapyr + quinclorac)* — POST herbicide for use on rice. BASF

Clincher SF *(cyhalofop)* — POST herbicide for grass control in rice. Corteva Agriscience

Clipper *(flumioxazin)* — Aquatic herbicide. Valent

Cloak EX *(chlorimuron + tribenuron)* — Burndown herbicide for use prior to planting soybeans. Nufarm

Closer *(sulfoxaflor)* — Insecticide for use on various corps. Corteva Agriscience

Clutch *(clothianidin)* — Insecticide for fruit trees. Discontinued by Valent

Cobalt *(chlorpyrifos + gamma-cyhalothrin)* — Insecticide for many crops. Discontinued by Dow AgroSciences

Cobalt Advanced *(chlorpyrifos + lambda-cyhalothrin)* — Insecticide for many crops. Discontinued by Dow AgroSciences

Cobra *(lactofen)* — POST herbicide for broadleaves in soybeans and cotton. Valent

Combine — A buffering and compatibility agent. Discontinued by WinField United

Comite and Comite II *(propargite)* — Acaricide with residual killing action; Used on many different crops. UPL

Command 3ME *(clomazone)* — Micro-encapsulated PRE herbicide for weeds in soybeans, cotton and tobacco. FMC

Command 4EC *(clomazone)* — PRE herbicide. Discontinued by FMC

Command Xtra *(clomazone + sulfentrazone)* — PRE herbicide for soybeans. Discontinued by FMC

Commence *(trifluralin + clomazone)* — PPI herbicide in soybeans. Discontinued by FMC

Commit *(dimethenamid-p)* — PRE herbicide for corn, soybeans, and many other crops. Discontinued by WinField United

Commit ATZ *(dimethenamid-p + atrazine)* — PRE herbicide for corn and sorghum. Discontinued by WinField United

Commit ATZ Lite *(dimethenamid-p + atrazine)* — PRE herbicide for corn and sorghum. Discontinued by WinField United

Commit 3ME *(clomazone)* — Broad spectrum herbicide. Discontinued by WinField United

Compact *(mepiquat chloride)* — Bioregulator which controls vegetative growth; used on cotton. Discontinued by WinField United

Compact 6X *(mepiquat chloride)* — Bioregulator which controls vegetative growth; used on cotton. WinField United

Compass *(trifloxystrobin)* — Broad-spectrum, long-lasting fungicide used on ornamentals and turf. Bayer

Complete Compatibility *(compatibility and acidifying agent)* — Anionic formulation for mixing fertilizer and pesticide solutions. WinField United

Complex *(spreader sticker + surfactant)* — Self-emulsifiable non-ionic surfactant adjuvant designed to increase activity, penetration and adhesion. WinField United

Concep II *(oxabetrinil)* **and Concep III** *(fluxofenim)* — Protectant applied to sorghum seed to protect from injury from Dual and Bicep herbicides. Syngenta

Concert II *(propiconazole + chlorothalonil)* — Fungicide for golf courses. Syngenta

Concert SP *(chlorimuron)* — POST herbicide for soybeans. Discontinued by DuPont

Conclude B *(bentazon + acifluorfen)* **and Conclude G** *(sethoxydim)* — Herbicide. Discontinued by BASF

Conclude Ultra *(bentazon + acifluorfen + sethoxydim)* — Herbicide. Discontinued by BASF

Conclude Xact *(bentazon + acifluorfen + sethoxydim)* — Herbicide. Discontinued by BASF

Conclude XTRA *(acifluorfen + bentazon + clethodim)* — Herbicide. Discontinued by BASF

Concur *(imidacloprid + metalaxyl)* — Hopper box seed treatment for corn. Discontinued by WinField United

Confidence *(acetochlor + safener)* — PPI, PRE, EARLY POST herbicide for corn. WinField United

Confidence Xtra *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for corn. WinField United

Confidence Xtra 5.6L *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for corn. WinField United

Confine Extra *(phosphite)* — Fungicide for downy mildew, phytopthera, pythium and various others in many crops. Discontinued by WinField United

Confirm 2F *(tebufenozide)* — Insecticide used on pecans and walnuts, sugar cane, vegetables, berries, cotton. Gowan

Confront *(clopyralid + triclopyr)* — Herbicide for broadleaf weeds in turf. Corteva Agriscience

Connect 20 WSP *(bromoxynil)* — POST control of broadleaf weeds in corn, sorghum, small grains, seedling alfalfa, flax, mint, other crops. Discontinued by Bayer

Conserve *(spinosad)* — Insecticide for turf and other crops. Corteva Agriscience

Contain *(imazapyr)* — For control of annual and perennial weeds and grasses in non-cropland. Discontinued by BASF

Contans WG *(Coniothyrium minitans)* — Biological fungicide for control of Sclerotinia sclerotium and minor. Bayer

Contend A *(benzovinduiflupyr + difenoconazole)* — Fungicide for turf. Syngenta

Contend B *(azoxystrobin + propiconazole)* — Fungicide for turf. Syngenta

Contour *(imazethapyr + atrazine)* — PPI, PRE or POST herbicide for use only on Clearfield *(IMI)* corn. Discontinued by BASF

Copper Sulfate — Used to control most forms of algae in farm ponds. Multiple distributors

Coragen *(chlorantraniliprole)* — Insecticide for corn, cotton, vegetables and other crops. FMC

Corn Mix LS *(micronutrient lignosulfonate)* — Plant nutrient product for corn. WinField United

Cornerstone *(glyphosate)* — Equivalent to Roundup Original. Discontinued by WinField United

Cornerstone 5 Plus *(glyphosate)* — Concentrated 5.4 lb/gal formulation for lower use rates. WinField United

Cornerstone Plus *(glyphosate)* — 4 lb/gal formulation. WinField United

Coronet *(pyraclostrobin + boscalid)* — Seed treatment for cotton and certain vegetables. BASF

Corral AMS Dry *(water conditioner + drift reduction)* — Designed to reduce tank antagonism, reduce drift and enhance herbicide performance. Discontinued by WinField United

Corral AMS Liquid *(water conditioner + drift reduction)* — Liquid AMS plus drift reduction agent. Discontinued by WinField United

Corral Poly *(drift control, deposition aid)* — Increases droplet size in spray pattern to reduce drift. WinField United

Corvus *(isoxaflutole + thiencarbazone + cyprosulfamide safener)* — PP, PPI, PRE, early POST herbicide for grass and broadleaves in corn. Bayer

Cotoran 4L *(fluometuron)* — PRE and POST for annual grasses and broadleaves in cotton. Adama

Cotton Pro *(prometryn)* — Selective weed control in cotton and celery. Discontinued by MANA

Cotton Quik *(AMADS + ethephon)* — Defoliant, boll-opener for cotton. Discontinued by Nufarm

Counter 15G *(terbufos)* — Insecticide for soil insects in corn, sorghum and sugarbeets. Discontinued by AMVAC

Counter 20G *(terbufos)* — Insecticide for soil insects in corn, sorghum and sugarbeets; utilizes a Lock'n Load closed handling system. AMVAC

CPF 4E *(chlorpyrifos)* — Insecticide for field, grain and vegetable crops. Discontinued by WinField United

Credit *(glyphosate)* — Equivalent to Roundup Original. Discontinued by Nufarm

Credit Extreme *(glyphosate)* — Equivalent to Roundup WeatherMAX. Nufarm

Crew *(isoxaben + dithiopyr)* — Herbicide for turf, non-crop and landscape settings. Corteva Agriscience

Crop Booster — Foliar micronutrients. WinField United

Crop Mix LS products *(micronutrient lignosulfonate)* — Plant nutrient products. WinField United

Cropstar GB *(alachlor)* — PRE herbicide in corn and soybeans. Discontinued by Monsanto

Crossbow *(2,4-D + Triclopyr)* — Formulation of 2,4-D and Garlon for control of woody plants and broadleaves in pasture, CRP acres and non-cropland. Corteva Agriscience

Cruiser 5FS *(thiamethoxam)* — Commercial seed treatment systemic for sucking insects on barley, cotton, corn, sorghum, soybean and wheat. Syngenta

Cruiser 70 WS *(thiamethoxam)* — Systemic seed treatment for carrots, leafy vegetables, dry bulb onions, and Brassica leafy vegetables. Syngenta

Cruiser Extreme *(thiamethoxam + fludioxonil + mefenoxam + azoxystrobin)* — Corn seed treatment. Syngenta

Cruiser Vibrance Quattro *(thiamethoxam + difenoconazole + mefenoxam + fludioxonil + sedaxane)* — Seed treatment on barley, triticale, oats, rye and wheat. Discontinued by Syngenta

CruiserMaxx *(thiamethoxam + fludionoxil + mefenoxam)* — On-farm and commercial seed treatment for soybean, beans and peas. Syngenta

CruiserMaxx Advanced *(thiamethoxam + mefenoxam + fludioxonil)* — Insecticide and fungicide seed treatment for soybeans. Discontinued by Syngenta

CruiserMaxx APX *(thiamethoxam + mefenoxam + picarbutrazox + fludioxinil + sedaxane)* — Insecticide and fungicide seed treatment for soybeans. Syngenta

CruiserMaxx Cereals *(thiamethoxam + mefenoxam + difenoconazole)* — Insecticide and fungicide on-farm and commercial seed treatment for cereals. Syngenta

CruiserMaxx EZ *(thiamethoxam + mefenoxam + fludioxonil)* — Fungicide and insecticide seed treatment for soybeans. Discontinued by Syngenta

CruiserMaxx PAK — Seed treatment pak of Cruiser 5FS and ApronMaxx RFC for soybean. Discontinued by Syngenta

CruiserMaxx Peanut *(thiamethoxam + mefenoxam + fludioxonil + azoxystrobin)* — Commercial seed treatment for peanuts. Syngenta

CruiserMaxx Plus *(thiamethoxam + mefenoxam + fludioxonil)* — Seed treatment for soybean. Discontinued by Syngenta

CruiserMaxx Potato *(thiamethoxam + mefenoxam + fludioxonil)* — On-farm or commercial seed treatment for potato. Syngenta

CruiserMaxx Potato Extreme *(thiamethoxam + fludioxonil + difenoconazole)* — On-farm or commercial seed treatment for potato. Syngenta

CruiserMaxx Rice *(thiamethoxam + fludioxonil + azoxystrobin + mefenoxam)* — Commercial seed treatment for rice. Syngenta

CruiserMaxx Sugarbeets *(thiamethoxam + mefenoxam + fludioxinil)* — Commercial seed treatment for sugarbeets. Syngenta

CruiserMaxx Sunflower *(thiamethoxam + azoxystrobin + fludioxinil + mefenoxam)* — Commercial seed treatment for sunflower. Syngenta

CruiserMaxx Vibrance *(thiamethoxam + sedexane + ffludioxonil + mefenoxam)* — Commercial seed treatment for soybean. Syngenta

CruiserMaxx Vibrance Cereals *(difenoconazole + mefenoxam + sedaxane + thiamethoxam)* — Commercial and on-farm seed treatment for cereals. Syngenta

CruiserMaxx Vibrance Potato *(thiamethoxam + fludioxonil + difenoconazole + sedaxane)* — Commercial and on-farm seed treatment for potato. Syngenta

CruiserMaxx Vibrance Pulses *(thiamethoxam + thiabendazole + sedaxane + mefenoxam + fludioxonil)* — Commercial and on-farm seed treatment for dried shelled peas and beans, chickpea, and lentils. Syngenta

CruiserMaxx Vibrance Quattro *(thiamethoxam + sedexane + fludioxonil + metalaxyl-m)* — Seed treatment for soybean. Discontinued by Syngenta

Crusher *(rimsulfuron + thifensulfuron)* — Burndown/PP herbicide for corn, soy, cotton and peanuts. FMC

Cuprofix *(copper sulfate)* — Fungicide for many crops. Discontinued by UPL

Cuprofix MZ Disperss *(copper sulfate + mancozeb)* — Fungicide/bactericide for many crops. Discontinued by UPL

Cuprofix Ultra 40 *(copper sulfate)* — Fungicide/bactericide for many field and horticultural crops. UPL

Cuprofix Ultra 40 Disperss *(copper sulfate)* — Foliar fungicide/bactericide for many crops. Discontinued by UPL

Curalan EG *(vinclozolin)* — Fungicide for turf. Discontinued by BASF

Curtail *(clopyralid + 2,4-D)* — POST herbicide for broadleaves in wheat, barley, pastures, fallow, CRP acres and non-cropland. Corteva Agriscience

Curtail M *(clopyralid + MCPA)* — POST herbicide for broadleaf weeds in wheat, barley, fallow, CRP. Corteva Agriscience

Curzate 60 DF *(cymoxanil)* — Fungicide labeled for use in potatoes, potato seed pieces, tomatoes, cucurbit crops, hops, lettuce *(head and leafy)*, and spinach. Corteva Agriscience

CutOut *(thidiazuron + diuron)* — Cotton defoliant. Nufarm

Cutrine Plus *(copper alkanolamine complex)* — Algicide/herbicide for use in potable water reservoirs, lakes, ponds. Applied Biochemists

Cyclone Max *(paraquat)* — Contact herbicide to control emerged weeds and grasses. Discontinued by Syngenta

Cyclone Star *(paraquat + carfentrazone)* — Harvest aid for cotton. Discontinued by Syngenta

Daconil Action *(chlorothalonil + acibenzolar)* — Turf fungicide. Syngenta

Daconil Ultrex Turf Care *(chlorothalonil)* — Turf fungicide. Syngenta

Daconil Weather Stik *(chlorothalonil)* — Turf and ornamental fungicide. Syngenta

Dacthal W-75, Dacthal Flowable *(DCPA)* — PRE herbicide for grasses and some broadleaves in vegetables, turf, ornamentals. AMVAC

Dakota *(fenoxaprop + MCPA)* — POST herbicide for spring and winter wheat *(excluding durum)*. Discontinued by Bayer

Danitol 2.4 EC *(fenpropathrin)* — Synthetic pyrethroid insecticide/ miticide for cotton, peanuts, tomatoes, strawberries. Valent

Dash PBC — Biological planter box treatment and seed lubricant. WinField United

Dash PBS — Biological planter box treatment and seed lubricant. WinField United

Daze 4SC *(thidiazuron)* — Cotton defoliant. WinField United

Deadline Bullets, Deadline M-Ps, Deadline GT *(metaldehyde)* — Slug bait. AMVAC

Decis 1.5EC *(deltamethrin)* — Broad spectrum insecticide for various crops. Discontinued by Bayer

Declare *(gamma-cyhalothrin)* — Insecticide for alfalfa, corn, soybean, wheat and other crops. Discontinued by FMC

DEF 6 *(butifos)* — Defoliant for cotton. Discontinued by Bayer

Defendis *(imidacloprid + metalaxyl + oxathiapiprolin + picoxystrobin + ipconazole)* — Seed treatement for soybean. Discontinued by WinField United

Defendor *(florasulam)* — Herbicide for control of annual and perennial broadleaf weeds in turf. Corteva Agriscience

Define SC *(flufenacet)* — PPI/Pre herbicide for grasses and certain broadleaves in corn. Discontinued by Bayer

Defol 750 *(sodium chlorate)* — Defoliant, desiccant for cotton. Discontinued by Drexel

Degree *(acetochlor + safener)* — Harness in encapsulated form. Discontinued by Monsanto

Degree Xtra *(acetochlor + safener + atrazine)* — Harness Xtra in encapsulated form. Bayer

Delaro 325 SC *(prothioconazole + trifloxystrobin)* — Fungicide for chickpea, corn, dry peas, lentils, soybean, and sugar beets. Bayer

Delaro Complete *(prothioconazole + trifloxystrobin + fluopyram)* — Fungicide for corn, soybean and wheat. Bayer

Delegate *(spinetoram)* — Insecticide for citrus and other crops. Corteva Agriscience

Delta Coat XL *(chloroneb + mefenoxam)* — Seed treatment for beans, soybeans, and cotton. Discontinued by WinField United

Delta Goal *(oxyfluorfen)* — Directed spray for broadleaf weed control in cotton. Discontinued by Dow AgroSciences

Delta Gold *(deltamethrin)* — Foliar insecticide for corn, soybean, cotton and many horicultural crops. WinField United

Denim *(emamectin benzoate)* — Insecticide for control of lepidoptera on cotton and soybean. Syngenta

Departure *(glyphosate)* — Non-crop herbicide. Discontinued by Syngenta

Dermacor X-100 *(chlorantraniliprole)* — Insecticide seed treatment that controls various pests in rice. Corteva Agriscience

Destiny *(MSO)* — Methylated seed oil. Discontinued by WinField United

Destiny HC *(HSOC-MSO)* — Soy oil-based spray adjuvant with CornSorb to increase herbicide uptake and efficiency; CPDA certified. WinField United

Detail *(saflufenacil)* — POST herbicide for broadleaf control in non-crop areas. BASF

Devrinol 10G *(napropamide)* — Herbicide for use on citrus and other crops. Discontinued by UPL

Devrinol DF-XT *(napropamide)* — Herbicide for use on vegetables and other crops. UPL

Diacon IGR *(methoprene)* — Insect control in stored grain. Wellmark

Diacon-D IGR *(deltamethrin + methoprene)* — Insect control in stored grain. Wellmark

Diazinon 5WB *(diazinon)* — Insecticide. Discontinued by WinField United

Dibrom 8E *(naled)* — Organo-phosphate insecticide used on many crops. AMVAC

Dicamba Max 4 *(dicamba)* — POST herbicide for emerged broadleaf weeds in corn, grain sorghum, small grains, sugar cane and pasture. WinField United

DiFlexx *(dicamba)* — Herbicide for field corn. Bayer

DiFlexx DUO *(dicamba + tembotrione)* — Herbicide for corn and postharvest burndown. Bayer

Diluent, Diluent Blue — Low volume penetrants for basal bark herbicidal sprays. WinField United

Dimate 4E *(dimethoate)* — Insecticide used on many crops. WinField United

Dimension 2EW *(dithiopyr)* — Lawn, ornamental, turf, and landscape ornamental herbicide for annual grasses and broadleaf weeds. Corteva Agriscience

Dimension Ultra 40WP *(dithiopyr)* — Lawn, ornamental, turf, and landscape herbicide for annual grasses and broadleaf weeds. Corteva Agriscience

Dimethoate 4EC — Insecticide used to control aphids, grasshoppers, etc. Drexel

Dimetric Charged *(metribuzine + flumioxazin)* — Herbicide for use in burndown applications, fallow land and soybeans. WinField United

Dimetric EXT/Dimetric Liquid *(metribuzin)* — Herbicide for many crops; similar to Sencor. WinField United

Dimilin 2L *(diflubenzuron)* — Insect growth regulator. UPL

DiPel 10G, ES, DF — Biological insecticide using the Bacillus thuringiensis organism. Valent

Diquat 2L *(diquat dibromide)* — Used primarily as a preharvest aid to desiccate certain crops to facilitate harvesting. Nufarm

Direx 4L *(diuron)* — Herbicide for emerging and young broadleaf and grass weeds in alfalfa, cotton, small grains, nuts, sugar cane, fruits and other crops. ADAMA

Disarm 480 SC *(fluoxastrobin)* — Turf fungicide. Discontinued by Arysta LifeScience

Discover NG *(clodinafop-propargyl)* — Post herbicide for grass control in spring wheat *(including durum)*. Syngenta

Dismiss *(sulfentrazone)* — Turf herbicide. Discontinued by FMC

Display *(carfentrazone + fluthiacet-methyl)* — Defoliant for cotton. FMC

Distinct *(diflufenzopyr + dicamba)* — PP herbicide. BASF

Distinguish *(pyrimethanil + trifloxystrobin)* — Fungicide. Discontinued by Bayer

Di-Syston 15G, 8EC — Systemic insecticide for use on a number of field, vegetable crops and ornamentals. Discontinued by Bayer

Dithane DF/M-45 *(mancozeb)* — Fungicide for use on many field crops, fruits and vegetables. Discontinued by Dow Agrosciences

Dithane F-45 Rainshield *(mancozeb)* — Flowable formulation of fungicide and on-farm or commercial seed treatment use on many crops. UPL

Diuron 4L, 80DF *(diuron)* — Herbicide for emerging and young broadleaf and grass weeds in alfalfa, cotton, wheat, nuts, sugar cane, fruits. Discontinued by WinField United

Divanem *(abamectin)* — Nematicide and miticide for golf turf. Syngenta

Dividend *(difenoconazole)* — Seed treatment for common bunt, flag smut, smuts and seedling diseases in wheat. Discontinued by Syngenta

Dividend Extreme *(difenoconazole + mefenoxam)* — On-farm and commercial seed treatment fungicide for barley, oats, rye, cotton, sweet corn, triticale, wheat. Syngenta

Dividend XL RTA *(difenoconazole + mefenoxam)* — Seed treatment fungicide for barley, wheat. Discontinued by Syngenta

Domain *(flufenacet + metribuzin)* — Soil-applied herbicide for soybeans. Discontinued by Bayer
Domark 230 ME *(tetraconazole)* — Fungicide for diseases in corn and soybean. Gowan
Dormal — Bacterial inoculant for various non-legume crops. Discontinued by Becker Underwood
Dormant Oil 435 — Controls mites and insects on trees and shrubs. WinField United
DoubleDown *(water conditioner + drift reduction)* — Liquid AMS with drift reduction and deposition. Discontinued by WInField United
DoublePlay *(acetochlor + safener + EPTC)* — PPI herbicide for annual grasses, some broadleaves in corn. Discontinued by Syngenta
Double Threat *(bifenthrin + spinosad)* — Cotton insecticide. Discontinued by FMC
Double X *(water conditioner + drift reduction)* — Premix of non-AMS water conditioner plus drift reduction adjuvant. Discontinued by WinField United
Downdraft *(deposition aid)* — Increases deposition by delivering more droplets to leaves, reduces spray drift. Discontinued by WinField United
Drive 75 DF *(quinclorac)* — PRE or POST for grass in turf. Discontinued by BASF
Drive XLR8 *(quinclorac)* — PRE or POST for grass in turf. BASF
Dropp 50 WP *(thidiazuron)* — Plant growth regulator/defoliant in cotton. Discontinued by Bayer
Dropp Ultra *(thidiazuron + diuron)* — Cotton defoliant combining green leaf drop plus regrowth prevention with enhanced defoliation of mature leaves. Bayer
Dryacide 100 *(diatomaceous earth)* — Product for insect control in stored grain. WinField United
Dryacide CIK *(diatomaceous earth)* — Crawling insect control indoors and in housing structures. WinField United
DSMA *(disodium methanearsonate)* — POST herbicide for grasses in cotton, non-crop and turf areas. Various
Dual 8E *(metolachlor)* — PRE herbicide for annual grasses and some broadleaves. Discontinued by Syngenta
Dual II Magnum/Dual IIG Magnum *(s-metolachlor + benoxacor)* — Similar to Dual II but with more active isomers. Syngenta
Dual II, Dual II 25G — Same as Dual, but with an additive *(benoxacor)* which enhances the ability of corn to break down metolachlor. Discontinued by Syngenta
Dual Magnum *(s-metolachlor)* — Broad spectrum herbicide for weed control in multiple crops. Syngenta
Duet *(propanil + bensulfuron)* — POST herbicide for grass and weeds in rice. RiceCo
Duplosan *(2,4-DP-p)* — Non-crop herbicide for woody plants and brush. Nufarm
DuraCor *(aminopyralid + florpyrauxifen)* — Herbicide for pasture, woody plants and brush, and CRP. Corteva Agriscience
Durango DMA/Duramax *(glyphosate)* — A 5.4 lb/gal dimethylamine salt. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont
Durivo *(chlorantraniliprole + thiamethoxam)* — Soil applied insecticide for vegetables. Syngenta
Dursban 50W *(chlorpyrifos)* — Insecticide used by professional applicators. Discontinued by Dow AgroSciences
DVM 4 IVM *(2,4-D)* — Aquatic herbicide. Corteva Agriscience
Dylox 6.2G *(trichlorfon)* — Insecticide for turf. Bayer
Dynamark UV Blue — Spray indicator to increase visibility. WinField United
Dynasty *(azoxystrobin)* — On-farm and commercial fungicide seed treatment. Syngenta
Dynasty CST — On-farm and commercial seed treatment for cotton. Syngenta
Dynasty PD — On-farm and commercial seed treatment for peanuts. Syngenta
Eagle 20EW *(myclobutanil)* — Fungicide for lawn and turf diseases. Corteva Agriscience
Early Harvest PGR, TST *(cytokins + gibberellic acid + indole butyric acid)* — Plant growth regulator for early harvest. Discontinued by Auxein/Emerald Bio
Echelon 4SC *(sulfentrazone + prodiamine)* — PRE, POST herbicide for non-crop and turf. Discontinued by FMC
Echo 720, Echo 90DF *(chlorothalonil)* — Fungicides for peanuts, potatoes, soybeans and many vegetables. Sipcam
Elatus *(azoxystrobin + benzovindiflupyr)* — Fungicide for canola, sweet corn, peanuts, potatoes and others. Syngenta
Element 3A/4 *(triclopyr)* — POST herbicide for broadleaf weeds and woody plants on non-cropland; primarily for industrial use. Corteva Agriscience
Elevest *(bifenthrin + chlorantraniliprole)* — Insecticide for corn, soybean, peanuts and vegetable crops. FMC
Elevore *(haluaxifenl)* — PP burndown for annual broadleaf weeds. Corteva Agriscience
Elumin *(ethaboxam)* — Fungicide for cucurbits, peppers/eggplants, and tuberous and corm vegetables. Valent
Embrace *(tebuconazole)* — Foliar fungicide for peanuts. Discontinued by WinField United
Emerald *(boscalid)* — Fungicide for golf courses. BASF
Emesto Silver *(penflufen + prothioconazole)* — Commercial fungicide seed treatment for protection against seedborne and soilborne diseases in potatoes. Bayer
Eminent VP *(tetraconazole)* — Systemic foliar fungicide in sugarbeets and peanuts. Gowan
Enable 2F *(fenbuconazole)* — Fungicide for sugarbeet, citrus and other crops. Corteva Agriscience
Endigo ZCX *(lambda-cyhalothrin + thiamethoxam)* — Insecticide for cotton, soybean and other crops. Syngenta
Endura *(boscalid)* — Fungicide for beans, potatoes, and other field and vegetable crops. BASF
Endurance *(prodiamone)* — Non-crop herbicide. Syngenta
Engenia *(dicamba)* — Herbicide for use in dicamba-tolerant soybean and cotton. Discontinued by BASF
Enhance *(carboxin + captan)* — Planter box seed protectant for wheat, oats, barley, soybeans. UPL
Enlist Duo *(glyphosate + 2,4-D)* — Herbicide for use with Enlist corn, soybean and cotton, and in other listed crops. Corteva Agriscience
Enlist One *(2,4-D)* — Herbicide for use with Enlist corn, soybean and cotton, and in other listed crops. Corteva Agriscience
Enlite *(chlorimuron + thifensulfuron + flumioxazin)* — PP or PRE herbicide for soybeans. Corteva Agriscience
Entrust *(spinosad)* — Insecticide approved for organic use. Discontinued by Dow AgroSciences
Entrust SC *(spinosad)* — Insecticide for control of lepidopterous larvae, leafminers, thrips, and red imported fire ants. Corteva Agriscience
Enversa — Herbicide for Corn, Soybeans, Cotton and other crops. Corteva Agriscience
Envidor 2SC *(spirodiclofen)* — Miticide for citrus, trees, vines and other crops. Discontinued by Bayer
Envidor 2SC *(spirodiclofen)* — Miticide for citrus, trees, vines and other crops. Bayer
Envive *(chlorimuron + thifensulfuron + flumioxazin)* — PP or PRE herbicide for soybeans. Corteva Agriscience
Envoke *(trifloxysulfuron)* — POST herbicide for cotton, sugar cane and tomato. AMVAC
Envoy *(clethodim)* — Use post for annual and perennial weed grass control in ornamentals, conifer trees and non-bearing food crops and non-crop areas. Discontinued by Valent
Epic *(flufenacet + isoxaflutole)* — Herbicide. Discontinued by Bayer
Eptam 20-G, Eptam 7E *(EPTC)* — PP herbicide for grasses, some broadleaves in alfalfa, dry beans, potatoes, sugarbeets, sunflowers. Gowan
Equip *(foramsulfuron + iodosulfuron)* — POST broadleaf and grass herbicide for corn. Discontinued by Bayer
Equity *(thiamethoxam + mefenoxam + fludioxonil + thiabendazole)* — Seed treatment for soybean. Discontinued by Loveland
Eradicane 6.7E *(EPTC + antidote)* — PPI herbicide for grasses, some broadleaves in corn. Discontinued by Gowan
Eradicane 25G *(EPTC + antidote)* — Herbicide. Discontinued by Syngenta
Escort XP *(metsulfuron)* — Control of broadleaf weeds and brush in non-crop areas and grasses. Bayer
EsplAnade 200 SC *(indaziflam)* — Non-crop herbicide. Bayer
Esteem 0.86 EC *(pyriproxyfen)* — Insect growth regulator used on citrus and fruit crops. Valent
ET *(pyraflufen ethyl)* — POST contact herbicide for PP ahead of cotton, corn, wheat and soybeans and as a cotton and potato defoliant. Nichino America
Ethephon 6 *(ethephon)* — Growth regulator for cotton, tobacco. Discontinued by Arysta LifeScience
Ethion 4 *(ethion)* — Insecticide for citrus. Discontinued by FMC
Ethos Elite LFR ‡, Ethos XB, Ethos 3D *(bifenthrin + Bacillus spp.)* — Insecticide and fungicide to control soil pests. FMC
Everest 2.0 *(flucarbazone-sodium + safener)* — POST herbicide for grass control in wheat. Discontinued by Arysta LifeScience
Everest 3.0 *(flucarbazone-sodium)* — POST herbicide for grass control in wheat. UPL
EverGol Energy *(prothioconazole +penflufen + metalaxyl)* — Fungicide commercial seed treatment for a variety of crops. Bayer
EverGol Energy SB *(prothioconazole + penflufen + metalaxyl)* — Fungicide commercial seed treatment for soybean. Bayer
EverGol Prime *(penflufen)* — Fungicide seed treatment for various crops. Discontinued by Bayer
Everlon *(fluxapyroxad + pyraclostrobin)* — Disease control and plant health in various crops. WinField United.
EverpreX *(s-metolachlor)* — Herbicide for various pulse crops, soybean, corn, cotton and other grain, corm and vegetable crops. Corteva Agriscience
Evik DF *(ametryn)* — POST-directed spray for broadleaves and grasses in corn. Syngenta
Evik 80W *(ametryn)* — POST-directed spray for broadleaves and grasses in corn. Discontinued by Syngenta

Evito T *(fluoxastrobin + tebuconazole)* — Fungicide for peanuts, corn, and soybean. UPL

Evito 480 SC *(fluoxastrobin)* — Fungicide for peanut, potato, corn, soybean, wheat and vegetables. UPL

Evolve *(thiophanate-methyl + mancozeb + ethylene bisdithiocarbonate)* — A potato seed piece treatment fungicide. Discontinued by Bayer

Excalia *(inpyrfluxam)* — Fungicide for peanut, soybean and sugarbeet. Valent

Excalibre-SA — Bacterial inoculant for soybeans and dry beans. Agrauxine Corp.

Exceed *(prosulfuron + prionisulfuron)* — POST herbicide for broadleaves and grasses in corn. Discontinued by Syngenta

Excellorate — Bacterial inoculant for cereals, corn and soybeans. Agrauxine Corp.

Execute *(spinosad)* — Insecticide for many crops stored grain. Discontinued by WinField United

Exirel *(cyantraniliprole)* — Insecticide for fruits and vegetables. FMC

Expert *(s-metolachlor + atrazine + glyphosate)* — PRE and POST *(RR corn)* weed control in corn and sorghum. Discontinued by Syngenta

Expert 4.88 SE *(s-metolachlor + atrazine + glyphosate)* — PRE and POST *(RR corn)* weed control in corn and sorghum. Discontinued by Syngenta

Express *(tribenuron)* — PP/PH Burndown and POST herbicide for broadleaves in wheat, barley, triticale and ExpressSun sunflowers. FMC

Extrazine II 4L and 90 DF *(cyanazine + atrazine)* — PRE and POST herbicide in corn. Discontinued by DuPont

Extreme *(imazethapyr + glyphosate)* — PP and POST weed control in Roundup Ready soybeans. Discontinued by BASF

Exuro *(MSO)* — Increases herbicide absorption and penetration for tough burndown and desiccation applications. WinField United

Facet 75 DF *(quinclorac)* — Soil or foliar herbicide for grasses and broadleaf weeds in rice. Discontinued by BASF

Facet L *(quinclorac)* — Soil or foliar herbicide for grasses and broadleaf weeds in rice. BASF

Fallowmaster *(glyphosate + dicamba)* — POST herbicide in fallow or reduced-till small grain systems. Discontinued by Monsanto

Fallowmaster Broad Spectrum *(dicamba + glyphosate)* — Herbicide. Discontinued by Monsanto

Far-Go *(triallate)* — PPI in wheat and barley, pulses and sugarbeet. Gowan

Fast Break *(anti-foam/defoaming agent)* — Can decrease mixing and filling times, reduces foaming-over loss from tanks. WinField United

Fastac CS *(alpha-cypermethrin)* — Insecticide for many crops. BASF

Fastac EC *(alpha-cypermethrin)* — Insecticide for many crops. Discontinued by BASF

Fastrack *(AMS-replacement)* — Water conditioning and surfactant for glyphosate tank mixes. Discontinued by WinField United

Ference *(cyantraniliprole)* — Turf insecticide. Syngenta

FeXapan *(dicamba)* — Herbicide with VaporGrip™ technology for use on XtendFlex cotton and RR2 Xtend soybean, and for other use sites *(see label)*. Discontinued by DuPont

Field Master *(acetochlor + atrazine + glyphosate)* — For control of many annual grasses and broadleaf weeds in field corn and popcorn under no-till/minimum-till practices. Discontinued by Monsanto

Fierce *(flumioxazin + pyroxasulfone)* — PRE herbicide for field corn, soybean, fallow, and non-crop areas. Discontinued by Valent

Fierce EZ *(flumioxazin + pyroxasulfone)* — Burndown and PRE herbicide for cotton, field corn, soybean, grass grown for seed, fallow and non-crop. Valent

Fierce MTZ *(flumioxazin + pyroxasulfone + metribuzin)* — Burndown and PRE herbicide for field corn, soybean, fallow and non-crop. Valent

Fierce XLT *(flumioxazin + pyroxasulfone + chlorimuron)* — Burndown of broadleaves and annual grasses in soybean. Valent

Finale *(glufosinate ammonium)* — Non-selective weed control in non-crop areas. Bayer

Finesse Cereal and Fallow *(chlorsulfuron + metsulfuron)* — Herbicide for wheat, barley, triticale, fallow, and CRP grasses. FMC

Finesse DF *(chlorsulfuron + metsulfuron)* — Weed control in wheat, barley and fallow. Discontinued by DuPont

Finesse Grass & Broadleaf *(chlorsulfuron + flucarbazone-Na)* — Weed control in wheat. Discontinued by DuPont

Finish 6 Pro *(ethephon + cyclanilide)* — Harvest aid for cotton. Bayer

Firepower *(glyphosate + oxyfluorfen)* — For control of weeds in cotton, fallow and dormant vine crops. Discontinued by Monsanto

FirstRate *(cloransulam methyl)* — POST herbicide for control of broadleaf weeds in soybeans. AMVAC

FirstShot *(thifensulfuron + tribenuron)* — Burndown of broadleaves in fallow. FMC

FirstStep *(florasulam + glyphosate)* — Multi-pack herbicide for preseed weed control in wheat, barley, and oats. Discontinued by Dow AgroSciences

Flexstar *(fomesafen)* — POST broadleaf weed control in soybeans. Syngenta

Flexstar GT 3.5 *(fomesafen + glyphosate)* — PP, PRE or POST herbicide for glyphosate tolerant soybean or cotton. Syngenta

Flint, Flint Extra *(trifloxystrobin)* — Fungicide for potatoes, tomatoes, almonds, cucurbits, pome fruits, and other crops. Bayer

Floxcor — For the control of foliar, stem and root diseases in turf. Corteva Agriscience

Fluometuron 4L, 80DF *(flumeturon)* — PRE or POST control of weeds in cotton. Discontinued by WinField United

Foaminator Dry *(anti-foam/defoaming agent)* — Powdered formulation of silicone emulsion. WinField United

Folex 6 EC *(tribufos)* — Cotton defoliant. AMVAC

Folicur 3.6F *(tebuconazole)* — Foliar fungicide. Discontinued by Bayer

Fontelis *(penthiopyrad)* — Foliar fungicide for various crops. Corteva Agriscience

Force 3G *(tefluthrin)* — Pyrethroid insecticide for use on soil insects in corn. Discontinued by Syngenta

Force 6.5G, Force Evo *(tefluthrin)* — Pyrethroid insecticide for use on soil insects in corn. Syngenta

Forcivo *(azoxystrobin + fluindapyr + flutriafol)* — Fungicide for corn, soybeans, sorghum and small grains. Corteva Agriscience

Force 10G HL *(tefluthrin)* — Pyrethroid insecticide for use on soil insects in corn. AMVAC

Fore 80WP Rainshield *(mancozeb)* — Fungicide for lawn and turf. UPL

Forefront HL *(aminopyralid + 2,4-D)* — POST herbicide broadleaves in rangeland and pasture. Discontinued by Dow AgroSciences

Formula 1 *(AMS-replacement + drift reduction)* — Liquid formulation that increases glyphosate activity, optimizes spray and conditions hard water. Discontinued by WinField United

Formula 40 *(2,4-D amines)* — Control of broadleaf weeds in corn, sorghum, pastures. Discontinued by Nufarm

Fortenza *(cyantraniliprole)* — Insecticide commercial seed treatment for corn, canola, cotton, soybean, sunflower and rice.. Syngenta

Fortix *(fluoxastrobin + flutriafol)* — Fungicide for corn, soybean and wheat. Discontinued by FMC

Fortress 2.5G and 5G *(chlorethoxyfos)* — Organophosphate insecticide for corn soil insect pests. Discontinued by AMVAC

Forum *(dimethomorph)* — Fungicide for use in vegetables. BASF

Foxfire *(pinoxaden + fenoxaprop)* — POST herbicide for control of certain grasses in wheat. Discontinued by Syngenta

Fracture 2.1L *(BLAD=banda de lupinus albus doce)* — Fungicide for grape, strawberry, tomato, and stone fruits. Discontinued by FMC

Framework 3.3 EC *(pendimethalin)* — PP or PPI herbicide for many crops. Winfield United

Freedom *(alachlor + trifluralin)* — PPI for soybeans. Discontinued by Monsanto

FreeFall SC *(thidiazuron)* — Cotton defoliant. Nufarm

Freehand 1.75G *(dimethanamid-P + pendimethalin)* — PRE herbicide for ornamentals, landscapes and certain other non-crop uses. BASF

Frequency *(topramezone)* — PRE and POST herbicide for non-crop areas. BASF

Frontier 6.0 *(dimethenamid)* — PPI, PRE or EARLY POST control of annual grasses and some broadleaves. Discontinued by BASF

Frontrow *(flumetsulam + cloransulam-methyl)* — POST control of broadleaf weeds in soybeans. Discontinued by Dow AgroSciences

Fuego *(triasulfuron + dicamba)* — Herbicide for pastures, range, CRP. Discontinued by Syngenta

Fulfill *(pymetrozine)* — Control of aphids in potatoes, tobacco, vegetables. ADAMA

FulTime *(acetochlor + atrazine)* — EPP, PPI, PRE or EARLY POST weed control in corn. Discontinued by Dow AgroSciences

FulTime NXT *(encapsulated acetochlor + safener + atrazine)* — EPP, PPI, PRE or EARLY POST weed control in corn. Corteva Agriscience

Furadan 4F *(carbofuran)* — Systemic broad spectrum insecticide, nematicide used in soil or foliar on many different crops. Discontinued by FMC

Fury *(zeta-cypermethrin)* — Control of many insects on cotton, head lettuce, rice, corn, sugarbeets, pecans. Discontinued by FMC

Fusilade II *(fluazifop)* — Control of grass weeds in turf. Syngenta

Fusilade DX *(fluazifop)* — POST herbicide for grasses in cotton, vegetables and soybeans. Syngenta

Fusion *(fluazifop + fenoxaprop)* — POST herbicide for annual grasses in soybeans and cotton. Syngenta

G-Max Lite *(dimethenamid-p + atrazine)* — PP, PRE, or early POST herbicide in corn and grain sorghum. Discontinued by BASF

Gainer products *(plant food)* — Water soluble plant food concentrates. WinField United

Galaxy *(bentazon + acifluorfen)* — POST for broadleaf weeds in soybeans. Discontinued by BASF

Gallery SC and 75DF *(isoxaben)* — Pre or incorporated herbicide for broadleaves in horticultural crops and non-cropland. Corteva Agriscience

GameOn *(2,4-D + fluroxypyr + halauxifen)* — POST herbicide for turf and ornamental grasses, sod farms. Corteva Agriscience

Gammasan *(captan + lindane)* — Planter box seed treatment for corn and sorghum. Discontinued by WinField United

Gangster *(flumioxazin + cloransulam)* — PPI or PRE multi-pack herbicide in soybeans. Discontinued by Valent

Garlon 3A, 4 *(triclopyr)* — POST herbicide for broadleaf weeds and woody plants on non-cropland; primarily for industrial use. Corteva Agriscience

Gaucho Grande *(imidacloprid)* — Insecticide seed treatment for cotton. Discontinued by Bayer

Gaucho MZ *(imidacloprid + mancozeb)* — Potato seed piece treatment insecticide and fungicide. Discontinued by Bayer

Gaucho XT *(imidacloprid + metalaxyl + tebuconazole)* — A commercial seed treatment for wheat and barley. Discontinued by Bayer

Gaucho 600 FL *(imidacloprid)* — Insecticide commercial seed treatment on corn, sorghum, soybean, canola, wheat, barley, sugarbeets and cotton. Bayer

Gauntlet *(sulfentrazone + cloransulam-methyl)* — PRE control of weeds in soybeans. Discontinued by FMC

Gavel 75DF *(mancozeb + zoxamide)* — Fungicide for potato blight. Gowan

Gem 500 SC *(trifloxystrobin)* — Fungicide for potatoes, citrus, sugarbeets, and other crops. Discontinued by Bayer

Gem RC *(trifloxystrobin)* — Fungicide for rice and soybean. Discontinued by Bayer

Gin Out *(mepiquat chloride + kinetin)* — Foliar-applied plant regulator for cotton. Nufarm

Ginstar EC *(thidiazuron + diuron)* — Cotton defoliant with the qualities of Dropp, but with improved performance under cool and/or dry conditions. Bayer

Gladiator *(zeta-cypermethrin + avermectin)* — Foliar insecticide for various crops. Discontinued by FMC

Glean XP *(chlorsulfuron)* — PRE and POST broadleaf herbicide for use in wheat, barley, oats. FMC

Glymix MT *(glyphosate, 2,4-D)* — Herbicide. Discontinued by Dow AgroSciences

Glyphomax *(glyphosate)* — Equivalent to Roundup original. Discontinued by Dow AgroSciences

Glyphomax Plus *(glyphosate)* — Equivalent to Roundup Ultra. Discontinued by Dow AgroSciences

Glyphomax XRT *(glyphosate)* — 5.4 lb IPA salt with surfactant. Discontinued by Dow AgroSciences

Goal 2XL, Goaltender *(oxyfluorfen)* — PRE and/or POST herbicide for control of annual broadleaves in cotton, onions and vegetables. Nufarm

GoldSky *(florasulam + fluroxypyr + pyroxsulam)* — POST herbicide for annual grass and broadleaves in wheat, durum, triticale. Corteva Agriscience

GR2 *(pyroxsulam)* — POST herbicide for wheat and triticale. FMC

Gradual products *(nitrogen)* — Guaranteed analysis nitrogen products. WinField United

Graduate *(fludioxonil)* — Fungicide for citrus. Syngenta

Graduate A+ *(fludioxonil + azoxystrobin)* — Fungicide for citrus. Syngenta

Grain Guard *(mancozeb)* — Planter box seed fungicide used on small grains. UPL

Gramoxone Inteon *(paraquat)* — 3 lb/gallon formulation. Discontinued by Syngenta

Gramoxone Max *(paraquat)* — Non-selective contact herbicide. Discontinued by Syngenta

Gramoxone SL *(paraquat)* — Revised formulation of Inteon. Discontinued by Syngenta

Gramoxone SL 3.0 *(paraquat)* — Non-selective contact herbicide. Syngenta

Grandstand R *(triclopyr)* — POST control of broadleaf weeds in rice. Corteva Agriscience

Granite GR, Granite SC *(penoxsulam)* — POST herbicide for grass in rice in CA. Discontinued by Dow AgroSciences

Granox Plus — Planter box seed treatment. Discontinued by WinField United

Graph-Ex, Graph-Ex SA — Bacterial inoculant for soybeans, dry bean, peanut and cover crops. Agrauxine Corp.

Graslan L *(picloram + 2,4-D)* — Herbicide for control of weeds, woody plants, vines and brush on non-cropland, CRP, rights-of-way. Corteva Agriscience

Grasp SC *(penoxsulam)* — POST herbicide for grass and broadleaves in rice. Corteva Agriscience

Grasp Xtra *(penoxsulam + triclopyr)* — POST herbicide for rice. Corteva Agriscience

GrazonPD3 — Herbicide for control of weeds, woody plants, vines and brush on non-cropland, CRP, rights-of-way. Corteva Agriscience

GrazonNext HL *(aminopyralid + 2,4-D)* — POST pasture and rangeland herbicide; broadleaf and woody plant control in CPR, pasture and range. Corteva Agriscience

Grazon P+D *(picloram + 2,4-D amine)* — POST herbicide for broadleaf weed control with residual in permanent grass pastures and rangeland. Corteva Agriscience

Grizzly Too *(lambda-cyhalothrin)* — Insecticide for many crops; similar to Warrior. WinField United

Grizzly Z *(lambda-cyhalothrin)* — Insecticide for many crops. Discontinued by WinField United

Guardsman *(dimethenamid + atrazine)* — Herbicide for corn and sorghum. Discontinued by BASF

Guardsman Max *(dimethenamid-p + atrazine)* — PP, PRE or early POST weed control in corn and grain sorghum. Discontinued by BASF

Guthion *(azinphos-methyl)* — Organophosphate insecticide for certain tree crops. Discontinued by MANA

Habitat *(imazapyr)* — Herbicide for aquatic weeds. BASF

Halex GT *(s-metolachlor + mesotrione + glyphosate)* — POST herbicide for glyphosate tolerant corn, and PRE in grain sorghum. Syngenta

Harmony Extra SG *(thifensulfuron + tribenuron)* — PP and POST herbicide for small grains. FMC

Harmony SG *(thifensulfuron)* — Soluble granule herbicide for POST in small grains, soybeans and fallow; GT was previous formulation. Discontinued by FMC

Harness *(acetochlor + safener)* — PPI, PRE, EARLY POST herbicide for control of grasses and some broadleaves in field corn, seed corn and popcorn. Bayer

Harness 20G *(acetochlor + safener)* — Granular form of Harness *(above)*. Discontinued by Bayer

Harness MAX *(acetochlor + mesotrione)* — Broad-spectrum PRE/POST herbicide for corn. Bayer

Harness Xtra *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for control of grasses and broadleaves in field corn, seed corn and popcorn. Bayer

Harness Xtra 5.6L *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for field, pop and seed corn. Bayer

Harvade 5F *(dimethipin)* — Harvest growth regulant for cotton. Discontinued by Chemtura

Headline/Headline SC *(pyraclostrobin)* — Fungicide for small grain, sugarbeet, and other crops. BASF

Headline AMP *(pyraclostrobin + metconazole)* — Fungicide for corn. BASF

HeadsUp *(extract of Chenopodium quinoa saponins)* — Preplant seed treatment treatment for the disease suppression. HeadsUp Plant Protectants Inc.

Headway, Headway G *(azoxystrobin + propiconazole)* — Turf fungicide. Discontinued by Syngenta

Heat *(saflufenacil)* — Non-crop herbicide. Discontinued by BASF

Heat Wave *(foam marker)* — High-foaming surfactants and foam stabilizing agents formulated for hot, dry and windy conditions. WinField United

Helix Lite — Same as Helix Xtra but with only 1/2 as much thiamethoxam as Helix Xtra. Discontinued by Syngenta

Helix Vibrance *(thiamethoxam + difenoconazole + mefenoxam + fludioxonil + sedaxane)* — Commercial seed treatment on Canola. Syngenta

Helix Xtra *(difenoconazole + metalaxyl + fludioxonil + thiamethoxam)* — Commercial seed treatment for canola. Syngenta

Herbivore *(halosulfuron)* — PRE and POST herbicide for control of broadleaf weeds and nutsedge. Discontinued by WinField United

Heritage *(azoxystrobin)* — Fungicide for turf and other crops. Discontinued by Syngenta

Heritage Action *(azoxystrobin + azibenzoler)* — Fungicide for golf courses and other turf except home lawns. Discontinued by Syngenta

Heritage G *(azoxystrobin)* — Fungicide for lawns and turf. Discontinued by Syngenta

Heritage TL *(azoxystrobin)* — Fungicide for turf and other crops. Discontinued by Syngenta

Hero *(zeta cypermethrin + bifenthrin)* — Insecticide for corn, cotton, pecans, soybeans, potato and certain vegetables. FMC

Hi-Comp *(compatibility and acidifying agent)* — Emulsifies and disperses liquid fertlizer and pesticides for uniform mixture. Discontinued by WinField United

Hi-Dep — Blended amine formulation of 2,4-D for hard-to-kill broadleaf weeds in small grains, corn, sorghum, pastures, non-cropland. PBI Gordon

HI-PER-OIL — High-load COC. Discontinued by WinField United

HiredHand P+D *(picloram + 2,4-D amine)* — POST herbicide for broadleaves and brush. Discontinued by Dow AgroSciences

Hoelon *(diclofop)* — PRE and POST herbicide for annual grass in barley, wheat and set-aside acres. Discontinued by Bayer

Honcho K6 *(glyphosate)* — Equivalent to Roundup WeatherMAX. Bayer

Honor *(pyraclostrobin + boscalid)* — Fungicide for golf courses. BASF

Horizon 1 EC *(fenoxaprop-ethyl)* — POST grass control in turf grass seed production. Bayer

Hornet *(flumetsulam + clopyralid)* — Herbicide for EPP, PPI, PRE and early POST control of broadleaf weeds in corn. AMVAC

Huskie *(pyrasulfotole + bromoxynil)* — POST herbicide for broadleaves in wheat, barley, triticale, sorghum and CRP. Bayer

Huskie Complete *(thiencarbazone + pyrasulfotole + broxomynil)* — POST herbicide for annual weeds in wheat. Bayer

Huskie FX *(pyrasulfotole + bromoxynil + fluroxypyr)* — POST herbicide for broadleaves in wheat, barley, triticale, sorghum and CRP. Bayer

Hydrothol 191 *(endothall)* — Aquatic algicide and herbicide. UPL

Hyvar X and X-L *(bromacil)* — Herbicide for long-lasting control of weeds and brush in citrus *(X)* and non-cropland *(X and XL)*. Discontinued by AMVAC

Icon 6.2 FS *(fipronil)* — Insecticide for commercial treatment of rice seed. Discontinued by Bayer

Iconic *(non-AMS conditioner)* — Adjuvant with water conditioner and activator designed to enhance herbicide activity. Discontinued by WinField United

Idol *(fenamidone)* — Seed treatment for sunflower. Discontinued by Bayer

Ignite 280 SL *(glufosinate)* — Contact herbicide for LibertyLink crops. Discontinued by Bayer

ILeVO *(fluopyram)* — Fungicide and nematicide commercial seed treatment for soybean. BASF

Illoxan 3 EC — Herbicide for golf courses. Discontinued by Bayer

Image 1.5 LC *(imazaquin)* — Weed control in zoysiagrass lawns and selected ornamentals. BASF

Imidan 70-W *(phosmet)* — Insecticide used on many crops. Gowan

Impact *(topramezone)* — POST herbicide for corn. AMVAC

ImpactZ *(topramezone + atrazine)* — POST herbicide for corn. AMVAC

Impact Core *(acetochlor + topramezone)* — POST herbicide for corn. AMVAC

Imperium *(EPTC + acetochlor)* — PPI for corn. Discontinued by Gowan

Incentive RTA *(mefanoxam + difenoconazole)* — Wheat and barley seed fungicide. Discontinued by WinField United

Incinerate *(mesotrione)* — PRE and POST herbicide for broadleaf weeds in corn and other crops. WinField United

Indar 2F *(fenbuconazole)* — Fungicide for many crops. Corteva Agriscience

Index *(chlorethoxyfos + bifenthrin)* — Liquid at-plant insecticides for corn. AMVAC

Inergy *(MSO + OS adjuvant)* — Highly refined, modified vegetable oil and non-ionic organosilicone surfactant. Discontinued by WinField United

InLine *(1,3-dichloropropene + chloropicrin)* — Soil fumigant. Corteva Agriscience

Inovate *(clothianidin + ipconazole + metalaxyl)* — Fungicide and insecticide seed treatment for soybean. Discontinued by Valent

Insignia/Insignia SC *(pyraclostrobin)* — Fungicide for turf and ornamentals. BASF

Inspire XT *(difenoconazole + propiconazole)* — Fungicide for sugarbeets. Syngenta

Inspire Super *(difenoconazole + cyprodinil)* — Foliar fungicide for cereals, various vegetable crops. Syngenta

Instigate *(rimsulfuron + mesotrione)* — PP and PRE herbicide in field corn. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Instinct, Instinct HL, Instinct II *(nitrapyrin)* — Nitrogen stabilizer/nitrification inhibitor for corn. Corteva Agriscience

Instrata *(chlorothalonil + propiconazole + fludioxonil)* — Turf fungicide. Syngenta

Intego Suite Soybeans *(clothianidin + ethaboxam + ipconazole + metalaxyl)* — Commercial seed treatment for use on soybeans. Valent

Intego Suite System *(clothianidin + ethaboxam + ipconazole + metalaxyl)* — Seed Treatment. Discontinued by Valent

Interface *(iprodione + trifloxystrobin)* — Fungicide for turfgrass. Bayer

InterLock *(deposition aid)* — Drift reduction with improved deposition; CPDA certified. WinField United

Intrepid 2F *(methoxyfenozide)* — Insect growth regulator for many crops. Corteva Agriscience

Intrepid Edge *(methoxyfenozide + spinetoram)* — Insecticide for use in soybean, cotton and other crops. Corteva Agriscience

Intrro *(alachlor)* — PRE grass herbicide for soybean, peanuts, sorghum and other crops. Discontinued by Monsanto

Intruder *(acetamiprid)* — Insecticide for cotton. Gowan

Ion Stryke *(microbial mix)* — Nutrient release powder for legumes. Planet Earth Agronomy

Iprodione 4L *(iprodione)* — Contact and locally systemic fungicide. Various

Isotox F — Planter box seed treatment. Discontinued by WinField United

Javelin WG *(Bt kurstaki)* — Biological insecticide for use in alfalfa, corn, cotton, small grains, fruits, nuts, vegetables, stored grains. Certis

Journey *(imazapic + glyphosate)* — Herbicide for non-crop weeds. Discontinued by BASF

JumpStart — Bacterial inoculant for alfalfa, canola/mustard, clover, corn, pulses, sorghum, soybean, sugarbeet, sunflower and wheat. Novozymes A/S

Junction *(mankozeb + copper hydroxide)* — Fungicide for turf. SePRO

K-4 *(hexazinone + diuron)* — Herbicide for use on sugar cane in FL, LS, TX. Discontinued by DuPont

Karate Z *(lambda-cyhalothrin)* — Encapsulated insecticide for use in cotton, peanuts, rice, sorghum, soybeans. Discontinued by Syngenta

Karmex DF *(diuron)* — Selective control of annual weeds in cotton, grain sorghums, winter wheat, established alfalfa; soil sterilant in non-cropland at higher rates. ADAMA

Kelthane 35, 50, MF *(dicofol)* — Miticide used in field crops, vegetables, fruit, nuts. Discontinued by Dow AgroSciences

Kerb SC *(pronamide)* — For PRE and early POST weed control in forage legumes, ornamentals, fallow. Corteva Agriscience

Kernel Guard *(captan + diazinon + lindane)* — Fungicide-insecticide seed treatment. Discontinued by Chemtura

Kernel Guard Supreme *(permethrin + carboxin)* — Fungicide-insecticide seed treatment for corn and soybeans. Discontinued by Chemtura

Ketch DF *(Bt. aizawai)* — Biological insecticide. Discontinued by Dow AgroSciences

Keystone and Keystone LA *(acetochlor + atrazine)* — Herbicides for corn. Discontinued by Dow AgroSciences

Keystone LA NXT *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for grasses and broadleaves in field corn, seed corn and popcorn. Corteva Agriscience

Keystone NXT *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for grasses and broadleaves in field corn, seed corn and popcorn. Corteva Agriscience

Kixor *(saflufenacil)* — Active ingredient in Testify, Verdict, Sharpen and Treevix. Discontinued by BASF

Knack *(pyriproxyfen)* — Insecticide growth-regulator for multiple crops. Valent

Kochiavore — POST broadleaf control in several grains and fallow land. WinField United

Kocide 3000 *(copper hydroxide)* — Fungicides for many labeled crops. Corteva Agriscience

Kodiak HB — Biological fungicide, Bacillus subtilis, which is used as a seed treament on corn, cotton, peanuts and pod vegetables. Discontinued by Bayer

Komeen *(copper + ethylenediamine + copper sulfate)* — Aquatic herbicide. SePRO

Koverall *(mancozeb)* — Fungicide for various crops. Discontinued by FMC

Krenite S *(fosamine)* — Control of brush on non-cropland. Albaugh

Kriss 5-8-4 *(nitrogen + phosphorus + potassium)* — Plant nutrition product. WinField United

Krovar I DF *(bromacil + diuron)* — Control of certain weeds and grasses in citrus. AMVAC

Krovar I and II *(bromacil + diuron)* — Control of certain weeds and grasses in citrus and noncropland. Discontinued by DuPont

Kyber *(flumioxazin + pyroxasulfone + metribuzin)* — Burndown and PRE herbicide for field corn, soybean, fallow and non-crop. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Kyber Pro *((flumioxazin + pyroxasulfone + metribuzin)* — Burndown and PRE herbicide for field corn, soybean, fallow and non-crop. Corteva Agriscience

Kyro *(acetochlor + topramezone + clopyralid)* — Herbicide for corn. Corteva Agriscience

K-TEA *(copper sulfate)* — Algaecide. SePRO

Laddok S-12 *(bentazon + atrazine)* — POST broadleaf control in corn and sorghum. Discontinued

Lambda-Cy AG *(lambda-cyhalothrin)* — Encapsulated insecticide for use in cotton, peanuts, rice, sorghum, soybeans. WinField United

Landmark XP *(sulfometuron + chlorsulfuron)* — Non-crop herbicide. Corteva Agriscience

Landmaster BW *(glyphosate + 2,4-D amine)* — Suppression of field bindweed and many annual weeds in fallow and reduced-tillage systems. Discontinued by Monsanto

Landmaster II *(glyphosate + 2,4-D)* — Suppression of field bindweed and many annual weeds in fallow and reduced-tillage systems. Discontinued by Monsanto

Landstar *(glyphosate + 2,4-D amine)* — Generic Landmaster. Discontinued by Albaugh

Lannate LV, Lannate SP *(methomyl)* — Broad spectrum insecticide used for control of many insects on many crops. Tesenderlo Kerley

Laredo EW *(myclobutanil)* — Supplemenental label for control of rust in soy. Discontinued by Corteva Agriscience

Lariat — Combination of alachlor + atrazine for PPI, PRE weed control in corn and grain sorghum. Discontinued by Monsanto

Larvin *(thiodicarb)* — Carbamate insecticide/ovicide which has activity on many caterpillars in corn, soybeans, sweet corn. Discontinued by Bayer

Lasso *(alachlor)* — PRE herbicide for annual grasses, some broadleaves. Discontinued by Monsanto

Latitude *(imidacloprid + carboxin + metalaxyl)* — Seed treatment. Discontinued by Chemtura

Laudis *(tembotrione + isoxadifon-ethyl safener)* — POST corn herbicide for grass and broadleaf. Bayer

Layby Pro *(linuron + diuron)* — Directed spray herbicide for cotton. Discontinued by DuPont

Leadoff *(rimsulfuron + thifensulfuron)* — PP herbicide for field corn, soybean, and cotton. Corteva Agriscience

Leafless *(dimethipin + thidiazuron)* — Harvest growth regulator for cotton. Discontinued by Chemtura

League *(imazosulfuron)* — Rice herbicide. Valent

League MVP *(imazosulfuron + thiobencarb)* — Grasses, sedges and broadleaf control in rice. Valent

Lepinox WDG *(Bt. kurstaki)* — Biological insecticide for many field and vegetable crops. Discontinued by Chemtura

Level 7 *(water conditioning agent + non-ionic surfactant)* — Multicomponent adjuvant that includes spreader, penetrator and acidifier; CPDA certified. Discontinued by WinField United

Leverage 2.7 *(imidacloprid + beta-cyfluthrin)* — Insecticide. Discontinued by Bayer

Leverage 360 *(imidacloprid + beta-cyfluthrin)* — Insecticide for cotton, potato, soybean and other crops. Bayer

Lexar EZ *(atrazine + mesotrione + s-metolachlor)* — A herbicide for corn and grain sorghum. Syngenta

Lexicon Intrinsic *(fluxapyroxad + pyraclostrobin)* — Fungicide for use in turf. BASF

Lexone *(metribuzin)* — Annual broadleaf weed control. Discontinued by DuPont

Liberty Ultra *(glufosinate P-ammonium)* — POST, contact herbicide for LibertyLink corn, canola, cotton, and soybeans. BASF

Liberty 280 SL *(glufosinate-ammonium)* — POST, contact herbicide for LibertyLink corn, canola, cotton, and soybeans. BASF

Liberty ATZ *(glufosinate + atrazine)* — Herbicide in LibertyLink corn. Discontinued by Bayer

Liberty NC *(glufosinate)* — Herbicide in non-crop. Discontinued by Bayer

Lift *(surfactant + buffer)* — Enhances activity of agrochemicals that benefit from pH>7. Discontinued by WinField United

Lightning 70DG *(imazapyr + imazethapyr)* — POST weed control in Clearfield *(IMI)* corn. Discontinued by BASF

Lindane 25DB — Insecticide planter box seed treatment. Discontinued

Lindane 30EC *(lindane)* — Insecticidal seed treatment. Discontinued by Bayer

Lineage Clearstand *(imazapyr + metsulfuron)* — Herbicide for non-crop, or pasture. Discontinued by DuPont

Lineage HWC *(imazapyr + metsulfuron + sulfometuron)* — Herbicide for non-crop. Discontinued by DuPont

Lineage Prep *(imazapyr + metsulfuron + sulfometuron)* — Herbicide for non-crop. Discontinued by DuPont

Linex 4L *(linuron)* — PRE herbicide for various crops. Tessenderlo Kerley

Lint Plus *(dimethipin)* — Harvest growth regulator for cotton. Discontinued by Chemtura

Lock-On *(chlorpyrifos)* — Insecticide for alfalfa and cotton. Discontinued by Dow AgroSciences

Logic *(fenoxycarb)* — Insect growth regulator for control of fire ants in non-crop areas. Syngenta

Londax *(bensulfuron methyl)* — Herbicide used on rice. Corteva Agriscience

Lontrel T + 0 *(clopyralid)* — POST broadleaf herbicide for turf, ornamentals. Corteva Agriscience

Lorox DF *(linuron)* — PRE for broadleaf weed control in corn, potatoes, soybeans, sorghum; also, as a directed spray POST in corn, sorghum and soybeans. Tessenderlo Kerley

Lorsban 15G *(chlorpyrifos)* — Insecticide for various field and vegetable crops. Discontinued by Dow AgroSciences

Lorsban 50W, 4E *(chlorpyrifos)* — Broad spectrum organophosphate insecticides labeled on a variety of crops. Discontinued by Dow AgroSciences

Lorsban Advanced *(chlorpyrifos)* — Insecticide that replaces Lorsban 4E. Discontinued by Dow AgroSciences

Loyant *(florpyrauxifen)* — Herbicide for use in rice to control weeds in select states. Corteva Agriscience

Lucento *(bixafen + flutriafol)* — Fungicide for corn, peanut, soybean, sugarbeet and wheat. FMC

Lumax EZ *(s-metolachlor + atrazine + mesotrione)* — PP or PRE herbicide for corn and grain sorghum. Syngenta

Lumiderm *(cyantraniliprole)* — Seed treatment insecticide for use on rapeseed, including canola. Corteva Agriscience

Lumisena *(oxathiapiprolin)* — Fungicide seed treatment for soybean and sunflowers. Corteva Agriscience

Luna Experience *(fluopyram + tebuconazole)* — Fungicide for Watermelons, Cole crops, Cucurbits, Onion/Garlic and Various other crops. Bayer

Luna Flex — Fungicide for dry beans, Onions/Garlic, Sugarbeets and various other crops. Bayer

Luna Pro — Fungicide for Potatoes and various other crops. Bayer

Luna Privilege *(fluopyram)* — Fungicide for dried beans, peanut, potato, sugarbeet, and watermelon. Discontinued by Bayer

Luna Sensation *(fluopyram + trifloxystrobin)* — Fungicide for watermelon, Cole Crops, Cucurbits, Leafy Vegetables, Solenaceous crops and various other crops. Bayer

Luna Tranquility *(fluopyram + pyrimethanil)* — Fungicide for potatoes, Onions/Garlic and various other Root Crops. Bayer

Luxxur A *(tribenuron)*— Post herbicide for winter and spring wheat, including durum. Discontinued by Bayer

Luxxur B *(thiencarbazone)* — Post herbicide for winter and spring wheat, including durum. Discontinued by Bayer

LV 4, LV 6 Phenoxy *(2, 4-D Lo-Vol esters)* — Post broadleaf weed killers for several crops. WinField United

Maestro 2EC *(bromoxynil)* — Herbicide for broadleaf control in corn, sorghum, small grains, alfalfa, flax, onion/garlic, mint, turf and non-cropland. Nufarm

Maestro Advanced, Maestro MA *(bromoxynil + MCPA)* — Herbicide for broadleaf control in small grains, flax, grasses grown for seed. Nufarm

Mainspring GNL *(cyantraniliprole)* — Insecticide for some tubers, ornamentals, greenhouses and trees. Syngenta

Majesty *(glufosinate-ammonium)* — POST, contact herbicide for listed tree, vine and berry crops, for LibertyLink cotton, PRE BURNDOWN in sweet corn and cotton, and potato vine desiccation. Discontinued by WinField United

Malathion 5, 5EC or 8 Flowable — Non-persistent general insecticide with a variety of uses on vegetables, fruit, stored grain and field crops. WinField United, Drexel, Gowan

Malathion Grain Dust 6% — Premium grade Malathion to apply as a dust to grain as it goes into storage to protect against infestation by many of the common insects which attack grain in storage. Discontinued by WinField United, Douglas

Malathion ULV *(malathion)* — Ultra low-volume formulation. Discontinued by Loveland, WinField United

Manage *(halosulfuron)* — Turf herbicide for nutsedge. Discontinued by Monsanto

Mandate 2E *(thiazopyr)* — Insecticide for use in citrus. Discontinued by Dow AgroSciences

Manex *(maneb)* — Foliar fungicide for fruit, nut and vegetable crops. Discontinued by DuPont

Manex II *(mancozeb)* — Foliar and seed treatment fungicide for many field crops, fruits, vegetables. Discontinued

ManKocide *(mancozeb + copper hydroxide)* — Foliar fungicide for peanuts, potatoes, sugarbeets, vegetables. Certis

Manticor LFR *(bifenthrin + pyraclostrobin)* — In-furrow insecticide for corn. Discontinued by BASF

Manzate Max and Manzate Pro-Stick *(zinc + manganese mancozeb)* — Foliar fungicide and on-farm or commercial seed treatment for various crops. UPL

Marksman *(dicamba + atrazine)* — PRE and POST weed control in corn, grain sorghum and in fallow rotations. Discontinued by BASF

Marvel *(fluthiacet-methyl + fomesafen)* — PP and Post herbicide in soybeans. Discontinued by FMC

MatchPoint *(spinosad)* — Insecticide for turfgrass. Corteva Agriscience

Matrix SG *(rimsulfuron)* — Herbicide for PRE and POST use in potatoes, tomatoes and fruit crops. Corteva Agriscience

Matrix FNV *(rimsulfuron)* — Herbicide for citrus and other trees and fruits. Discontinued by DuPont

Mauler *(metribuzin)* — Herbicide for soybeans. Valent

Maverick *(pyroxasulfone +mesotrione+clopyralid)* — PP, PRE and POST control of weeds in corn. Valent

MAX-IN products — Foliar micronutrients. WinField United

Maxim 025FS *(fludioxonil)* — Seed treatment for use on sunflower seed to be exported only. Syngenta

Maxim 4FS *(fludioxonil)* — Fungicide on-farm and commercial seed treatment for cereal grains, cotton, peanuts, most vegetables. Syngenta

Maxim MZ *(fludioxonil + mancozeb)* — On-farm and commercial seed treatment for potatoes. Discontinued by Syngenta

Maxim Quattro *(fludioxonil + mefenoxam + azoxystrobin + thiabendazole)* — Commercial seed treatment for corn. Syngenta

Maxim XL *(fludioxonil)* — Seed treatment for control of diseases in corn, soy, small grain, sorghum and other crops. Syngenta

Maxtima *(mefentrifluconazole)* — Fungicide for turfgrass in nonresidential areas. BASF

MBC 67-33, 75-25, 80-20, 98-2 *(methyl bromide + chloropicrin in various ratios)* — PPI control of many soil-borne pests in plant beds and nurseries. Discontinued by WinField United

MCPA — Phenoxy herbicide; used in small grains, flax, pastures, lawns and other settings. WinField United, Albaugh, NuFarm, others

MCPP-p 4 Amine — Phenoxy herbicide; used in small grains, flax, pastures, lawns and other settings. Discontinued by Nufarm

Medallion, Medallion SC *(fludioxonil)* — Turf and lawn fungicide. Syngenta

MegaPack — Bacterial inoculant for soybeans. Agrauxine Corp.

Mentor *(propiconazole)* — Fungicide for drip/drench of citrus, stone fruit and tomato. Syngenta

Mentor EC *(propiconazole)* — Fungicide for drip/drench of citrus and tomato. Syngenta

Merit 0.5 G *(imidacloprid)* — Insecticide for turf and ornamental. Bayer

Merivon *(fluxapyroxad + pyraclostrobin)* — Fungicide for vegetables and fruits. BASF

Mertect 340F *(thiabendazole)* — Systemic fungicide used on certain vegetables and fruits and as an on-farm or commercial seed treatment for wheat, soybean and peas. Syngenta

Messenger — Protein that is promoted to enhance plant's immune systems to diseases and insects. Discontinued by Eden Bioscience

Method 240SL, Method 50SG *(aminocyclopyrachlor)* — herbicide for non-crop use. Bayer

Methyl 4EC *(methyl parathion)* — Insecticide for many crops. Discontinued by Cheminova

Metriclude EXT *(metribuzin)* — Herbicide for many crops; similar to Dimetric EXT. Discontinued by WinField United

Mettle *(tetraconazole)* — Fungicide for cucurbits and fruiting vegetables. Gowan

Meturon 4L, 80DF *(fluometuron)* — PRE and POST weed control in cotton. Discontinued by Griffin

MicroFuse Products — Micro nutrients blends for Corn and Soybeans. WinField United

Micro-Tech *(alachlor)* — PPI, PRE or EARLY POST herbicide for use in corn, grain sorghum, dry beans, peanuts, soybeans; micro-encapsulated formulation to reduce herbicide tie-up by crop residues. Discontinued by Monsanto

Microthiol Disperss *(sulfur)* — Controls mites and certain diseases in field and horticultural crops. Cerexagri-Nisso

Milestone *(aminopyralid)* — Broad spectrum systemic herbicide for broadleaves in range, pasture, non-crop, CRP, natural areas and other uses. Corteva Agriscience

Milestone VM *(aminopyralid)* — Broad spectrum systemic herbicide for broadleaves in range, pasture, non-crop, CRP, natural areas and other uses. Discontinued by Corteva Agriscience

Milestone VM PLUS *(aminopyralid + triclopyr)* — POST herbicide for broadleaf and woody plant control in pasture and non-crop. Discontinued by Corteva Agriscience

Minecto Pro *(cyantraniliprole + abamectin)* — Insecticide/miticide for citrus, cotton, and various vegetable crops. Syngenta

Minuet *(QST 713 strain of Bacillus subtilis)* — Soil fungicide for many crops. Bayer

Miravis *(pydiflumetofen)* — Foliar fungicide for peanut. Syngenta

Miravis Ace *(pydiflumetofen + propiconazole)* — Foliar fungicide for small grains. Syngenta

Miravis Neo *(pydiflumetofen + propiconazole + azoxystrobin)* — Foliar fungicide for canola, corn, soybean and dried shelled beans. Syngenta

Miravis Prime *(pydiflumetofen + fludioxonil)* — Foliar fungicide for various vegetables, leafy greens and tuberous vegetables. Syngenta

Miravis Top *(pydiflumetofen + difenoconazole)* — Foliar fungicide for dried beans and peas, soybean and tuberous vegetables. Syngenta

Mocap EC, Mocap 15G *(ethoprop)* — Insecticide-nematicide used in corn, mint, peanuts, potatoes, sugar cane. AMVAC

Moncut SC *(flutolanil)* — Fungicide used in potato and cole crops. Nichino America

Monitor 4 *(methamidophos)* — Insecticide/acarcide for cotton, potatoes, tomatoes. Discontinued by Bayer

Monument *(trifloxysulfuron)* — POST herbicide for turf. Syngenta

Movento, Movento HL *(spirotetramat)* — Systemic, foliar insecticide for fruit trees, vegetables, Christmas trees and other crops. Bayer

Movento MPC *(spirotetramat)* — Insecticide for citrus. Bayer

Moxy 2E *(bromoxynil)* — Contact herbicide for broadleaves in small grains, corn, grain and forage sorghum, alfalfa. Discontinued by WinField United

Moxy + Atrazine *(bromoxynil + atrazine)* — Herbicide for corn and sorghum. Discontinued by WinField United

M-Pede *(fatty acids)* — Kills soft-bodied insects on vegetables, fruits, ornamentals and certain field crops. Corteva Agriscience

M-Peril *(Bt. var. kurstaki)* — Bioinsecticide granule for control of corn borer and armyworm larvae. Corteva Agriscience

MSMA 6 Plus *(monosodium methanearsonate)* — For POST control of grasses in turf and non-crop areas; PP or POST in cotton. Drexel

MSR Spray Concentrate *(oxydemeton-methyl)* — Systemic, contact insecticide/ acaricide product. Discontinued by Gowan

MTZ Co-pack *(metribuzin)* — Herbicide for soybeans. Discontinued by Valent

Mural *(azoxystrobin + benzovindiflupyr)* — Fungicide for vegetable transplants grown for retail, ornamental crops, nurseries and commercial landscapes. Syngenta

Mustang/Mustang Maxx *(zeta-cypermethrin)* — Control of many insects on cotton, head lettuce, pecans, rice, corn, sugarbeets and more. FMC

Muster *(ethametsulfuron acthyl)* — Herbicide for canola, crambe. Discontinued by DuPont

Mystic Z *(lambda-cyhalothrin)* — Similar to Karate with Zeon technology. Discontinued by WinField United

MZ Curzate — Potato seed piece fungicide. Discontinued by Bayer

NativeKlean *(aminopyralid + 2,4-D)* — Herbicide for broadleaf weed control including invasive weeeds in non-crop areas. Corteva Agriscience

Navicon *(mefentrifluconazole)* — Fungicide for turfgrass in nonresidential areas. BASF

Nealta *(cyflumetofen)* — Miticide in citrus, pome, strawberries, tomatoes, and tree nuts. BASF

Neemix *(azadirachtin)* — Botanical insecticide. Certis

Nemacur 3 & Nemacur 15G *(fenamiphos + naphthtalene)* — Insecticide/Nematicide. Discontinued by Bayer

New Path *(imazethapyr)* — Weed control in Clearfield rice. BASF

Newtone *(surfactant)* — Proprietary surfactant blend with ammoniated salts. Discontinued by WinField United

Nexicor *(fluxapyroxad + pyraclostrobin + propiconazole)* — Fungicide for small grains and sorghum. BASF

NextStep NG *(clodinafop)* — Wheat herbicide. UPL

NipsIt INSIDE *(clothianidin)* — Insecticide commercial seed treatment for canola, sorghum and sugarbeet. Valent

NipsIt SUITE Cereals OF — On-farm and commercial seed treatment. Valent

Nitragin Gold — Bacterial inoculant for alfalfa. Novozymes A/S

Nitro Shield IV *(imidacloprid)* — Commercial seed treatment insecticide for many crops. Discontinued by WinField United

Noble *(MSO + surfactant)* — Designed to benefit postemergence herbicides and certain insecticides, especially under adverse conditions. WinField United

Nodulator — Inoculant for various pulse crops. BASF

Northstar *(primisulfuron-methyl + dicamba)* — POST weed control in corn. Discontinued by Syngenta

Nortron SC *(ethofumesate)* — A PP, PRE, or POST herbicide for sugarbeets. Bayer

Nova 40W *(myclobutanil)* — Fungicide for tree fruits. Discontinued by Dow AgroSciences

NovaGraz — Herbicide for pasture, rangeland, CRP and wildlife areas. Corteva Agriscience

Novodor *(Bt. tenabrionis)* — Bacterial insecticide for control of beetles on potatoes, tomatoes, ornamentals. Discontinued by Valent

N-Charge, N-Charge S — Inoculant for various legume crops. Verdesian Life Sciences

N-Dure — Inoculant for various legume crops. Verdesian Life Sciences

N-Take, N-Take XL — Inoculant for various legume crops. Verdesian Life Sciences

N-Pak AMS Liquid *(AMS)* — Liquid form of 34% AMS to enhance pesticide performance or where AMS is required. DIscontinued by WinField United

N-Pak Plus *(ammonium sufate + glycerol acid)* — Improves performance of herbicides. Discontinued by WinField United

N-Pak 28 *(28% liquid nitrogen)* — Improves the performance of some herbicides. Discontinued by WinField United

N-SERVE 24, N-SERVE 24E *(nitrapyrin)* — Nitrification inhibitor with selective activity against Nitrosomonas bacteria. Corteva Agriscience

Nufos *(chlorpyrifos)* — Insecticide for certain field, fruit and vegetable crops. Discontinued by FMC

Nuprid 4F Max *(imidacloprid)* — Insecticide for cotton, peanut, potatoes, soybean, tobacco and vegetables. Nufarm

Nurizma *(broflanilide)* — In-furrow insecticide for corn and potato. BASF

Oberon 2 SC, Oberson 4 SC *(spiromesifen)* — Insecticide for corn, cotton, and vegetables. Bayer

Obey *(clomazone + quinclorac)* — PRE and POST herbicide for rice. Discontinued by FMC

Obvius *(fluxapyroxad + pyraclostrobin + metalaxyl)* — Fungicide on-farm and commercial seed treatment for peas, beans, canola and other crops. BASF

Obvius Plus *(fluxapyroxad + pyraclostrobin + metalaxyl + thiophanate-methyl)* — Fungicide on-farm and commercial seed treatment for dry beans and soybean. BASF

Olympus *(propoxycarbazone-Na)* — Herbicide for Post control of grasses in wheat. Bayer

Olympus Flex *(propoxycarbazone-Na + mesosulfuron-methyl)* — POST for winter wheat and triticale. Discontinued by Bayer

Omega 500F *(fluazinam)* — Fungicide for control of blight and rot in peanuts. Syngenta

Omega Top MP *(fluazinam)* — Fungicide for potato. Syngenta

Omite-6E *(propargite)* — Agricultural miticide. UPL

Onager *(hexythiazox)* — Miticide for various crops. Gowan

OneStep *(imazapyr + glyphosate)* — Herbicide for control of weeds and woody plants in forestry areas. BASF

Onset 3.6L *(tebuconazole)* — Fungicide for many crops. WinField United

OnTarget *(drift reduction)* — Proprietary surfactant blend designed for new dicamba tolerant herbicides. WinField United

Opensight *(aminopyralid + metsulfuron)* — POST herbicide for non-crop uses. Corteva Agriscience

OpenSky *(fluroxypyr + pyroxsulam)* — POST herbicide for annual grass and broadleaves in small grains. Corteva Agriscience

Optify *(complex polymeric polyhydroxy acids)* — Plant growth regulator for use on a variety of crops. WinField United

Optify A *(water conditioner + nonionic surfactant)* — Liquid AMS and nonionic surfactant designed for use with glyphosate and other pesticide products; previously called Optify A20. WinField United

Optify D30 *(water conditioner + nonionic surfactant + drift reduction)* — Adjuvant designed to optimize performance of glyphosate, glufosinate, and other pesticides; reduces off-target drift and increases target deposition. WinField United

Optify HSCOC *(HSOC-COC adjuvant)* — Spray penetrant and droplet evaporation reduction; previously called Between. WinField United

Optify HSMSO *(MSO)* — Soy oil-based adjuvant and surfactant for glyphosate and its tank mix partners; previously called Succeed/Ultra. WinField United

Optify L27 *(water conditioner + nonionic surfactant)* — Blend of water conditioning acidifier, AMS and nonionic surfactant designed to optimize pesticide performance at low use rates; previously called Level 7. WinField United

Optify XX *(water conditioner + nonionic surfactant + drift reduction)* — Blend of ammonium-free non-AMS water conditioner, nonionic surfactant, and drift reduction additive designed to optimize performance and reduce drift potential with dicamba tank mixtures. Discontinued by WinField United

Optify Z37 *(water conditioner + nonionic surfactant + MSO)* — Blend of water conditioning acidifier, nonionic surfactant, and methylated seed oil *(MSO)* designed to optimize performance of a wide range of pesticides and tank mixtures. WinField United

Optify 4X *(non-AMS water conditioner + nonionic surfactant)* — General use adjuvant, DRA and VRA; approved for use to reduce dicamba volatility. WinField United

Optill *(dimethamid + dicamba)* — PRE weed control in limited tillage corn. Discontinued by BASF

OpTill *(saflufenacil + imazethapyr)* — Burndown or PRE herbicide for corn, soybean, pea, and chickpea. Discontinued by BASF

OpTill PRO *(saflufenacil + imazethapyr)* — Burndown or PRE herbicide for soybean. Discontinued by BASF

Optimize, Optimize XC, Optimize 200 — Bacterial and molecular inoculant for soybean or peanut. Novozymes A/S

Option 72DF *(foramsulfuron + isoxadifen)* — Post herbicide for corn. Discontinued by Bayer

Ordram 8E, 15G *(molinate)* — Rice herbicide. Discontinued by Syngenta

Orion *(forasulam + MCPA)* — POST broadleaf herbicide for small grains. Syngenta

Orondis *(oxathiapiprolin)* — Fungicide for citrus. Syngenta

Orondis Gold *(oxathiapiprolin)* — Fungicide for asparagus, cucurbits, leafy greens, fruiting vegetables and potatoes. Syngenta

Orondis Gold 200 *(oxathiapiprolin + mefenoxam)* — Fungicide for asparagus, cucurbits, leafy greens, fruiting vegetables and potatoes. Syngenta

Orondis Gold B *(mefenoxam)* — Fungicide for several cucurbits, leafy and fruiting vegetables. Syngenta

Orondis Opti *(chlorothalonil + oxathiapiprolin)* — Fungicide for several crops, including brassica, cucurbits, potato and fruiting vegetables. Syngenta

Orondis Ultra *(oxathiapiprolin + mandipropamid)* — Fungicide for several crops, including brassica, cucurbits, potato and fruiting vegetables. Syngenta

Orondis Ultra A *(oxathiapiprolin)* — Fungicide for several crops, including brassica, cucurbits, potato and fruiting vegetables. Discontinued by Syngenta

Orondis Ultra B *(mandipropamid)* — Fungicide for several crops, including brassica, cucurbits, potato and fruiting vegetables. Discontinued by Syngenta

Orthene 90 *(acephate)* — Insecticide for a variety of field and vegetable crops. Discontinued by AMVAC

Orthene 97 *(acephate)* — Broad spectrum contact and systemic insecticide for use on a number of agricultural crops. AMVAC

Osprey *(mesosulfuron)* — POST herbicide for winter grass and broadleaf wheat. Bayer

Osprey Xtra *(mesosulfuron + thiencarbazone)* — POST herbicide for winter grass and broadleaf wheat. Bayer

Oust Extra *(sulfometuron + metsulfuron)* — For POST control of grasses and broadleaf weeds in turf. Bayer

Oust, Oust XP *(sulfometuron)* — For control of many annual and perennial weeds and grasses in noncropland. Bayer

Outlook *(dimethamid-p)* — More active isomer of Frontier; PRE for many crops. BASF

Outreach SC *(bacillus amyloliquefaciens)* — Biological nematicide for protection against listed plant parasitic nematodes in Corn, Peanuts and Cotton. Valent

Outrider *(sulfosulfuron)* — POST control of certain broadleaves and grasses in non-crop and native grasses. Valent

Ovasyn *(amitraz)* — Insecticide/miticide for cotton. Bayer

Overdrive *(dicamba + diflufenzopyr)* — Broadleaf herbicide for pasture and non-crops. BASF

Palisade 2EC *(trinexapac-ethyl)* — Plant growth regulator for small grains, grasses for seed, and sugarcane. Discontinued by Syngenta

Palisade EC *(trinexapac-ethyl)* — Plant growth regulator for small grains, rice and grasses for seed. Syngenta

Palisade Maxx *(trinexapac-ethyl)* — Plant growth regulator for small grains and grasses for seed. Syngenta

Panoflex *(tribenuron + thifensulfuron)* — Herbicide for fallow and PRE or POST burndown for most crops. FMC

Panther SC *(flumioxaxin)* — Herbicide for cotton, various grain, legume and vegetable crops, and non-crop areas. Nufarm

Paradigm VC *(lambda-cyhalothrin)* — Insecticide for many crops. Discontinued by WinField United

Paramount *(quinclorac)* — POST herbicide for use in grain sorghum and fallow, and PP in wheat. Discontinued by BASF

Parathion, ethyl — Organic phosphate insecticide with contact and stomach poison activity. Discontinued

Parathion, methyl — Organic phosphate insecticide with contact and stomach poison activity. Discontinued

Parrlay *(metolachlor)* — PRE herbicide for cotton and soybean. Discontinued by Monsanto

Partner *(alachlor)* — 65% water dispersible granule of Micro-Tech. Discontinued by Monsanto

Pastora *(nicosulfuron + metsulfuron)* — Herbicide for established Bermudagrass pasture. Bayer

PasturAll *(aminopyralid + 2,4-D)* — POST herbicide pasture, rangeland and non-crop. Discontinued by Dow AgroSciences

PasturAll HL *(aminopyralid + 2,4-D)* — POST herbicide pasture, rangeland and non-crop. Discontinued by Corteva Agriscience

PastureGard HL *(triclopyr ester + fluroxypyr)* — Herbicide for brush and broadleaf weeds in permanent grass pastures, non-crop and rangeland. Corteva Agriscience

Pathfinder II *(triclopyr)* — Ready-to-use herbicide for basal and cut-stump control of woody plants in pasture and range, rights-of-way and non-crop sites. Corteva Agriscience

Pathway *(picloram + 2,4-D)* — Non-crop herbicide. Discontinued by Dow AgroSciences

Patriot *(metsulfuron)* — Herbicide for use in small grains, sorghum, pasture, fallow, non-crop areas. Nufarm

Payload *(flumioxazin)* — Broadleaf herbicide for bare ground and non-crop. Discontinued by Valent

Peak *(prosulfuron)* — PRE and POST broadleaves in sorghum and post broadleaf control in small grains, proso millet. Syngenta

Peanut Power — Bacterial inoculant for peanut. Verdesian Life Sciences

Pendant *(pendimethalin)* — PPI, PRE, post-plant incorporated herbicide for many crops. Discontinued by WinField United

Pendimax *(pendimethalin)* — PPI, PRE, post-plant incorporated herbicide for many crops. Discontinued by Dow AgroSciences

Pendulum 2G, Pendulum 3.3. EC *(pendamethalin)* — PRE herbicide control of annual grasses and broadleaf weeds in turf, ornamentals, landscape and noncropland areas. BASF

Pennant Magnum *(s-metolachlor)* — Herbicide for turf, nurseries and landscape settings. Syngenta

Penncap M *(methyl-parathion)* — Encapsulated formulation of methyl parathion insecticide for insect control on forages and field crops. Discontinued by UPL

Penncozeb 75DF *(mancozeb)* — Foliar fungicide and seed treatment for many crops. UPL

Pentagon DG *(pendimethalin)* — PPI, PRE, post-plant incorporated for many crops. Discontinued by BASF

Pentia *(mepiquat pentaborate)* — Cotton growth regulator. Nufarm

PerfectMatch *(clopyralid + fluroxypyr + pyroxsulam)* — A POST herbicide for wheat and triticale. Corteva Agriscience

Permeate *(surfactant)* — For use anywhere a pesticide allows for use of non-ionic surfactant. WinField United

Permethrin 3.2 AG *(permethrin)* — Similar to Arctic 3.2 EC. Discontinued by WinField United

Permit *(halosulfuron)* — POST for broadleaves and nutsedge in corn, rice and grain sorghum, sugar cane and fallow. Gowan.

Permit Plus *(halosulfuron + thifensulfuron)* — Selective herbicide for broadleaf control in corn, fallow, rice and soy. Gowan

Perpetuo *(flumiclorac + pyroxasulfone)* — Herbicide for corn and soybean. Valent

Perspective *(aminocyclopyrachlor + chlorsulfuron)* — Herbicide for broadleaf weed control in non-crop. Corteva Agriscience

Phaser *(endosulfan)* — Insecticide. Discontinued by Bayer

Phenoxy 088 *(2, 4-D acid + 2, 4-D ester)* — Control of hard-to-kill weeds in cereal grain crops, corn, sorghum, pastures. Discontinued by WinField United

Phoenix *(lactofen)* — New formulation of Cobra to reduce injury to soybeans. Valent

Phorate 20G *(phorate)* — Organic phosphate insecticide primarily used to control northern and western corn rootworms; also wireworms and seed corn beetles. Discontinued by WinField United, AMVAC

Phostrol *(phosphite)* — Fungicide for numerous vegetable crops. Nufarm

PH3 Fumigation Pellets/Tablets *(aluminum phosphide)* — Fumigant pellets/tablets are inserted into the stored grain surface; the gas is released from the pellets/tablets and kills stored grain insects. Douglas

Ph-D *(polyoxin D zinc)* — Fungicide for vegetable and other crops. UPL

Pillar G, Pillar G Intrinsic *(pyraclostrobin + triticonazole)* — Turf fungicide. BASF

Pindar GT *(penoxsulam + oxyfluorfen)* — Tree nut and non-crop herbicide. Corteva Agriscience

Pinnacle *(thifensulfuron)* — POST for broadleaves in soybeans. Discontinued by DuPont

Pirate *(chlorfenapyr)* — Pyrrole insecticide for control of beet armyworm in cotton. Discontinued by BASF

Pix Plus *(mepiquat chloride + Bacillus cereus)* — Bioregulator that controls vegetative growth in cotton. Discontinued by Arysta LifeScience

Pix Ultra *(mepiquat chloride)* — Plant growth regulator that controls vegetative growth in cotton. Discontinued by Arysta LifeScience

Pix WSG *(mepiquat chloride)* — Plant growth regulator that controls vegetative growth in cotton. UPL

Pixxaro EC *(fluroxypyr + haluaxafen)* — A POST herbicide for broadleaves in wheat, durum, triticale, and barley. Corteva Agriscience

Placement *(adjuvant)* — Deposition aid and drift control. Discontinued by WinField United

Placement Propak — Premix of Placement and ammoniated salt solution. Discontinued by WinField United

Plateau *(imazapic)* — Herbicide and turf height suppression in non-cropland areas and on CRP land. BASF

Platinum *(thiamethoxam)* — Systemic, soil-applied insecticide for control of sucking insects on many crops; 2 SC formulation. Discontinued by Syngenta

Platinum 75 SG *(thiamethoxam)* — Systemic, soil-applied insecticide for control of sucking insects on many crops. Syngenta

Platinum Ridomil Gold *(thiamethoxam + mefenoxam)* — Insecticide/fungicide for potatoes. Discontinued by Syngenta

Plenaris 200FS *(oxathiapiprolin)* — Fungicide commercial seed treatment for sunflower. Syngenta

Poast *(sethoxydim)* — POST herbicide for control of grasses in broadleaf crops. BASF

Poast Plus *(sethoxydim)* — Another version of Poast, with additional surfactant, for use in alfalfa, PP field corn, cotton, peanuts, soybeans. Discontinued by BASF

Polado L *(glyphosate)* — Hastens ripening and extends the period of high sucrose levels in sugar cane. Discontinued by Bayer

Poncho 1250 VOTiVO *(clothianidin + Bacillus firmus)* — Insecticide seed treatment for corn. Discontinued by BASF

Poncho 600 *(clothianidin)* — Insecticide seed treatment for corn, sorghum, and canola. Discontinued by Bayer

Poncho Beta *(clothianidin)* — Commercial seed treatment for maggot and other insects in sugarbeet. Bayer

Poncho VOTiVO *(clothianidin + Bacillus firmus)* — Commercial seed treatment for various crops. BASF

Poncho XC *(clothianidin)* — Seed treatment for soybeand and cereal grains. BASF

Potato Seed Piece Treatment 6% *(mancozeb)* — Protects potato seed pieces against seed piece decay. Discontinued by WinField United

Pounce 1.5G *(permethrin)* — Insecticide for corn. FMC

PowerFlex *(pyroxsulam)* — POST herbicide for cheatgrass, ryegrass and broadleaf control in winter wheat. Discontinued by Dow AgroSciences

PowerFlex HL *(pyroxsulam)* — POST herbicide for cheatgrass, ryegrass and broadleaf control in winter wheat. Corteva Agriscience

PowerLock *(adjuvant)* — Multipurpose adjuvant with deposition aid, canopy penetration, drift control, surfactant and anti-foaming agent; CPDA certified. WinField United

Praiz *(chlorothalonil)* — Fungicide for sweet corn, corn grown for seed, soybeans, potatoes, peanuts and many vegetables. WinField United

Pramitol 25E, Pramitol 5PS *(prometon)* — Soil sterilant for control of weeds in non-cropland. WinField United and others

Precept 3G *(tefluthrin)* — Soil applied 3G pyrethroid insecticide for corn; same as Force 3G. Discontinued by Monsanto

Predict *(norflurazon)* — Non-crop herbicide. Discontinued by Syngenta

Preemptor SC *(fluoxastrobin + flutriafol)* — Fungicide for corn, soybean and wheat. Discontinued by FMC

Prefar *(bensulide)* — PP herbicide for weed control in cucurbits, onions, other vegetables. Gowan

Preference *(surfactant)* — Soybean fatty acid-based non-ionic surfactant. WinField United

Prefix *(s-metolachlor + fomesafen)* — PPI or PRE herbicide for grasses and broadleaves in soybean. Syngenta

Prep *(ethephon)* — Plant growth regulator to accelerate maturity of cotton, tobacco. Discontinued by Bayer

Pre-Pare *(flucarbazone)* — Burndown and PRE herbicide for spring, winter wheat and triticale. UPL

Prequel *(rimsulfuron + isoxaflutole)* — A corn herbicide for PP or PRE control of annual grass and broadleaf. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Prescribe *(imidacloprid)* — A seed applied insecticide. Bayer

Preside CL, Preside Ultra — Bacterial inoculant for soybean. Verdesian Life Sciences

Presidio *(fluopicolide)* — Fungicide for vegetables and other crops. Valent

PREsidual *(s-metolachlor + metribuzin)* — Herbicide for potatoes and soybeans. WinField United

Pre-Vail — Bacterial inoculant for alfalfa, clover. Verdesian Life Sciences

Prevail *(carboxin + PCNB + metalaxyl)* — Fungicide seed treatment for various crops. Discontinued by Chemtura

Prevathon *(chlorantraniliprole)* — Insecticide for corn, cotton, grasses and other crops. Discontinued by Corteva Agriscience/Dow Agrosciences/DuPont

Previcur Flex *(propamocarb)* — Fungicide for potatoes with late blight and tuber blight. Bayer

Previsto *(copper hydroxide)* — Fungicide for numerous crops. Gowan

Priaxor *(fluxapyroxad + pyraclostrobin)* — Disease control and plant health in various crops. BASF

Priaxor D *(fluxapyroxad + pyraclostrobin + tetraconazole)* — Disease control and plant health in soybean. Discontinued by BASF

Prime Oil — 17% petroleum-based COC. Discontinued by WinField United

Prime Oil EV — Vegetable-based COC. Discontinued by WinField United

Primo/Primo CL/Primo GX2/Primo Power CL/Primo Ultra — Bacterial inoculant for soybeans, pulses or peanut. Verdesian Life Sciences

Primo MAXX *(trinexapac-ethyl)* — Plant growth regulator for turf. Syngenta

Princep 4L, Princep Caliber 90 *(simazine)* — Persistent PRE herbicide for corn, ornamentals, shelter belts. Syngenta

Pristine *(pyraclostrobin + boscalid)* — Fungicide for various crops. BASF

Proceed Concentrate *(prothioconazole + tebuconazole + metalaxyl)* — Seed treatment for wheat, barley, and triticale. Discontinued by Bayer

Proceed Plus *(prothioconazole + tebuconazole + metalaxyl + clothianidin)* — Seed treatment for wheat, barley, and triticale. Discontinued by Bayer

Proclaim *(emamectin benzoate)* — Control of worms on certain vegetables. Syngenta

Procure *(triflumizole)* — Fungicide for various crops. UPL

ProGibb 4% *(gibberellic acid)* — Plant growth regulator for various crops. Valent

Progress *(ethofumesate + phenmedipham + desmedipham)* — PPI, PRE or POST herbicide for control of annual weeds in sugarbeets. Discontinued by Bayer

Proline 480 SC *(prothioconazole)* — Foliar fungicide for barley, wheat, dry beans, canola, oat, rye, soybean and other crops. Bayer

ProMark *(foam marker)* — High foaming surfactants and stabilizing agents. Discontinued by WinField United

Prometryne 4L *(prometryn)* — Selective weed control in cotton and celery. Discontinued by Loveland

Propanil 4, 80 EDF *(propanil)* — Herbicide for POST weed control in rice. Discontinued

Propicure 3.6F *(propioconazole)* — Fungicide for many crops. Discontinued by WinField United

PropiMax EC *(propiconazole)* — Fungicide for use on cereals, corn, peanuts, sugarcane and on rice. Discontinued by Corteva Agriscience

Propulse *(fluopyram + prothioconazole)* — Fungicide for dry beans and peanuts. Bayer

Prosaro 421 SC *(prothioconazole + tebuconazole)* — Foliar fungicide for fusarium in wheat and barley. Bayer

Prosaro Pro 400 SC *(prothioconazole + tebuconazole + fluopyram)* — Foliar fungicide for corn, wheat and barley. Bayer

Prosper *(clothianidin + metalaxyl + carboxin + trifloxystrobin)* — Fungicide and insecticide seed treatment for canola. Discontinued by Bayer

Prosper EverGol *(clothianidin + penflufen + trifloxystrobin + metalaxyl)* — Fungicide and insecticide commercial seed treatment for various crops. Bayer

ProStar 70 WP *(flutolanil)* — Turf and ornamental fungicide. Bayer

Protank *(cleaner)* — Proprietary blend of salts, surfactants and solvents that serve as tank cleaner, chemical neutralizer and pump/valve protectant. WinField United

Protegam YLD *(prothioconazole + trifloxystrobin)* — Fungicide for corn, soybean, wheat, barley, beans and peas. WinField United

Provado *(imidacloprid)* — Insecticide. Discontinued by Bayer

Provaunt *(indoxacarb)* — Insecticide for turf and landscape. Discontinued by DuPont

Provost 433 SC *(prothioconazole + tebuconazole)* — Fungicide for peanuts. Discontinued by Bayer

Provost Opti *(prothiocanazole + tebuconazole)* — Fungicide for peanuts. Discontinued by Bayer

Provost Silver *(prothiocanazole + tebuconazole)* — Fungicide for peanuts. Bayer

Provysol *(mefentrifluconazole)* — Fungicide for beans and peas, citrus, peanut, potato, canola and sugarbeet. BASF

Prowl H2O *(pendimethalin)* — New formulation of Prowl in aqeous solution; for PPI, PRE, post-plant incorporated for many crops. BASF

Prowl 3.3EC *(pendimethalin)* — PPI, PRE, post-plant incorporated for many crops. Discontinued by BASF

Pulsar *(dicamba + fluroxypr)* — POST broadleaf herbicide for wheat and barley. Discontinued by Syngenta

Puma 1EC *(fenoxyprop ethyl + safener)* — POST grass herbicide for wheat, durum, and barley. Discontinued by Bayer

Pursuit *(imazethapyr)* — PPI, PRE or POST herbicide for broadleaf and grassy weeds in soybeans, Clearfield *(IMI)* corn, alfalfa, peanuts. BASF

Pursuit Plus *(pendimethalin + imazethapyr)* — PPI application in soybeans, PRE or POST to Clearfield *(IMI)* field corn. Discontinued by BASF

Purus *(cleaner)* — Proprietary blend of alkalinity builders, emulsifiers and surfactants. Discontinued by WinField United

PyGanic EC 1.4II, PyGanic EC 5.0II *(pyrethrins)* — Insecticide for row crops, vegetables and citrus. Valent

Pylex *(topramezone)* — POST control of broadleaf and grass weeds in turf. BASF

Python *(flumetsulam)* — A PPI, PRE or POST herbicide for control of broadleaf weeds in field corn and soybeans. AMVAC

Quadris & Quadris Flowable *(azoxystrobin)* — A foliar broad spectrum preventative fungicide with systemic and curative properties for many crops. Discontinued by Syngenta

Quadris Opti *(azoxystrobin + chlorothalonil)* — Foliar fungicide for potatoes, tomatoes and vegetables. Syngenta

Quadris Ridomil Gold SL *(azoxystrobin + mefenoxam)* — Broad-spectrum disease control in potatoes. Syngenta

Quadris Top *(azoxystrobin + difenoconazole)* — Foliar fungicide for many vegetables. Syngenta

Quadris Top SB *(azoxystrobin + difenconazole)* — Foliar fungicide for soybean. Discontinued by Syngenta

Quadris Top SBX *(azoxystrobin + difenoconazole)* — Foliar fungicide for soybean. Syngenta

Quadris Xtra *(azoxystrobin + cyproconazole)* — Fungicide for soybeans. Discontinued by Syngenta

Quash *(metconazole)* — Fungicide for peanut and certain stone or tree fruits. Valent

Quelex *(halauxifen + florasulam)* — For PP burndown and POST control of annual broadleaf weeds in wheat *(including durum)*, barley, and triticale. Corteva Agriscience

QuickRoots PB, QuickRoots WP — Bacterial inoculant for corn, cotton, soybean, pulses or wheat. Bayer

Quicksilver *(carfentrazone)* — POST herbicide for non-crop. Discontinued by FMC

Quilt *(azoxystrobin + propiconazole)* — Fungicide for rice, soybeans, corn, small grains. Discontinued by Syngenta

Quilt Xcel *(azoxystrobin + propiconazole)* — Foliar fungicide for many crops. Syngenta

Quintec *(quinoxyfen)* — Fungicide for powdery mildew in certain horticultural crops. Gowan

Radiant *(spinetoram)* — Insecticide for many crops. Corteva Agriscience

Radico LFR *(bifenthrin)* — Insecticide for corn and soybeans. Discontinued by WinField United

Radius *(isoxaflutole + flufenacet)* — PRE herbicide for corn. Discontinued by Bayer

Rage 5.04L *(carfentrazone + glyphosate)* — Herbicide. Discontinued by FMC

Rage D-Tech *(carfentrazone + 2,4-D)* — Burndown + POST herbicide for vegetables and other crops. Discontinued by FMC

Rally 40WSP *(myclobutanil)* — Fungicide for many crops and T&O. Corteva Agriscience

Rancona Crest *(ipconazole + metalaxyl + imidacloprid)* — On-farm and commercial seed treatment. UPL

Rancona Pinnacle *(ipconazole + metalaxyl)* — On-farm and commercial seed treatment. UPL

Rancona Summit *(ipconazole + metalaxyl)* — On-farm and commercial seed treatment. UPL

Ranger *(glyphosate)* — Herbicide. Discontinued by Monsanto

Ranman *(cyazofamid)* — Fungicide for curcurbits, potatoes and tomatoes. ISK Biosciences

RapidFire *(glyphosate)* — 5.4 lb/gal dimethylamine salt. Discontinued by Dow AgroSciences

Raptor *(imazamox)* — Herbicide for soybeans, alfalfa, dry beans. Discontinued by BASF

Rascal *(glyphosate)* — Herbicide. Discontinued by WinField United

Rascal Plus *(glyphosate)* — Herbicide. Discontinued by WinField United

Rascal Plus Herbicide ex *(glyphosate)* — Herbicide. Discontinued by WinField United

Rave *(triasulfuron + dicamba)* — POST herbicide for small grains, rangeland, CRP. Syngenta

Raxil 2.6F *(tebuconazole)* — Commercial seed treatment fungicide for wheat, barley, oats. Discontinued by Bayer

Raxil MD W *(tebuconazole + metalaxyl + imidacloprid)* — Seed treatment for wheat and barley. Discontinued by Bayer

Raxil MD Extra *(tebuconazole + metalaxyl + imazalil)* — Seed treatment for diseases of wheat, barley, oats. Discontinued by Bayer

Raxil MD Extra W *(tebuconazole + metalaxyl + imazalil)* — Seed treatment for wheat and barley. Discontinued by Bayer

Raxil MD *(tebuconazole + metalaxyl)* — Seed treatment for wheat, barley, oat. Discontinued by Bayer

Raxil PRO MD *(prothioconazole + tebuconazole + metalaxyl)* — On-farm and commercial seed treatment for cereal grains. Bayer

Raxil PRO Shield *(imidacloprid + prothioconazole + tebuconazole + metalaxyl)* — Fungicide and insecticide, and on-farm and commercial seed treatment for wheat, barley and triticale. Bayer

Raze *(flucarbazone + fluroxypyr)* — Wheat herbicide. Discontinued by Arysta LifeScience

Ready Master ATZ *(glyphosate + atrazine)* — POST herbicide for Roundup Ready corn. Discontinued by Monsanto

Realm Q *(rimsulfuron + mesotrione, plus crop safener)* — POST herbicide for field corn. Corteva Agriscience

Reason 500 SC *(fenamidone)* — Fungicide for various crops. Discontinued by Bayer

Rebel EX *(penoxsulam + cyhalofop)* — POST herbicide for rice. Corteva Agriscience

Reclaim *(clopyralid)* — Control of mesquite and other woody plants in rangeland and pasture in AZ, OK, NM, TX only. Discontinued by Corteva Agriscience

Redeem *(triclopyr + clopyralid)* — POST herbicide for pasture, CRP, non-crop. Discontinued by Dow AgroSciences

Reflex *(fomesafen)* — POST control of broadleaf weeds in soybeans, cotton and PP dry beans. Syngenta

Regard *(spinosad)* — Seed treatment insecticide for seedcorn and onion maggots. Discontinued by Syngenta

Regent 4 SC *(fipronil)* — Soil-applied, systemic insecticide for potato. BASF

Regiment *(pyrithiobac-sodium)* — Post herbicide for rice. Valent

Reglone *(diquat dibromide)* — Used primarily as a preharvest aid to desiccate certain crops to facilitate harvesting. Syngenta

Reldan 4E and 3% Dust *(chlorpyrifos-methyl)* — Stored grain insecticide. Discontinued by Bayer

Reliance STS *(chlorimuron + thifensulfuron)* — POST in STS soybeans. Discontinued by DuPont

Rely 280 *(glufosinate-ammonium)* — Non-selective contact herbicide for LibertyLink crops, orchards and potato vines. BASF

Remedy *(triclopyr)* — Control of woody plants and broadleaf weeds on rangeland, permanent grass pastures. Discontinued by Dow AgroSciences

Remedy Ultra *(triclopyr)* — Control of woody plants and broadleaf weeds on rangeland, permanent grass pastures. Corteva Agriscience

Renestra *(afidopyropen + alpha-cypermethrin)* — Insecticide for soybeans. BASF

Renovate 3 *(triclopyr)* — Aquatic weed control. SePRO

Renounce 3 *(cyfluthrin)* — Insecticide for many crops. Discontinued by Bayer

Renown *(azoxystrobin + chlorothalonil)* — Turf fungicide. Syngenta

Requiem EC *(Chenopodium ambrosioides near ambrosioides)* — Insecticide for use in cotton, potato and other crops. Bayer

Resicore, Resicore REV *(acetochlor+mesotrione+ clopyralid)* — PP, PRE and POST control of weeds in corn. Corteva Agriscience

Resolute *(prodiamine)* — Turf and ornamental herbicide. Syngenta

Resolve Q *(rimsulfuron + thifensulfuron + safener)* — PRE or POST corn herbicide. Corteva Agriscience

Resolve SG *(rimsulfuron)* — PP, PRE or POST herbicide for corn. Discontinued by DuPont

Resonate 480 ST *(imidacloprid)* — Commercial seed treatment for corn, sorghum, canola, soybeans, legumes and small grains. Albaugh

Resource *(flumiclorac)* — Selective POST herbicide for certain broadleaf weeds in soybeans and field corn. Valent

Respect & Respect EC *(zeta-cypermethrin)* — Control of many insects on cotton, head lettuce, pecans, rice, corn, sugarbeets. Discontinued by BASF

Revolver *(foramsulfuron)* — POST herbicide for grasses in turf. Bayer

Revulin Q *(nicosulfuron + mestrione)* — Post herbicide for corn. Corteva Agriscience

Revus *(mandipropamid)* — Fungicide for vegetables; seed piece treatment for potato. Syngenta

Revus Top *(mandipropamid + difenoconazole)* — Fungicide for potato and tomato. Syngenta

Revylok *(mefentrifluconazole + fluxapyroxad)* — Fungicide for corn, cotton, soybean, beans and other crops. BASF

Revytek *(mefentrifluconazole + fluxapyroxad + pyraclostrobin)* — Fungicide for corn, peanut, sugarbeet and soybean. BASF

Reward *(diquat dibromide)* — Aquatic and non-crop herbicide. Syngenta

Rezult *(sethoxydim)* — Herbicide for soybeans. Discontinued by BASF

Rezuvant *(halauxifen + fluroxypyr + pinoxaden)* — POST control of annual broadleaf weeds in wheat *(excluding durum)* and barley. Corteva Agriscience

Rhino *(bromoxynil + MCPA ester)* — POST herbicide for small grains and flax. Discontinued by Bayer

Rhizo-Flo — Bacterial inoculant for soybean. BASF

Rhomene MCPA *(MCPA amine)* — Control of broadleaf weeds in cereals and flax. Nufarm

Rhyme *(flultriafol)* — Fungicide for use on vegetables, peanuts and fruit and nut trees. FMC

Ricestar HT *(fenoxaprop)* — POST herbicide for control of annual grasses in rice. Gowan

Ridgeback *(bifenthrin + sulfoxaflor)* — Insecticide for various crops. Corteva Agriscience

Ridomil 2E and 5G *(metalaxyl)* — Soil-applied fungicide for many crops. Discontinued by Syngenta

Ridomil Gold Bravo SC *(chlorothalonil + mefenoxam)* — Fungicide for various crops. Syngenta

Ridomil Gold Copper *(mefenoxam + copper hydroxide)* — Fungicide for various fruits and vegetables. Syngenta

Ridomil Gold GR *(mefenoxam)* — Fungicide for various fruits, vegetables, soybeans and sugarbeets. Syngenta

Ridomil Gold MZ WG *(mefenoxam + mancozeb)* — Fungicide combination for control of various diseases in potatoes, sugarbeets, some vegetables. Syngenta

Ridomil Gold SL *(mefenoxam)* — Fungicide for various crops. Syngenta

RightStart — Custom commerical seed treatment blends. WinField United

Rimfire Max *(mesosulfuron methyl + propoxycarbazone + mefenpyr safener)* — POST weed control in spring, durum and winter wheat. Bayer

Rimfire WDG *(mesosulfuron methyl + propoxycarbazone + mefenpyr safener)* — POST weed control in spring, durum and winter wheat. Discontinued by Bayer

Rival FL *(captan + PNCA + TBZ)* — Commercial seed treatment for soybeans, dry beans and wheat. Bayer

Rivet *(MSO + non-ionic surfactant)* — Silicone wetter for use with certain POST herbicides. Discontinued by WinField United

Rizolex *(tolclofos-methyl)* — Fungicide on-farm and commercial seed treatment in corn, soybean, small grains, cotton and other crops. Sumitomo

Rodeo *(glyphosate)* — Control of emerged weeds in aquatic and other non-crop sites. Corteva Agriscience

Ro-Neet 6-E *(cycloate)* — PPI herbicide for annual grasses, some broadleaves in sugarbeets. Discontinued by Helm Agro

Ronilan EG, DF *(vinclozolin)* — Fungicide for berries, lettuce, onions, snap beans, canola. Discontinued by BASF

Ronstar G, 50 WSP *(oxadiazon)* — Herbicide used on ornamentals. Bayer

Roundup Custom *(glyphosate)* — Various formulations of the popular non-selective herbicide. Bayer

Roundup Original & Original II *(glyphosate)* — 4 lb/gal glyphosate. Discontinued by Bayer

Roundup Original Max *(glyphosate)* — 5.5 lb/gal potassium salt. Discontinued by Bayer

Roundup PowerMAX *(glyphosate)* — 5.5 lb/gal potassium salt. Discontinued by Bayer

Roundup PowerMAX II *(glyphosate)* — 5.5 lb/gal potassium salt. Discontinued by Bayer

Roundup PowerMAX 3 *(glyphosate)* — 5.88 lb/gal potassium salt. Bayer

Roundup Pro, Roundup Pro Concentrate, Roundup PROMAX *(glyphosate)* — Labeled for industrial turf and ornamental use. Bayer

Roundup Ultra, Roundup Ultra Dry *(glyphosate salt)* — Herbicide. Discontinued by Bayer

Roundup UltraMAX *(glyphosate)* — 5 lb/gal. Discontinued by Bayer

Roundup UltraMAX II *(glyphosate)* — 5.5 lb/gal potassium salt. Discontinued by Bayer

Roundup WeatherMAX *(glyphosate)* — 5.5 lb/gal formulation of the non-selective weed killer. Bayer

Rovral 4F *(iprodione)* — Fungicide used in peanuts, rice, stone fruits, vegetables. FMC

Rowel *(flumioxazin)* — Broadleaf herbicide for PRE use on peanuts and soybeans. Discontinued by Bayer

Rowel FX *(flumioxazin + chlorimuron)* — PP and PRE herbicide for soybeans. Discontinued by Bayer

Royal MH-30 *(maleic hydrazide)* — Growth regulator for tobacco, onions, potatoes. Bayer

RT 3 *(glyphosate)* — Similar to RT Master II. Bayer

RT 4 *(glyphosate)* — Similar to RT 3. Discontinued by Monsanto

RT Master *(glyphosate + 2,4-D)* — Herbicide for wheat, barley, fallow. Discontinued by Monsanto

RT Master II *(glyphosate)* — Herbicide for wheat, barley, fallow. Discontinued by Monsanto

Rubigan AS *(fenarimol)* — Foliar fungicide for fruits, ornamentals, turf. Discontinued by Gowan

Rugged *(2,4-D acid)* — Herbicide for many crops. WinField United

Rush *(water conditioner + drift reduction)* — Adjuvant utilizing high fructose corn syrup and AMS. DIscontinued by WinField United

RustEase *(azoxystrobin + cyproconazole)* — Fungicide for soybeans. WinField United

Ryzup *(gibberellic acid)* — Growth regulator used in cotton and rice. Discontinued by Valent

SabrEx IF, SabrEx PB, SabrEx LQ — Bacterial inoculant for corn, cotton, rice, soybean and wheat. Agrauxine Corp.

Saddle-Up *(dicamba + 2,4-D)* — Herbicide for non-crop areas, pastures, sugarcane and wheat. WinField United

Sahara DG *(diuron + imazapyr)* — Herbicide for PRE or POST application to non-cropland; broad spectrum. BASF

Salibro — Nematicide for several vegetable crops. Corteva Agriscience

Saltro *(pydiflumetofen)* — Seed treatment for canola and soybean. Syngenta

Sandea *(halosulfuron)* — Herbicide for nutsedge and broadleaves in various crops. Gowan

Sapphire *(Penoxsulam)* — Postemergence control of annual and perennial broadleaf weeds in established turfgrass and non crop areas. Corteva Agriscience

Scala SC *(pyrimethanil)* — Fungicide for potato and other crops. Bayer

Scepter 70 DG *(imazaquin)* — PPI, pre and POST herbicide for broadleaves and suppression of annual grasses in soybeans. AMVAC

Scepter OT *(imazaquin + acifluorfen)* — POST control of broadleaf weeds in soybeans. Discontinued by BASF

Scholar SC *(fludioxnil)* — Fungicide for fruit crops. Syngenta

Scimitar CS *(lamba-cyhalothrin)* — Insecticide for turf and ornamentals. Syngenta

Scoparia — PRE herbicide in corn and fallow. Bayer

Scorch *(dicamba + 2,4-D + fluroxypyr)* — Herbicide for select field crops and non-crop areas. Nufarm

Scorch EXT *(dicamba + 2,4-D + Dichlorprop-P)* — Herbicide for non crop areas. Nufarm

Scorpion III *(flumetsulam + clopyralid + 2,4-D)* — POST herbicide for corn. Discontinued by Dow AgroSciences

Scout Xtra *(tralomethrin)* — Synthetic pyrethroid insecticide. Discontinued by Bayer

Screen *(flurazole)* — Protectant applied to sorghum seed to protect against injury from alachlor. Bayer

Section *(clethodim)* — Herbicide for a variety of field and vegetable crops, ornamentals and non-crop areas. Discontinued by WinField United

Section Three *(clethodim)* — POST grass control in alfalfa, sugarbeets, dry beans, peanuts, soybeans, potatoes, sunflowers and cotton. WinField United

Secure *(fluazinam)* — Fungicide for golf courses. Syngenta

Secure Action *(fluazinam + acibenzolar)* — Fungicide for golf courses. Syngenta
Sedgehammer *(halosulfuron)* — Nutsedge control in turf. Gowan
Seed + Graphite *(nutrients + graphite)* — Seed treatment for various field crops. Cytozyme Laboratories
Seed Shield Soybean *(thiamethoxam + mefenoxam + fludioxonil + azoxystrobin)* — Insecticide and fungicide on-farm and commercial seed treatment for soybean. Helena Agri-Enterprises
Seeker *(sulfoxaflor + lambda-cyhalothrin)* — Insecticide used on wheat and canola. Discontinued by Dow AgroSciences
Sefina *(afidopyropen)* — Insecticide for citrus, cotton, cucurbits, fruiting vegetables and soybean. BASF
Seize *(pyriproxyfen)* — Fungicide for fruit and nut trees. Discontinued by Valent, WinField United
Select 2 EC *(clethodim)* — POST grass control in alfalfa, sugarbeets, dry beans, peanuts, soybeans, potatoes, sunflowers and cotton. Discontinued by WinField United
Select Max *(clethodim)* — Resolved isomer of clethodim. Valent
Sempra *(halosulfuron)* — POST herbicide for broadleaves in corn, grain sorghum, sugar cane, tree nuts, rice. Discontinued by Monsanto
Senator 600 FS *(imidacloprid)* — Insecticide commercial seed treatment on corn, sorghum, soybean, canola, wheat, barley, sugarbeets and cotton. Nufarm
Sencor *(metribuzin)* — Annual broadleaf control in soybeans, alfalfa, barley, field corn, potatoes, sugar cane, dryland winter wheat fallow; often used in combinations. Discontinued by Bayer
Sendero *(clopyralid + aminopyralid)* — Control of mesquite and other woody plants in rangeland and pasture, CRP, and non-crop area in NM, OK, and TX. Corteva Agriscience
Sensat *(spinosad)* — Stored grain insecticide. Bayer
Senstar *(spirotetramat + pyriproxyfen)* — Insecticide for many vegetables. Valent
Sentrallas *(thifensulfuron + fluroxypyr)* — Herbicide for small grains. Discontinued by FMC
Sepresto *(clothianidin + imidacloprid)* — Seed treatment. Bayer
Sequence *(s-metolachlor + glyphosate)* — Herbicide for cotton, peanut, pod crops, sorghum, and soybean. Syngenta
Sequoia *(sulfoxaflor)* — Insecticide for many fruit and vegetable crops. Corteva Agriscience
Sercadis *(fluxapyroxad)* — Fungicide for rice and sugarcane. Discontinued by BASF
Serenade ASO *(QST 713 strain of Bacillus subtilis)* — Foliar and soil fungicide for many crops. Bayer
Serenade OPTI — High load, foliar and soil applied fungicide for many crops. Bayer
Serenade Soil *(QST 713 strain of Bacillus subtilis)* — Soil/drench fungicide for many crops. Discontinued by Bayer
Serifel *(Bacillus amyloliquefaciens strain MBI 600)* — Biofungicide for a variety of crops. BASF
Sevin 5 Bait *(carbaryl)* — Formulation of Sevin on apple pomace pellet for cutworm control. Discontinued by Various
Sevin 80S, 80WSP *(carbaryl)* — Insecticide used on many agricultural crops. Discontinued by Various
Sevin SL *(carbaryl)* — Insecticide used in lawn and turf. Discontinued by Bayer
Sevin XLR Plus *(carbaryl)* — Water-based flowable, micro-fine suspension of Sevin with a spreader-sticker for longer residual and resistance to wash-off. Discontinued by Tessenderlo Kerley
Shadeout *(rimsulfuron)* — For broadleaf and grass control in tomato. Discontinued by DuPont
Shadow *(clethodim)* — POST grass herbicide for many crops. UPL
Shark EW *(carfentrazone-ethyl)* — PP Burndown, PRE, POST herbicide for small broadleaf weeds in a number of grain and vegetable crops; harvest aid for select crops. FMC
Sharpen *(saflufenacil)* — Broadleaf burndown herbicide for many crops. BASF
Showcase *(trifluralin + isoxaben)* — Herbicide for ornamentals, fruit and nut trees and non-crop. Corteva Agriscience
Shredder 2,4-D LV4 *(2,4-D)* — Herbicide for broadleaf control in multiple crops. Discontinued by WinField United
Shredder 2,4-D LV6 *(2,4-D)* — Herbicide for broadleaf control in multiple crops. Discontinued by WinField United
Shredder E-99 *(2,4-D)* — Herbicide for broadleaf control in multiple crops. WinField United
Shredder MCPA *(MCPA)* — Herbicide for broadleaf control in multiple crops. Discontinued by WinField United
Shredder MCPE *(MCPE)* — Herbicide for broadleaf control in multiple crops. Discontinued by WinField United
Sierra *(flucarbazone)* — Wheat herbicide. Discontinued by Syngenta
Silhouette *(glyphosate)* — Equivalent to Roundup Original. Discontinued by WinField United
Silkin *(OS)* — Organosilicone surfactant for water-based herbicides and for use most pesticide and fertilizer products. WinField United
Silverado *(mesosulfuron)* — POST herbicide for spring and durum wheat. Discontinued by Bayer
Simazine 4L, Simazine 90DF *(simazine)* —PP,PRE herbicide for corn, ornamentals, shelter belts. WinField United; Various
Sinate *(glufosinate + topramezone)* — POST herbicide for LibertyLink corn and sweet corn. AMVAC
Sinbar WDG *(terbacil)* — Herbicide for dormant season control of annual grasses and broadleaves in established alfalfa and asparagus. Tessenderlo Kerley
Sivanto Prime, Sivanto 200 SL *(flupyradifurone)* — Insecticide on various crops. Bayer
SmartChoice 5G *(bifenthrin + chlorethoxyfos)* — Granular insecticide for closed handling at-planting corn. Discontinued by AMVAC
SmartChoice HC *(bifenthrin + chlorethoxyfos)* — Granular insecticide for closed handling at-planting corn. AMVAC
Snapshot *(isoxaben + trifluralin)* — Herbicide for ornamentals, trees and non-crop. Corteva Agriscience
Soberan *(tembotrione)* — Postharvest burndown herbicide. Discontinued by Bayer
Soco Gold — Hand cleaner. Discontinued by WinField United
Solicam DF *(norflurazon)* — Soil applied herbicide for grass and broadleaf control in certain vegetable crops. Tessenderlo Kerley
Solitare *(sulfentrazone + quinclorac)* — Turf and non-crop herbicide. Discontinued by FMC
Solstice *(fluthiacet-methyl+mesotrione)* — POST herbicide for selective broadleaf control in corn. Discontinued by FMC
Sonalan 10G, Sonalan HFP *(ethalfluralin)* — PPI for annual grasses, some broadleaves, in soybeans, dry beans, peanuts, sunflowers. Gowan
Sonar, SonarOne *(fluridone)* — Aquatic herbicide. Discontinued by SePRO
Sonata *(Bacillus pumilis)* — Bacillus pumilis for control of disease in many vegetable crops. Bayer
Sonic Boom — Fall, PPI, PP surface or PRE herbicide for broadleaves in Field corn, Potatoes, soybean, and Sugarcane. Corteva Agriscience
Sonic *(sulfentrazone + cloransulam)* — PPI, PP surface or PRE herbicide for broadleaves in soybean. Corteva Agriscience
Sorghum Guard *(captan + lindane)* — Planter box seed treatment. Discontinued by Bayer
Source DC *(malto lactone)* — Microbiome activator for corn, soybeans, cotton, wheat and forages. Sound Ag
Sovereign *(fertilizer)* — Refined foliar fertilizer for soybeans and other crops. WinField United
Soygard *(azoxystrobin + metalaxyl)* — Seed treatment for control of many diseases in soybeans. Discontinued by Bayer
Spartan Advance *(sulfentrazone + glyphosate)* — Burndown and residual herbicide for field peas, sunflower, fallow, and soybean. Discontinued by FMC
Spartan Charge *(carfentrazone + sulfentrazone)* — PP or PRE herbicide for pea, peanut, soybean and sunflower. FMC
Spartan Elite *(sulfentrazone + s-metolachlor)* — PP or PRE herbicide for soybeans, peas, and sunflowers. Discontinued by FMC
Spartan 4F *(sulfentrazone)* — PPI or PRE herbicide for tobacco, sunflowers, etc. FMC
Specticle Flo *(indaziflam)* — PRE herbicide for turf and ornamentals. Bayer
Speedway NF *(AMS replacement)* — Water conditioner concentrate that replaces AMS and maximizes glyphosate performance and is compatible with most nitrogen sources. WinField United
Sphaerex *(metconazole + prothioconazole)* — Disease control in wheat. BASF
Spike 20P *(tebuthiuron)* — Total vegetation and selective brush control in grassland and non-crop areas. Corteva Agriscience
Spin-Aid *(phenmedipham)* — POST for broadleaves in beets and spinach. Discontinued by Bayer
SpinTor 25C *(spinosad)* — Naturalyte insecticide for control of worms, thrips on fruits and vegetables. Corteva Agriscience
Spirit *(prosulfuron + primisulfuron)* — POST herbicide for corn. Gowan
Spitfire *(dicamba + 2,4-D)* — Herbicide for use on corn, soybean, wheat and non-crop areas. Nufarm
Spotlight *(fluroxypyr)* — POST for broadleaves in turf. Discontinued by Dow AgroSciences
Spotrete F *(thiram)* — Fungicide for golf courses. Nufarm
Spray Booster S *(surfactant)* — 90/10 non-ionic surfactant. Discontinued by WinField United
Sprint/ADT *(AMS replacement)* — Multi-function AMS replacement, surfactant, drift reduction agent. Discontinued by WinField United

Sprout Stop *(maleic hydrazide)* — Growth retardant to prevent sprouting of potatoes and onions. Discontinued by Drexel

Squadron *(imazaquin + pendimethalin)* — PPI for grasses and broadleaves in soybeans. Discontinued by BASF

SquareOne *(carfentrazone + quinclorac)* — Turf and non-crop herbicide. Discontinued by FMC

SRN products *(nutrients)* — Slow release nitrogen; may include additional select nutrients. WinField United

Stalker 2EC *(imazapyr)* — PRE and POST for brush and weeds control in non-crop areas. BASF

Stallion Brand *(zeta-cypermethrin + chlorpyrifos)* — Insecticide for many crops. Discontinued by FMC

Stam M-4, Stam 80 EDF *(propanil)* — POST herbicide used in rice. RiceCo

Stam-Pro *(propanil + bensulfuron-methyl)* — POST herbicide for rice. Discontinued by Dow AgroSciences

Stamina *(pyraclostrobin)* — On-farm and commercial seed treatment fungicide for corn, barley, wheat, rye and legume vegetables. BASF

Stamina F4 Cereals *(pyraclostrobin + triticonazole + metalaxyl + fluxapyroxad)* — Fungicide on-farm and commercial seed seed treatment for barley, oat, rye, triticale, and wheat. BASF

Stampede 80 EDF *(propanil)* — POST herbicide for small grains. Discontinued by Dow AgroSciences

Stance *(cyclanilide + mepiquat chloride)* — Growth regulator for cotton. Bayer

Stanza *(flumetsulam + clopyralid)* — Herbicide for EPP, PP, PPI, PRE, and early POST control of broadleaf weeds in corn. Discontinued by FMC

Staple LX *(pyrithiobac sodium)* — POST *(over-the-top or directed)* herbicide for broadleaf weeds in cotton. Corteva Agriscience

Staple Plus *(pyrithiobac-sodium + glyphosate)* — Herbicide for use on Roundup Ready cotton. Discontinued by DuPont

Starane *(fluroxypyr)* — POST herbicide for corn, small grains, sorghum, fallow and non-cropland. Discontinued by Dow AgroSciences

Starane Flex *(fluroxypyr + florasulam)* — POST herbicide for wheat, barley, oats, rye, and triticale. Corteva Agriscience

Starane NXT *(fluroxypyr + bromoxynil)* — POST herbicide for wheat, barley and oats. Corteva Agriscience

Starane Ultra/StareDown *(fluroxypyr)* — POST herbicide for corn, small grains, sorghum, fallow and non-cropland. Corteva Agriscience

Starfire *(paraquat)* — Harvest-aid in cotton, corn and soybeans and broadcast in peanuts. Discontinued by Syngenta

Status *(diflufenzopyr + dicamba + isoxadifen safener)* — POST broadleaf herbicide for corn. BASF

Steadfast 75 WDG *(nicosulfuron + rimsulfuron)* — POST herbicide for field corn. Discontinued by DuPont

Steadfast ATZ *(nicosulfuron + rimsulfuron + atrazine)* — POST herbicide for corn. Discontinued by DuPont

Steadfast Q *(nicosulfuron + rimsulfuron + isoxadifen-ethyl safener)* — POST herbicide for field corn. Corteva Agriscience

Steed *(bifenthrin + zeta-cypermethrin)* — Insecticide for corn, soybean, peanuts and vegetable crops. Discontinued by FMC

Steel *(imazaquin + imazethapyr + pendimethalin)* — Herbicide for soybeans. Discontinued by BASF

Stellar *(fluopicolide + propamocarb)* — Fungicide for Pythium control in turfgrass. Discontinued by Valent

Sterling *(dicamba)* — Herbicide for emerged broadleaf weeds in corn, grain sorghum, small grains, sugar cane and pasture. Discontinued by WinField United

Sterling Blue *(diglycolamine salt of dicamba)* — POST control of broadleaf weeds in field corn, popcorn, small grains, cotton, sorghum and pasture. WinField United

Sterling Plus *(dicamba + atrazine)* — PRE and POST herbicide in corn, grain sorghum and in fallow rotations. Discontinued by WinField United

Steward EC *(indoxacarb)* — Controls through ingestion, several important insects in multiple crops. FMC

Stinger *(clopyralid)* — POST for broadleaves in small grains, field corn, sugarbeets, pasture, fallow and CRP acres. Corteva Agriscience

Stinger HL — POST for broadleaves in small grains, field corn, sugarbeets, pasture, fallow CRP acres and various other crops. Corteva Agriscience

Storcide II *(chlopyriphos + deltamethrin)* — Stored grain protectant for small grain, rice and sorghum. Discontinued by Bayer

Storen *(s-metolachlor + mesotrione + pyroxasulfone + bicyclopyrone)* — Herbicide for corn. Syngenta

Storm *(bentazon + acifluorfen)* — POST control of broadleaves in soybeans, peanuts and rice. UPL

Stout *(nicosulfuron + rimsulfuron)* — POST herbicide for grass and broadleaf in corn. Discontinued by DuPont

Strada *(orthsulfamuron)* — POST herbicide for rice. Nichino America

Strada Pro *(orthosulfamuron + halosulfuron)* — POST herbicide for rice. Nichino America

Strada XT2 *(orthsulfamuron + quinclorac)* — Rice herbicide. Nichino America

Stratego *(trifloxystrobin + propiconazole)* — Fungicide for corn, wheat, peanuts and other crops. Discontinued by Bayer

Stratego YLD *(prothioconazole + trifloxystrobin)* — Fungicide for corn, soybean, wheat, barley, beans and peas. Bayer

Streamline *(aminocyclopyrachlor + metsulfuron)* — Herbicide for broadleaf weed control in non-crop and brush. Corteva Agriscience

Strike 3 *(2,4-D + MCPP-P + dicamba)* — POST broadleaf control in turf and other areas. WinField United

StrikeLock *(surfactant)* — HSOC, deposition aid and drift control agent without negative effects on spray pattern. WinField United

StrongArm *(diclosulam)* — Controls cocklebur, morningglory, ragweeds and nutsedge in peanuts in southern states. Corteva Agriscience

Stryker *(tralomethrin)* — Insect control on broccoli, lettuce and sunflowers. Bayer

STS Broadleaf *(clorimuron + thifensulfuron)* — PRE or POST broadleaf herbicide for STS soybean. Discontinued by DuPont

Subdue GR, Subdue Maxx *(mefenoxam)* — Fungicide for conifers, nonbearing citrus, ornamental and turf. Syngenta

Succeed/Ultra *(MSO)* — Soy oil-based adjuvant and surfactant for glyphosate and its tank mix partners. Discontinued by WinField United

Success *(spinosad)* — Naturalyte insect contol product for many crops. Corteva Agriscience

Sugarbeet Mix *(desmedipham + phenmedipham)* — POST Sugarbeet herbicide. Discontinued by Bayer

Superb HC *(HSOC-COC adjuvant)* — Highly concentrated adjuvant blend of petroleum oil and non-ionic surfactant; CPDA certified. WinField United

Superb HC — High surfactant oil concentrate with drift reduction agent. Winfield United

Super Boll *(ethephon)* — Growth regulator for cotton and tobacco. Nufarm

Super Tin 80WP *(triphenyltin hydroxide)* — Fungicide used on potatoes, sugarbeets and pecans. Discontinued by UPL

SuperLock — High surfactant oil concentrate with drift reduction agent. WinField United

SuperWHAM! *(propanil)* — POST herbicide for rice. UPL

Supremacy *(fluroxypyr + thifensulfuron + tribenuron)* — Small grain herbicide for POST control of broadleaf weeds. UPL

Suprend *(trifloxysulfuron + prometryn)* — POST-directed cotton herbicide. Discontinued by Syngenta

SureGuard *(flumioxazin)* — Herbicide for container and field-grown trees, woody landscapes and non-crop areas. Discontinued by Valent

SureStart *(acetochlor + flumetsulam + clopyralid)* — PP or PRE herbicide for corn. Discontinued by Dow AgroSciences

SureStart II *(acetochlor + flumetsulam + clopyralid)* — PP or PRE herbicide for corn. Corteva Agriscience

Surflan A.S. *(oryzalin)* — PRE herbicide for annual grasses and broadleaf weeds in turf and ornamentals. UPL

Surmount *(picloram + fluroxypyr)* — Herbicide for brush and broadleaf weed control with soil residual in permanent grass pastures and rangeland. Corteva Agriscience

Surpass EC and 20G *(acetochlor)* — Herbicide for control of grasses and some broadleaves in field corn, seed corn and popcorn. Discontinued by Dow AgroSciences

Surpass NXT *(acetochlor + safener)* — PPI, PRE or EARLY POST herbicide for control of grasses and some broadleaves in field corn, seed corn and popcorn. Corteva Agriscience

Surtain *(pyroxasulfone + saflufenacil)* — EPP, PPI, PP, Pre & EPost soil residual herbicide for corn and fallow. BASF

Surveil *(cloransulam + flumioxazin)* — Burndown and PRE control of weeds in soybeans. Corteva Agriscience

Sutan + *(butylate + antidote)* — PPI herbicide for annual grasses in corn. Discontinued by Helm Agro

SWB MCPA Ester — Phenoxy herbicide similar to MLPE. Discontinued by WinField United

SWB 2, 4-D LV4 — Broadleaf herbicide for corn, small grains, sorghum, soybeans *(PP)*, turf, forest management. Discontinued by WinField United

Switch 62.5WG *(cyprodinil + fludioxonil)* — Fungicide for onions and strawberries. Syngenta

Symbol products *(nutrients)* — Concentrated highly soluble nutrient blends. WinField United

Synapse *(flubendiamide)* — Insecticide for various crops. Discontinued by Bayer

Synchrony XP *(chlorimuron + thifensulfuron)* — POST control of broadleaf weeds in soybean varieties designated STS *(sulfonylurea tolerant soybeans)* in the variety name; replaces STS form. Corteva Agriscience

Systiva XS *(fluxapyroxad)* — Commercial seed treatment for multiple crops. BASF

Tacoma 1EC *(fenoxyprop ethyl + safener)* — POST grass herbicide for wheat, durum, and barley. WinField United

Taegro 2 *(FZB24 strain of Bacillus subtilis)* — Fungicide for fruits and many vegetables. Novozymes A/S

TagTeam, TagTeam LCO, TagTeam LCO XC — Bacterial inoculant for various legume and non-legume crops. Novozymes A/S

Taiga Z *(lambda-cyhalothrin)* — Similar to Warrior. Discontinued by WinField United

Take Off — Non-bacterial inoculant for multiple crops. Verdesian Life Sciences

Talinor *(bicyclopyrone + bromoxynil)* — POST herbicide for small grains. Syngenta

Tandem *(thiamethoxam + lambda-cyhalothrin)* — Insecticide for turf and ornamentals. Syngenta

Tanos *(famoxadone + cymoxanil)* — Fungicide for potatoes and other vegetables. Corteva Agriscience

Targa *(quizalofop)* — PP burndown for wheat/barley, POST for annual and perennial grasses in soybeans, canola, cotton, dry beans and sugarbeets. Gowan

Tartan *(trifloxystrobin + triadimefon)* — Fungicide for use in turf. Bayer

Tarzec *(pyroxsulam + halauxifen)* — Herbicide for winter wheat and triticale. Corteva Agriscience

Tattoo C *(propamocarb + chlorothalonil)* — Foliar fungicide. Discontinued by Bayer

Tavium *(dicamba + s-metolachlor)* — Herbicide for DT cotton and soybean. Discontinued by Syngenta

Team 2G *(trifluralin + benefin)* — Control of crabgrass and other weed grasses in turf. Discontinued by Corteva Agriscience

TeamMate *(pyroxsulam)* — POST herbicide for cheatgrass, ryegrass and broadleaf control in wheat *(winter/spring, durum)* and triticale. Corteva Agriscience

Teamwork *(carfentrazone-ethyl)* — Herbicide for corn and grain sorghum. Discontinued by WinField United

Tebucure *(tebuconazole)* — Fungicide for many crops. Discontinued by WinField United

Telar XP *(chlorsulfuron)* — Control of broadleaf weeds in non-cropland. Bayer

Telone II *(dichloropropene)* — Nematicide/soil fumigant used to control various insects and diseases on a variety of crops. Corteva Agriscience

Telone C-17 *(dichloropropene + chloropicrin)* — Nematicide/soil fumigant used to control various insects and diseases on a variety of crops. Discontinued by Dow AgroSciences

Temik 15G *(aldicarb)* — Soil-applied systemic insecticide, acaricide and nematicide. Discontinued by Bayer

Tempo SC Ultra, 20WP *(cyfluthrin)* — Non-systemic synthetic pyrethroid insecticide used for insect pests on indoor and outdoor surfaces; for PCO use only. Bayer

Tenacity *(mesotrione)* — Herbicide for sod farms and golf courses. Syngenta

Tendovo *(S-metolochlor + Metribuzin + Cloransulam)* — Herbicide for grass and broadlead soil residual control in Soybeans. Syngenta

Teraxxa *(broflanilide)* — Insecticide seed treatement for wheat. BASF

Teraxxa F4 *(broflanilide + fluxapyroxad + pyraclostrobin + triticonazole + metalaxyl)* — Insecticide and fungicide seed treatment for wheat. BASF

Terminate *(ethephon + cyclanilide)* — Cotton harvest aid. Nufarm

Tersus *(pyrethrins)* — Insecticide for row crops, vegetables and citrus. Discontinued by Valent

Tesaris *(fluxapyroxad)* — Fungicide for many crops. BASF

Testify *(saflufenacil + dimethenamid-p)* — Burndown and PRE herbicide for corn, soybean and sorghum. BASF

Tetraban *(azoxystrobin)* — Fungicide for many crops. WinField United

Thimet 20-G *(phorate)* — An organic phosphate insecticide - including Lock'n Load closed handling container. AMVAC

Thiolux Jet — Sulfur fungicide. Discontinued by Syngenta

Thionex 3EC, 50W, 50WSB *(endosulfan)* — Insecticide used on many crops. Discontinued by MANA

Thiram 42-S *(thiram)* — Seed treatment animal repellent and fungicide. Bayer

Thistrol *(MCPB)* — Control of canada thistle and other broadleaves in peas and mint. Nufarm

Threesidual *(acetochlor + flumetsulam + clopyralid)* — PP or PRE herbicide for corn. WinField United

Throttle XP *(chlorsulfuron + sulfometuron methyl + sulfentrazone)* — Non-crop herbicide. Discontinued by DuPont

Tillam 6E *(pebulate)* — PPI herbicide for control of annual grasses in sugarbeets, tobacco and tomatoes. Discontinued by Monterey

Tiller *(fenoxaprop ethyl + 2,4-D + MCPA)* — POST for foxtails in wheat and barley. Discontinued by Bayer

Tilt *(propiconazole)* — Broad spectrum fungicide labeled for corn, small grains, peanuts, sugar cane and grasses grown for seed; protective and localized systemic activity. Syngenta

Tilt Bravo SE *(propiconazole + chlorothalonil)* — Fungicide for peanut. Discontinued by Syngenta

Titan *(clothianidin)* — Seed insecticide for canola. Bayer

T-Methyl 4.5 F, T-Methyl 70 WSB *(thiophanate methyl)* — Fungicide for soybeans, grains, legumes and various vegetables. Nufarm

Tolvera *(tolpyralate + bromoxynil)* — Post emergence herbicide for wheat and Barley. Corteva Agriscience

Tomahawk 4, Tomahawk 5 *(glyphosate)* — 4 or 5.4 lb/gal isopropylamine salt. Discontinued by WinField United

Topaz *(propiconazole)* — Fungicide for many crops. WinField United

TopGuard *(flutriafol)* — Fungicide for use in various crops. FMC

TopGuard EQ *(azoxystrobin + flutriafol)* — Fungicide for vegetables, peanuts, wheat and other crops. FMC

Top MP *(difenoconazole)* — Fungicide for potato. Syngenta

TopNotch *(acetochlor + safener)* — Micro-encapsulated formulation of Surpass for corn. Discontinued by Dow AgroSciences

Tops MZ *(thiophasate-methyl + mancozeb)* — Potato seed piece treatment fungicide. Discontinued by Bayer

Tops MZ-Gaucho *(imidacloprid + thiophasate-methyl + mancozeb)* — Potato seed piece treatment fungicide. Discontinued by Bayer

Topsin M WSB, Topsin 4.5FL *(thiophanate-methyl)* — Foliar fungicide used on peanuts, soybeans, sugarbeets, other crops. UPL

Top Surf — NIS. Discontinued by WinField United

Tordon 101 Mixture, RTU *(picloram + 2,4-D)* — Annual and perennial broadleaf weeds in forest planting sites and noncrop areas; very persistent. Corteva Agriscience

Tordon K, 22K *(picloram)* — POST for annual and perennial broadleaf weeds and woody plants in small grains, grasslands and CRP acres; very persistent. Corteva Agriscience

Torino *(cyflulfenamid)* — Fungicide for cucurbits. Gowan

Tornado *(fomesafen + fluazifop)* — POST for grasses and broadleaves in soybeans. Discontinued by Syngenta

Total, Total 2.3, Total SL, Total TNV *(glufosinate)* — Non-selective contact herbicide for LibertyLink crops, non-crop areas, orchards and potato vines. WinField United

Touchdown CT/CT2 *(K salt of glyphosate)* — Herbicide. Discontinued by Syngenta

Touchdown IQ *(diammonium glyphosate)* — Non-selective, translocating herbicide for control of emerged vegetation, PP and POST, in-crop Roundup Ready corn, cotton and soybeans. Discontinued by Syngenta

Touchdown HiTech *(K salt of glyphosate)* — Non-selective, translocating herbicide for control of emerged vegetation, PP and POST, in-crop Roundup Ready corn, cotton and soybeans. Discontinued by Syngenta

Touchdown Total *(K salt of glyphosate)* — Non-selective, translocating herbicide for control of emerged vegetation, PP and POST, in-crop Roundup Ready corn, cotton and soybeans; includes a surfactant. Discontinued by Syngenta

Tough 5EC *(pyridate)* — POST weed control in corn and peanuts. Discontinued by Syngenta

Tourney *(metconazole)* — Fungicide for turfgrass. Discontinued by Valent

Tower *(dimethanamid)* — PRE herbicide for non-crop. BASF

Tracer Naturalyte 4SC *(naturalyte class)* — Insecticide for worms in corn, cotton, sorghum, soybeans, tobacco pasture and wheat. Discontinued by Dow AgroSciences

Tradewind *(bispyribac-sodium)* — Aquatic herbicide. Valent

Transfix *(sticker)* — Sticking agent intended for use with most crop protection products calling for use of spreader sticker. WinField United

Transform WG *(sulfoxaflor)* — Insecticide for use in potatoes, canola and other crops. Corteva Agriscience

Transline *(clopyralid)* — POST herbicide for broadleaves and brush in pasture and non-crop areas. Corteva Agriscience

Trebuset *(pydiflumetofen)* — Seed treatement fungicide for corn, small grains, dry beans and peas, and peanuts. Syngenta

Treevix *(saflufenacil)* — POST-directed broadleaf herbicide for citrus, nut and pome fruit trees. BASF

Treflan HFP, TR-10 *(trifluralin)* — PPI herbicide for annual grasses, some broadleaves in alfalfa, cotton, dry beans, potatoes, soybeans, sugarbeets, sunflowers, other crops. Gowan

Tremor ATZ Lite NXT *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for corn. WinField United

Tremor ATZ NXT *(acetochlor + atrazine + safener)* — PPI, PRE or EARLY POST herbicide for corn. WinField United

Tremor NXT *(acetochlor + safener)* — PPI, PRE, EARLY POST herbicide for corn. WinField United

Tribune *(diquat)* — Aquatic herbicide. Discontinued by Syngenta

Trigard *(cyromazine)* — Insecticide for many vegetables. Syngenta

Trilex Advanced *(trifloxystrobin + triadimenol + metalaxyl)* — Fungicide seed treatment for cotton. Discontinued by Bayer

Trilex FL *(trifloxystrobin)* — Fungicide seed treatment for corn, peanuts, and rice. Discontinued by Bayer

Trilex Flowable *(trifloxystrobin)* — Fungicide commercial seed treatment for various crops. Discontinued by Bayer

Trilex 2000 *(trifloxystrobin + metalaxyl)* — Fungicide on-farm and commercial seed treatment for various crops. Discontinued by Bayer

Trilex 5000 — Fungicide seed treatment for soybean and legumes with Trilex, Allegiance, Celgard and a colorant. Discontinued by Bayer

Trilex 6000 — Fungicide and insecticide seed treatment for soybean and legumes with Gaucho, Trilex, Allegiance, Celgard and a colorant. Discontinued by Bayer

Trilin — Generic trifluralin. Discontinued by Tri-Corp

Trimax *(imidacloprid)* — Insecticide for cotton. Discontinued by Bayer

Trimax Pro *(imidacloprid)* — Insecticide for cotton. Discontinued by Bayer

Trimec Classic *(2,4-D + MCPP + dicamba)* — Broad spectrum control of broadleaf weeds in lawns. PBI Gordon

Trimec Plus *(MSMA + 2,4-D + MCPP + dicamba)* — Broadleaf and crabgrass herbicide for turf. Discontinued by PBI Gordon

Trinity *(triticonazole)* — Fungicide for turf. BASF

Triple Crown *(zeta-cypermethrin + bifenthrin + imidacloprid)* — Insecticide for various crops. Discontinued by WinField United

TripleFLEX II *(acetochlor + flumetsulam + clopyralid)* — PP or PRE herbicide for corn. Bayer

Trisidual *(acetochlor + flumetsulam + clopyralid)* — PP or PRE herbicide for corn. Discontinued by WinField United

Tri-Scept *(trifluralin + imazaquin)* — Annual grassand broadleaf control in soybeans. Discontinued by BASF

Trivapro *(benzovindiflupyr + azoxystrobin + propiconazole)* — Fungicide for various crops. Syngenta

Trivapro A *(benzovindiflupyr)* — Fungicide for various crops. Discontinued by Syngenta

Trivapro B *(azoxystrobin + propiconazole)* — Fungicide for various crops. Discontinued by Syngenta

Trivence *(chlorimuron + flumioxazin + metribuzin)* — Burndown, PP and PRE herbicide for weed control in soybeans. Corteva Agriscience

TriVolt *(isoxaflutole + thiencarbazone + flufenacet)* — PP, PPI, PRE, early POST herbicide for grass and broadleaves in corn. Bayer

Trunemco *(Bacillus amyloliquefaciens strain MBI 600)* — Nematode protection for corn, cotton, soybeans. Nufarm

Trust *(trifluralin)* — Selective PPI herbicide for annual grasses, some broadleaves in alfalfa, cotton, dry beans, potatoes, soybeans, sugarbeets, sunflowers, other crops. WinField United

Trust 10 G *(trifluralin)* — Annual grass and some broadleaf control in alfalfa, cotton, dry beans, potatoes, soybeans, sugarbeets, sunflowers, other crops. Discontinued by WinField United

Tundra EC *(bifenthrin)* — Insecticide for many field and horticultural crops. WinField United

Tundra LFC *(bifenthrin)* — Insecticide for PRE application in liquid fertilizer in multiple crops. WinField United

Tundra Supreme *(chlorpyrfos + bifenthrin)* — Foliar insecticide for corn, soybean, cotton, and citrus orchard floors. Discontinued by WinField United

Tupersan *(siduron)* — PRE grass herbicide for turf and other grasses. Gowan

Turbo *(metolachlor + metribuzin)* — PPI or PRE control of annual grasses and broadleaves in soybeans, peanuts, potatoes. Discontinued by Syngenta

Turfcide 400 *(PCNB)* — Turf fungicide. AMVAC

Turflon Ester/Turflon Ester Ultra *(triclopyr)* — POST herbicide for broadleaves in turf. Corteva Agriscience

Tuscany SC *(flumioxaxin)* — Herbicide for cotton, various grain, legume and vegetable crops, and non-crop areas. Nufarm

Tuxedo — Non-bacterial inoculant for soybean and cereals. Verdesian Life Sciences

TwinLine *(pyraclostrobin + metconazole)* — Fungicide for small grains. Discontinued by BASF

Typhoon *(fluazifop + fomesafen)* — POST control of weeds in soybeans. Discontinued by Syngenta

Ultima 160 *(sethoxydim)* — 1.3 lb/gal formulation of Poast. Discontinued by BASF

Ultor *(spirotetramat)* — Insecticide for pome fruit, hops, and Christmas trees. Bayer

Ultra Blazer *(acifluorfen)* — POST contact herbicide for broadleaves in soybeans, peanuts, rice. UPL

Ultra-CHE products *(chelated nutrients)* — Fully chelated secondary nutrients to prevent/correct deficiencies in crops and ornamentals. WinField United

Ultra Flourish *(mefenoxam)* — Fungicide for soybean, various vegetable and legume crops, cotton. Nufarm

Ultra-Lite *(AMS + surfactant)* — Liquid AMS and surfactant guards against hard water antagonism and is designed for use with glyphosate and other pesticide products. Discontinued by WinField United

UltraLock *(deposition aid and drift control agent)* — Drift reduction with improved deposition; for general use and use with new dicamba herbicides. WinField United

Uniform *(azoxystrobin + mefenoxam)* — In-furrow fungicide for cotton. Syngenta

Upbeet *(triflusulfuron methyl)* — Sulfonylurea herbicide for POST control of broadleaf weeds in sugarbeets. FMC

UpperCut *(tebuconazole)* — Fungicide for soybean, peanut and grass seed. Discontinued by DuPont

Uproar *(aciflorfen)* — POST contact herbicide for broadleaf weeds in soybean, peanuts, rice. Discontinued by WinField United

UpShot Soybeans *(thiamethoxam + mefenoxam + fludioxonil)* — Commercial seed treatment for soybeans. Discontinued by FMC

Ureabor *(sodium metaborate + sodium chlorate)* — Non-selective weed and grass killer for noncropland. Discontinued by Pro-Serve

Vabro *(chlorthalonil)* — Fungicide for sweet corn, corn grown for seed, soybeans, potatoes, peanuts and many vegetables. Discontinued by WinField United

Valcheck *(water conditioner + surfactant + drift reduction)* — Premix of non-AMS water conditioner and surfactant plus drift reduction adjuvant. Discontinued by WinField United

Valcheck II *(water conditioner + surfactant + drift reduction)* — Premix of non-AMS water conditioner and surfactant plus drift reduction adjuvant. Discontinued by WinField United

Valcheck III *(water conditioner + drift reduction + volatility reduction)* — Non-AMS water conditioner, drift reduction agent for many tank mixes and volatility reduction approved for use with dicamba. WinField United

Valcheck 80/20 *(surfactant + wetting agent)* — Nonionic surfactant and spreader/penetrant; previously called Top Surf. WinField United.

Valcheck AMS *(liquid AMS)* — 34% liquid AMS designed to enhance herbicide performance; previously called Amsol 34. WinField United

Valcheck AMS + DRT *(liquid AMS + drift reduction)* — Liquid AMS designed to enhance herbicide performance and improve spray deposition; previously called Amsol Plus. WinField United

Valcheck COC — Crop oil concentrate; previously called Prime Oil. WinField United

Valcheck Foam Marker *(foam marker)* — Agricultural foam marker for improving spray accuracy; previously called Promark. WinField United

Valor 50WDG *(flumioxazin)* — Broadleaf herbicide for PRE use on peanuts and soybeans. Discontinued by Valent

Valor EZ, Valor SX *(flumioxazin)* — Residual, burndown and layby herbicide for various crops. Valent

Valor XLT *(flumioxazin + chlorimuron)* — PP and PRE herbicide for soybeans. Valent

Vangard *(cyprodinil)* — Fungicide for onions and fruit crops. Syngenta

Vanquish *(dicamba)* — Herbicide for non-crop areas including turf. Discontinued by Nufarm

Vantacor *(chlorantraniliprole)* —Insecticide for corn, cotton, vegetables and other crops. FMC

Varisto *(imazamox + bentazon)* — Herbicide for clover grown for seed, dry beans and peas, succulent limas and snap beans, and soybean. BASF

Varro *(thiencarbazone-methyl)* — POST herbicide in spring wheat and durum. Bayer

Vastlan *(triclopyr)* — Control of woody plants and broadleaf weeds on non-crop areas. Corteva Agriscience

Vault, Vault NP, Vault SP — Bacterial inoculant for various legumes. BASF

Vault HP — Bacterial inoculant for various legumes. Discontinued by BASF

Vault IP/Vault IP Plus *(Bacillus amyloliquefaciens, MBI 600)* — Bacterial inoculant and disease suppression for soybean. BASF

Vayantis *(picarbutrazox)* — Fungicide seed treatment for corn and soybean. Syngenta

Velista *(penthiopyrad)* — Fungicide for golf courses and other turf except home lawns. Syngenta

Velocity *(bispyribac sodium)* — POST herbicide for turf. Discontinued by Valent

Velpar AlfaMax *(hexazinone + diuron)* — Dormant herbicide for alfalfa. Tessenderlo Kerley

Velpar AlfaMax Gold *(hexazinone + diuron)* — Dormant herbicide for alfalfa. Tessenderlo Kerley

Velpar L VU *(hexazinone)* — POST for established alfalfa, rangeland and pasture, sugar cane and for weed and brush control in non-cropland. Bayer

Velpar L *(hexazinone)* — POST for established alfalfa, rangeland and pasture, sugar cane and for weed and brush control in non-cropland. Tessenderlo Kerley

Veltyma *(mefentrifluconazole + pyraclostrobin)* — Fungicide for beans and peas, citrus, corn, peanut, potato, canola, sorghum, soybean and sugarbeet. BASF

Velum Prime / Velum One *(fluopyram)* — Fungicide and nematicide soil treatment for leafy vegetables, cucurbits, fruiting vegetables and potatoes and other crops. Check for specific state registrations. Bayer

Velum Rise *(fluopyram + Penflufen)* — Fungicide and Insecticide for use on Potatoes. Bayer

Velum Total *(imidacloprid + fluopyram)* — Fungicide and nematicide soil treatment for cotton and peanuts. Discontinued by Bayer

Vendex *(fenbutalin-oxide)* — Miticide used on fruits and nuts. UPL

Venom *(dinotefuran)* — Insecticide for cotton, vegetables, trees, nuts and grapes. Valent

Verdict *(saflufenacil + dimethenamid-p)* — Burndown and PRE herbicide for corn, soybean and sorghum; previously called Integrity. BASF

Verimark *(cyantraniliprole)* — Insecticide for many fruits and vegetables. FMC

Versys *(afidopyropen)* — Insecticide for Brassica and leafy vegetables. BASF

Vertisan *(penthiopyrad)* — Fungicide for various crops. Discontinued by Corteva Agriscience

Viatude *(Picoxystrobin + Protioconazole)* — Foliar fungicide for Canola and Soybeans. Corteva Agriscience

Vibrance *(sedaxane)* — On-farm and commercial seed treatment for canola, soybean, peanut, rice and small grains. Syngenta

Vibrance Cinco *(azoxystrobin + mefenoxam + fludioxonil + sedaxane + thiabendaozole)* — Commercial seed treatment for corn. Syngenta

Vibrance CST *(azoxystrobin + fludioxinil + Mefenoxam + sedaxane)* — Fungicide on-farm and commercial seed treatment for cotton. Syngenta

Vibrance Extreme *(sedaxane + difenoconazole + mefenoxam)* — On-farm and commercial seed treatment for small grains. Syngenta

Vibrance Maxx *(sedaxane + difenoconazole + mefenoxam)* — On-farm and commercial seed treatment for dried peas and beans. Syngenta

Vibrance Maxx Pulses RTA *(thiabendazole + sedaxane + mefenoxam + fludioxonil)* — Fungicide seed treatment for peas and beans. Syngenta

Vibrance Quattro *(difenoconazole + mefenoxam + fludioxonil + sedaxane)* — Fungicide seed treatment on barley, triticale, oats, rye and wheat. Discontinued by Syngenta

Vibrance RST *(azoxystrobin + sedaxane + mefenoxam + fludioxonil)* — Fungicide seed treatment for rice. Syngenta

Vibrance Trio *(mefenoxam + fludioxonil + sedaxane)* — On-farm and commercial seed treatment for soybean. Syngenta

Vibrance Ultra Potato *(mandipropamid + difenoconazole + sedaxane)* — Seed treatment for potato. Syngenta

Vida *(pyraflufen)* — Hericide/desiccant in select states/counties for use on various crops. Gowan

Viewpoint *(aminocyclopyrachlor + metsulfuron + imazapyr)* — Herbicide for broadleaf weed control in non-crop and brush. Corteva Agriscience

Vindicate *(nitrapyrin)* — Delays nitrification of ammoniacal and urea nitrogen in soil. Corteva Agriscience

Vios FX — Broad Spectrum, post emerge herbicide for spring and winter wheat. Bayer

Vista XRT *(fluroxypyr)* — POST for annual and perennial broadleaf weeds in non-crop areas; same as Starane Ultra/StareDown. Corteva Agriscience

Voliam Flexi *(chlorantraniliprole + thiamethoxam)* — Insecticide for potato and certain fruits. Syngenta

Voliam Xpress *(chlorantraniliprole + lambda-cyhalothrin)* — Insecticide for vegetables. Discontinued by Syngenta

Volt-Edge *(volatility reducing agent)* — Used as an additional tool to reduce volatility potential when tank mixed with dicamba. WinField United

Vortex *(ipconazole)* — Fungicide seed treatment for corn, cotton, and sorghum. Bayer

Voyagro 4-0-16 *(nitrogen + potassium)* — Plant nutrition product. WinField United

Vydate C-LV *(oxamyl)* — Concentrated insecticide labeled for cotton, peanuts, soybeans, tobacco. Corteva Agriscience

Vydate L *(oxamyl)* — Insecticide, nematicide and acaracide used for control of certain insects, mites and/or nematodes on many crops and vegetables. Corteva Agriscience

Warden Cereals *(ipconazole + metalaxyl)* — Fungicide seed treatment for cereals. Discontinued by WinField United

Warden Cereals 360 *(thiamethoxam + difenoconazole + mefenoxam + sedaxane + cytokinin + gibberellic acid + indole butyric acid)* — Fungicide and insecticide commercial seed treatment for cereals. Discontinued by WinField United

Warden Cereals HR *(ipconazole + metalaxyl + imidacloprid)* — Fungicide and insecticide on-farm and commercial seed treatments for cereals. WinField United

Warden Cereals II *(sedaxane + difenoconazole + mefenoxam)* — Fungicide on-farm and commercial seed treatment for cereals. WinField United

Warden Cereals WR *(ipconazole + metalaxyl)* — Fungicide seed treatment for cereals. Discontinued by WinField United

Warden Cereals WRII *(thiamethoxam+ difenoconazole + mefenoxam + fludioxonil + sedaxane)* — Fungicide and insecticide on-farm and commercial seed treatment for cereals. WinField United

Warden CX *(thiamethoxam + mefenoxam + fludioxonil + sedaxane)* — Commercial seed treatment for soybeans. Discontinued by WinField United

Warden CX II *(thiamethoxam + mefenoxam + fludioxonil + sedaxane + picarbutrazox)* — Commercial seed treatment for soybeans. WinField United

Warden CZ *(mefenoxam + thiamethoxam + fludioxonil)* — A fungicide and insecticide seed treatment for soybeans. Discontinued by WinField United

Warden RTA *(mefenoxam + fludioxonil)* — Fungicide on-farm and commercial seed treatment. WinField United

Warden SCI *(mefenoxam + fludioxonil + soybean inoculant w/extender)* — Seed treatment. Discontinued by WinField United

Warrant *(acetochlor)* — Encapsulated herbicide for PRE control applied POST in soybean, sorghum and cotton. Bayer

Warrant Ultra *(acetochlor + fomesafen)* — Herbicide for soybeans and cotton. Bayer

Warrior *(lambda-cyhalothrin)* — An insecticide with an encapsulated formulation. Discontinued by Syngenta

Warrior II *(lambda-cyhalothrin)* — An insecticide with an encapsulated formulation. Syngenta

Weedar 64 *(2,4-D)* — Herbicide for broadleaf control in cereals, corn, soybean, and non-crop areas. Nufarm

Weedar XHL — High load formulation herbicide for broadleaf control in cereals, corn, soybean, and non-crop areas. Nufarm

WeedMaster *(dicamba + 2,4-D)* — POST control of broadleaves in pasture, range, sugar cane, fallow, non-cropland . Nufarm

WeedMaster XHL *(dicamba + 2,4-D)* — High Load formulation herbicide for broadleaf control in cereals, corn, soybean, and non-crop areas. Nufarm

Weedone 638 — Combination of 2,4-D acid and 2,4-D lo-vol ester for hard-to-kill broadleaf weeds. Nufarm

Weld *(MCPE + fluroxypyr + clopyralid)* — POST herbicide for wheat, barley, and oats. WinField United

Westar *(hexazinone + sulfometuron)* — PRE or POST herbicide for non-crop and conifers. Corteva Agriscience

Wham EDF-80, EZ *(dichloropropionanilide)* — POST herbicides for rice. Discontinued by RiceCo

Whip 360 *(fenoxaprop)* — Herbicide for POST control of grasses in rice. Discontinued by Bayer

WideARmatch *(fluroxypyr + halauxifen + clopyralid)* — POST herbicide for use in small grains. Corteva Agriscience

WideMatch *(fluroxypyr + clopyralid)* — POST herbicide use in barley, wheat, oat, and corn. Corteva Agriscience

Windcheck *(polyacrylamide)* — Deposition aid and drift retardant. Discontinued by WinField United

Wolverine *(fenoxaprop + pyrasulfotole + bromoxynil)* — POST grass and broadleaf herbicide for wheat and barley. Discontinued by Bayer

Wolverine Advanced *(fenoxaprop + pyrasulfotole + bromoxynil)* — POST grass and broadleaf herbicide for wheat and barley. Bayer

Xanthion *(Bacillus subtilis, MBI 600 + pyraclostrobin)* — In-furrow fungicide for soilborne/seedling disease control. Discontinued by BASF

XenTari *(Bt aizawai)* — Biological insecticide for control of caterpillar larvae on many field crops and vegetables. Valent

Xonerate *(amicarbazone)* — POST herbicide for turf. UPL

Xpedient Plus V — At-plant, PRE and PPI insecticide for corn; at plant for other field crops and vegetables. AMVAC

XtendiMax *(dicamba)* — Herbicide with VaporGrip™ technology for use on XtendFlex cotton and RR2 Xtend soybean. Discontinued by Bayer

XXpire *(spinetoram + sulfoxaflor)* — Insecticide for use in turf and ornamentals. Corteva Agriscience

Xyway 3D *(flutriafol)* — Fungicide for at-plant corn using 3RIVE 3D system. FMC

Xyway LFR *(flutriafol)* — Fungicide for corn and cotton. FMC

Xzemplar *(fluxapyroxad)* — Fungicide for use in turf. BASF

Yield Shield *(Bacillus pumilus GB 34)* — Biological seed treatment for many field and vegetable crops. Discontinued by Bayer

YieldOn *(plant extracts + trace micronutrients)* — Foliar applied biostimulant for corn soybeans and other crops. Syngenta.

Yukon *(halosulfuron + dicamba)* — POST for broadleaves in field and seed corn, grain sorghum, and sugar cane. Gowan

Yuma 4E *(chlorpyrifos)* — Insecticide for many crops. Discontinued by WinField United

Zampro *(ametoctradin + dimethomorph)* — Fungicide for grapes, potatoes, and vegetables. BASF

Zeal SC *(etoxazole)* — Miticide for cotton and other crops. Valent

Zeltera *(inpyrfluxam)* — Seed treatment for cereals, millet, corn, sorghum, dry/succulent beans, soybean, canola, and sugarbeet. Sumitomo

Zemax *(s-metolachlor + mesotrione)* — Herbicide for control of annual broadleaves and grasses in corn and sorghum. Discontinued by Syngenta

Zephyr *(abamectin)* — Miticide for cotton. Discontinued by Syngenta

Zeus *(sulfentrazone)* — Herbicide for many crops. FMC

Zidua *(pyroxasulfone)* — Herbicide applied PRE or POST for grass and broadleaf weeds in corn. Discontinued by BASF

Zidua PRO *(saflufenacil + imazethapyr + pyroxasulfone)* — Herbicide for soybean. BASF

Zidua SC *(pyroxasulfone)* — Herbicide applied PP, PRE and Early POST in chickpea, corn, cotton, dry beans, dry peas, fallow, lentil, peanut, soybean, sunflower and wheat. BASF

Zing! *(chlorothalonil + zoxamide)* — Fungicide for vegetables and potatoes. Gowan

Ziram 76DF *(ziram)* — Foliar fungicide for fruits and nuts. Cerexagri-Nisso

Zironar *(Bacillus licheniformis + Bacillus subtilis)*— Early season fungicide/nematicide for corn, cotton, soybean, sugarbeet and sugar cane. FMC

Zorial Rapid 80 *(norflurazon)* — PP or PRE herbicide for cotton, peanuts, alfalfa and soybeans. Discontinued by Syngenta

Zorina — Foliar fungicide for alfalfa, canola, legume vegetables, soybean, and sunflower. BASF

Zume *(zinc + enzymes)* — Soil applied product to enhance nutrient availability and uptake in various field crops. Winfield United.

10% Molybdenum Liquid *(molybdenum)* — On-farm or commercial seed treatment or foliar use WinField United

2,4-D *(2,4-Dichlorophenoxyacetic acid)* — Growth-regulating POST herbicide for broadleaf weeds in grass crops and turf. WinField United, others

2,4-D Amine 4 *(2,4-D amine)* — Herbicide for broadleaf control in multiple crops. WinField United, others

2,4-D LV 4 *(2,4-D)* — Herbicide for broadleaf control in multiple crops. WinField United, others

2,4-D LV 6 *(2,4-D)* — Herbicide for broadleaf control in multiple crops. WinField United, others

2,4-DB 175 *(2,4-DB)* — Controls broadleaf weeds post in soybeans and peanuts. WinField United, others

2,4-DB 200 *(2,4-DB)* — Controls broadleaf weeds Post in soybeans, peanuts, forage legumes. WinField United, others

3336 F *(thiophanate methyl)* — Turf and ornamental fungicide. Nufarm

912 Herbicide *(MSMA)* — POST herbicide for turf. Discontinued by WinField United

WINFIELD UNITED PRODUCTS

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Winfield United Product	Equivalent Products*	Active Ingredient and Product Description
HERBICIDES		
AGENT 1.88	Flexstar	Fomesafen. PP, PRE and POST for weeds in soybeans, beans, cotton and potatoes.
ASULAM 3.3	Asulox	Asulam. POST for grasses in sugar cane.
ATRAZINE 4L OR 90DF	Aatrex 4L or Nine-0	Atrazine. PRE or POST for broadleaves and grasses in corn, sorghum, sugar cane, and others.
AVALANCHE ULTRA	Ultra Blazer	Acifluorfen. POST for broadleaves in peanut, rice and soybean.
BASAGRAN	Basagran	Bentazon. POST for broadleaves in soybean, beans, corn, peanut, pea, sorghum, and mint.
BISON	Bromac, Maestro MA	Bromoxynil + MCPA. POST for broadleaves in small grains and CRP.
BOLL'D (HARVEST AID)	Prep, Super Boll	Ethephon. Plant growth regulator to promote early maturity in cotton and tobacco.
BRASH/SADDLE-UP	Weedmaster	Dicamba + 2,4-D. POST for broadleaves in pasture and non-crop.
CARNIVORE	Cleansweep M	MCPE + Bromoxynil + Fluroxypyr. POST for broadleaves in small grain and CRP.
CHARGER BASIC	Dual Magnum	S-Metolachlor. PP and PRE for grasses and certain broadleaves in many crops.
CHARGER MAX	Dual II Magnum	S-Metolachlor. PP and PRE for grasses and certain broadleaves in many crops.
CHARGER MAX ATZ	Bicep II Magnum	S-Metolachlor + Atrazine. PP and PRE for grasses and certain broadleaves in corn and sorghum.
CHARGER MAX ATZ LITE	Bicep Lite II Magnum	S-Metolachlor + Atrazine. PP and PRE for grasses and certain broadleaves in corn and sorghum.
CLEANSE	Select 2EC	Clethodim. POST for grass control in many crops.
COMPACT6X (COTTON PGR)	Gin Out, Pix WSG	Mepiquat chloride. Cotton plant regulator.
CONFIDENCE/TREMOR NXT	Harness, Surpass NXT	Acetochlor. PP and PRE for grasses and certain broadleaves in corn.
CONFIDENCE XTRA/TREMOR ATZ LITE NXT	Harness Xtra, Keystone LA NXT	Acetochlor + Atrazine. PP and PRE for grasses and certain broadleaves in corn.
CONFIDENCE XTRA 5.6L/TREMOR ATZ NXT	Harness Xtra 5.6L, Keystone NXT	Acetochlor + Atrazine. PP and PRE for grasses and certain broadleaves in corn.
CORNERSTONE PLUS	Roundup Original II	Glyphosate - 4 lb IPA. POST for broadleaves and grasses.
CORNERSTONE 5 PLUS	Roundup Custom ATU	Glyphosate - 5.5 lb IPA. POST for broadleaves and grasses.
CROSSBOW	many	2,4-D + Triclopyr. Control trees, brush and broadleaves in fencerows, rangeland, pastures, CRP acres and other non-crop areas.
DAZE 4SC (HARVEST AID)	Dropp or Free Fall	Thidiazuron. Cotton defoliant.
DICAMBA MAX 4	many	Dicamba DMA. PP, PRE and POST for broadleaves in corn, sorghum, small grains and other crops and non-cropland.
DIMETRIC CHARGED	Panther MTZ	Metribuzin + Flumioxazin. Burndown and PRE for broadleaves in soybean and fallow.
DIMETRIC EXT/DIMETRIC LIQUID	Metribuzin 75 and others	Metribuzin. PP and POST uses in many crops.
FRAMEWORK 3.3 EC	Prowl	Pendimethalin. PRE or PPI for grasses and certain broadleaves.
HERBIVORE	Permit	Halosulfuron. POST for nutsedge and broadleaves in certain crops. New row:
INCINERATE	Callisto	Mesotrione. Systemic PRE and POST selective contact and residual control of broadleaves in corn.
KOCHIAVORE	Cleansweep D	2,4-D + Bromoxynil + Fluroxypyr. POST selective control of broadleaves in wheat, barley, corn, sorghum and others.
MCPE	MCP Ester	MCP ester. POST for broadleaves in small grains and pasture.
METRICLUDE EXT	many	Metribuzin. PP, PRE and POST (certain states) for control of certain grasses and broadleaves in many crops.
PRAMITOL 25E	many	Prometon. Soil sterilant for non-cropland.
PRESIDUAL	Boundary	Metribuzin + S-Metolachlor. PP, PPI and PRE grass and broadleaf control in soybeans and potato.
RUGGED	many	2,4-D acid. POST for broadleaf control in many crops.
SECTION THREE	many	Clethodim - 3 lb. POST for grass control in many crops.
SHREDDER E-99	many	2,4-D ester. POST for broadleaves in many crops.
SIMAZINE 4L	Princep 4L	Simazine. PRE for annual broadleaves and grasses in corn, agriculture crops and orchards.
STERLING BLUE/CLARIFIER	Clarity	Diglycolamine salt of dicamba. POST for broadleaves in corn, sorghum, small grain, pasture and other crops.
TACOMA 1EC	Puma	Fenoxaprop. POST for grasses in wheat and barley.
TESTIFY	Verdict	Dimethenamid-p + saflufenacil for burndown and PRE grasses in corn, soy and sorghum
THREESIDUAL	SureStart II, Triple Flex	Acetochlor + Flumetsulam + Clopyralid. PP and PRE for grasses and certain broadleaves in corn.
TOTAL/TOTAL 2.3/TOTAL SL	Liberty 280 SL	For LibertyLink crops and labeled preplant and burndown uses; formulations and rates may differ - check labels..

EQUIVALENT PRODUCTS *continued*

Winfield United Product	Equivalent Products	Active Ingredient and Product Description
TRUST	Trifluralin 4EC, Treflan 4L	Trifluralin. PPI for annual and grasses and some broadleaves in alfalfa, cotton, dry bean, potato, soybean, sugarbeet, sunflower and other crops.
HERBICIDES *continued*		
WELD	Hat Trick, TruSlate Pro	MCPA + Fluroxypyr + Clopyralid. POST broadleaf control in wheat, barley, and oats.
2,4-D AMINE 4	many	2,4-D amine. POST for broadleaves in soybean, sugar cane, aquatic, small grain, pasture and other.
2,4-D LV4	many	2,4-D ester - 4lb. POST for broadleaves in corn, small grains, sorghum, others.
2,4-D LV6	many	2,4-D ester - 6 lb. POST for broadleaves in corn, small grains, sorghum, others.
2,4-DB 175	Butyrac 175; others	2,4-DB. POST for broadleaves in soybean and peanut.
2,4-DB 200	Butyrac 200; others	2,4-DB. POST for broadleaves in legumes, peanut, and soybean.
INSECTICIDES		
ADVISE FOUR	many	Imidacloprid. Insecticide for a variety of crops.
ARCTIC 3.2EC	Pyrethroids	Permethrin. Insecticide for a variety of crops.
BRACKET 97	Orthene 97	Acephate. Insecticide for cotton.
DELTA GOLD	DeltaGard	Deltamethrin. Insecticide for a variety of crops.
DIMATE 4E	Dimethoate 4E	Dimethoate. Insecticide for a variety of crops.
GRIZZLY TOO	Warrior II	Lambda-cyhalothrin. Insecticide for a variety of crops.
LAMBDA-CY AG	Warrior	Lambda-cyhalothrin. Insecticide for a variety of crops.
MALATHION 5	Malathion	Malathion. Insecticide for a variety of crops.
TUNDRA EC/BIFEN 2 AG GOLD	Capture/Brigade 2EC	Bifenthrin. Insecticide for a variety of crops.
TUNDRA LFC	Capture LFR	Bifenthrin. Insecticide for a variety of crops.
FUNGICIDES		
ALTIPRO	—	Azoxystrobin and Prothioconazole Fungicide premix for a variety of field crops.
EVERLON	Priaxor	Fluxapyroxad + Pyraclostrobin. Disease control in multiple crops.
ONSET 3.6L	Folicur	Tebuconazole. Fungicide for many crops.
PRAIZ	Bravo Weather Stik	Chlorothalonil. Fungicide for many crops.
PROTEGAM YLD	Stratego YLD	Prothioconazole + Trifloxystrobin. Fungicide for barley, chickpea, dry peas, lentils, soybean, and wheat.
RUSTEASE	Azure Xtra	Azoxystrobin + Cyproconazole. Fungicide for cereals, corn and soybean.
TETRABAN	Quadris	Azoxystrobin. Fungicide for many crops including corn and soybean late season disease control and plant health.
TOPAZ	Tilt	Propiconazole. Fungicide for a variety of crops.
SEED TREATMENTS		
10% MOLY LIQUID	Special Liquid Moly	Molybdenum. Seed treatment or foliar use.
WARDEN CEREALS II	Vibrance Extreme	Difenoconazole, Mefenoxam, Sedaxane. Seed treatment for barley, oats, rye, wheat and triticale.
WARDEN CEREALS HR	Rancona Crest	Imidacloprid, Metalaxyl and Ipconazole. Seed treatment for barley, oats, rye, wheat and triticale.
WARDEN CEREALS WR II	—	Thiamethoxam, Difenoconazole, Sedaxane, Mefenoxam, Fludioxonil. Seed treatment for barley, oats, rye, wheat and triticale.
WARDEN RTA	Apron MAXX	Mefenoxam and Fludioxonil. Seed treatment for soybeans.
STORED GRAIN PRODUCTS		
ACTELLIC 5E	—	Pirimiphos-methyl. Insect control in stored corn, popcorn and grain sorghum.
DRYACIDE 100	—	Diatomaceous earth. Insect control in stored grain.

* Equivalent products do not necessarily have identical formulations, a.i. concentrations, or use sites as WinField United products; always check the label.

Data contained herein is product information only and not to be construed as label instructions or directions for specific application. Please read and follow all label instructions pertaining to basic manufacturer's recommendations for rates and use of adjuvants as provided with the actual product package.

ACCUDROP

Drift Reduction Technology + Surfactant Spreader Sticker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Blend of high content of unsaturated fatty acid and low content of rosin acids, mixture of glycerol polyethylene glycol ricinolate with fatty acid esters of polyethylene glycol, and alcohol ethoxylate..... 98% Constituents ineffective as adjuvants..... 2% **Total 100%**	AccuDrop is a non-oil-based drift reducer and spray deposition aid designed to optimize pesticide performance across crop stages. This surfactant-based adjuvant controls droplet size and helps improve deposition to increase canopy penetration and coverage. AccuDrop is compatible with air-assisted nozzles and does not adversely impact spray patterns. To ensure crop safety, it does not contain nonylphenol ethoxylates (NPE) or methylated vegetable or seed oils (MSO).	3 fl oz/A

ADURO

Water Conditioner + Surfactant Spreader Sticker + Acidifier

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION (PER 100 GAL)
Monocarbamide dihydrogen sulfate, alkyl amine ethoxylate,1,2,3-trihydroxypropane ..... 80% Constituents ineffective as a spray adjuvants ..... 20% **Total 100%**	Aduro is a blend of surfactants, acidifiers and pH buffering agents, that improves spray solution characteristics for faster, better herbicide performance. Designed for use with glyphosate and herbicides containing glyphosate, Aduro reduces antagonistic effects of hard water cations and lowers pH to minimize the alkaline hydrolysis and increase solubility of certain pesticides. Aduro may also be used with other pesticides that benefit from water conditioning, wetting, spreading, sequestering, buffering or acidification.	With fully loaded glyphosate 2-4 pints With partial or unloaded glyphosate 4-8 pints General purpose 2-8 pints pH buffering and acidification only 1-2 pints *Use the higher end of rate range when weeds are large, tough or dense. Aerial applications should also use the higher end of the rate range.

AMS/2000

Water Conditioner + Drift Reduction Technology + Defoamer

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ammonium salts, Polyacrylamide polymer, and Siloxane 100% **Total 100%**	AMS 2000 is a highly refined dry ammonium sulfate (AMS) drift reducer and water conditioner designed to enhance pesticide efficacy and coverage in a 2-4 pounds per acre use rate. Its AMS formulation helps reduce antagonism in spray tank solutions that negatively impact herbicide efficacy. AMS 2000 also improves spray deposition to ensure droplets reach targeted plant surfaces. For convenient mixing, AMS 2000 disperses rapidly, can be mixed in cold water and contains anti-foam properties. It ships in premeasured packaging for precise application.	Use AMS 2000 at 17 pounds per 100 gallons Equivalency: 2% v/v liquid AMS = 17 pounds of AMS 2000 per 100 gallons of spray solution

AMSURF XTRA

Water Conditioner + Drift Reduction Technology + Surfactant Spreader Sticker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ammonium salts, polyol, alkyl polyoxyethylene sulfate, aryl sulfonate, polyacrylamide ..... 44.8% Constituents ineffective as spray adjuvants ..... 55.2% **Total ..... 100%** Surfactant Content 6.75%	"Amsurf Xtra is a multi-functioning liquid ammonium sulfate (AMS)-based water conditioner, surfactant and drift reduction agent. Its AMS formulation can help reduce antagonism in spray tank solutions that negatively impacts herbicide efficacy. Amsurf Xtra reduces fine droplets that result in spray drift and works to increase spray deposition for improved uptake by the targeted weed species. At 2.5 gallons per 100 gallons: • Delivers 8.5 lbs of ammonium sulfate. • Delivers 1 qt of surfactant blend. • Delivers an optimized rate of a drift reduction agent/ deposition aid.	• Standard: 2.5 gallons per 100 gallons • 1.25 to 5 gallons per 100 gallons* * Note: Inclusion below 2.5 gallons per 100 gallons may not offer optimum performance and rates above 2.5 gallons per 100 gallons may not be acceptable to all spray tips and pressures.

CHEMSURF/90

Surfactant Spreader Sticker + Defoamer

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Alkyl aryl polyoxyethylene glycol, sodium alkyl benzenesulfonate, poly glycerol fatty acid ester, sodium alkyl sulfonate ester, free fatty acids ..... 90% Constituents ineffective as spray adjuvants ..... 10% **Total ..... 100%** Surfactant Content 80%	Chemsurf 90 is a non-ionic surfactant that helps reduce surface tension for improved uptake on plant surfaces. This surfactant was designed for quick wetting to ensure even droplet distribution and increased coverage. It also helps improve humectancy for a better chance at uptake on plant surfaces. Chemsurf 90 contains a sticker agent to resist rewetting by dew, irrigation or rain. For easy mixing and use, it includes a defoamer to suppress spray tank foaming.	Ground, Air, CDA: 1/2 to 4 pints per 100 gallons of spray solution. Use enough CHEMSURF 90 to achieve good wetting, spreading and surface coverage without excessive run-off

CLASS ACT FLEX

Water Conditioner + Surfactant Spreader Sticker + Defoamer

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ammonium sulfate, high frutose corn syrup, substituted fatty alkyl ammonium, alkyl carboxylate and alkyl polyglucoside ..... 60.0% Constituents ineffective as spray adjuvant ..... 40.0% **Total ..... 100%** CORNSORB TECHNOLOGY.	Class Act Flex is a liquid, flexible rate spray tank additive for no- and low-load glyphosate-based herbicides. Designed for areas where hard water is of less concern, it contains less ammonium sulfate (AMS) water conditioner than its counterpart, Class Act® NG. Added CornSorb technology helps to improve pesticide uptake and performance on tough weeds. Class Act Flex contains a non-ionic surfactant that is designed to reduce surface tension for improved coverage. For convenient use, Class Act Flex contains defoamer and pre-dissolved AMS to prevent sedimentation and plugged nozzles.	Class Act Flex may be used at 1 to 4 gallons per 100 gallons of spray solution. 1 gallon contains 2.7 lb of AMS and 1 qt NIS.

CLASS ACT NG

Water Conditioner + Surfactant Spreader Sticker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ammonium sulfate, corn syrup, and alkyl polyglucoside ..... 50.5% Constituents ineffective as spray adjuvant ..... 49.5% **Total ..... 100%** CPDA CERTIFIED. CORNSORB TECHNOLOGY.	Class Act NG offers an easy-to-use formulation that combines CornSorb technology, a nonionic surfactant and ammonium sulfate (AMS) for water conditioning in a high-performance liquid premix. It is a low-foam adjuvant specially formulated for use with glyphosate, glufosinate, 2,4-D, dicamba and clethodim herbicides. CornSorb is a patented technology that increases herbicide uptake and efficacy. It may be used where NIS plus AMS is recommended.	Typically used at 2.5 gallons per 100 gallons of spray solution. 2.5 gallons contains 8.5 lb of AMS, and 2 qt NIS, 5 gallons contains 17 lb of AMS and 4 qt NIS.

CLASS ACT RIDION

Water Conditioner + Surfactant Spreader Sticker

ACTIVE INGREDIENTS

1,2,3-Propanetriccarboxylic acid, 2-hydroxy-, trisodium salt, dihydrate, High fructose corn syrup, Alkyl polyglycoside, Monocarbamide dihydrogen sulfate 34.7%
Constituents ineffective as spray adjuvant 65.25%
Total 100%

USES

Class Act Ridion is a non-ammonium sulfate (AMS) liquid water conditioner designed for use with dicamba-based herbicide technologies that require a non-AMS product. Class Act Ridion helps to reduce antagonism in spray tank solutions that limit herbicide efficacy. This product also contains a non-ionic surfactant that is designed to reduce surface tension for improved coverage, plus CornSorb® technology to help increase coverage and moisture uptake to maximize weed control.

RATES OF APPLICATION

Optimum use rates for Class Act Ridion is 0.75% v/v or greater. The labeled rate is 0.5-2% v/v

COMPLETE COMPATIBILITY

Compatibility + Acidifier

ACTIVE INGREDIENTS

Alcohol ethoxylate phosphate ester, isopropanol, dipropylene glycol monomethyl ether 60%
Constituents ineffective as spray adjuvant 40%
Total 100%

USES

Complete Compatibility is a spray tank additive that can reduce compatibility problems in liquid fertilizer and pesticide tank mixes. This liquid adjuvant can help prevent free ammonia in liquid fertilizer from creating un-sprayable or incompatible tank mixes to help prevent product loss. Complete Compatibility is designed to promote product suspension, reduce lumping and increase overall droplet coverage. By lowering the pH of spray solution, this utility adjuvant can also help delay decomposition to improve pesticide efficacy.

RATES OF APPLICATION

- Use 1• to 2 pints of COMPLETE COMPATIBILITY per 100 gallons of liquid nitrogen/pesticide tank mixture.
- Use 2 to 3 pints of COMPLETE COMPATIBILITY per 100 gallons of mixed fertilizer/pesticide tank mixture.
- Use 1 to 2 pints of COMPLETE COMPATIBILITY per 100 gallons of pesticide tank mixture.

COMPLETE COMPATIBILITY pH Recommended Use

Chart Starting pH

Desired pH	9	8	7	6
8	2	0	0	0
7	4	2	0	0
6	16	12	8	0
5	24	16	12	8

Oz. of COMPLETE COMPATIBILITY per 100 gallons of water

This chart is a guide to the approximate quantity of COMPLETE COMPATIBILITY required to reduce the pH of 100 gallons of water.

Instructions for use of chart:

1. Test the pH of the water to be used in your tank mix by using a pH test kit.
2. Determine the desired pH for the pesticide to be tank mixed. Typically, spray tank mixtures are most effective at pH's between 5 and 7.
3. Determine the approximate quantity of COMPLETE COMPATIBILITY to be added to each 100 gallons of the tank mix by reading across the chart from the starting pH and down to the desired pH on the left side.

COMPLEX

Surfactant Spreader Sticker

ACTIVE INGREDIENTS

Alkylphenol ethoxylate, alkylphenol polymerized resin, linoleic diethanolamide 23.03%
Constituents ineffective as spray adjuvant 76.97%
Total 100%

USES

Complex is a spreader/sticker and non-ionic surfactant that helps improve the efficacy of pesticide spray mixtures. It is designed to increase contact activity, penetration and adhesion to plant surfaces. As a surfactant, Complex can also reduce surface tension to promote uniform coverage and penetration of waxy leaf surfaces. Not for use with insecticides or fungicides in California.

RATES OF APPLICATION

COMPLEX is applied at the following rates:

Fungicides, acaricides, and insecticides	0.5-2 pints per 100 gallons
Herbicides - see label	1-3 pints per 100 gallons
Wettable powders	0.5-2 pints per 100 gallons

CORRAL POLY

Drift Reduction Technology

ACTIVE INGREDIENTS

Polyvinyl polymer (polyacrylamide)..... 30%
Constituents ineffective as adjuvant 70%
Total 100%

USES

Corral Poly is a liquid spray tank additive designed to improve spray deposition and reduce spray drift to help crop protection products reach targeted surfaces. Usable with the complete range of glyphosate formulations, as well as most water-soluble and wettable-powder crop protection products. This product is compatible with a variety of spray configurations.

RATES OF APPLICATION

DOSAGE:
Generally 1-8 ounces per 100 gallons of spray solution.
Cone or raindrop nozzles..... 1-3 oz.
Flat fan or flood nozzle..... 1-5 oz.
Off center nozzles..... 2-6 oz.
Spray gun (30-50 psi)..... 5-8 oz.

DESTINY HC

Oil Adjuvant

ACTIVE INGREDIENTS

Methylated soybean oil, sorbitan fatty esters, high fructose corn syrup..... 92%
Constituents ineffective as spray adjuvant 8%
Total 100%

CPDA CERTIFIED. CORNSORB TECHNOLOGY.

USES

Destiny HC adjuvant is a liquid high surfactant oil concentrate methylated soybean oil (HSOC-MSO) designed to optimize the performance of most post-emergent herbicides. Added CornSorb technology helps increase droplet spreading to improve absorption and uptake. It also helps increase droplet drying time to protect herbicides against environmental factors like evaporation. The highly concentrated formulation of Destiny HC enables it to improve herbicide weed control at half the use rate of standard MSOs.

RATES OF APPLICATION

Follow herbicide product label recommendations for MSO or COC oil rates, use with specific crops and application timing. Destiny HC may be used at rates that are less than or equal to the rates recommended on the herbicide label. The table below shows the appropriate rate of Destiny HC compared to standard oil rates on the herbicide label.

Label Rate for Oil Adjuvant Rate per acre	Equivalent Destiny HC Rate Rate per acre
1 pint	0.75-1 pint
1.5 pints	0.75-1.5 pints
1 quart	1 pint - 1 quart

Volume-to-Volume (V/V) Recommendations

Percentage v/v	Rate per 100 gallons
0.25	1 pint - 1 quart
0.5	1-2 quarts
1.0	2-4 quarts

DYNAMARK U.V. BLUE

Foam Marker + Colorant

USES

Dynamark U.V. Blue is a foam colorant/marker that can be added to spray tank solutions to help identify sprayed areas accurately. By eliminating swath, overlap, retreatment of missed areas and skips, Dynamark U.V. Blue helps enhance the application of sprays. This product is designed for use with industrial, forestry, spot allocation, soil sterilization, knapsack and other applications.

RATES OF APPLICATION

Spray Tank Volume	Amount of Dynamark Blue Spray Indicator
per 1 gallon	1 teaspoon
per 3 gallons	1-2 oz.
per 30 gallons	4-9 oz.
per 50 gallons	6-15 oz.
per 100 gallons	12-30 oz.

EXURO

Oil Adjuvant

ACTIVE INGREDIENTS

Soybean Oil, Methyl Ester..... 90%
Alkylphenol Ethoxylate Blend 10%
Total 100%

Surfactant Content 10%

USES

Exuro is a modified vegetable oil concentrate that helps promote herbicide absorption and penetration specifically in burndown and desiccation (moisture removal) applications to control tough-to-kill weeds. A crop-based adjuvant, Exuro can be used as a tank mix partner with a broad range of herbicides to kill kochia, lambsquarters and other tough weeds effectively.

RATES OF APPLICATION

EXURO should be applied at a rate of 1 to 2 pints per acre. Alternatively, EXURO can be applied at a rate of 1 gallon per 100 gallons or 1% v/v. Use the higher end of the rate on hard-to-control weeds or weeds under stress for optimum effectiveness.

FAST BREAK — Defoamer

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Dimethylpolysiloxane ..... 7.7% Methylated silicon..... 2.3% Inert Ingredients ..... 90% **Total 100%**	Fast Break is as a defoaming agent designed for use in spray solutions. Its highly effective silicone emulsion formulation is designed for use in most spray application equipment. Fast Break can optimize mixing and fill times and reduce material loss caused by foaming over spray tanks. Fast Break can also reduce the risk of unintended vegetation kills or contamination caused by foaming over.	**Preventative:** For foam reduction when mixing spray solutions, add FAST BREAK at the rate of 1 ounce per 100 gallons of solution. Water hardness, temperature and spray mixture may call for more or less FAST BREAK. **Curative:** If foaming should occur after spray mixture is in the tank, FAST BREAK used full strength can be applied to the surface for fast foam knock down.

FOAMINATOR DRY — Defoamer

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Dimethylpolysiloxane, polypropylene glycol,silicon dioxide ..... 15.5% Constituents ineffective as spray adjuvant ..... 84.5% **Total 100%**	A highly effective silicone emulsion, Foaminator Dry reduces material lost when spray tanks foam over. This product is a highly concentrated, free-flowing formulation that controls excessive foaming without interaction with spray mixture active ingredients. It is packaged in an easy-to-use shaker container and can be added through inductors or over the top. The dry formulation eliminates cold-weather storage concerns and provides a longer shelf life than liquid products. Foaminator Dry can be used in most agricultural/ horticultural spray tanks to eliminate foam. It can be introduced through induction systems or through the tank lid opening, and will not interact with any of the chemicals to which it is applied.	Use FOAMINATOR at the rate of ONE or TWO shakes per 100 gallons of spray solution. Water hardness, temperature and spray tank mixture may call for more or less. Adjust the rate until the desired control is achieved. If mixing products known to foam add FOAMINATOR to the partly water-filled tank first and agitate well before adding other products to the spray solution. If foaming should occur after spray mixture is in tank, FOAMINATOR can be applied directly to the surface of the spray solution for fast foam knockdown.

HEAT WAVE — Foam Marker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Surfactant blend ..... 77% 2-Butoxyethanol and ethanol ..... 23% **Total 100%**	Heat Wave is a concentrated, versatile blend of high-foaming surfactants and foam stabilizing agents. This product is formulated for longevity in hot, dry, and windy conditions and provides a reliable and easy to use means of identifying areas where crop inputs have been applied to reduce areas of double coverage or missed applications. Heat Wave will tolerate hard water conditions and is compatible with many marker dyes.	HEAT WAVE is a foaming agent designed for use in foam generating equipment used in field marking systems. Before using make sure the foam generator and hose lines are clean and free from residue by flushing with fresh water. The general use rate is one gallon HEAT WAVE, Foam Marking Concentrate, per 100 gallons of water (100:1 dilution). In soft water (<300 ppm hardness) a dilution rate of one gallon HEAT WAVE to 120 gallons of water – up to 160 gallons of water (120:1 or 160:1 dilution) will continue to provide satisfactory results. In water over 1000 ppm hardness a dilution ratio of 80:1 (one gallon per 80 gallons of water) is preferred for extended foam life. Mix HEAT WAVE into the foam tank when it is half full of water, then complete the filling to ensure thorough mixing. Note: Not for aquatic use.

INTERLOCK

Drift Reduction Technology

ACTIVE INGREDIENTS

Modified vegetable oil, polyoxyethylene sorbitan fatty acid esters, vegetable oil 100%
Total 100%

CPDA CERTIFIED.

USES

InterLock is a crop-based adjuvant that improves spray deposition on intended targets and reduces spray drift. InterLock works effectively with herbicides, fungicides, insecticides, desiccants and defoliants to reduce the number of fine particles in the spray pattern without thickening the spray. By keeping more spray droplets within the most effective size range, InterLock helps improve coverage, increase canopy penetration, and reduce drift and evaporation of pesticides, whether they are applied by ground or air. InterLock is unique and does not negatively affect spray pattern even when using air-assisted type nozzles. Along with good judgment and the proper selection and use of spray equipment, InterLock can help ensure the maximum performance of pesticides.

RATES OF APPLICATION

Rate of InterLock	Spray Solution Gallons per Acre (GPA)
4-6 fl oz/A	5 to 25 GPA
8-10 oz/A	25 to 50 GPA
10 oz/A	> 50 GPA

The higher rate of InterLock, within the range listed in the above table, is recommended for when using higher rates of pressure or increased GPA of the spray solution. Before mixing pesticides with InterLock, conduct a jar test to determine compatibility.

Deposition Aid:
For use as a deposition aid only with insecticides and fungicides: 2-4 oz/A for spray solutions of 5-25 GPA.

Aquatic Use:
InterLock can be used for aquatic applications including surface water. Always follow tank mix product labels for specific directions and precautions. InterLock use rate of 4-6 oz/A. Do not exceed 6 oz/A.

MIXING

Add InterLock after pesticides or other adjuvants are added but prior to complete filling of the spray tank.
For Direct Injection: InterLock can be applied through injection systems where INTERLOCK is added to one of the system's chemical injection tanks. An in-line mixing chamber is recommended.

- Step 1 Add InterLock to the chemical injection tank.
- Step 2 Pump the correct amount of InterLock into the line.
- Step 3 Pump the proper amount of water, pesticide, and other adjuvants into the line for mixing with InterLock and chemicals becore going into the spray boom.

Do not mix InterLock with Superb HC, Class Act NG in an induction system or container when all the products are undiluted. Once mixed in water, all the products are compatible in any mixing order.

MASTERLOCK

Drift Reduction Technology + Surfactant

ACTIVE INGREDIENTS

Modified vegetable oil, polyoxyethylene sorbitan fatty acid ester, vegetable oil, and soybean oil, ethoxylated..... 100%
Total 100%

USES

MasterLock optimizes droplet size to reduce drift potential and help ensure more product penetrates the canopy. It also contains a surfactant to cover more leaf surface area. MasterLock works effectively with fungicides and insecticides and may be used with herbicides and other crop protection products.

RATES OF APPLICATION

Prior to use, read all directions on this label.

Rate of MASTERLOCK	Application Method
6.4 oz./A	Ground
1% v/v (but not <4 oz./A)	Aerial

NOBLE

Oil Adjuvant

ACTIVE INGREDIENTS

Mixed fatty acid methyl esters of vegetable oil and alkylphenol ethoxylate 92.5%
Constituents ineffective as spray adjuvants..... 1%
Total 100%

USES

Noble is a blend of methylated seed oil, surfactants and emulsifiers for use with post-emergence herbicides to help improve uptake and performance of crop protection products that require methylated seed oil (MSO) or crop oil concentrate (COC). Noble can help increase droplet adhesion and coverage, slow dry time, and aid penetration of spray mixtures on plant leaves to improve pesticide uptake and efficacy. Formulated for use under hot, dry weather conditions in which weeds are most challenging to control, Noble helps boost herbicide performance on large weeds with waxy plant surfaces.

RATES OF APPLICATION

Use at 1-2 pints per acre with postemergence herbicides or as directed by the herbicide label. The 2 pint rate may be required if weed populations are extreme or if plants are stressed at the time of treatment. Noble may be used at 1-2 pints per acre with insecticides, or at a final solution concentration of 0.125% to 1% (1 pint to 4 quarts per 100 gallons). Always add Noble last to the spray mix and continue agitation, or follow specific tank filling and mixing information provided on the pesticide label. Refer to the pesticide label for additional recommendations or precautions.

ONTARGET

Drift Reduction Technology + Surfactant + Defoamer

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Propietary Surfactant Blend:..... 100% **Total 100%**	OnTarget is a drift reduction adjuvant (DRA) formulated for use with dicamba herbicide chemistries. OnTarget helps reduce driftable fines and improve canopy penetration of dicamba spray applications. OnTarget contains a surfactant to help improve herbicide efficacy by enhancing droplet spreading, and also contains anti-foam properties. OnTarget is designed for use with very coarse, extremely coarse and ultra coarse nozzles to apply pesticides by ground or air.	0.5% v/v

OPTIFY A

Water Conditioner + Surfactant Spreader Sticker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION		
Ammonium sulfate, polyols, alkyl polyoxyethylene sulfate and aryl sulfonate..... 46.5% Constituents ineffective as spray adjuvants ..... 53.5% **Total ..... 100%** Surfactant Content 5%	Optify A adjuvant is a convenient, versatile blend of liquid ammonium sulfate (AMS) water conditioner and non-ionic surfactant designed to optimize herbicide performance. It is specifically designed for use in tank mixtures containing glyphosate and glufosinate, and on crops tolerant to those herbicides. The AMS in Optify A can help overcome issues with hard water and tough to control weeds, especially at higher use rates. It enhances herbicide movement through the cuticle on the leaf surface and helps herbicide formulations work better by guarding against hard water antagonism.	**Gallons of OPTIFY A per 100 gallons (v/v) of water**	**Quarts/100 gallons Non-ionic Surfactant (NIS)**	**Pounds/100 gallons Ammonium Sulfate (AMS)**
		1.25 gallons	1 pint	4.25 lbs. (0.5% v/v)
		2.50 gallons	1 quart	8.50 lbs. (1% v/v)
		5.00 gallons	2 quarts	17.0 lbs. (2% v/v)

OPTIFY D30

Water Conditioner + Surfactant Spreader Sticker + Drift Reduction Technology

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ammonium sulfate, D-glucopyranose, oligomeric, C10-16-alkyl glycosides, N,N-dimethyl-n-decylamine oxide ..... 40.25% Constituents ineffective as spray adjuvants ..... 59.75% **Total 100%**	Optify D30 is a convenient, versatile blend of liquid ammonium sulfate (AMS) water conditioner, surfactant and drift reduction technology. Use Optify D30 to enhance the performance of tank mixtures containing glyphosate and glufosinate, for use on crops tolerant to those herbicides. The AMS in OPTIFY D30 can help overcome issues with hard water and tough to control weeds, especially at higher use rates. Where off target drift is a concern, Optify D30 provides hard-working drift control that work across a range of application conditions.	1-5 gallons per 100 gallons of water Use 2.5 gallons per 100 gallons to deliver 8.5 pounds AMS per 100 gallons and 0.25% NIS 1 gallon per 100 gallons can be used with soft water and when weeds are small

OPTIFY HSCOC

Oil Adjuvant

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Soybean Oil, Methyl Ester..... 60% Polyol Fatty Acid Esters, Polyethoxylated Derivatives ..... 40% **Total ..... 100%** Surfactant Content 40%	Optify HSCOC is a high surfactant oil concentrate crop oil concentrate (HSOC-COC) that helps increase contact activity, leaf penetration, and uniform coverage of pesticides at half the use rate of conventional crop oils. It works to increase spray penetration while reducing droplet evaporation and is designed for use with many pesticides calling for oil concentrate. Optify HSCOC has a convenient, concentrated formulation that requires less bulk storage and space on field loading equipment. It is designed for use with a broad range of pesticides where an oil concentrate adjuvant is recommended. Always follow herbicide label recommendations. Care should be taken in treating sensitive crops during drought stress, high temperatures and high humidity.	OPTIFY HSCOC should be applied at a rate of 4 pints per 100 gallons or 0.5% v/v in ground, aerial, low volume or CDA applications. If conventional crop oil concentrate is recommended at a rate of 1 quart per acre replace with OPTIFY HSCOC at a rate of 1 pint per acre. OPTIFY HSCOC rates are generally one half the rate of conventional crop oil concentrates.

OPTIFY HSMSO

Oil Adjuvant

ACTIVE INGREDIENTS

Soybean Oil, Methyl Ester..... 60%
Fatty Acid, Fatty Acid Ethoxylate, Alkylphenol Ethoxylates, and Alcohol Ethoxylates..... 40%
Total 100%

Surfactant Content 25%

USES

Optify HSMSO is a high surfactant oil concentrate methylated seed oil (HSOC-MSO) that helps improve droplet spreading, cuticle penetration, and spray droplet sizing of glyphosate and its tank mix partners. It contains surfactants designed to improve leaf coverage and promote more rapid uptake of herbicides like glyphosate and its tank-mix partners. Optify HSMSO also contains an emulsifier, which enables more oil to interact with the leaf surface at half the use rates of traditional methylated seed oils.
Optify HSMSO can be used with a broad range of herbicides, fungicides, and insecticides where methylated seed oil-based adjuvants are recommended.

RATES OF APPLICATION

OPTIFY HSMSO should be applied at a rate of 1-3 quarts per 100 gallons (0.25 – 0.75% v/v) in ground, aerial, low volume or CDA applications.
If conventional methylated seed oil concentrate is recommended at a rate of 1-2 pints per acre replace with OPTIFY HSMSO at a rate or 0.5-1 pint per acre. OPTIFY HSMSO rates are generally one half the rates of conventional methylated seed oil concentrates.

OPTIFY L27

Water Conditioner + Surfactant Spreader Sticker + Acidifier

ACTIVE INGREDIENTS

Saccharides, alkyl polyglucoside, ammonium sulfate 65%
Constituents ineffective as spray adjuvants..... 35%
Total 100%

CPDA CERTIFIED. CORNSORB TECHNOLOGY.

USES

Optify L27 is a convenient, versatile blend of water conditioning acidifier, ammonium sulfate (AMS), and nonionic surfactant designed to optimize pesticide performance at an easy low use rate. Use Optify L27 to enhance the performance of tank mixtures containing glyphosate, for use on glyphosate-tolerant crops. Acidifier products such as Optify L27 are best used in soft water areas, when weed control is timely, and weeds are not hardened off.

RATES OF APPLICATION

Acidifying Agent: Add OPTIFY L27 at the rates listed below to reduce spray solution pH. Use the higher rate for highly buffered waters or for lowering below 5 pH.

Beginning pH	Suggested rate per 100 gallons
< 8	4-8 fl oz
8	6-16 fl oz
9	12-24 fl oz
10	16-32 fl oz

Spreader, Penetrator:
Herbicides, Insecticide and Fungicides – 2 to 6 pints per 100 gallons of spray solution.
Foliar Nutrients – 2 to 6 pints per 100 gallons of spray solution.
Water Conditioner: OPTIFY L27 may be used at a rate of 3 to 6 pints per 100 gallons of spray solution. The standard use rate is 4 pints per 100 gallons. Use 4 or more pints of OPTIFY L27 in spray water that has less than 300 ppm hardness. Use 6 pints of OPTIFY L27 in spray water that has less than 500 ppm hardness. It is strongly suggested that a CLASS ACT brand adjuvant be used in spray solutions containing hard water which is 500 ppm or greater.
Three quarts of OPTIFY L27 contain the equivalent of 1.13 pounds of ammonium sulfate.
Under stressful environmental conditions, such as hot and dry weather or if greater populations of hard to control weeds are evident, the higher rates of OPTIFY L27 should be used or a CLASS ACT adjuvant should be substituted.

OPTIFY Z37

Water Conditioner + Oil Adjuvant + Surfactant Spreader Sticker + Acidifier

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Methylated seed oil, alcohol ethoxylate phosphate ester and branched alkyl phenol ethoxylate ..... 100% **Total 100%**	Optify Z37 adjuvant is a convenient, versatile blend of water conditioning, acidifier, surfactant, and methylated seed oil (MSO) designed to optimize performance of a wide range of pesticides and tank mixtures. Use Optify Z37 to boost burndown applications and to enhance the function of combinations of glyphosate + oil-loving herbicides. Acidifier products such as Optify Z37 are best used in soft water areas, when weed control is timely, and weeds are not hardened off.	Ground: 2-4 quarts per 100 gallons of water for use as oil + water conditioner. See label for use as acidifying buffer or for aerial applications.

OPTIFY 4X

Water Conditioner + Surfactant Spreader Sticker + Drift Reduction Technology + Volatility Reduction Agent

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Proprietary surfactant blend using a dual-action non-AMS water conditioner. ..... 100% **Total 100%**	OPTIFY 4X adjuvant is a convenient, versatile blend of a non-AMS water conditioner, non-ionic surfact, drift reduction agent (DRA) and volatility reduction agent (VRA) to help manage hard water antagnoism of glyphosate and does not contribute to volatility of dicamba. Enhances spreading, penetration and uptake to improve weed control. Approved DRA for many tank mixtures. Approved VRA for dicamba volatility reduction. Formulated without nonylphenol ethoxylate (NPE).	Ground: 1.75 to 1.85% v/v

PERMEATE

Surfactant Spreader Sticker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ethoxylated Proprietary Surfactant..... 100% **Total 100%**	Permeate adjuvant is a non-ionic surfactant plus humectant that helps optimize application coverage by reducing surface tension and increasing wetting/spreading for improved pesticide uptake. It can be applied whenever a pesticide label allows for the addition of a non-ionic surfactant. Formulated without nonylphenol ethoxylate (NPE).	0.5-4 pt/100 gallons For most applications use 0.25% v/v or 1 quart per 100 gallons

POWERLOCK

Drift Reduction Technology + Surfactant Spreader Sticker

ACTIVE INGREDIENTS

Modified vegetable oil, alkyl phenol ethoxylate, vegetable oil..... 95%
Constituents ineffective as spray adjuvant 5%
Total 100%

CPDA CERTIFIED

USES

PowerLock combines the deposition aid, canopy penetration and drift reduction properties of InterLock adjuvant with Preference non-ionic surfactant in one premix formulation to reduce measuring and mixing time. PowerLock helps optimize pesticide performance by improving deposition and increasing canopy penetration. At higher rates, it also reduces drift. In addition, PowerLock reduces surface tension of spray droplets to improve wetting of leaf surfaces and aid pesticide absorption by the leaves and foliage. PowerLock is unique and does not adversely affect spray pattern even when using air-assisted type nozzles. Along with good judgment and the proper selection and use of spray equipment, PowerLock can help ensure the maximum performance of pesticides.

RATES OF APPLICATION

Rate/Acre	Pesticide
5-8 fluid ounces	Insecticides, Fungicides
5-8 fluid ounces	Herbicides, Defoliants: for deposition and canopy penetration
5-8 fluid ounces	Herbicides, Defoliants: for reducing drift

Do not add POWERLOCK in excess of 1.6% of the finished spray volume. POWERLOCK can be applied by ground or air. Also, it can be used for aquatic applications including surface water. It is recommended that fungicides and insecticides by applied in a minimum of 5 gpa. Do not use less than 3 gpa.

MIXING

Add PowerLock after pesticides or other adjuvants are added, but prior to complete filling of the spray tank.
Direct Injection: PowerLock can be applied through injection systems when it is added to one of the system's chemical injection tanks. An in-line mixing chamber is recommended.

- Step 1 Add PowerLock to the chemical injection tank.
- Step 2 Pump the correct amount of InterLock or PowerLock into the line.
- Step 3 Pump the proper amount of water, pesticide, and other adjuvants into the line for mixing with PowerLock and chemicals becore going into the spray boom.

Do not mix PowerLock with Class Act NG, or Superb HC, in an induction system or container when all the products are undiluted. Once mixed in water, all the products are compatible in any mixing order.

PREFERENCE

Surfactant Spreader Sticker + Defoamer

ACTIVE INGREDIENTS

Alkylphend ethoxylate, sodium salts of soya fatty acids, isopropyl alcohol..... 89.5%
Inert Ingredients..... 10.5%
Total 100%

USES

Preference is a non-ionic surfactant plus antifoaming agent that helps reduce surface tension on the leaf and slow the rate of evaporation for better uptake of pesticides. Use Preference whenever a pesticide label allows for the addition of a non-ionic surfactant.

RATES OF APPLICATION

Surfactants are generally recommended on a volume per volume basis. For example:

%		Volume
0.125% v/v	= 1 pint per	100 gal spray solution
0.250% v/v	= 1 quart per	100 gal spray solution
0.500% v/v	= 2 quart per	100 gal spray solution
1.000% v/v	= 1 gallon per	100 gal spray solution

Labeled Rates	Preference/100 gallons
Insecticides, Miticides, Fungicides:	0.5-2 pt
Herbicides:	1-4 pt
Defoliants, Desiccants:	1-4 pt
Fertilizers, Micronutrients:	0.5-2 pt
Glyphosates w/o surfactant:	8 pt
Aquatic:	1-2 qt

PROTANK LIQUID CLEANER

Spray Tank Cleaner

ACTIVE INGREDIENTS

Proprietary blend of phosphate and carbonate salts, sequestering agents, surfactants and solvents..... 100%
Total 100%

USES

- Removes Scale and Dirt
- Protects Pump and Valves
- Reduces Strainer Clogging
- Minimizes Nozzle Wear

RATES OF APPLICATION

FOR LARGE TANKS: 100-300 gallons: Close boom valve and add 50 gallons of water to tank, then turn on agitation and add one pint of PROTANK LIQUID CLEANER. PROTANK LIQUID CLEANER goes quickly into solution, allowing you to circulate the liquid through the valves, hoses and pump by opening the bypass valve. Rinse tank for 3 minutes following same procedure using water only.
FOR SMALLER TANKS: Fill tank half full of water and use 1 ounce or more for each 3 gallons of tank's volume. When using PROTANK LIQUID CLEANER to clean tanks left standing or containing built-up residue from extended use, allow the cleaning solution longer time to act

SILKIN

Surfactant Spreader Sticker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Alkylphenol ethoxylate, polyether-modified polysiloxane, and propylene glycol ..... 99% Constituents Ineffective as adjuvant ..... 1% **Total 100%**	Silkin is an organo-silicone surfactant designed for water-based pesticide applications. This "super wetter" product helps promote fast-spreading, uniform distribution and absorption of spray on plant surfaces. Silkin's organo-silicone base creates lower surface tension than conventional non-ionic surfactants, promoting better coverage and allowing lower use rates compared to some other surfactants. Enhanced cohesion and penetration of crop protection products makes Silkin especially cost-effective. Silkin is compatible with most herbicides, insecticides, fungicides and fertilizer products. It's also recommended for use with non-selective herbicides, desiccants and defoliants.	Herbicides: 0.75-4 pt/100 gal; Desicants: 0.75-4 pt/100 gal; Insecticides, Fungicides, Fertilizers, Micronutrients: 0.25-2 pt/100 gal

SPEEDWAY

Water Conditioner

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Potassium salts of hydroxyl carboxylic, phosphoric, and polyacrylic acids and amine phosphate..... 50% Constituents ineffective as spray adjuvants..... 50% **Total ..... 100%** Surfactant Content: 26%	Speedway is a water conditioner concentrate that can replace ammonium sulfate (AMS) in glyphosate applications. Speedway is designed to neutralize metal cations in hard water to prevent spray tank antagonism that can make glyphosate less effective. Although Speedway contains a spray activator technology, it cannot be used as a substitute when a pesticide label calls for a surfactant. Speedway is compatible with most ammonium nitrate sources, including 32-0-0, 10-34-0 and AMS. In some cases, AMS can be added to the spray tank in addition to Speedway to meet specific pesticide label requirements.	General Use, pH Reduction & Buffering: Standard: 1 quart per 100 gallons of water Ground/Air Range: 1-6 pints per 100 gallons of water For severe hard water conditions or to maximize pesticide activity Ground/Air: 3-6 pints per 100 gallons of water. Use a minimum of 1/2 pint per acre. Use higher rates of SPEEDWAY NF in areas where the water has a high mineral content.

STRIKELOCK

Oil Adjuvant + Drift Reduction Technology

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Polyglyceryl phthalate ester of coconut oil fatty acids and methylated soybean oil..... 100% Constituents ineffective as spray adjuvants..... 0% **Total 100%**	StrikeLock is a high surfactant oil concentrate methylated seed oil (HSOC-MSO) plus drift and deposition aid designed to improve the performance of oil-loving herbicides. StrikeLock helps optimize pesticide performance by improving deposition and coverage while reducing drift and evaporation by ground or air. This product allows for quicker and more complete uptake and absorption of herbicides, insecticides and fungicides compared to traditional oil concentrates or non-ionic surfactants, especially on oversized and stressed weeds. StrikeLock is unique and does not negatively affect spray pattern even when using air-assisted type nozzles. StrikeLock can help ensure the maximum performance of pesticides.	STRIKELOCK may be used at rates that are less than or equal to the MSO rates, and similar to HSOC rates, recommended on the pesticide label. The suggested use rate for STRIKELOCK is 0.5% v/v or 8 ounces per acre. Do not use less than 6.4 ounces per acre.

SUPERB HC

Oil Adjuvant + Surfactant Spreader Sticker

ACTIVE INGREDIENTS

Phytobland paraffinic oil, high fructose corn syrup, polyoxyethylene, sorbitan fatty esters.....92%
Constituents ineffective as spray adjuvant.....8%
Total 100%

CPDA CERTIFIED. CORNSORB TECHNOLOGY.

USES

Superb HC is a high surfactant oil concentrate crop oil concentate (HSOC-COC) that contains a blend of petroleum oil and a non-ionic surfactant. Superb HC also contains CornSorb, a patented technology that increases herbicide uptake and efficacy. Superb HC can be used at half the rate of traditional crop oil concentrates while providing comparable performance. Superb HC is compatible with glyphosate and may be used with many postemergence products that recommend the use of a crop oil concentrate.

RATES OF APPLICATION

Generally used at 0.5 gallon per 100 gallons of spray solution.

Conventional Crop Oil Concentrate Label Rates	SUPERB HC Equivalent Rates
1 quart per acre	1 pint per acre
1 gallon per 100 gallons	4 pints per 100 gallons
2-4 quarts per 100 gallons	2-4 pints per 100 gallons
1-2 gallons per 100 gallons	4-8 pints per 100 gallons

NOTE: For spray volumes below 12.5 gallons per acre use SUPERB HC at 1 pint per acre.

MIXING:

Fill the spray tank one half full of water. Add the required amount of pesticide and AMS, if required, while agitating. Add remainder of water. Be sure to allow sufficient time for Ammonium Sulfate Solutions and DF formulations to solubilize. Add the recommended amount of SUPERB HC last and continue agitation until completion of spraying. Adding a nitrogen source such as UAN or AMS increases performance.

SUPERLOCK

Oil Adjuvant + Drift Reduction Technology

ACTIVE INGREDIENTS

Proprietary surfactant mixed with phytobland oil
Total 100%
Surfactant content 25%

USES

SUPERLOCK adjuvant is a high surfactant oil concentrate crop oil concentrate (HSOC-COC) with a built-in oil emulsion drift and deposition aid. SuperLock has flexible use to improve pesticide performance with herbicides like glufosinate, 2,4-D, mesotrione, clethodim and others. SuperLock helps improve weed control by increasing on-target sprays through drift reduction and herbicide activity with an nonylphenol-ethoxylate (NPE) free high surfactant crop oil system. Do not use SuperLock when the pesticide label specifically requires MSO.

RATES OF APPLICATION

Label Rate for Conventional Oil Adjuvant Rate per acre	Equivalent SuperLock Rate Rate per acre
1 pint	8-12 fl oz
1.5 pints	12-16 fl oz
1 quart	16 fl oz

Percentage v/v	Rate per 100 gallons
0.5	64 fl oz
1.0	64-128 fl oz

MIXING:

Always add SUPERLOCK adjuvant to the spray mix last and continue agitation or follow specific tank filling and mixing information provided on pesticide labels. Refer to pesticide labels for additional recommendations or precautions.

TRANSFIX

Surfactant Spreader Sticker

ACTIVE INGREDIENTS

Beta pinene polymer..... 96%
Constituents ineffective as adjuvant 4%
Total 100%

USES

Transfix is a sticking agent that helps pesticides and micronutrients adhere to leaf surfaces to enhance penetration. Its economical pinene formula maintains pliability and maintains coverage as leaves grow. For ease of use, Transfix mixes easily with most crop protection products and foliar micronutrients. Application can also help reduce runoff losses resulting from rain or irrigation.

RATES OF APPLICATION

To increase the efficiency of insecticidal, fungicidal and hormonal herbicide sprays, use 4-6 oz TRANSFIX per acre.
For use in air blast or hydraulic gun type sprayers, use at the rate 4-6 oz per 100 gallons of water. When applied by aircraft, use at the rate of 4-6 oz per acre for all applications.
To ensure maximum absorption of Foliar Nutrient Sprays, use 4 oz of TRANSFIX per acre.

ULTRALOCK

Drift Reduction Technology

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION	MIXING:
Methyl ester of fatty acids, polyoxyethylene sorbitan fatty acid ester vegetable oil .....100% **Total 100%**	UltraLock spray adjuvant is an all-purpose drift and deposition aid designed to address herbicide resistance and enhance drift prevention for weed control. Derived from crop-based oil, UltraLock considerably reduces the number of driftable fines with superior handling and spraying characteristics that enhanced herbicide efficacy without the hassle. Extensive wind-tunnel testing with fine and ultra-coarse nozzles, tank-mix compatibility tests, and field research confirms that UltraLock provides a single solution for all your DRT and DRA needs.	**Rate of UltraLock** / **Spray Solution** 4-6 fl oz/A — 5 to 25 Gal/Ac. 8-10 oz/A — 25 to 50 Gal/Ac. 10 oz/A — > 50 Gal/Ac. The higher rate of UltraLock, within the range listed in the above table, is recommended for when using higher rates of pressure or increased GPA of the spray solution. Before mixing pesticides with UltraLock, conduct a jar test to determine compatibility.	Prior to use, read and follow all directions on the UltraLock label and on the label of the tank mix partner(s). The tank mix partner(s) label for specific usages and restrictions has precedence over UltraLock's labeled Directions For Use. Add UltraLock after pesticides or other adjvuants are added but prior to complete filling of the spray tank. Maintain agitation at all times until the contents of the tank are sprayed out.

VALCHECK III

Water Conditioner + Drift Reduction Technology

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Proprietary blend of volatility reducing agent, water conditioning agent and drift reduction polymer ..... 100.0% **Total 100%**	Valcheck III adjuvant is a non-AMS water conditioner, drift reduction agent (DRA) and volatility reduction agent (VRA) that manages hard water antagonism of glyphosate and does not contribute to volatility of dicamba. Meets the DRA and VRA requirements for many dicamba applications.Always check the manufacturers' websites for recent tank mix approvals.	1.4% v/v minimum use rate

VALCHECK 80/20

Surfactant Spreader Sticker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Alcohol ethoxylate and alkyl phenol ethoxylate .... 80.0% Constituents ineffective as a spray adjuvant ..... 20.0% **Total 100%**	Valcheck 80/20 is a general purpose, low foam 80-20 nonionic surfactant that meets label requirements. It is designed for quick wetting, uniform droplet distribution, and increased spray retention on leaf and stem surfaces. Valcheck 80/20 incorporates wetting and penetrating characteristics that allow for more uniform spray coverage without excessive run-off of the spray. Care must be taken in treating crops during periods when plants are subjected to drought stress, high temperatures, and high humidity.	1-2 pints per 100 gallons of water

VALCHECK AMS

Water Conditioner

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ammonium sulfate ..... 34% Constituents ineffective as adjuvants..... 66% **Total 100%** 7-0-0-8S	Valcheck AMS is a liquid ammonium sulfate (AMS) solution designed to increase herbicide performance by acting as a water conditioner. Valcheck AMS can help reduce antagonism in spray tank solutions that negatively impact herbicide efficacy.	Each gallon of VALCHECK AMS contains 3.4 pounds of ammonium sulfate. To meet various label recommendations include: • 2.5 gallons VALCHECK AMS per 100 gallons to equal 8.5 pounds of ammonium sulfate per 100 gallon. • 3 quarts per acre of VALCHECK AMS to equal 2.5 pounds of ammonium sulfate per acre. 1.2 quarts of VALCHECK AMS to equal 1 pound of ammonium sulfate.

VALCHECK AMS + DRT

Water Conditioner + Drift Reduction Technology

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Ammonium sulfate ..... 34% Acrylamide sodium acrylate linear copolymer blend ..... 15% Constituents ineffective as adjuvants ..... 51% **Total 100%**	Valcheck AMS+DRT is a liquid ammonium sulfate (AMS) complex water conditioner with built-in drift reducer designed to enhance pesticide uptake and coverage. The liquid AMS formulation can help reduce antagonism in spray tank solutions that negatively impact herbicide efficacy. Valcheck AMS+DRT works to control droplet size to reduce spray drift so droplets reach targeted weeds and for optimal plant absorption.	To meet various label recommendations include: • 2.5 gallons VALCHECK AMS + DRT per 100 gallons to equal 8.5 pounds of ammonium sulfate with a moderate amount of deposition agent to reduce spray drift. • 5 gallons VALCHECK AMS + DRT per 100 gallons to equal 17 pounds of ammonium sulfate with a full amount of deposition agent to reduce spray drift.

VALCHECK COC

Oil Adjuvant

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Mineral oil ..... 83.0% Secondary alcohol ethoxylate ..... 17.0% **Total 100%**	Valcheck COC is a non-ionic blend of highly refined paraffinic crop oil and surfactant designed to optimize the performance of certain herbicides in post emergence applications. The addition of this product to the spray tank utilizes the penetrating, non-evaporating properties of a paraffinic crop oil and the wetting and dispersing characteristics of a surfactant blend. When used as directed, Valcheck COC increases the activity of herbicides by aiding in the deposition, absorption and retention of active ingredients on leaf and stem surfaces.	1-4 quarts in 15-50 gallons of water. Do not exceed 2.5% volume of spray solution. Refer to herbicide label for specific crop and use rates.

VALCHECK FOAM MARKER

Foam Marker

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Blend of sodium alkyl polyoxyethylene sulfate and sodium alkyl sulfate ..... 38% Inert Ingredients ..... 62% **Total 100%**	Valcheck Foam Marker is a versatile blend of high foaming surfactants and foam stabilizing agents. It provides a reliable and easy way to identify areas where crop inputs have been applied and to reduce areas of double coverage or missed applications. Valcheck Foam Marker is a concentrated formulation with a 100-to-1 use rate.	Use one gallon VALCHECK FOAM MARKER per 100 gallons of water (100:1 dilution) when water source contains between 300 and 1000 ppm hardness. In soft water, or to produce less voluminous foam, increase dilution rate up to a maximum of 160:1. Water temperatures between 25-80° F will not affect foam quality; do not adjust the dilution ratio in this temperature range. In extremely difficult situations such as water hardness above 1000 ppm or water temperature greater than 80° F, reduce the ratio to 80:1 or less if required. The foaming power of this unique formulation is virtually unaffected by water hardness, making expensive water softeners unnecessary. For the grower, this means consistent and reliable results without concern for changing weather or water conditions.

VOLT-EDGE, A VAPORGRIP XTRA AGENT

Volatility Reducing Agent

ACTIVE INGREDIENTS	USES	RATES OF APPLICATION
Potassium hydroxide/Ethanoic acid ..... 50.0% Constituents ineffective as spray adjuvants ..... 50.0% **Total 100%**	Volt-Edge, a VaporGrip Xtra Agent is a volatility reducing agent (VRA) designed for dicamba applications that require a VRA. VRAs help reduce dicamba volatility and are part of the label requirements for many dicamba registrations. The use of Volt-Edge, a VaporGrip Xtra Agent does not replace an approved drift reduction adjvuant (DRA).	20 fl oz/A minimum use rate, for 15 GPA water carrier rate. See label for product use rates at other carrier rates.

2026 BIOVERTIFIED PRODUCT LIST

Using market analysis, controlled environment and field research, operational factors and financial assessment, the WinField United Bioverified designation aims to identify biological products on the market with high potential to perform. This list is updated periodically as we learn more about product performance through continued biological product evaluation and research.

PRODUCT	DESCRIPTION	KEY CROPS & APPLICATION TIMING	RATE RANGE
ASCEND2®	An auxin-dominant unique blend of three PGRs with patent protection. Specifically designed for in-furrow use on corn that leads to larger root mass and quicker emergence.	Corn: At Planting, In-Furrow	4.7-6.3 fl oz/A
ASCEND® SL	Use foliar to enhance vegetative growth. When used foliar on soybeans, petiole length and trifoliate size are increased as well as increased flowering and pod retention into reproduction stages.	Corn: Foliar , V3-VT Soybean: Foliar, R1-R3; Cotton: Foliar, Match head square through boll	4.7-6.3 fl oz/A
ASCEND® ST3™	An auxin-dominant unique blend of three PGRs with patent protection. Specifically designed for seed treatment use. Inoculant friendly with a low use rate for optimal handling & drying.	Soybean & Cereals: Seed Treatment	1 fl oz/cwt
DASH™ PBC DASH™ PBS	Planter box seed treatments that provide seed lubrication and microbial benefits. Includes 8 synergistic strains and amino acids to support microbial growth, nutrient release, germination and early plant vigor.	Corn & Soybean: Planter Box Seed Treatment	0.5 oz/unit
HEADS UP®	Use as a preventative measure to help manage against disease such as Pythium, White Mold and Sudden Death Syndrome	Soybean: Seed Treatment	0.5 fl oz/cwt
SOURCE® DC	Synthetic Strigolactone that helps stimulate 200+ beneficial soil microbes responsible for N-fixing and P-solubilizing.	Corn: Foliar, V4-V6, VT-R1; Cotton: Foliar Squaring – Mid-bloom	1 fl oz/A
TRUROW™ ATTACK	Plant growth regulator and yield stimulant that helps increase available sugar and seed size for higher yield potential.	Corn: Foliar, VT-R1 (32 oz/A) Soybeans: Foliar, R1-R3 (32 oz/A)	32 fl oz/A
VAULT® IP PLUS	Rhizobia strain for maximum N fixation with 3 AIs/MOAs; EPA-registered B amyloliquifaciens for extended disease control and B. subtilis for plant health and nutrient acquisition.	Soybean: Seed Treatment	1.1 fl oz/cwt
VOYAGRO®	A powerful amino acid that works well on highly managed corn acres where there is moisture stress prior to application or where stress is anticipated.	Corn: Foliar, V8-V11 or V15-VT; Soybean: Foliar, R1-R3; Cotton: Early Bloom	8-32 fl oz/A
YIELDON®	A biostimulant for late-season foliar application to corn and soybeans that improves the transport of sugars and other nutrients.	Corn: Foliar, V10-R2; Soybeans: Foliar, R1-R3	1.5 pt/A
ZUME®	For use in-furrow to help enhance nutrient availability and uptake at the rootzone during early growth and development.	Corn: At planting, In-Furrow	1-2 qt/A

Data contained herein is product information only and not to be construed as label instructions or directions for specific application. Please read and follow all label instructions pertaining to basic manufacturer's recommendations for rates and use as provided with the actual package.

The key to cropping success is a balanced nutrition program including secondary and micronutrients when they are deficient and limiting crop yields.

From Liquid Zinc to Granular Boron to special Pre-Mixes and more, WINFIELD products offer the flexibility, compatibility and performance needed from a plant nutrient source. There are eleven products in the family, seven liquids that can be soil or foliar applied, and three granular products primarily intended for soil application. Four liquid products are formulated with EDTA or HEDTA, two chelators with high resistance against chemical and microbial attack (10% Zinc is chelated partially with citrate). Quality chemistry gives these four products an extra edge when soil applied, keeping more micronutrient plant-available longer.

DETERMINING MICRONUTRIENT NEEDS

Micronutrient deficiencies are less common in many areas than are deficiencies of N, P and K. Identification of cropping situations where micronutrient fertilization is most likely to provide a profitable yield increase should be based on:

- Crop susceptibility to deficiency
- Soil properties and
- Soil tests.

Crop Susceptibility — Crop response to micronutrient fertilizers varies widely with the crop species. For example, alfalfa may respond to boron but corn or wheat grown in the same field may not. The following table is a guide to the relative susceptibility of crops to deficiencies of micronutrients and sulfur.

Soil Properties — Micronutrient deficiencies are commonly associated with certain soil properties. The following table lists the soil conditions that are most frequently associated with deficiency and crop response.

Soil Properties Most Commonly Associated with Deficiencies of Micronutrients and Sulfur

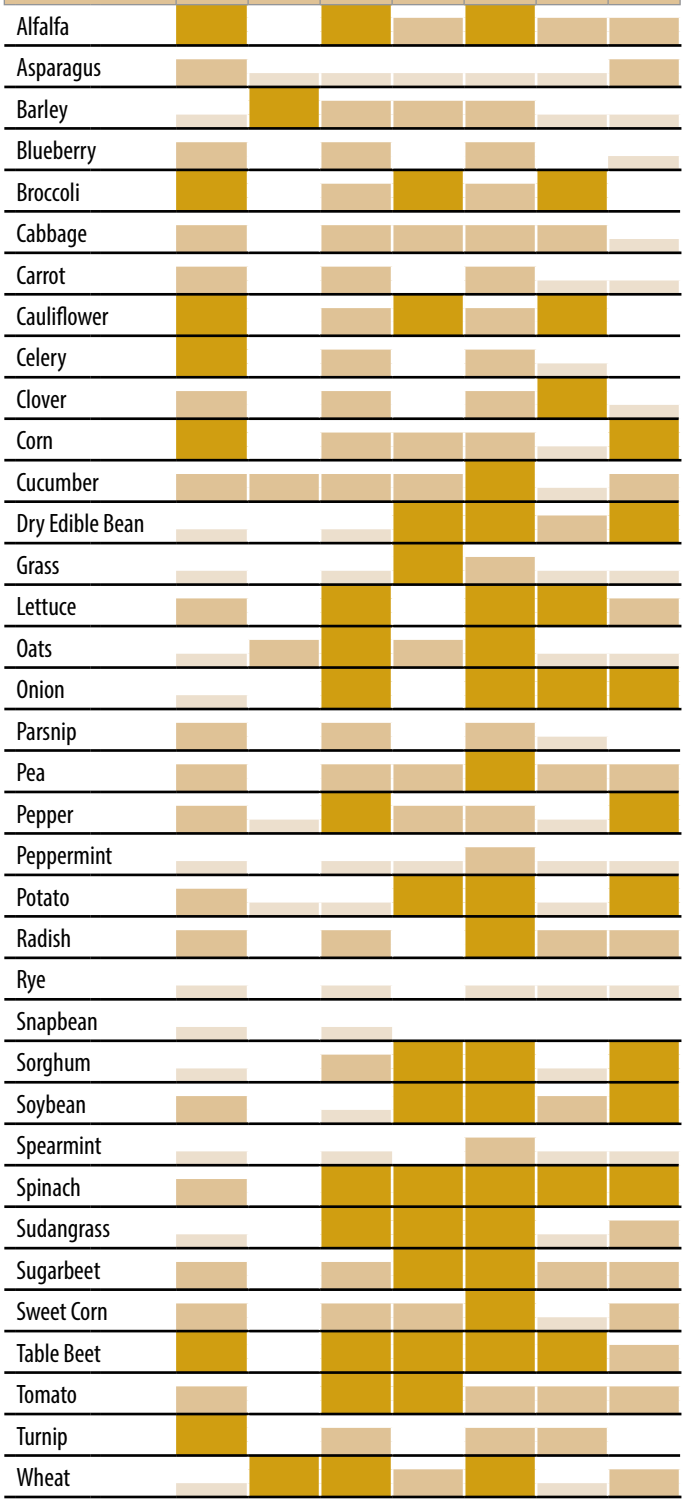
Micronutrient	Soil Properties
Zinc	High pH, low organic matter, sandy texture, very high P
Iron	High pH, calcareous (high lime)
Boron	Low organic matter, sandy texture, over-limed acid soil, dry soil conditions
Copper	Organic soil (peat), high pH, sandy texture
Manganese	High pH, calcareous, sandy or peat
Molybdenum	Acid sands or peat
Sulfur	Sandy texture, low organic matter

Soil Tests — In general, soil tests for micronutrients and sulfur are less reliable than for P and K. Test procedures can be useful for sensitive crops on certain soil types but of little value in other cropping situations. The following table provides guidelines on the usefulness of soil tests for specific nutrients. For more detailed information on micronutrients, refer to the Micronutrient Technical Handbook

The NutriSolutions 360 system is a complete nutrition management system designed to make accurate micronutrient product recommendations by using soil, resin and tissue sampling tools. Crops can reach maximum yield potential if nutrients are precisely tailored and timed according to critical growth stage needs. Insights from NutriVision analysis and NutriSolutions Tool drive product solutions like Ascend SL, Ascend Pro Ascend ST3 and Ascend WSG plant growth regulators and MAX-IN micronutrients to help reach complete plant health.

Note: For the most current recommendations on micronutrients and plant nutrition, check the WinField United Micronutrient Technical Handbook.

Relative Response Of Selected Crops To Micronutrient Fertilizers



Low crops usually do not respond to fertilizer additions; even at low levels of soil micronutrients.

Medium crops less likely to respond to fertilizer additions.

High crops often respond to micronutrient fertilizer additions if soil micronutrient concentration is low.

NOTE: the actual crop response varies depending on the crop growth stage variety, soil conditions, environmental conditions, and other factors.

Actaphos 0-0-25 – Soluble potash.

Ascend², Ascend Pro, Ascend SL, Ascend WSG, Ascend ST3 – EPA registered plant growth regulator for many crops.

Boron 14.3% – Dry B granular. Soil application.

Citri-Che Copper 5% – Citric Acid/EDTA chelated Zn liquid. Soil or foliar applications.

Citri-Che Iron 5% – Citric Acid / EDTA chelated Fe liquid. Soil or foliar applications.

Citri-Che Manganese 5% – Citric Acid / EDTA chelated Mn liquid. Soil or foliar applications.

Citri-Che Zinc 10% – Citric Acid / EDTA chelated Zn liquid. Soil or foliar applications.

Citri-Che Zinc 10% Complete – EDTA / Citric Acid chelated Zn liquid. Soil application.

Citri-Che Crop Mix 2 – Citric Acid / EDTA chelated Cu, Mn, Zn liquid. Soil application.

Copper 5% LS – Dry Cu lignosulfonate. Soil application.

Corn Mix LS – Dry S, B, Cu, Mn, Zn lignosulfonate. Soil application.

Crop Booster Manganese 5% – Foliar chelated manganese.

Crop Mix 1 LS – Dry S, Cu, Fe, Mn, Zn lignosulfonate. Soil application.

Crop Mix 2 LS – Dry S, B, Cu, Mn, Zn lignosulfonate. Soil application.

Gainer 0-50-30 – Foliar water soluble NPK fertilizer plus B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer 10-16-38 – Foliar water soluble NPK fertilizer plus B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer 10-20-30 – Foliar water soluble NPK fertilizer plus S, B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer 10-52-10 – Foliar water soluble NPK fertilizer plus B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer 20-20-20 – Foliar water soluble NPK fertilizer plus B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer High K – Foliar water soluble K plus N, P, S, B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer High Phos – Foliar water soluble P plus N, K, S, B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer High Yield – Foliar water soluble NPK fertilizer plus S, B, Cu, Fe, Mn, Mo, Zn. Foliar application.

Gainer P-K-Z – Foliar water soluble P and K plus Zn. Foliar application.

Gainer WIF K – Dry soluble K plus N, S for water injection.

Gainer WIF P – Dry soluble P plus N, S for water injection.

Gradual-N 25-0-0-0.5B – Slow release liquid N plus B.

Gradual-N 30-0-0 – Slow release liquid N.

Green Soybean IDC – Water Soluble, dry 6% Fe. In Furrow application.

Iron 10% LS – Dry Fe lignosulfonate. Soil application.

Iron Up – Dry Fe granular product. Soil, in-furrow or foliar applications.

Kriss – Biostimulant fertilizer. Foliar application.

Liquid Boron 10% – Basic B liquid. Soil or foliar applications.

Liquid Magnesium 4% – Basic Mg liquid. Foliar application.

Manganese 8% LS – Dry Mn lignosulfonate. Soil application.

MAX-IN for Beans – Foliar Mn, Zn, Fe, B, Mo for beans with CornSorb technology.

MAX-IN Boron – Foliar B for many crops with CornSorb technology.

MAX-IN Calcium – Foliar Ca nutrient for many crops with CornSorb technology.

MAX-IN Copper – Foliar Cu nutrient for many crops with CornSorb technology.

MAX-IN for Cotton NF – Foliar Zn, Ca, B, N, Mn for cotton with CornSorb technology.

MAX-IN Flexi Mn – Foliar Mn wiht CornSorb technology designed for applications with 2,4-D and dicamba on new herbicide-tolerant soybeans.

MAX-IN Iron – Foliar Fe nutrient for many crops with CornSorb technology.

MAX-IN K – Liquid K source with CornSorb technology for improved effectiveness.

MAX-IN Manganese Four HW – Foliar Mn for soybeans and other crops with CornSorb technology.

MAX-IN Magnesium – Foliar MG for many crops with CornSorb technology.

MAX-IN Sulfur – Foliar S for many crops with CornSorb technology.

MAX-IN Ultra Manganese – Foliar Mn for soybeans and other crops with CornSorb technology.

MAX-IN Vine and Vegetable – Foliar Zn, Ca, B, N, Mn for vine and vegetable crops with CornSorb technology.

MAX-IN Ultra ZMB – Foliar Zn, Mn, B for corn, soybeans and other crops with CornSorb technology.

MAX-IN Ultra ZMB Plus – Foliar Zn, Mn, B with added boron for corn, soybeans and other crops with CornSorb technology.

MAX-IN X-Mn – Foliar Mn designed for use on herbicide-tolerant crops with CornSorb technology.

MAX-IN Zinc – Foliar Zn for corn, soybeans and other crops with CornSorb technology.

MicroFuse Corn – Soil applied, S, B, Cu, Mn, Zn, granular blend, micronutrient pre mix fertilizer for corn.

MicroFuse Soybeans – Soil applied - S, B, Cu, Fe, Mn, Zn, granular blend micronutrient pre mix fertilizer for Soybeans.

Optify – Plant growth regulator for many crops. In-furrow, soil or foliar applications.

Optify/Stretch – Plant growth regulator for many crops. In-furrow application.

OptiStart/Climb – 9-18-6 starter fertilizer with S, Mn, Zn.

OptiStart/Five – 8-18-5 starter fertilizer with S, Mn, Zn.

OptiStart/Gold – 6-20-5 starter fertilizer with S, Mn, Zn.

OptiStart/Gold Pro – 6-20-5 starter fertilizer with S, Mn, Zn and AVAIL technology.

OptiStart/Local – 0-0-12 starter fertilizer additive with S, Mn, Zn.

OptiStart/Local Pro – 0-0-12 starter fertilizer additive with S, Mn, Zn and AVAIL technology.

OptiStart/Plus – 9-15-4 starter fertilizer with S, Mn, Zn.

Quick Cal – Liquid Ca for soil or foliar applications.

Sovereign – 8-15-8 foliar fertilizer with B, Fe, Mn, Mo, Zn for soybeans and other crops.

SRN25B – Slow release liquid N plus B.

SRN28 – Slow release liquid N.

Sulfur 90% – Granular elemental S. Soil applications.

Symbol Release Plus – Liquid N, S, Mn, Zn, B, Mo. Foliar application.

Ultra-Che Calcium 3% EDTA – EDTA chelated Ca liquid. Soil or foliar applications.

Ultra-Che Copper 7.5% EDTA – EDTA chelated Cu liquid. Soil or foliar applications.

Ultra-Che Corn Mix EDTA – EDTA chelated Cu, Mn, Zn liquid. Soil or foliar applications.

Ultra-Che Iron 4.5% HEDTA – HEDTA chelated Fe liquid. Soil application.

Ultra-Che Magnesium 2.5% EDTA – EDTA chelated Mg liquid. Soil or foliar applications.

Ultra-Che Manganese 6% EDTA – EDTA chelated Mn liquid. Soil or foliar applications.

Ultra-Che Zinc 9% EDTA – EDTA chelated Zn liquid. Soil application.

Voyagro – Biostimulant fertilizer for stress mitigation in corn. Foliar application.

Zinc Sulfate 35.5% – Granular zinc sulfate. Soil application.

Zinc 10% LS – Dry Zn lignosulfonate. Soil application.

NUTRIENT CONTENT

PRODUCT	Formulation [1]	Nutrient Content (%)											
		N	P or P_2O_5	K or K_2O	B	Ca	Cu	Fe	Mg	Mn	Mo	S	Zn
ACTAPHOS 0-0-25	L			25									
BORON 14.3%	D				14.3								
CITRI-CHE COPPER 5%	L						5					2	
CITRI-CHE CROP MIX 2	L						1			2			4
CITRI-CHE IRON 5%	L							5					
CITRI-CHE MANGANESE 5%	L									5			
CITRI-CHE ZINC 10%	L	6											10
CITRI-CHE ZINC 10% COMPLETE	L												10
COPPER 5% LS	D						5					6	
CROP BOOSTER MANGANESE 5%	L									5		2.8	
CORN MIX LS	D				1		1			3		7	8
CROP MIX 1 LS	D						1	1		4		8	5
CROP MIX 2 LS	D				1.5		1.5			3		8	6
GAINER 0-50-30	D		50	30	0.02		0.05	0.1		0.05	0.0005		0.05
GAINER 10-16-38	D	10	16	38	0.02		0.05	0.15		0.05	0.0005		0.15
GAINER 10-20-30	D	10	20	30	0.02		0.05	0.1		0.05	0.0005	1	0.05
GAINER 10-52-10	D	10	52	10	0.02		0.05	0.1		0.05	0.0005		0.05
GAINER 20-20-20	D	20	20	20	0.02		0.05	0.1		0.05	0.0005		0.05
GAINER HIGH K	D	12	8	30	1		0.25	0.1		0.1	0.0005	2	1
GAINER HIGH PHOS	D	10	45	10	0.02		0.05	0.1		0.05	0.0005	3	0.05
GAINER HIGH YIELD	D	15	20	20	0.08		0.15	0.1		0.1	0.0005	2	1
GAINER P-K-Z	D	9	18	17								5	10
GAINER WIF 'K'	D	8		50								3.5	
GAINER WIF 'P'	D	12	58									1	
GRADUAL-N 25-0-0-0.5B	L	25			0.5								
GRADUAL-N 30-0-0	L	30											
GREEN SOYBEAN IDC	D									6			
IRON 10% LS	D							10				8	
IRONUP	D							6					
KRISS	L	5	8	4									
LIQUID BORON 10%	L				10								
LIQUID MAGNESIUM 4%	L	2							4			4	
10% MOLY LIQUID	L										10		
MANGANESE 8% LS	D									8		6	
MAX-IN BORON	L				8								
MAX-IN CALCIUM	L					10							
MAX-IN COPPER	L						5						
MAX-IN FLEXI MN	L	5								4		2	
MAX-IN FOR BEANS	L	2			0.2			0.3		3.2	0.01		2.1
MAX-IN FOR COTTON NF	L	1			1.33	1.33				0.66			2
MAX-IN IRON	L	12						5		1			
MAX-IN K	L			23									
MAX-IN MAGNESIUM	L	6							5				
MAX-IN MANGANESE FOUR HW	L									4			
MAX-IN SULFUR	L			19								13	

See notes and footnotes at end of table.

PRODUCT	Formulation [1]	Nutrient Content (%)											
		N	P or P_2O_5	K or K_2O	B	Ca	Cu	Fe	Mg	Mn	Mo	S	Zn
MAX-IN ULTRA MANGANESE	L									5		2	
MAX-IN ULTRA ZMB	L				0.1					3		3.6	4
MAX-IN ULTRA ZMB PLUS	L				2.1					3.85			4.24
MAX-IN VINE & VEGETABLE	L	1			1.33	1.33				0.66			2
MAX-IN X-MN	L									5			
MAX-IN ZINC	L												6
MICROFUSE CORN	D				1		1			5		8	20
MICROFUSE SOYBEANS	D				0.5		1	3		16		6	4
OPTISTART/CLIMB	L	9	18	6						0.05		2	0.5
OPTISTART/FIVE	L	8	18	5						0.05		5	0.5
OPTISTART/GOLD or OPTISTART/ GOLD PRO	L	6	20	5						0.05		2	0.1
OPTISTART/LOCAL or OPTISTART/ LOCAL PRO	L			12						0.7		4.2	2.2
OPTISTART/PLUS	L	9	15	4						0.05		3	0.5
QUICK CAL 12%	L					12							
SOVEREIGN	L	8	15	8	0.03			0.33		0.41	0.017		0.17
SRN25B	L	25			0.5								
SRN28	L	28											
SULFUR 90%	D											90	
SYMBOL RELEASE PLUS	L	5			0.5					2	0.05	2	2
ULTRA-CHE CALCIUM 3% EDTA	L	2				3							
ULTRA-CHE COPPER 7.5% EDTA	L	7					7.5						
ULTRA-CHE CORN MIX EDTA	L						0.40			1.50			5.50
ULTRA-CHE IRON 4.5% HEDTA	L	2						4.5					
ULTRA-CHE MAGNESIUM 2.5% EDTA	L	2							2.5				
ULTRA-CHE MANGANESE 6% EDTA	L	3								6			
ULTRA-CHE ZINC 9% EDTA	L	7											9
ZINC SULFATE 35.5%	D											17.5	35.5
ZINC 10% LS	D											7	10

[1] L= liquid, D= dry.

NOTE: For the most current recommendations on micronutrients and plant nutrition, check The Plant Nutrition Product Catalog or the Micronutrient Technical Handbook.

HERBICIDE SELECTION WORKSHEET

(make copies for each field)

Field Location _____ Soil Texture _____ % O.M. _____

pH _____ Previous Crop _____ Previous Herbicide _____

This Year's Crop _____

Next Year's Crop _____

List weeds from most troublesome to least in columns 1-6. Then, using the Herbicide Performance charts from the front of the book, decide which products will work the best, listing the weed control ratings, such as E, G, F or P in the individual boxes. ***Remember to add your AgriSolutions Adjuvants when applying postemergence herbicides.***

WEED CONTROL PROGRAMS

OPTION 1

Cost/A	Rate/A	Product	Time of Application	1	2	3	4	5	6
	Other Cost: Tech fees, etc.								
	TOTAL								

OPTION 2

Cost/A	Rate/A	Product	Time of Application	1	2	3	4	5	6
	Other Cost: Tech fees, etc.								
	TOTAL								

OPTION 3

Cost/A	Rate/A	Product	Time of Application	1	2	3	4	5	6
	Other Cost: Tech fees, etc.								
	TOTAL								

FORMULATION, APPLICATION AND COMPATIBILITY INFORMATION

PRODUCT	Formulation[1]	Water Soluble	Rate Range/ Acre[2]	Application				Compatibility[3]						Weight/gallon or cubic ft[4]	Storage Temperature (°F)
				Seed Treatment	In-furrow	Soil	Foliar	Herbicides	Insecticides	Fungicides	N Solutions, Suspension Mixes	Orthophosphate Fertilizers	Polyphosphate Fertilizers		
ACTAPHOS 0-0-25	L	Yes	32-64 fl oz			✓	✓	✓	✓	✓	✓	✓	✓	12.18	>32
ASCEND[2]	L	Yes	3.4-32 fl oz		✓	✓		✓	✓	✓		✓	✓	8.47	>32
ASCEND PRO	L	Yes	4.7-32 fl oz	✓	✓	✓	✓	✓	✓	✓		✓	✓	8.65	>32
ASCEND SL	L	Yes	0.2-9.5 fl oz	✓	✓	✓	✓	✓	✓	✓		✓	✓	8.65	>32
ASCEND ST3	L	Yes	0.5 - 2.1 fl oz/100 lbs seed	✓										8.68	>32
ASCEND WSG	D	Yes	0.03-0.8 oz	✓	✓	✓	✓							34.96	>32
BORON 14.3%	D	Yes	6.7-20 lb			✓								57-60	NSP
CITRI-CHE COPPER 5%	L	Yes	1-8 qt		✓	✓	✓	✓	✓					10.1	>32
CITRI-CHE CROP MIX 2	L	Yes	1-8 qt		✓	✓		✓	✓	✓	✓	✓	✓	10.91	>32
CITRI-CHE IRON 5%	L	Yes	1-8 qt		✓	✓		✓						10.30	>32
CITRI-CHE MANGANESE 5%	L	Yes	1-8 qt		✓	✓	✓	✓	✓					10.0	>32
CITRI-CHE ZINC 10%	L	Yes	1-6 qt		✓	✓		✓	✓	✓	✓		✓	10.3	>32
CITRI-CHE ZINC 10% COMPLETE	L	Yes	1-6 qt		✓	✓								10.2	>32
COPPER 5% LS	D	P	2-10 lb			✓		✓	✓	✓	✓		✓	48-52	NSP
CORN MIX LS	D	P	2-18 lb		✓	✓								54-58	NSP
CROP BOOSTER MN 5%	L	Yes	1-2 qt				✓	✓	✓	✓				9.6	>40
CROP MIX 1 LS	D	P	7.5-30 lb			✓								54-58	NSP
CROP MIX 2 LS	D	P	7.5-30 lb			✓								54-58	NSP
GAINER 0-50-30	D	Yes	3-40 lb				✓	✓	✓	✓				42-62	NSP
GAINER 10-16-38	L	Yes	3-20 lb				✓	✓	✓	✓				42-62	NSP
GAINER 10-20-30	D	Yes	5-10 lb		✓	✓	✓	✓	✓	✓				42-62	NSP
GAINER 10-52-10	D	Yes	5-10 lb		✓	✓	✓	✓	✓	✓				42-62	NSP
GAINER 20-20-20	D	Yes	3-40 lb				✓	✓	✓	✓				42-62	NSP
GAINER HIGH K	D	Yes	3-40 lb				✓							42-62	NSP
GAINER HIGH PHOS	D	Yes	3-40 lb				✓							42-62	NSP
GAINER HIGH YIELD	D	Yes	3-40 lb				✓							42-62	NSP
GAINER P-K-Z	D	Yes	3-40 lb				✓							42-62	NSP
GAINER WIF 'K'	D	Yes	5-10 lb				✓	✓	✓	✓				42-62	NSP
GAINER WIF 'P'	D	Yes	5-10 lb				✓	✓	✓	✓				42-62	NSP
GRADUAL-N 25-0-0-0.5B	L	Yes	1-12 qt or up to 25 fl oz/1000 sq ft			✓	✓	✓	✓	✓				9.96	>32
GRADUAL-N 30-0-0	L	Yes	3-10 qt			✓	✓							10.4	>32
GREEN SOYBEAN IDC	D	Yes	1-3 Lb		✓	✓							✓	34.36	NSP
IRON 10% LS	D	P	5-22 lb			✓		✓	✓	✓	✓		✓	54-58	NSP
IRONUP	D	Yes	0.5-2 lb		✓	✓	✓	✓	✓	✓	✓	✓	✓	5-5.4	NSP
KRISS	L	Yes	1-2.6 pt				✓	✓	✓	✓				10.2	NSP
LIQUID BORON 10%	L	Yes	2-8 qt			✓	✓	✓	✓	✓	✓	✓		11.07	>32
LIQUID MAGNESIUM 4%	L	Yes	1-8 qt			✓	✓							10.4	>32
MANGANESE 8% LS	D	P	2-15 lb		✓	✓								54-58	NSP
MAX-IN BORON	L		0.75-1.5 pt				✓	✓	✓	✓		✓[5]		10.68	>40
MAX-IN CALCIUM	L	Yes	2-4 qt				✓	✓	✓	✓				81	>40
MAX-IN COPPER	L	Yes	8-10 fl oz				✓	✓	✓	✓				9.92	>40
MAX-IN FLEXI MN	L	Yes	1-2 qt				✓	✓						10.68	>20

See notes and footnotes at end of table.

FORMULATION, APPLICATION AND COMPATIBILITY INFORMATION

continued

PRODUCT	Formulation[1]	Water Soluble	Rate Range/ Acre[2]	Application				Compatibility[3]						Weight/gallon or cubic ft[4]	Storage Temperature (°F)
				Seed Treatment	In-furrow	Soil	Foliar	Herbicides	Insecticides	Fungicides	N Solutions, Suspension Mixes	Orthophosphate Fertilizers	Polyphosphate Fertilizers		
MAX-IN FOR BEANS	L	Yes	1-2 qt				✓	✓	✓	✓				10.5	>40
MAX-IN FOR COTTON NF	L	Yes	1.5-3 pt				✓	✓	✓	✓				9.8	>40
MAX-IN IRON	L	Yes	1 qt - 1.5 gal				✓							11	NSP
MAX-IN K	L	Yes	0.5-1 gal			✓	✓							10.65	NSP
MAX-IN MN FOUR HW	L	Yes	1-2 qt				✓	✓	✓	✓				10.14	>40
MAX-IN MAGNESIUM	L	Yes	1.5 pt-4 qt				✓[6]	✓[6]	✓[6]	✓[6]				11.0	>40
MAX-IN SULFUR	L		2 qt				✓							11.3	>40
MAX-IN ULTRA MANGANESE	L	Yes	1-2 qt				✓	✓	✓	✓		✓[5]		10.14	>40
MAX-IN ULTRA ZMB	L	Yes	1-2 qt				✓	✓	✓	✓		✓[5]		10.71	>40
MAX-IN ULTRA ZMB PLUS	L	Yes	0.2-2 qt				✓	✓	✓	✓		✓[5]		11.84	NSP
MAX-IN VINE & VEGETABLE	L	Yes	1.5-3 pt				✓	✓	✓	✓				9.8	>40
MAX-IN X-MN	L	Yes	0.2-2 qt				✓	✓	✓	✓				11	>40
MAX-IN ZINC	L	Yes	1.5 pt - 2 qt				✓	✓	✓	✓				10.3	>40
OPTISTART/CLIMB	L	Yes	1-18 gal		✓	✓								10.8	>0
OPTISTART/FIVE	L	Yes	5-30 gal°			✓								11.2	>0
OPTISTART/GOLD + GOLD PRO	L	Yes	1-18 gal		✓	✓								11	>0
OPTISTART/LOCAL + LOCAL PRO	L	Yes	1 gal		✓									10.6	>0
OPTISTART/PLUS	L	Yes	1-20 gal		✓	✓								10.8	>0
QUICK CAL 12%	L	Yes	0.5-6 qt			✓	✓							11.3	32
SOVEREIGN	L	Yes	1-40 gal				✓							10.99	>40
SRN 25B	L	Yes	2 qt - 3 gal				✓							10	>32
SRN 28	L	Yes	1 qt - 5 gal				✓							10.59	>0
SULFUR 90%	D	No	5-50 lb		✓	✓								67-70	NSP
SYMBOL RELEASE PLUS	L	Yes	1-2 pt				✓	✓	✓	✓				10.6	NSP
ULTRA-CHE CALCIUM 3% EDTA	L	Yes	1-8 pt		✓	✓		✓	✓	✓	✓	✓	✓	9.8	>32
ULTRA-CHE COPPER 7.5% EDTA	L	Yes	1-8 pt		✓	✓		✓	✓	✓	✓	✓	✓	10.5	>32
ULTRA-CHE CORN MIX EDTA	L	Yes	1-4 qt		✓	✓		✓	✓	✓	✓	✓	✓	10.6	>32
ULTRA-CHE IRON 4.5% HEDTA	L	Yes	1-8 pt		✓	✓		✓	✓	✓	✓	✓	✓	10.9	>40
ULTRA-CHE MAGNESIUM 2.5% EDTA	L	Yes	1-8 pt		✓	✓		✓	✓	✓	✓	✓	✓	10.8	>32
ULTRA-CHE MANGANESE 6% EDTA	L	Yes	1-8 pt		✓	✓		✓	✓	✓	✓	✓	✓	11.06	>32
ULTRA-CHE ZINC 9% EDTA	L	Yes	1-8 qt		✓	✓		✓	✓	✓	✓	✓	✓	10.9	>32
VOYAGRO	L	Yes	4-16 fl oz				✓							10.84	NSP
ZINC SULFATE 35.5%	D	Yes	3.3-33 lb		✓	✓								100-105	NSP
ZINC 10% LS	D	P	2-15 lb		✓	✓								54-58	NSP

[1] L= liquid, D= dry.
[2] Rates given are for common uses. See the label for all specific rates.
[3] May be used with other products not checked (✓) if compatibility is confirmed by previous experience or jar testing.
[4] Weight per gallon of liquid or weight per cubic foot of dry product.
[5] Foliar only.
[6] See label. Not for use with glyphosate.

P = Partially water soluble to high water solubility but not 100%.
NSP= No Special Precautions

WEIGHT OF LIQUID AND DRY FERTILIZERS

Weight of Liquid Fertilizers and Other Products

Product	Approximate lb/gal @ 60° F.*	Fertilizer Provided lb/gal	Specific Gravity	Conversion Factor**
28-0-0	10.66	2.98-0-0	1.28	1.13
32-0-0	11.06	3.54-0-0	1.33	1.15
10-34-0	11.65	1.16-3.96-0	1.40	1.18
11-37-0	12.00	1.32-4.4-0	1.44	1.20
0-54-0	13.10	0-7.07-0	1.57	1.25
6-18-6	10.75	0.64-1.93-0.64	1.29	1.14
7-21-7	11.00	0.77-2.31-0.77	1.32	1.15
9-18-9	11.11	0.99-1.99-0.99	1.33	1.15
3-10-30	12.25	0.36-1.22-1.22	1.47	1.21
4-10-10	10.25	0.35-0.89-0.89	1.23	1.11
8-0-0-9S	10.15	0.81-0-0-0.91	1.22	1.10
12-0-0-26S	11.00	1.32-0-0-2.86	1.32	1.15
WATER	8.345	–	1.0	1.0
NH3 82-0-0	5.15	4.22-0-0	0.62	–
–	7.00	–	0.84	0.92
–	8.00	–	0.96	0.98
–	9.00	–	1.08	1.04
–	10.00	–	1.20	1.10
–	14.00	–	1.68	1.30
–	16.00	–	1.92	1.39

* Actual weight will often vary depending on manufacturing process. To figure your weight per gallon for these or other liquid fertilizers, multiply the specific gravity (found on SDS sheets) times the weight of water.

Example: Example: the specific gravity of 28-0-0 is 1.28.

Take 1.28 x 8.345 = 10.6752 lbs. per gallon.

**Conversion factor to use when spraying liquids heavier or lighter than water. Multiply the desired GPA by the conversion factor for the liquid being sprayed. Use the new GPA to determine the proper nozzle use.

Example: 10 GPA x 1.13 (for 28%N) = 11.3 GPA.

Choose a nozzle to deliver 11.3 GPA.

Note the conversion factor = $\sqrt{SG}$, SG = specific gravity.

Dry Bulk Fertilizer Weights

Grade		lb/ft³
21-0-0-24	Ammonium Sulfate Gran.	60-64
34-0-0	Ammonium Nitrate	58-62
46-0-0	Urea Granular	48-52
11-52-0	Monoammoniun Phosphate	58-64
11-55-0	Monoammoniun Phosphate	58-64
18-46-0	Diammonium Phosphate	56-60
0-46-0	Triple Superphosphate	66-72
16-20-0	Ammonium Phosphate	58-62
0-0-62	Soluble Muriate of Potash	70-74
0-0-60	Coarse Muriate of Potash	69-73
0-0-60	Granular Muriate of Potash	66-70
0-0-50	Sulfate of Potash Gran.	85-93
0-0-22	Sul-Po-Mag Granular	94-98
0-0-22	K-Mag Granular	94-98
0-0-22	K-Mag Prilled	68-72

NOTES

GET ALL THE MICRONUTRIENTS YOUR CROP NEEDS TO SUCCEED EASILY AND EFFICIENTLY WITH MAX-IN® ULTRA ZMB® PLUS.

BUILT FOR IT.



MAX-IN Ultra ZMB Plus helps you deliver three key micronutrients that increase plant health all at once. MAX-IN Ultra ZMB Plus is made to maximize crop performance potential. 78.7% of corn plants are deficient in zinc*, which aids in leaf growth and early ear development. 65.5% of corn plants are deficient in manganese*, which is essential for photosynthesis and disease resistance. And 67% of corn plants are deficient in boron*, which influences cell development. CornSorb® technology helps increase the movement of nutrients through the leaf cuticle, so you can feel confident in a crop's potential. With all of this behind it, MAX-IN Ultra ZMB Plus is built to deliver a high load of zinc, manganese and boron with one efficient application. Help unlock the full potential of every field with products that are built for it. Scan the QR code to learn more.

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MAX-IN® Ultra ZMB® Plus

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*Average based on 221,050 tissue samples from the WinField United Tissue Sample Treasure across V4-R2 growth stages from 2012-2022. © 2024 WinField United. Important: Before use always read and follow label directions. Crop performance is dependent on several factors, many of which are beyond the control of WinField United. Including without limitation: soil type, pest pressure, agronomic practices and weather conditions. Growers are encouraged to consider data from multiple locations, over multiple years and to be mindful of how such agronomic conditions could impact results. CornSorb, MAX-IN, ZMB and WinField are registered trademarks of WinField United.



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