

SMALL GRAIN HERBICIDE PERFORMANCE RATINGS

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

GRASSES

	CROP TOLERANCE					SITE OF ACTION ^A	GRASSES												
	BARLEY	OAT	RYE	WHEAT	DURUM		Barnyardgrass	Cheat	Downy brome	Foxtail, gi,gr	Foxtail, yellow	Jointed goatgrass	Persian Damel	Ryegrass, Italian (annual)	Wild oat	Bindweed, field	Canada thistle	Catchweed bedstraw	Chickweed

PREPLANT or PREEMERGENCE

Affinity BroadSpec ^R - PP (thifensulfuron + tribenuron)	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P	P	F	G	P	G ^R	G ^R	G	
Affinity TankMix ^R - PP (thifensulfuron + tribenuron)	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P	P	F	P	G ^R	G ^R	G		
Amber ^R - PRE (triasulfuron)	NL	NL	NL	E	NL	2	P	F ^R	F ^R	G ^R	P	P	P	P	F	G	P	P	P	U	U	U	U
Anthem Flex (pyroxasulfone + carfentrazone)	NL	NL	NL	E	NL	15,14	E	F	G	G	E	E	U	U	E	G	N	N	F	F	P	N	
Buckle - PPI (trifluralin + triallate)	E	NL	NL	G	E	3,8	G	P	F	P	F	G	G	P	F	P	G	P	P	P	P	P	P
Facet L (quinclorac)	NL	NL	NL	G	G	4	F	P	P	F	G	F	P	U	P	P	G	P	U	P	P	U	
Fargo - PPI/PRE Inc. (triallate)	E	NL	NL	G	E	8	P	P	F	P	P	P	P	P	E	P	P	P	P	P	P		
Finesse Cereal and Fallow ^R - PRE (chlorsulfuron + metsulfuron)	NL	NL	NL	E	NL	2,2	P	F ^R	F ^R	G ^R	P	P	P	N	G	P	P	P	P	G ^R	U	U	
Olympus (propoxycarbazone)	NL	NL	NL	G	NL	2	F	E	F	G	P	P	F	N	F	F	G	P	P	P	F	P	P
Outrider/Maverick ^R - PRE (sulfosulfuron)	NL	NL	NL	G	NL	2	P	G ^R	F ^R	G ^R	P	P	P	N	P	P	P	P	U	G ^R	P	U	
Pre-Pare ^R (flucarbazone)	NL	NL	NL	G	NL	2	F	G ^R	F ^R	G	F	P	F	P	F	G	P	P	U	P	P	U	
Quelex (halauxifen-methyl + florasulam)	E	NL	NL	E	E	2,4	N	N	N	N	N	N	N	N	N	F	F	E	E	G	F	G	
Sharpen ^G (saflufenacil)	E	E	E	E	E	14	N	N	N	N	N	N	N	N	N	U	G ^G	U	U	G	U		
Trust/Treflan - PPI (trifluralin)	G	NL	NL	G	G	3	G	F	F	E	E	F	G	N	G	F	P	P	P	U	P	U	

POSTEMERGENCE

Affinity BroadSpec ^R (thifensulfuron + tribenuron)	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P	P	P	F	P	G ^R	G ^R	G
Affinity TankMix ^R (thifensulfuron + tribenuron)	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P	P	G	P	G ^R	G ^R	G	
Agility SG (thifensulfuron + tribenuron + metsulfuron + dicamba)	G	NL	NL	G	G	2,2,2,4	P	P	P	P	P	P	P	P	P	P	F	G	F	G	E	G
Aim EC ^F (carfentrazone)	G	G	NL	G	E	14	P	P	P	P	P	P	N	P	P	P	P	E	P	P	U	
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	P	F	G	P	G	G	F
Ally XP ^R (metsulfuron)	E	NL	NL	E	E	2	P	P	P	P	P	P	N	P	P	P	F	P	G	U	U	
Ally XP ^R + 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	P	F	G	P	G	G	F
Amber ^R (triasulfuron)	E	NL	NL	E	E	2	P	P	P	P	P	P	N	P	P	P	P	P	U	G ^R	U	
Amber ^R + 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	P	F	F	U	G	G	F
Anthem Flex (pyroxasulfone + carfentrazone)	NL	NL	NL	E	E	14,15	P	P	P	P	P	P	P	P	P	P	P	E	P	P	U	
Audit ^R (thifensulfuron + tribenuron)	E	NL	NL	E	E	2,2	N	N	N	N	P	N	P	P	P	P	G	P	F	G ^R	G ^R	
Axial XL ^R (pinoxaden)	E	NL	NL	E	NL	1	G	E	P	P	E ^R	E ^R	U	E ^R	E ^R	E ^R	N	N	N	N	N	N
Axiom DF (metribuzin + flufenacet)	NL	NL	NL	G	NL	5,15	F	P	F	F	F	F	P	F	G	F	P	N	P	F	P	F

** Veiny pepperweed is tolerant to sulfonylurea herbicides such as Ally, 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.

¹ Efficacy may vary depending on product rate and fall or spring application.

³ C - control.

⁵ Green foxtail is suppressed.

^A Site of action, described on page 759.

^R No control of herbicide resistant weed biotypes. See the list of known resistant weeds on the second page of the technical section.

^B Clearfield wheat only.

^F Similar ratings for burndown.

^G Burndown.

¹ Suppression only. Requires tank mix partner or sequential applied herbicide for control.

SMALL GRAIN HERBICIDE PERFORMANCE RATINGS

BROADLEAVES

	Henbit or deadnettle	Horseweed (Marestail)	Knotweed	Kochia	Lambsquarters, common	Mayweed (Dogfennel)	Mustard, blue	Mustard, tansy or Flixweed	Mustard, Treade/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***			
	PREPLANT or PREEMERGENCE																											
●	G	F ^R	P	F	E ^R	E ^R	E	E	E ^R	E ^R	G	E ^R	P	E	E	G ^{ER}	E ^R	F	G ^R	P	G ^{ER}	E	G	F	G ^{ER}	E	G	Affinity BroadSpec ^R -PP
●	G	F ^R	P	F	E ^R	E ^R	E	E	E ^R	E ^R	G	E ^R	P	E	E	G ^{ER}	E ^R	F	G ^R	P	G ^{ER}	E	G	F	G ^{ER}	E	G	Affinity TankMix ^R -PP
●	G	G ^R	P	G ^R	F ^R	U	E	E ^R	E ^R	E	E ^R	P	E	E	E ^R	G ^{ER}	G	G	G ^R	E	G	P	E ^R	G	U	Amber ^R - PRE		
●	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	Anthem Flex		
●	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	Buckle - PPI		
●	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	Facet L		
●	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	Fargo - PPI/PRE Inc.		
●	E	U	P	G ^R	G ^R	G	E	E	E ^R	E	E ^R	U	E	E	E ^R	G ^{ER}	U	U	G ^R	E	G	P	E ^R	G	F	Finesse Cereal and Fallow ^R - PRE		
●	F	P	P	P	P	F	G	G	G ^R	G	G	P	G	P	P	P	P	P	P	F	G	P	P	P	F	P	Olympus	
●	F	G	E	U	P	P	U	U	G	E	E ^R	E	E ^R	U	E	E	P	U	U	U	U	E	G	P	P	F	Outrider/Maverick ^R - PRE	
●	U	U	P	G ^R	F ^R	U	G	G	E ^R	G	G ^R	U	G	U	G ^R	P	P	P	P	P	F	F	G	P	P	F	P	Pre-Pare ^R
●	E	E	G	F	E	F	G ^R	E	E ^R	G ^{ER}	E	E ^R	E	E	E ^R	E ^R	G	E	G ^R	G	E	F	F	G	E	P	Quelex	
●	F	E	U	E	E	U	U	U	U	E	E	E	E	U	E	E	E	E	E	E	E	E	U	G	G	U	Sharpen ^G	
●	P	P	F	G	F	F	U	P	P	P	P	P	P	P	F	P	P	P	F	P	P	P	P	F	P	Trust/Treflan - PPI		
	POSTEMERGENCE																											
●	G	F ^R	P	F	E ^R	E ^R	E	E	E ^R	E ^R	G	E ^R	P	E	E	G ^{ER}	E ^R	F	G	P	G ^{ER}	E	G	F	G ^{ER}	E	G	Affinity BroadSpec ^R
●	G	F ^R	P	F	E ^R	E ^R	E	E	E ^R	E ^R	G	E ^R	F ^R	E	E	G ^{ER}	E ^R	E ^R	P	G ^{ER}	E	G	F	G ^{ER}	E	G	Affinity TankMix ^R	
●	G	E	F	G	E	E	G ^E	E	E	E ^R	E	E	E	E	E	E	E	E	E	E	G ^E	E	E	E	F	E	G	Agility SG
●	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	Aim EC ^F	
●	G	G	F	G	E	F	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	G	F	E	G	G	Ally Extra SG + 2,4-D or MCPA	
●	G	G ^R	P	G ^R	G ^R	U	G	E	G ^R	E ^R	G	G ^R	G ^R	G	G	E ^R	G ^{ER}	U	U	G ^R	G	F	G	F	G ^{ER}	G	F	Ally XP ^R
●	G	G	F	G	E	G	E	E	E	E	E	F	E	E	E	E	E	E	E	E	E	F	F	G	G	F	Ally XP ^R + 2,4-D or MCPA	
●	G	G ^R	P	G ^R	F ^R	U	E	E ^R	E ^R	E	E ^R	U	E	G	E ^R	E ^R	E ^R	G ^R	G ^R	E	F	P	E ^R	G	P	Amber ^R		
●	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	Amber ^R + 2,4-D or MCPA	
●	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	Anthem Flex
●	G	F ^R	E	P	E ^R	E	E	E	E	E ^R	P	E	E	E ^R	E ^R	F	G	P	G	E	E	G	F	G	E	G	Audit	
●	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	Axial XL ^R	
●	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	Axiom DF		

SMALL GRAIN WEEDS

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GRASSES

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

CROP TOLERANCE

BARLEY OAT RYE WHEAT DURUM

SITE OF ACTION^A

Barnyardgrass Cheat Downy brome Foxtail, gi, gr Foxtail, yellow Jointed goatgrass Persian Darnel Ryegrass, Italian (annual) Wild oat

Bindweed, field Canada thistle Catchweed bedstraw Chickweed Cocklebur Fiddleneck

POSTEMERGENCE (continued)

Herbicide	BARLEY	OAT	RYE	WHEAT	DURUM	SITE OF ACTION ^A	Barnyardgrass	Cheat	Downy brome	Foxtail, gi, gr	Foxtail, yellow	Jointed goatgrass	Persian Darnel	Ryegrass, Italian (annual)	Wild oat	Bindweed, field	Canada thistle	Catchweed bedstraw	Chickweed	Cocklebur	Fiddleneck		
Beyond ^{BR} (imazamox)	NL	NL	NL	E ^B	NL	2	G	E ^R	G ¹	G ^R	F ¹	E	G ^R	G ¹	G ¹	P	F	F	G	G ^R	F		
Bison (MCPA ester + bromoxynil)	E	E	E	E	E	4,6	P	P	P	P	P	P	N	P	P	P	P	F	F	P	E	E	
Carnivore (MCPA + fluroxypyr + bromoxynil)	E	E	NL	E	NL	4,4,6	P	P	P	P	P	P	N	P	P	P	P	F	G ¹	G	G ¹	E	
Curtail (clopyralid + 2,4-D)	E	NL	NL	E	E	4,4	P	P	P	P	P	P	N	P	P	F	E	P	F	E	F		
Curtail M (clopyralid + MCPA)	E	E	NL	E	E	4,4	P	P	P	P	P	P	N	P	P	P	E	P	F	E	F		
Dimetric/Metriclud ^R (metribuzin)	F	NL	NL	F	NL	5	P ¹	G ¹	E	G	P	F	P	F	F	P	P	F	P	E	F ^R	E	
Discover NG ^R (clodinafop)	NL	NL	NL	E	E	1	E	U	U	E ^R	G ¹	U	G ^R	E ^R	E ^R	P	P	P	P	N	N		
Everest 2.0/Sierra ^R (flucarbazone)	NL	NL	NL	E	E	2	G	G ¹	G ^R	E ^R	G ¹	N	G	G	E ^R	P	P	P	P	P	U		
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	P	F	G	P	G	G	F	
Finesse Cereal and Fallow ^R (chlorsulfuron + metsulfuron)	E	NL	NL	E	E	2,2	P	P	P	P	P	P	N	P	P	P	F	P	G ^R	U	U		
Finesse Cereal and Fallow ^R + 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	P	F	G	P	G	G	F	
Foxfire (pinoxaden + fenoxaprop)	NL	NL	NL	E	NL	1,1	E ^R	N	N	G ¹	E	N	N	N	G ¹	N	N	N	N	N	N		
Glean XP ^R (chlorsulfuron)	E	E	NL	E	E	2	P	P	P	P	P	P	N	P	P	P	F	P	U	U	U		
GoldSky ^R (florasulam + pyroxosulam + fluroxypyr)	NL	NL	NL	E	E	2,2,4	G ¹	E ^R	G ^R	G ⁵	E ^R	P	F	G ¹	E ^R	E ^R	F	P	F	E	E	F	G
Harmony SG ^R (thifensulfuron)	E	E	NL	E	E	2	P	P	P	P	P	P	N	P	P	P	P	P	F	F ^R	F ^R	G	
Harmony Extra SG ^R (thifensulfuron + tribenuron)	E	E	NL	E	E	2,2	P	P	P	P	P	P	N	P	P	P	F	G	F	G ^R	G ^R	G	
Harmony Extra SG ^R + 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	P	G	P	G	G	G		
Huskie (bromoxynil + pyrasulfotole)	E	NL	NL	E	E	6,27	N	N	N	N	N	N	N	N	N	P	F	G ¹	G	E	G		
Huskie Complete (thiencazabone + bromoxynil + pyrasulfotole)	NL	NL	NL	E	E	2,6,27	G ¹	F	G	F	G ¹	E	N	F	N	G ¹	P	F	G ¹	G	E	G	
MCP amine (MCP amine)	E	E	E	E	E	4	P	P	P	P	P	P	N	P	P	P	F	F	P	F	G	F	
MCP ester (MCP ester)	G ¹	G ¹	E	E	E	4	P	P	P	P	P	P	N	P	P	P	F	F	P	F	G	F	
Moxy (bromoxynil)	E	E	E	E	E	6	P	P	P	P	P	P	N	P	P	P	P	F	P	E	G		
Olympus ^R (propoxycarbazone)	NL	NL	NL	E	NL	2	F ¹	E ^R	F ¹	G ¹	P	P	P	F	N	P	F	F	F ¹	P	P		
Orion ^R (florasulam + MCPA)	G ¹	G ¹	E	E	E	2,4	U	U	U	U	U	U	U	U	U	P	P	F	C ³	E ^R	G	F	
Osprey ^R (mesosulfuron)	NL	NL	NL	G ¹	NL	2	P	F ¹	F ¹	G	P	F	F	G ¹	G	E	E ^R	P	P	F ¹	P	P	
Outrider/Maverick ^R (sulfosulfuron)	NL	NL	NL	G	NL	2	P	G ¹	F	G ¹	P	P	P	N	P	F	E	G ¹	P	F	G	F	
Peak ^R (profluroxypyr)	E	E	E	E	E	2	P	P	P	P	P	P	N	P	P	P	F	P	G ^R	G ^R	U		
Peak ^R + 2,4-D or MCPA (profluroxypyr + 2,4-D or MCPA)	E	E	E	E	E	2,4	P	P	P	P	P	P	N	P	P	F	F	P	G	G ¹	E		
PerfectMatch (clopyralid + fluroxypyr + pyroxosulam)	NL	NL	NL	E	E	2,4,4	G ¹	E ^R	G ^R	F ¹	E ^R	P	F	G ¹	E	E	E	E	E	E	G		

** Veiny pepperweed is tolerant to sulfonyleurea herbicides such as Ally, 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.

¹ Efficacy may vary depending on product rate and fall or spring application.
³ C - control.
⁵ Green foxtail is suppressed.

^A Site of action, described on page 759.
^R No control of herbicide resistant weed biotypes. See the list of known resistant weeds on the second page of the technical section.
^B Clearfield wheat only.
^F Similar ratings for burndown.
^G Burndown.
¹ Suppression only. Requires tank mix partner or sequential applied herbicide for control.

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BROADLEAVES

	Henbit or deadnettle	Horseweed (Marestail)	Knotweed	Kochia	Lambsquarters, common	Mayweed (Dogfennel)	Mustard, blue	Mustard, tansy or Flixweed	Mustard, Treade/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***							
	G	G ^R	P	G ^R	G ^R	P	G	E ^R	E ^R	E	E ^R	E ^R	E	U	E ^R	P	F ^R	F	G ^R	E	G	F	G ^R	F	P	● Beyond ^{BR}						
	E	E	E	G	E	G	F	G	G	E	E	E	E	F	G	G	E	G	E	E	E	E	F	E	E	P	● Bison					
	G	G	E	G	E	E	F	G	G	E	E	E	E	F	G	G	E	G	E	E	E	P	F	E	E	P	● Carnivore					
	F	G	F	F	G	E	E	E	E	E	E	F	E	E	G	E	E	E	G	E	G	G	E	G	U	● Curtail						
	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	● Curtail M						
	G	E	F	G	U	F	G ^R	G ^R	F	F	G	G	G	G	E	P	G	G	E ^R	G	F ^R	F	F	E	F	G	P	● Dimetric/Metriclude ^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	● Discover NG ^R					
	P	P	G	P	N	P	G	G	G ^R	G	E ^R	P	E	G ^R	E ^R	P	P	P	P	E	E	P	P	F	P	● Everest 2.0/Sierra ^R						
	F	G	F	G	E	F	G	E	G	G	E	F	G	E	U	G	E	E	U	E	E	F	G	G	F	P	● Express + 2, 4-D or MCPA					
	E	G ^R	P	G	E ^R	G	E	E	E ^R	E	E ^R	E ^R	E	G	E ^R	G	E ^R	G ^R	U	E	E	F	G	P	E ^R	G	P	● Finesse Cereal and Fallow ^R				
	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	● Finesse Cereal and Fallow ^R + 2, 4-D or MCPA					
	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	● Foxfire					
	G	E	F	G ^R	P	F	G ^R	F ^R	G	E	F	E	E	E ^R	U	E	G	E ^R	G ^R	G ^R	U	G ^R	E	F	G	F	F	G ^R	F	G	P	● Glean XP ^R
	F	G	U	G	E	E	G	E	G	E	E	G ^R	E	E	E ^R	G	F	G	F	G	E	G	P	F	E	E	U	● GoldSky ^R				
	F	F ^R	P	E ^R	G ^R	U	G	E	E	G	G	E ^R	P	E	E	G ^R	F	G ^R	P	P	G ^R	E	G	P	G ^R	E	G	● Harmony SG ^R				
	G	F ^R	P	F	E ^R	E ^R	E	G	E	E	E	E ^R	F	G ^R	G	E	E	G ^R	G ^R	P	G	E	G	F	G ^R	E	G	● Harmony Extra SG ^R				
	G	G	F	E	E	E	E	E	E	E	E	F	G	E	E	E	E	E	E	E	E	G	F	G	E	G	E	● Harmony Extra SG ^R + 2, 4-D or MCPA				
	E	E	F	E	E	F	G	E	E	E	E	E	E	F	G	E	G	E	E	E	E	E	G	E	G	E	P	● Huskie				
	E	E	F	E	E	F	G	E	E	E	E	E	E	F	G	E	G	E	E	E	E	E	G	E	G	E	P	● Huskie Complete				
	P	F	F	G	P	F	E	P	P	G	E	G	E	F	G	E	G	E	G	E	F	G	E	P	F	F	G	P	P	F	● MCP amine	
	P	F	F	G	P	F	E	P	F	E	E	G	E	F	E	G	F	G	E	G	E	F	E	P	F	F	G	P	P	F	● MCP ester	
	F	F	E	G	G	E	G	F	G	G	E	E	E	E	F	G	F	G	E	F	G	E	E	F	E	G	E	P	● Moxy			
	F	P	P	P	P	F	E	E	E ^R	E	E ^R	P	E	P	P	P	P	P	P	P	E	P	P	P	P	P	P	● Olympus ^R				
	P	F	G	G ^R	P	F	E	U	E	E	E	E	E	F	E	U	F	G	E	E	G	E	F	E	G	U	● Orion ^R					
	F	P	P	P	P	P	P	U	P	E ^R	P	P	P	F	P	P	P	P	P	F	P	P	P	P	P	P	● Osprey ^R					
	F	F ^R	P	P	P	F	G	P	E	E ^R	E	E ^R	U	E	U	P	G ^R	U	U	P	F	G	E	P	P	F ^R	P	F	● Outrider/Maverick ^R			
	P	F	F ^R	P	F	F ^R	F ^R	U	G	E	E	E ^R	U	E ^R	P	E	E	G ^R	G ^R	G ^R	F ^R	F ^R	E	F	P	F ^R	G	G	E	● Peak ^R		
	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	● Peak ^R + 2, 4-D or MCPA					
	F	G	E	G	E	G	G	E	G	E	E	E	E	E	E	E	E	E	G	G	G	E	E	E	P	F	● PerfectMatch					

POSTEMERGENCE (continued)

SMALL GRAIN WEEDS

SMALL GRAIN HERBICIDE PERFORMANCE RATINGS

GRASSES

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

CROP TOLERANCE

BARLEY OAT RYE WHEAT DURUM

SITE OF ACTION^A

Barnyardgrass Cheat Downy brome Foxtail, gi,gr Foxtail, yellow Jointed goatgrass Persian Darnel Ryegrass, Italian (annual) Wild oat


Bindweed, field Canada thistle Catchweed bedstraw Chickweed Cocklebur Fiddleneck

POSTEMERGENCE (continued)

Herbicide	BARLEY	OAT	RYE	WHEAT	DURUM	SITE OF ACTION ^A	Barnyardgrass	Cheat	Downy brome	Foxtail, gi,gr	Foxtail, yellow	Jointed goatgrass	Persian Darnel	Ryegrass, Italian (annual)	Wild oat	Bindweed, field	Canada thistle	Catchweed bedstraw	Chickweed	Cocklebur	Fiddleneck		
PowerFlex HL/TeamMate ^R (pyroxulam)	NL	NL	NL	E	E	2	G ^R	E ^R	G ^R	F ^R	E ^R	P	F	G	E	E ^R	P	P	E	E ^R	N	E	
Pulsar (dicamba + fluroxypyr)	F	NL	NL	G	G	4,4	N	N	N	N	N	N	N	N	N	N	F	F	G	G	G	E	
Pulsar + MCP ester (dicamba + fluroxypyr + MCP ester)	F	NL	NL	G	G	4,4,4	N	N	N	N	N	N	N	N	N	N	FG	FG	GE	G	E	P	
Quelex (halauxifen-methyl + florasulam)	E	NL	NL	E	E	2,4	N	N	N	N	N	N	N	N	N	N	F	F	E	E	G	FG	
Rave (triasulfuron + dicamba)	F	NL	NL	G	G	2,4	P	P	P	P	P	P	N	P	P	P	FG	FG	G	G	E	F	
Rimfire Max ^R (propoxycarbazone + mesosulfuron)	NL	NL	NL	E	E	2,2	FG	G ^R	F ^R	F ^R	P	P	G	P	E ^R	P	P	P	P	P	P	P	
Starane Flex (fluroxypyr + florasulam)	E	E	E	E	E	2,4	P	P	P	P	P	P	P	P	P	P	F	P	F	E	GE	E	U
Starane Ultra (fluroxypyr)	E	E	E	E	E	4	P	P	P	P	P	P	N	P	P	P	F	P	E	G	G	U	
Starane NXT + MCPA (fluroxypyr + MCPA + bromoxynil)	E	E	NL	E	E	4,4,6	P	P	P	P	P	P	P	P	P	P	P	P	F	F	F	E	E
Sterling Blue/Clarifier/Clarity/Banvel/Dicamba Max 4 (dicamba)	F	F	G	NL	G	4	P	P	P	P	P	P	N	P	P	P	FG	G	G	G	E	P	
Sterling Blue/Clarifier/Clarity/Banvel/Dicamba Max 4 + 2,4-D or MCPA (dicamba + 2,4-D or MCPA)	F	F	G	NL	G	4,4	P	P	P	P	P	P	N	P	P	P	G	G	G	G	E	P	
Stinger (clopyralid)	G	E	NL	E	E	4	P	P	P	P	P	P	N	P	P	P	P	E	G	P	E	P	
Supremacy (thifensulfuron + tribenuron + fluroxypyr)	E	E	NL	E	E	2,2,4	N	N	N	N	P	N	P	P	P	P	G	G	E	G	G	G	
Tacoma ^R (fenoxaprop)	E	NL	NL	E	E	1	E ^R	N	N	E ^R	G ^R	P	N	P	E ^R	N	N	N	N	N	N	N	
Varro ^R (thiencazabone)	NL	NL	NL	E	E	2	G	G	F	GE	GE	U	FG	U	E	N	P	FG	FG	P	U		
Vida (pyraflufen)	G	G	NL	GE	GE	14	P	P	P	P	P	P	N	P	P	P	P	E	P	P	U		
Weld (MCPE + fluroxypyr + clopyralid)	E	E	NL	E	E	4,4,4	P	P	P	P	P	P	N	P	P	P	FG	E	G	FG	E	U	
WideMatch + MCPA (clopyralid + fluroxypyr + MCPA)	E	E	NL	E	E	4,4,4	P	P	P	P	P	P	N	P	P	P	FG	E	G	FG	E	U	
Wolverine Advanced (fenoxaprop + bromoxynil + pyrasulfotole)	E	NL	NL	E	E	1,6,27	E	N	N	E	GE	P	N	P	E ^R	P	F	GE	GE	E	G		
Zidua (pyoxasulfone)	NL	NL	NL	E	NL	5	FG	F ¹	F ¹	F ¹	F ¹	U	U	E	F ¹	N	N	F	F	U	N		
2,4-D amine (2,4-D amine)	E	G	E	E	E	4	P	P	P	P	P	P	N	P	P	P	F	FG	P	F	E	F	
2,4-D ester (2,4-D ester)	E	F	G	G	G	4	P	P	P	P	P	P	N	P	P	P	FG	FG	P	F	E	F	

** Veiny pepperweed is tolerant to sulfonylurea herbicides such as Ally, 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.

¹ Efficacy may vary depending on product rate and fall or spring application.
³ C - control.
⁵ Green foxtail is suppressed.

 ^A Site of action, described on page 759.
 No control of herbicide resistant weed biotypes. See the list of known resistant weeds on the second page of the technical section.
^B Clearfield wheat only.
^F Similar ratings for burndown.
^G Burndown.
¹ Suppression only. Requires tank mix partner or sequential applied herbicide for control.

SMALL GRAIN WEEDS

SMALL GRAIN HERBICIDE PERFORMANCE RATINGS

BROADLEAVES

	POSTEMERGENCE (continued)																																		
Henbit or deadnettle	G	P	F ^R	P	F ^R	P	F	G	E	G	E	E	E	G	E ^R	E	E ^R	E	E	E	E ^R	F ^R	F	F	F	G ^R	G	F	P	G ^R	F	P	F	F	● PowerFlex HL/TeamMate ^R
Horseweed (Marestail)	U	G	F	E	E	U	P	F	P	F	N	P	F	F	F	F	F	F	U	G	E	E	U	G	E	U	G	U	G	E	E	P	● Pulsar		
Knotweed	G	G	G	G	E	E	F	F	G	E	N	G	E	E	U	G	E	G	E	E	E	E	G	E	E	G	E	E	G	E	E	P	● Pulsar + MCP ester		
Kochia	E	E	G	F	E	E	F	G ^R	E	E ^R	G	E	E ^R	E	E	E	E ^R	F ^R	G	E	G	E	E	E	E	E	E	E	E	F	F	G	E	P	● Quelex
Lambsquarters, common	G	G	F	E	E	E	G	E	E	N	E	E	G	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	G	E	E	F	● Rave		
Mayweed (Dogfennel)	F	P	P	P	P	F	E	E ^R	N	E	E ^R	P	F	G	P	F ^R	P	P	P	P	F	G ^R	P	P	P	P	P	P	P	P	P	P	P	● Rimfire Max ^R	
Mustard, blue	P	F	F	G	E	P	G	E	E	N	E	F	G	P	E	U	F	G	E	E	F	G	E	E	F	G	P	G	P	F	E	F	U	● Starane Flex	
Mustard, tansy or Flixweed	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	G	F	G	P	● Starane Ultra			
Mustard, Treade/Bushy wallflower	E	E	E	E	E	G	F	G	N	E	E	E	E	F	G	F	G	E	G	E	E	E	E	E	E	E	E	E	F	E	E	U	● Starane NXT + MCPA		
Mustard, tumble	G	G	F	E ^R	E	P	F	F	N	F	F	G	G	F	E	F	G	E	E	G	E	E	G	E	E	G	E	E	G	E	E	P	● Sterling Blue/Clarifier/Clarity/Banvel/Dicamba Max 4		
Mustard, wild	G	G	E	G	E	E	P	F	G	E	N	E	E	G	E	E	E	G	E	E	E	G	E	E	E	G	E	E	G	E	E	P	● Sterling Blue/Clarifier/Clarity/Banvel/Dicamba Max 4 + 2,4-D or MCPA		
Nightshade, black	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	E	F	G	P	● Stinger			
Pennycress, field	G	F	G	E	E	E	E	E	N	G	E	F	E	E	E	E	E	G	G	E	E	G	E	E	G	E	E	G	F	G	E	E	G	● Supremacy	
Pepperweed**	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	● Tacoma ^R
Pigweed, redroot	U	P	P	N	F	U	F	G	F	G	F	G	G	U	G	F	G ^R	U	U	U	P	F	G	F	N	U	F	U	U	U	U	U	U	U	● Varro ^R
Prickly lettuce	F	F	F	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	P	P	P	● Vida		
Ragweed, common	F	E	F	E	E	E	F	G	N	E	E	G	E	E	F	G	E	E	E	F	E	F	G	F	G	E	E	U	U	U	U	U	U	U	● Weld
Ragweed, giant	F	E	F	E	E	E	F	G	N	E	E	G	E	E	F	G	E	E	E	F	E	F	G	F	G	E	E	U	U	U	U	U	U	U	● WideMatch + MCPA
Russian thistle	E	E	F	E	E	G	E	F	N	E	E	E	E	F	G	E	G	E	E	E	E	F	E	F	G	F	G	E	E	U	U	U	U	● Wolverine Advanced	
Shepherdspurse	F	G	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	N	U	F	N	● Zidua		
Smartweed, annual	P	F	G	P	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	P	F	● 2,4-D amine		
Sowthistle, perennial	P	F	G	F	F	G	E	P	G	E	N	E	E	F	E	E	G	E	G	E	G	E	G	E	F	F	E	P	F	F	F	F	● 2,4-D ester		
Sunflower																																			
Wild buckwheat																																			
Wild garlic***																																			

SMALL GRAIN WEEDS

SMALL GRAIN HERBICIDE ADJUVANT RECOMMENDATIONS

HERBICIDE	SPRAY ADJUVANTS ¹						
	NIS		HSOC-MSO ²		HSOC-COC ³		Other
AFFINITY BROADSPEC	1-2 qt/100 gal ⁸						
AFFINITY TANKMIX	1-2 qt/100 gal ⁸		L		L	+	2-4 qt UAN or 2-4 lb AMS/A
AGILITY SG	1-4 pt/100 gal ⁸	or	0.5-1 gal/100 gal ⁶	or	0.5-1 gal/100 gal ⁶	+	2-4 qt UAN or 2-4 lb AMS/A
AIM EC	1 qt/100 gal					+	2-4 gal/100 gal 28%N or 2-4 lb AMS/A
Aim + Harmony SG or Sterling Blue	1 qt/100 gal					or	2.5 gal/100 gal WC+NIS ⁴
ALLY XP (spring wheat and spring or winter barley)	1-2 pt/100 gal ⁸		L		L	+	2-4 qt UAN or 2-4 lb AMS/A
ALLY XP (winter wheat)	0.5-4 pt/100 gal ⁸		L		L	+	2-4 qt UAN or 2-4 lb AMS/A
ALLY XP + 2,4-D or MCPA (0.5 pt or less)	1-2 pt/100 gal ^{7,8}						
ALLY XP + 2,4-D or MCPA (over 0.75 pt)	No						
ALLY EXTRA SG	0.5-4 pt/100 gal ⁸		L		L	+	2-4 qt UAN or 2-4 lb AMS/A
AMBER	1-2 qt/100 gal ⁸						
Amber + 2,4-D or MCPA	1 qt/100 gal ⁷						
ANTHEM FLEX	1 qt/100 gal ¹⁵	or	0.5-1 pt/A ¹⁵	or	0.5-1 pt/A	+	1-2 qt UAN/A 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	1-2 qt/100 gal ⁸	or	0.5-1 gal/100 gal	or	0.5-1 gal/100 gal	+	2-4 qt UAN or 2-4 lb AMS/A
AXIAL XL (Adjuvant included)							
BEYOND ⁷	1 qt/100 gal	+	0.5 gal/100 gal ¹⁴	or	0.5 gal/100 gal ¹⁴	+	2.5 gal/100 gal 28% N or 12-15 lb AMS/A ⁵
CALLISTO/INCINERATE	1 qt/100 gal ⁷			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 2.0	1-2 qt/100 gal	or	0.5 gal/100 gal			+	1-2 qt UAN or 1-2 lb AMS/A or 0.5-1 gal/100 gal WC+NIS ⁴
EVEREST 3.0	1-2 qt/100 gal		1-2 qt/100 gal	or	2-4 pt/100 gal	+	1-2 qt/A UAN or 1-2 lb/A AMS
EXPRESS	0.5-4 pt/100 gal ⁸	or	L (0.5-1 gal/100 gal)	or	L (0.5-1 gal/100 gal)	+	2-4 qt UAN or 2-4 lb AMS/A
Express + 2,4-D or MCPA (1/8 lb a.i. or less)	1-2 pt/100 gal ⁷						
Express + 2,4-D or MCPA (1/4-3/8 lb a.i.)	1 pt/100 gal ⁷						
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	0.5-2 qt/100 gal ⁸						
Finesse Cereal and Fallow + 2,4-D or MCPA (1/4-1/2 lb a.i.)	0.5-1 qt/100 gal ^{7,8}						
FIRSTSHOT	1-2 qt/100 gal	or	0.5-1 gal/100 gal	or	0.5-1 gal/100 gal	+	2-4 qt UAN or 2-4 lb AMS
GLEAN XP	1-2 qt/100 gal						
GOLDSKY	1-2 qt/100 gal					+	1.5 lb AMS/A ⁵
GR2	1-2 qt/100 gal				L (1-1.25 gal/100 gal)	+	With NIS only: 1-2 qt/A UAN or 1.5-3 lb AMS/A
GRAMOXONE SL/SL 2.0	1 pt/100 gal ¹³	or	0.5 gal/100 gal	or	0.5 gal/100 gal		
HARMONY SG	1-2 qt/100 gal ⁸		L (0.5-1 gal/100 gal) ⁹	or	L (0.5-1 gal/100 gal) ⁹	+	2-4 qt UAN or 2-4 lb AMS
Harmony SG + 2,4-D or MCPA (1/4-3/8 lb a.i.)	1-2 pt/100 gal ⁷						
Harmony SG 2,4-D or MCPA (≥ 3/8 lb a.i.)	No						
HARMONY EXTRA SG	1-2 qt/100 gal ⁸		L (0.5-1 gal/100 gal) ⁹	or	L (0.5-1 gal/100 gal) ⁹	+	2-4 qt UAN or 2-4 lb AMS
Harmony Extra SG + 2,4-D or MCPA (1/4-3/8 lb a.i.)	1-2 pt/100 gal ⁷						
Harmony Extra SG + 2,4-D or MCPA (≥ 3/8 lb a.i.)	No						
HUSKIE ⁹	1-2 qt/100 gal					+	1-2 qt UAN or 0.5-1 lb AMS/A
MAVERICK/OUTRIDER	2 qt/100 gal ⁸						
OLYMPUS	1-2 qt/100 gal ⁸						
OSPREY ⁷	2 qt/100 gal ⁸	or	0.75 pt/A			+	1-2 qt UAN/A or 1.5-3 lb/A AMS with NIS
PEAK	1-2 qt/100 gal ⁸				L (dry climate)	+	2-4 qt UAN or 2 lb AMS/A
PERFECTMATCH	1-2 qt/100 gal					+	1-2 qt/A UAN or 1.5-3 lb AMS/A
POWERFLEX HL	1-2 qt/100 gal ⁸			or	L (0.5-0.625 gal/100 gal) ⁷	+	1-2 qt UAN or 1.5-3 lb AMS/A ⁴

SMALL GRAIN WEEDS

SMALL GRAIN HERBICIDE ADJUVANT RECOMMENDATIONS

HERBICIDE	SPRAY ADJUVANTS ¹					
	NIS		HSOC-MSO ²		HSOC-COC ³	Other
PRE-PARE	0.5-1 qt/100 gal ⁸		L (0.75 pt/A) ¹¹			+ 2 qt UAN for (NIS only) or 1.5 lb AMS/A
PULSAR	1-2 pt/100 gal					
QUELEX	1.6-4 pt/100 gal	or	2-4 pt/100 gal	or	2-4 pts/100 gal	
RAVE	1-2 pt/100 gal ⁸					
RIMFIRE MAX	2 qt/100 gal	or	0.75 pt/A			1-2 qt UAN or 1.5-3 lb AMS with NIS
RT 3						8.5-17 lb AMS/100 gal
SENTRALLAS	0.25-2 pt/100 gal		1 qt/100 gal	or	0.5 gal/100 gal	2-4 qt/A UAN or 2-4 lb/A AMS
SHARPEN			0.75pt/A			+ 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal
SIERRA	1-2 qt/100 gal	or	0.5 gal/100 gal			+ 1-2 qt UAN or 1-2 lb AMS/A or 0.5-1 gal WC+NIS ⁴ /100 gal
STERLING BLUE/CLARIFIER/CLARITY (When mixed with SU herbicides such as Ally, Amber Express, Finesse Cereal and Fallow, Glean XP and Harmony Extra)	1-2 pt/100 gal				1-2 qt/A	+ 2.5 lb/A of AMS or 2-4 qt/A of 28% UAN
SUPREMACY	1 qt/100 gal	or	0.75 pt/A			+ 1.5 lb AMS or 0.5-1 gal WC+NIS ⁴ /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	2-4 qt/A UAN or 2-4 lb/A AMS
TEAMMATE	1-2 qt/100 gal ⁸			or	L (0.5-0.625 gal/100 gal) ⁷	+ 1-2 qt UAN or 1.5-3 lb AMS/A ⁴
VALOR			1 qt/A			2-2.5 lb AMS/A or 1-2 qt UAN/A
VIDA	1 qt/100 gal					+ 2-4 gal/100 gal 28%N or 2-4 lb AMS/A

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 Succeed/Ultra or HSOC-MSO. HSOC-MSOs are generally used at half the labeled MSO rates.

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

⁴ Class Act NG or Flex, Alliance or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

⁵ NIS + Class Act NG or Flex, Alliance or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

⁶ Only in fallow.

⁷ Do not use adjuvant with a liquid nitrogen fertilizer carrier. For Callisto/ Incinerate - do not use POST.

⁸ NIS may be needed if fertilizer and water are carriers. See label for NIS and liquid fertilizer rates.

⁹ Burndown only.

¹¹ Not for mixes with sulfonyleureas.

¹³ Use NIS when applying by air.

¹⁵ 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.

SMALL GRAIN HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing*	Labeled Crops**	Comments/Restrictions (X-Y) = Zadoks Scale	GPA ¹		Rainfast (hrs)	Aerial Application	Intervals* (Days)		
				Ground	Aerial			Feeding Forage	Grazing Animals	Grain Harvest
Affinity TankMix or 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	Y	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	Y	7,30	7	45
Aim EC	PP POST	W,S,D,B,O,R,T W,S,B,D,O,R,T	Before planting to emerged weeds. Up to jointing.	10	3	1	Y	7	NR	NR
Ally XP	POST PH	W,S,D,B,T W,S,B	(12-40) 2 leaf - but before boot stage. 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	Y	NR	NR	10
Ally Extra SG	POST	W,S,D,B,T	(12-33) 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	Y	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	Y	NR	NR	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.	10	3	1	Y	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	Y	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	Y	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	Y	NO	NO	45
Axial Star	POST	W,S,B	Apply from 2-leaf to pre-boot.	8	5	1	Y	30,60 ⁶	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	Y	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	NR
Banvel			See Sterling Blue.							
Beyond	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. Supplemental label (exp. 8/2019) for use on Clearfield and Clearfield Plus winter wheat.	10	5	1	Y	0	0	0
Bison	POST	W,S,D,B,O,R	(13-40) 3 leaf up to boot stage.	10-20	5	1	Y	45	45	NR
Buckle	PP	W,D,B	PPI no deeper than 3-4".		NL		NL	NO	NO	NR
Brash/Weedmaster	PP POST PH	W,S,D,B,O W,S,D W,S,D	Apply before planting. Delay planting 10 days per pint. Barley and oat as pasture or hay. 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	Y	Delay M	Delay M	NR
Callisto/Incinerate	PRE POST	O	Prior to oat and weed emergence. To emerged weeds <5" up to 50 day PHI.	10-80	NL	1	NL	30	30	50
Carnivore	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	Y	45	45	40
Clarifier/Clarity			See Sterling Blue.							
Cornerstone/ Cornerstone Plus/ Tomahawk 4 or Cornerstone 5 Plus/ Tomahawk 5	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	Y	56	56	56
Curtail/Curtail M	POST	W,S,D,B,O	(14-31) 4-leaf up to jointing (Curtail). Curtail M labeled on oat. (13-31) 3-leaf up to jointing (Curtail M). *Curtail, Curtail M is NR.	10	2	6	Y	- ²	- ²	14 ²
Dicamba Max 4			See Sterling Blue.							
Dimetric/Metriclude	POST	W,B	2 leaf to prior to jointing for winter wheat and barley.	10-40	2-10	7	Y	-	14	21
Discover NG	POST	W,S,D	(12-30) 2 leaf to pre-boot. Do not apply to winter wheat in fall.	5	3	0.5	Y	30	30	60

SMALL GRAIN WEEDS

SMALL GRAIN HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing*	Labeled Crops**	Comments/Restrictions (X-Y) = Zadoks Scale	GPA ¹		Rainfast (hrs)	Aerial Application	Intervals* (Days)		
				Ground	Aerial			Feeding Forage	Grazing Animals	Grain Harvest
Distinct	PP	W,S	Apply ≥ 30 days before planting. 1" rain or irrigation is required.	3		4		NR	NR	NR
Durango DMA/Duramax	PP	W,S,D,B,O,R,T	Apply prior to planting to emerged weeds.	3-40	3-15	RE		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		Y	7	7	7
Elevore	PP	W,S,D,B,T	Apply >14 days before planting for annual broadleaf weed control.	8	5	NL	Y	NL	NL	NL
ET Herbicide	POST	W,S	Emergence to appearance of flag leaf. ^A 21 days for hay.	10	5	1	Y	NR, 21 ^A	7	60
Everest 2.0/Sierra	POST	W,S,D	Apply from 1-leaf to jointing.	5-10	3, 5	1	Y	30	30	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	Y	30	30	60
Express	PP	W,S,D,B,O,T	Burndown.	5-20	2-5		Y	7, 30	7	45
	PRE									
	POST		(12-32) 2 leaf - but before flag leaf is visible. PHI 30 days for hay.			3+				
Facet L	PP	W,S	Apply prior to wheat planting. Not labeled POST in-crop. Plant wheat at least 1-inch deep. Certain states only ^A .	5-40	5 ^A	6	Y ^A	NL	NL	NL
Fallow Star	PP	W,S,B,D,O	Apply to emerged weeds at least 15 days before planting.	3-10	3-5	6	Y	56	56	NR
Far-Go	PP	W,S,D,B,T	PPI no deeper than 3-4" Post-plant incorporated - stay above seed.	10	NL		NL	NO	NO	NR
Finesse Cereal and Fallow	PP	W,S	Do not apply to durum or Wampum varieties.	3	1-5		Y	NR	NR	NR
	PRE	W,S	Before crop emergence.							
	POST	W,S,D,B,T	1-leaf to before boot stage wheat and barley. After 2-3 leaf but before flag leaf visible in triticale.			6				
FirstShot	PP	W,S,D,B,T	Apply prior to planting.	5	5		Y	NO	NO	NR
Foxfire	POST	W,S	Apply from 2-leaf stage to pre-boot stage.	5-10	5	1	Y	30	30	60-70
Glean XP	PRE	W	Winter wheat and winter oat in certain states.	3-20	1-5		Y	NR	NR	45
	POST	W,S,D,B,O,T	(12-40) 2 leaf - but before boot stage.			4				
GoldSky	POST	W,S,D,T	Apply to actively growing weeds from 3 leaf to joint stage (Zadoks 31) of crop ⁹ .	10	5	4	Y	28	7	60
GR2	POST	W,S,D,T	Apply from 3-leaf to jointing (Zadoks 31) to main flush of actively growing weeds according to weed heights on label.	10	5	4	Y	28	7	60
Gramoxone SL/SL 2.0	PP	W,S,D,B	Before planting to emerged weeds.	5	5	0.5	Y	NR	NR	NR
	PRE	W,S,D,B	Before crop emergence to emerged weeds.							
Harmony SG	PP	W,S,D,B,O,T	Prior to planting or shortly after, but prior to crop emergence. PHI 30 days for hay.	5-20	2-5		Y	7, 30	7	NR
	POST		(12-33) 2 leaf - but before flag leaf is visible (Spring oats 3-leaf to prior to jointing.)			1				
Harmony Extra SG	PP	W,S,D,B,O,T	Prior to planting or shortly after, but prior to crop emergence. PHI 30 days for hay.	5-20	2-5		Y	7, 30	7	45
	POST		(12-33) 2 leaf - but before flag leaf is visible (Spring oats 3-leaf to prior to jointing.)			4				
Hi-Dep	POST	W,S,B,O,D,R	After grain begins tillering and before boot stage.	1-10	0.5	4	Y	14	14	NR
	PH	W,S,B,O,D,R	After the dough stage of grain.							
Huskie	POST	W,S,D,B,T	^A Apply from 1-leaf stage up to: 60 days prior to harvest in MN, MT, ND and SD; 70 days prior to harvest in other states.	10	5	1	Y	25	25	- ^A
Huskie Complete	POST	W,S,D	^A Apply from 1-leaf stage up to: 60 days prior to harvest in MN, MT, ND and SD; 70 days prior to harvest in other states.	10	5	1	Y	25	25	- ^A
Incinerate			See Callisto							
Karmex/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		Y	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	Y	45	45	40
Maverick/Outrider	PRE	W	For winter wheat only. Before crop emergence.	5-20	5-15		Y	NR	30-hay	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.			4			0-grz	
MCPA	POST	W,S,D,B,O,R	(13-40) 3-5 leaf up to early boot stage. Do not spray in boot to dough. ¹ 1 hr ester. 4 hr amine.	10	2	1-4 ^c	Y	7	7	NR
Moxy	POST	W,S,D,B,O,R,T	(10-40) emergence to boot stage.	10-20	5	1	Y	45	45	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	Y	NR	NR	71

SMALL GRAIN HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing*	Labeled Crops**	Comments/Restrictions (X-Y) = Zadoks Scale	GPA ¹		Rainfast (hrs)	Aerial Application	Intervals* (Days)		
				Ground	Aerial			Feeding Forage	Grazing Animals	Grain Harvest
Optify	PGR	W,S,D,B,O,R,T	Plant Growth Regulator. Soil applications can begin prior to planting and continue while plants are in vegetative stage. Formulate with liquid fertilizer and/or through irrigation system. Foliar applications may begin when plants reach or surpass 4-leaf stage of development. Best to apply before leaf hardening.	5 ^{foliar}	NO	-	NO	NL	NL	0
Orion	POST	W,S,D,B,O,R,T	Apply to emerged weeds from 3-leaf up to joint stage (31) of crop. May apply later, not after boot stage, if risk of crop injury is acceptable.	8	3	4	Y	NR	7	60
Osprey	POST	W, T	Apply from wheat 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 labels in ID, OR, WA (exp. dates not given) for various tank mixes to control emerged annual grasses and/or broadleaf weeds in winter wheat.	10	5	4	Y	30,60	NR	60
Palisade EC/Palisade 2EC	POST	W,S,D,B,O,R,T	Apply from Feekes 4-7 and before Feekes 8 ^A . ^A NR when grown for cereals. When grown for seed, do not feed or graze 49 days after last application.	10	2		Y	NR ^A	NR ^A	45
Peak	POST	W,S,B,O,D,R,T	(13-32) 3 leaf stage of crop to before the second node is detectable in stem elongation.	20	2	4	Y	30	30-grz 40-sil	60
PerfectMatch	POST	W,S,D,T	Apply from 3-leaf to jointing (Zadoks 31) to main flush of actively growing weeds according to weed heights on label.	10	5	4	Y	28	7	60
PowerFlex HL	POST	W, T	Apply to actively growing weeds from 3 leaf to joint stage (Zadoks 31) of crop.	10	5	4	Y	28	7	60
Pre-Pare	PP PRE	W,S	Burndown.	5-10	3	1	Y	NR	NR	60
Prowl H2O	POST	W, S, T	Apply from 1st leaf until before flag leaf is visible/emerged. ^A PHI 28 days for hay.	10	5		Y	11,28 ⁶	^A	60
Pulsar	POST	W,S,D,B	Spring wheat-before it exceeds 6-leaf; fall seeded wheat-prior to jointing. Spring barley-before it exceeds 4-leaf; fall barley-prior to jointing.	8	3	4	Y	7,14 ⁶	7	40
Quelex	PP POST	W,S,D,B,T W,S,D,B,T	Summer, Fall or Spring PrePlant 2 lf to flag leaf emergence; Zadoks 12-39	8	5	4	Y	21	7	60
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	Y	0	7-hay	37
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	Y	7	7	NR
Rimfire Max	POST	W, S, D	Emergence (one fully expanded leaf) up to flag leaf emergence.	10-15	5	4	Y	30	NR	71
Roundup PowerMax/ WeatherMAX	PP PRE PH	W,S,D,B,O,R,T W,S,D,B,O,R,T W,S,D,B	Apply prior to planting to emerged weeds. Apply prior to crop emergence to emerged weeds. Pre-harvest (wheat and feed barley only). Apply after hard dough stage and 30% moisture or less.	3-40	3-15	S		56	56	56
RT 3	PP PRE	W,S,D,B,O,R,T W,S,D,B,O,R,T	Apply before planting. Apply before crop emergence.	3-4	3-15	S	Y	NR	NR	14
	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 PH	W,S,D,B,O,R	Full tiller but before boot stage (25-40). Grain in hard dough stage.	5	2	6	Y	NR	NR	14
Sentrallas	POST	W,S,D,B,O	2 lf but before flag leaf is visible. For spring oats: 3 lf but before jointing.	8	3	1	Y	7-forage 30-straw	7	45
Sharpen	PP PRE	W,S,D,B,O,R,T	Apply as a burndown before planting or PPI. Before crop emergence.	5	3	1	Y	30	30	NR
Shredder E-99			See 2,4-D.							
Sierra			See Everest 2.0.							
Starane Flex	POST	W,S,D,B,O,R,T	Apply from 3-leaf crop to flag leaf emergence (39).	8	3	4	Y	NR	7	60
Starane Ultra	POST	W,S,D,B,O,T	(12-39) 2 leaf to flag leaf emergence.	8	3	1	Y	7	7	40
Starane NXT	POST	W,S,D,B,O,T	Apply from 3 leaf to flag leaf emergence.	8	3	1	Y	45	45	45
Sterling Blue/Clarifier/ Clarity/Banvel/ 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). Banvel/Dicamba Max 4: delay planting 20 days/pt (east) and 45 days/pt (west).	3-50	1-10		Y	37	7 (lact.) 0 (non-lact.)	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	POST	W,S,D,B,O	3 leaf up to early boot.	10	NL	6	NL	- ²	- ²	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	Y	NO	NO	45
Tacoma	POST	W,S,D,B	(11-30) wheat, apply from emergence to PHI; barley emergence to 5-leaf stage (prior to jointing); recommended prior to 5th leaf emergence.	5-20	5	1	Y	NR	NR	- ³

SMALL GRAIN WEEDS

SMALL GRAIN HERBICIDE APPLICATION TIMING AND RESTRICTIONS

Herbicide	Application Timing*	Labeled Crops**	Comments/Restrictions (X-Y) = Zadoks Scale	GPA ¹		Rainfast (hrs)	Aerial Application	Intervals* (Days)		
				Ground	Aerial			Feeding Forage	Grazing Animals	Grain Harvest
Talinor	POST	W,S,D,B	2 lf to pre-boot stage. Do not apply to crops stressed by frost, severe weather.	10	5	1	Y	30-forage 60-straw	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	Y	-	-	-
TeamMate	POST	W, T	Apply to actively growing weeds from 3 leaf to joint stage (Zadoks 31) of crop.	10	5	4	Y	28	7	60
Tomahawk 4, Tomahawk 5			See Cornerstone Plus, Cornerstone 5 Plus							
Treflan			See Trust.							
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		Y	NR	NR	NR
Valor SX	PP HA	S,B W,S	FALL in barley, spring wheat, SPRING in spring wheat. Hard dough stage and grain has <30% moisture.	15 10		1		NL	- ⁷	10
Varro	POST	W, S, D	Do not apply to durum wheat after jointing. In MT Only: Do not apply to winter, spring, or durum wheat after jointing. ^A Apply from 1-leaf stage up to 60 days prior to harvest in MN, MT, ND and SD, 70 days prior to harvest in other states.	10	5	1	Y	30	7	- ^A
Vida	PP POST	W,B,O,R,T W,T	B,O,R: Do not apply within 24 hours of planting. Emergence to appearance of flag leaf.	10	5	1	Y	21	21	60
Weedmaster			See Brash.							
Weld	POST	W,S,D,B,O	From 3-leaf up to and including flag leaf emergence (39).	8	3	6	Y	7, 14 ⁶	7	40
WideMatch	POST	W,S,D,B,O	Apply from 3 leaf up to flag leaf emergence.	10	3	6	Y	7	7	40
Wolverine Advanced	POST	W,S,D,B	(11-30) wheat, apply from emergence to PHI; barley emergence to 57 days PHI; recommended prior to 5th leaf emergence.	10-20	5	1	Y	25	25	- ³
Zidua	POST	W,S	Delayed PRE or early POST only. Do not apply PP surface, PPI, or PRE in wheat. Apply PRE as broadcast spray to soil surface when 80% of germinated seeds have a shoot at least 0.5" long until wheat spiking. Apply early POST up to the fourth-tiller growth stage.	5 Y	3 7	NL 7	Y NR	7	7	NL
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	-	Y	7	7	NR
2,4-D Amine 4, LV4, LV6, Shredder E-99 (2,4-D)	POST PH	W,S,D,B,O,R W,S,D,B,O,R	(25-40) full tiller - but before boot stage (prior to jointing preferred); not forming joints for E-99. When grain is in dough stage or later. ^C 1 hr ester, 4 hr amine. ^D E-99 for animals going to slaughter.	3	2	1-4 ^C	Y	14 ^D	14 ^D	14

* Application Timing and Intervals
¹ includes labeled minimum or range.
² 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.
⁴ Spring barley 57.
⁶ PHI for hay.
⁷ Do not graze until wheat is at least 5" tall.

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

SMALL GRAIN WEEDS

SMALL GRAIN WEED CONTROL

Burndown Herbicides

Herbicide	Comments/Restrictions
SEE PREPLANT OR PREEMERGENCE SECTION	

Preplant or Preemergence Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
AFFINITY BROADSPEC	W,S,D,B,O, T	0.4-1 oz + 1-2 qt NIS/100 gal	PP or PRE shortly after planting to emerged weeds. Burndown of emerged weeds <4" tall or across.
AFFINITY TANKMIX	W,S,D,B,O, T	0.6-1 oz + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb AMS	PP or PRE. Apply through planting for burndown of emerged weeds but prior to crop emergence.
AIM EC	W,S,D,B,O,R,T	0.5-1.9 fl oz: wheat 0.5-1 fl oz: oat, barley + 1 qt NIS/100 gal	PP. Apply to emerged weeds before planting up to jointing of crop. See label for rates on specific weeds. Tank mix with other labeled herbicides for broader spectrum control. Add 2-4 gal 28%N/100 gal or 2-4 lb AMS/A under dry conditions. Temporary leaf burn possible.
AMBER	W,S	0.28-0.47 oz: standard rate 0.56 oz: enhanced rate (each water-soluble packet = 1.4 oz) + 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 postemergence 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 4, 6.
ANTHEM FLEX	W,S	2-4.5 oz/A + 1 qt NIS or 1 pt HSOC-MSO ¹ /100 gal + UAN 1-2 qt or AMS	Rates dependent on soil type. Preemergence use in WA/OR/ID/MT only. All other states 'delayed pre' application (80% of wheat seed germinated with 1/2" 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 + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb AMS	POST harvest or PP burndown of emerged broadleaves up through planting but before crop emergence. May use COC or MSO.
BANVEL		SEE STERLING BLUE	
BRASH/WEEDMASTER	W,S,D,B,O	1-2 pt	PP. Apply prior to planting. Delay planting 10 days per pint at ≤ 6 pt/A. Labeled for barley and oat when grown for pasture or hay.
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/100 gal AMS. Better crop safety PRE than POST. Use 3 fl oz on emerged weeds.
CLARIFIER/CLARITY		SEE STERLING BLUE	
CORNERSTONE/PLUS/ TOMAHAWK 4 or CORNERSTONE 5 PLUS/ TOMAHAWK 5	W,S,D,B,O,R,T	Up to 48 fl oz or Up to 36 fl oz + 8.5-17 lb AMS/100 gal ^a	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. ^a Include NIS or WC+NIS ² as needed.
DICAMBA MAX 4		SEE STERLING BLUE	
DISTINCT	W,S	2-4 oz + 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".
DURANGO DMA/ DURAMAX	W,S,D,B,O,R,T	Up to 48 fl oz + 8.5-17 lb AMS/100 gal ^a	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. ^a Or WC+NIS ² .

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Preplant or Preemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
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.
EXPRESS	W,S,D,B,O	0.25-0.5 oz + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb AMS	PP, PRE, or POST harvest. Apply to emerged broadleaves through planting but prior to crop emergence.
FACET L	W,S	22 oz + 1 qt NIS/100 gal or 0.5-1 pt HSOC-MSO ¹ or 1 pt HSOC-COC ¹ + 2.5 AMS or 0.5-1 gal UAN	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 for burndown. Wheat may be planted 6 months after application in ID, MT, NV, OR, UT, WA, and WY. See label. Use NIS at 1 qt/100 gal if tank mix partner restricts oil use.
FALLOW STAR	W,S,D,B,O	32-44 fl oz + 8.5-17 lb AMS/100 gal	PP. Check label for state restrictions. Can control volunteer grains and certain annual weeds. Apply at least 15 days before planting wheat, barley or oats.
FAR-GO 4E	W,S,D,B, T	1 qt: spring, durum wheat 1.25 qt: spring barley, triticale 1.25 qt: winter wheat 1.25 qt: winter barley 1.5 qt: winter wheat, barley	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. 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". 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 4E + TRUST	S,D,B	1 qt + 1 pt	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.
FAR-GO 10-G	W,S,D,B, T	12.5-15 lb 10-12.5 lb: spring, durum wheat 12.5-15 lb: barley, triticale 15 lb: spring, durum wheat, barley	PPI FALL. For spring and durum wheat and barley, apply within 3 weeks of freeze-up. For winter wheat and barley, apply just before or after seeding. For control of wild oats; suppression of cheat and downy brome. Incorporate within 48 hours. Far-Go may be surface applied at 15 lb with delayed incorporation in ID, MN, MT, ND, and UT prior to spring and durum wheat and barley. Also can be applied to winter wheat at 15 lb without incorporation when seeded with a hoeddrill in CO, KS, NE, and SD. See label for incorporation instructions. PPI SPRING. Apply before or after seeding, but before wild oats germinate. For spring or durum, use 10 lb rate with disk/press drill. See label for incorporation instructions. Allow 3+ days between incorporation and seeding. Fall application is more effective. PRE in MT only for no-till. Apply into standing stubble from 3 weeks prior to soil freeze-up and ending before spring thaw, prior to seeding grain.
FINESSE CEREAL AND FALLOW	W,S	0.2-0.5 oz 0.2-0.5 oz 0.2-0.4 oz	PP winter wheat. May incorporate 1" in TX, OK, KS, NE, and SD. PRE winter wheat. Do not exceed 0.3 oz in WY, MT, ND, and MN. PP or PRE spring wheat. Do not exceed 0.3 oz 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.
FIRSTSHOT	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 in tank mixes. Do not exceed 1 oz 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, 4, 6.
GRAMOXONE SL/SL 2.0	W,S,D,B	2-4 pt + 1 pt NIS/100 gal	PP or PRE. Apply in clean water or nitrogen solution to annual weeds 1-6" tall.
HARMONY SG	W,S,D,B,O, T	0.45-0.9 oz + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb AMS	PP or PRE. Apply to emerged broadleaves through planting but before crop emerges.

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Preplant or Preemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
HARMONY EXTRA SG	W,S,D,B,O, T	0.45-0.9 oz + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb AMS	PP or PRE. Apply emerged broadleaves through planting but before crop emerges.
INCINERATE		SEE CALLISTO	
MAVERICK/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.
OLYMPUS	W,S	0.6 oz: winter wheat 0.2 oz: spring wheat	PP or PRE FALL burndown. For winter wheat and fall planted triticale, apply with glyphosate in the fall. For enhanced control, follow by Olympus, Osprey, Huskie Complete, Varro, Wolverine 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. See in ID,OR,WA (exp. date not given) for tank mix with Axiom DF to suppress Bromus spp. in winter wheat. Supplemental label (exp. date not given) for PP,PRE burndown with glyphosate.
OPTIFY	W,S,D,B,O,R,T	5-12 fl oz	Plant Growth Regulator. At planting: Apply 5 fl oz/A with liquid fertilizer. Broadcast, side or top dress 8-12 fl oz/A. Best results when applied with nutrients. Repeat application ≥7 days. Do not apply >24 oz/A/season.
OUTRIDER		SEE MAVERICK	
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. For improved performance on grass and broadleaf weeds, Pre-Pare used PP or PRE may be followed by Everest 2.0 POST. May use as a follow-up POST product in the SPRING.
QUELEX	W,S,D,B,T	0.55 to 0.75 oz + NIS	Supplemental label (exp. 6/2020): 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.
ROUNDUP POWERMAX/ WEATHERMAX**	W,S,D,B,O,R	11-32 fl oz + 8.5-17 lb AMS/100 gal ^a	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. ^a Or WC+NIS ² .
RT 3	W,S,D,B,O,R,T	11-32 fl oz + 8.5-17 lb AMS/100 gal ^a	PP,PRE or at planting. For use in CO, ID, KS*, MN*, MT, NE*, NM*, NV, ND, OK*, OR, SD, TX, UT, WA, WY. *See county restrictions on label. ^a Or WC+NIS ² .
SHARPEN	W,S,D,B,O,R,T	1-2 fl oz + 0.75 pt HSOC-MSO ¹ + 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 rate.
STERLING BLUE/CLARIFIER/ CLARITY/BANVEL/ DICAMBA MAX 4	W,S,D,B,O	8-16 fl oz	PP. Sterling Blue/Clarifier/Clarity (≤ 24 oz/A): delay planting 15 days/8 oz (east of Miss. River) and 22 days/8 oz (west of Miss. River). Banvel/Dicamba Max 4 (≤ 24 oz/A) delay planting 20 days/pt (east of Miss. River) and 45 days/pt (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.
TOMAHAWK 4/5		SEE CORNERSTONE	
TREFLAN TR-10	W,S,D,B	3.5-10 lb	Varies by crop, soil type, application method, timing and geography - see label.

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

SEE NOTES AT END OF SECTION.

**May use other glyphosate herbicides: Roundup brands, Cornerstone/Tomahawk brands, or Durango DMA/Duramax at labeled rates.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Preplant or Preemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
TRUST/TREFLAN HFP	B	1.0-2.0 ptr	Varies by crop, soil type, application method, timing and geography - see label.
VALOR SX	S, B	FALL: 3 oz SPRING: 2 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		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.

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

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite 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, Finesse Cereal and Fallow, Harmony, Glean XP, Olympus and Osprey. 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 Bayer CropScience or DuPont. Never add surfactant if tank mixed with phenoxy herbicides in liquid fertilizer carrier.

Note 4: See restrictions chart for rotational and/or soil pH restrictions.

Note 6: 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.

SMALL GRAIN WEED CONTROL

Condensed Summary of the Zadoks Two-Digit Code System for Growth Staging in Wheat with Corresponding Feekes Scale

Zadok Code		Description	Corresponding Feekes Code
Principal Stage	Secondary Stage		
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	
	0	First leaf through coleoptile	1
	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	
	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	

Zadok Code		Description	Corresponding Feekes Code
Principal Stage	Secondary Stage		
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 Stage*

- | | | |
|--|--|--|
| 1. One shoot (number of leaves can be added as 1.2). | 7. Second node of stem formed, next-to-last leaf just visible. | 10.5.3 Flowering over at base of head. |
| 2. Beginning of tillering. Collar visible on lower leaves. | 8. Last leaf visible, but still rolled up; head beginning to swell. | 10.5.4 Flowering over, kernel watery-ripe. Lower leaves and culm lose color. |
| 3. Tillers formed, leaves often twisted spirally. In some varieties of winter wheats, plants may be 'creeping' or prostrate. | 9. Ligule of last leaf just visible. | 11.1 Milky-ripe, kernel near full length. |
| 4. Beginning of the erection of the pseudo-stem, leaf-sheaths beginning to lengthen. Full tillered. | 10. Sheath of last leaf completely grown out. Head swollen but not yet visible. Boot stage. | 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. |
| 5. Pseudo-stem (formed by sheaths of leaves) strongly erected. Head initiated. | 10.1 First heads just visible (awns just showing in barley, head escaping through split of sheath in wheat or oats). | 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. |
| 6. First node of stem visible at base of shoot. Beginning jointing. | 10.2 Quarter of heading process completed. | 11.4 Ripe for cutting. Straw dead. Grain ready to crack, not dented by thumbnail lost green color. |
| | 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. | |

SMALL GRAIN WEED CONTROL

APPLICATION TIMING

Preemergence surface
 Preplant surface
 Preplant incorporated and preplant surface
 PPI only

Days before planting (maximum)

Herbicide	Labeled Crops*	Fall**	***	45	30	21	14	7	0	PRE	Comments
Affinity Broadspec	W, S, D, B, O, T										Notes 1, 2.
Affinity Tankmix	W, S, D, B, O, T										Notes 1, 2.
Aim 2EC	W, S, D, B, O, R, T										Note 10.
Amber	W, S										Note 1.
Anthem Flex	W, S										Note 18.
Audit 1:1	W, D, B										Notes 1, 2.
Audit 4:1	W, D, B, T										Notes 1, 2.
Audit 75 WDG	W, S, D, B, T										Notes 1, 2.
Brash/Weedmaster	W, S, D, B, O										Notes 1, 15.
Buckle	W, D, B										Notes 3, 15.
Callisto/Incinerate	0										Note 4.
Comestone/ Plus/S Plus/Tomahawk 4 and 5-	W, S, D, B, O, R, T										Notes 1, 2.
Distinct	W, S										Notes 12, 16.
Durango DMA/Duramax	W, S, D, B, O, R, T										Notes 1, 2.
Elevore	W, S, D, B, T										
Express	W, S, D, B, O, T										Note 2.
Facet L	W, S										Notes 1, 15.
Fallow Star	W, S, D, B, O										Note 10.
Far-Go 4E or 10G	W, S, D, B, T										Notes 3, 8, 15.
Finesse Cereal and Fallow	W, S										Notes 1, 4.
Glean XP	W, O										Notes 4, 11, 15.
Gramoxone SL/SL 2.0	W, S, D, B										Notes 1, 2.
Harmony SG	W, S, D, B, O, T										Notes 1, 9.
Harmony Extra SG	W, S, D, B, O, T										Notes 1, 2.
Maverick/Outrider	W										Note 2.
Pre-Pare	W, S										Notes 1, 2.
Quelex	W, S, D, B, T										Notes 1, 2.
Roundup WeatherMAX	W, S, D, B, O, R, T										Notes 1, 2.
RT 3	W, S, D, B, O, R, T										Notes 1, 2, 15.
Sharpen	W, S, D, B, O										Notes 1, 2.
Sterling Blue/Banvel/Clarifier/Clarity/Dicamba Max 4	W, S, D, B, O										Notes 1, 10, 13, 15.
Targa	W, B										Notes 1, 2.
Treflan TR-10	W, S, D, B										Note 15.
Trust/Treflan HFP	W, S, D, B										Notes 14, 15.
Valor SX	S, B										Note 15.
Vida	W, T										Notes 1, 2.
Zidua	W, S										Notes 15, 16.
Zidua SC	W										

* 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: Maximum days preplant not defined.

Note 2: To emerged weeds, prior to crop emergence.

Note 3: Fall, before ground is frozen. Apply within three weeks of freeze up.

Note 4: Apply prior to crop emergence.

Note 8: Maximum days PPI not defined. PPI spring before or immediately after seeding. Triticale only in spring.

Note 9: Apply through planting but before crop emergence.

Note 10: Apply to emerged weeds.

Note 11: Winter oat only.

Note 12: Delay planting 30 days.

Note 13: 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 Banvel/Dicamba Max 4.

Note 14: Post-plant incorporated winter wheat and before emergence.

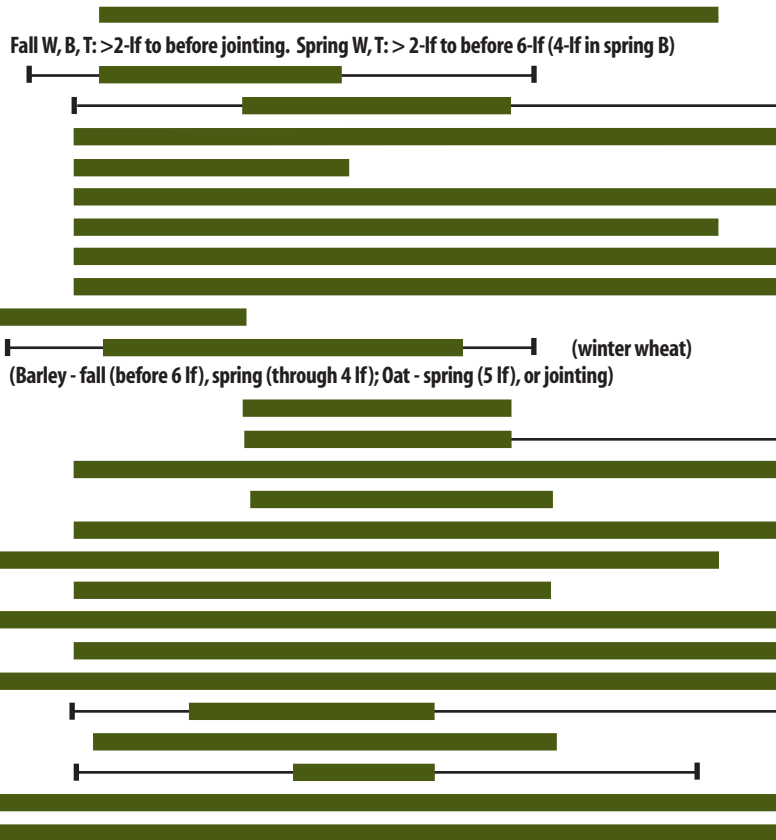
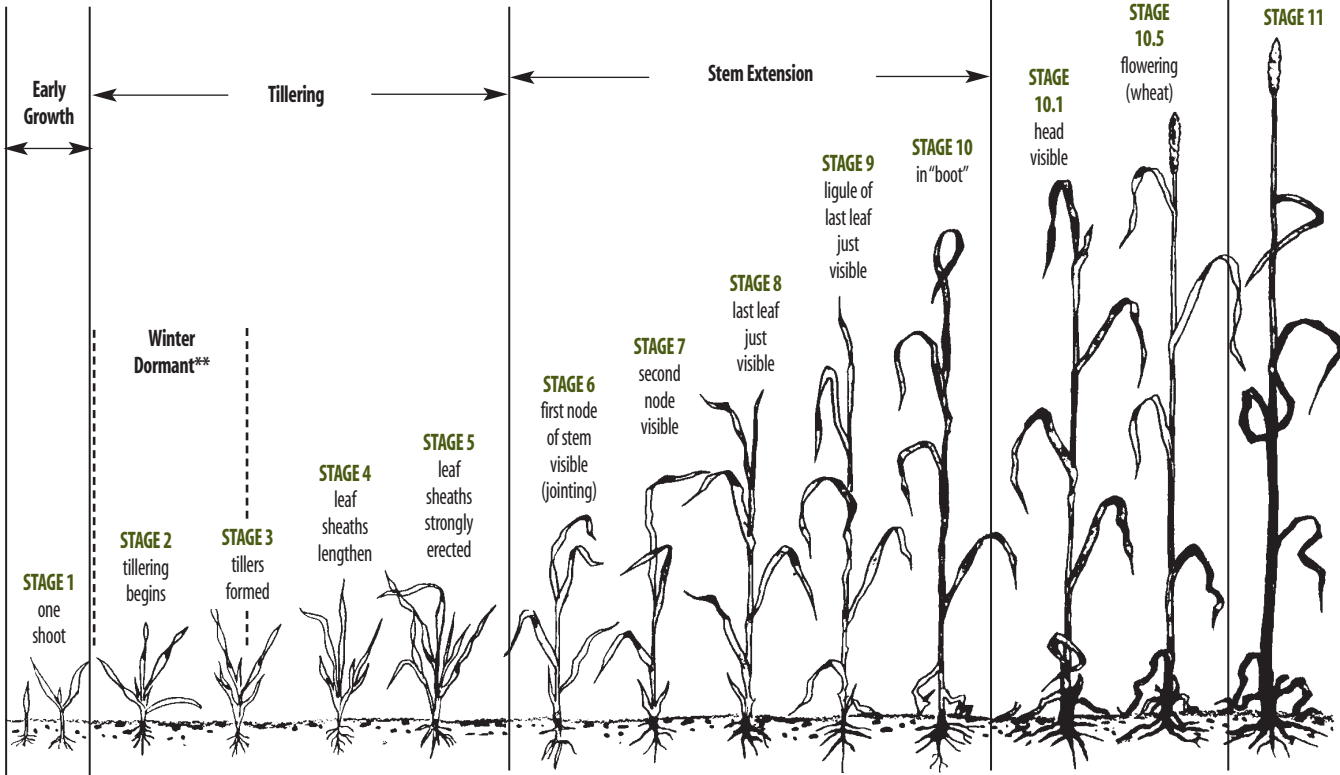
Note 15: See the label for applicable crops, state or use area restrictions.

Note 16: See label for other restrictions.

Note 18: Apply Anthem Flex when 80% of the wheat has germinated and has at least 0.5 inch shoot delayed PRE use or FALL application.

SMALL GRAIN WEED CONTROL

Feekes Growth Stages and POST Herbicide Application



- Affinity TankMix/BroadSpec
- Agility
- Aim/Dimetric/Metriclude
- Ally or Amber
- Ally Extra SG
- Anthem Flex
- Audit
- Audit 1:1 or Audit 4:1
- Axial Star
- Axial XL
- Axiom DF⁵
- Banvel/Clarifier/Clarity/Sterling Blue/Rave/Dicamba Max 4
- Beyond
- Bison
- Carnivore
- Curtail
- Discover NG
- ET Herbicide
- Everest 2.0/Sierra
- Everest 3.0 - wheat (up to 60 days PHI)
- Finesse Cereal and Fallow⁴
- Foxfire
- Glean XP³/Amber
- GoldSky⁸/GR2
- Harmony SG or Extra SG or Ally Extra SG/Express
- Huskie
- Huskie Complete⁹

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

²Wolverine Advanced - Up to 5-leaf stage barley. Apply from crop emergence to 60 days PHI in MN, MT, ND, and SD; 70 days PHI all others.

³Glean XP; all crops, and Amber for barley 2-leaf to before boot; Amber for wheat - emergence to before boot.

⁴After 2-leaf to before boot for wheat and barley; after 2-3-leaf to before the flag leaf for triticale.

⁵Wheat at-spiking to 2-lf in OR, WA, ID.

⁶Wheat, barley, and triticale. Oat is 2-leaf to prior to jointing.

⁸24c MT (exp. 12/2019) application from 3-leaf up to before flag leaf emergence (Zadoks 37).

⁹Apply up to 60 days prior to harvest in ND, SD, MT, MN and 70 days in other states.

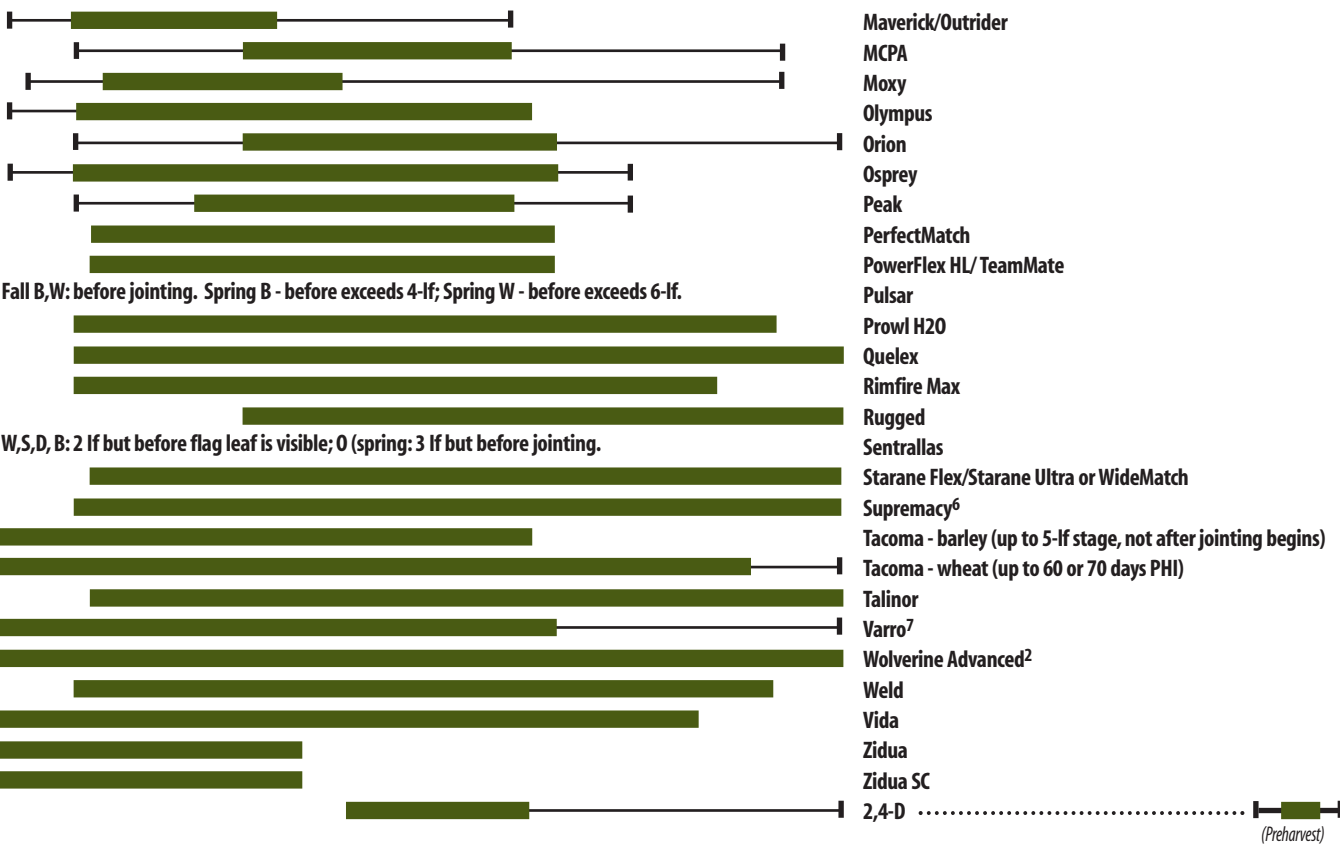
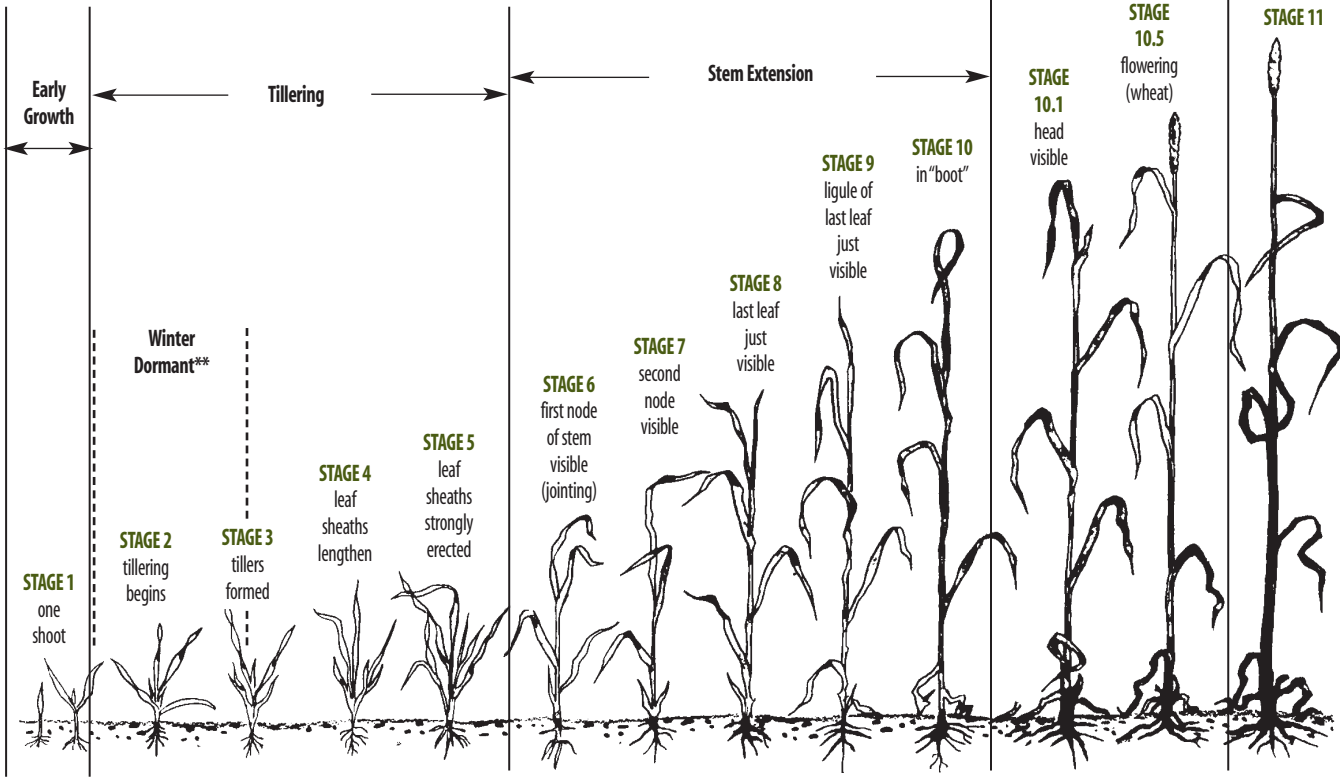
** Usual dormancy within this range, depending on weather.

— = labeled

█ = preferred or recommended application period

SMALL GRAIN WEED CONTROL

Feekes Growth Stages and POST Herbicide Application (continued)



Fall B,W: before jointing. Spring B - before exceeds 4-lf; Spring W - before exceeds 6-lf.

W,S,D, B: 2 lf but before flag leaf is visible; O (spring: 3 lf but before jointing).

Source: Adapted from Correlation of Five Wheat Growth Stage Scales in the Great Plains Bauer, Armond, et al.
²Wolverine Advanced - Up to 5-leaf stage barley. Apply from crop emergence to 60 days PHI in MN, MT, ND, and SD; 70 days PHI all others.
³Glean XP; all crops, and Amber for barley 2-leaf to before boot; Amber for wheat - emergence to before boot.

⁴After 2-leaf to before boot for wheat and barley; after 2-3-leaf to before the flag leaf for triticale.
⁵Wheat at-spiking to 2-lf in OR, WA, ID.
⁶Wheat, barley, and triticale. Oat is 2-leaf to prior to jointing.
⁷Apply up to 60 days prior to harvest in MN, ND and SD, up to 70 days in all other states, in MT do not apply after jointing.

⁸24c MT (exp. 12/2019) application from 3-leaf up to before flag leaf emergence (Zadoks 37).
⁹Apply up to 60 days prior to harvest in ND, SD, MT, MN and 70 days in other states.
 ** Usual dormancy within this range, depending on weather.
 — = labeled
 ■ = preferred or recommended application period

SMALL GRAIN WEEDS

SMALL GRAIN WEED CONTROL

Postemergence Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
AFFINITY BROADSPEC	W,S,D,B,O,T	0.4-1 oz + 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, 6.
AFFINITY TANKMIX	W,S,D,B,O,T	0.6-1 oz + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb 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, 6.
AGILITY SG	W,S,D,B,T	1.6-3.2 oz + 1-4 pt NIS/100 gal + 2-4 qt UAN or 2-4 lb 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, 6.
AIM EC	W,S,D,B,O,R,T	0.5-1.9 fl oz (oat, barley: 0.5-1 fl oz) + 1 qt NIS/100 gal	Apply from emergence up to jointing 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. Add 2-4 gal 28%N/100 gal or 2-4 lb AMS/A under dry conditions. Temporary leaf burn possible. Do not apply if foliage is wet from dew, rain, or irrigation.
ALLY EXTRA SG + 2,4-D LV4 or 2,4-D LV6 or SHREDDER E-99 or MCP or STERLING BLUE BANVEL/CLARIFIER/ CLARITY/ DICAMBA MAX 4	W,S,D,B,T	0.3 - 0.5 oz + 0.5-1 pt #4 amine/ester 0.33-0.67 pt 0.5-1 pt #4 amine/ester 2-4 oz (4-8 fl oz SGF) + 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 Banvel/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 with Sterling Blue/Banvel/Dicamba Max 4. On winter wheat, use 1 pt surfactant with high rate of 2,4-D or MCPA; 2 pt with low rate. On spring wheat and barley use 0.5-1 qt. Do not use surfactant with liquid fertilizer carrier. UAN or AMS may be added to Ally Extra. Notes 1, 2, 4, 6.
ALLY XP	W,S,D,B,T	0.1 oz + 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 winterwheat. UAN or AMS may be added. Do not apply during boot and early heading. Notes 1, 2, 6.
AMBER	W,S,D,B	0.28-0.47 oz: standard rate or 0.56 oz: enhanced rate + 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, 6.
AMBER or PEAK + 2,4-D LV4 or 2,4-D LV6 / SHREDDER E-99 or MCPA or MCPE or STERLING BLUE BANVEL/CLARIFIER/ CLARITY/DICAMBA MAX 4 or DIMETRIC/METRICLUDE	W,S,D,B	0.28-0.47 oz 0.25-0.5 oz + 0.5-0.75 pt amine/ester 0.33-0.67 pt 0.5-1 pt 0.33-0.67 pt 2-4 fl oz 1.3-5.3 oz + 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 4, 6. Apply from tillering to jointing (fall seedings); prior to 5-leaf stage (spring wheat); DON'T 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 + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb 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, 6.

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
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. 2ee CO, ID, MN, MT, ND, OR, SD, WA, WY (exp. 12/2019) for tank mixes with broadleaf herbicides for select weeds in spring wheat (excluding durum), winter wheat and barley. 2ee AL, AR, CO, DE, GA, IA, ID, IL, IN, KS, KY, LA, MD, MI, MN, MO, MS, MT, NC, ND, NE, NJ, NM, NV, OH, OK, OR, PA, SC, SD, TN, UT, VA, WA, WI, WV, WY (exp. 12/2019) for tank mix with Talinor for control of grass and broadleaf weeds in spring wheat (excluding durum), winter wheat and barley.
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. 2ee for tank mix with Talinor in AL, AR, AZ, CO, CT, DE, GA, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, OH, OK, OR, PA, RI, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY (exp. 12/2019) for control of grass and broadleaf weeds, or tank mix with Quelex in ID, MN, MT, ND, OR, SD, WA (exp. 6/2022) for control of wild oat and broadleaf weeds in spring wheat (excluding durum), winter wheat and barley.
AXIOM DF	W, T	4-6 oz: coarse 6-10 oz: medium, fine	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 for lighter soils and 8-10 oz for heavier soil types. In OR, ID, WA: at-spiking to 2-lf wheat. Use 4-6 oz on coarse, 6-8 oz medium and 8-10 oz for fine soils.
BANVEL		SEE STERLING BLUE	
BEYOND	W,S	4-6 fl oz: winter wheat 4-5 fl oz: spring wheat + 1 qt NIS/100 gal + 2.5 gal 28% N or 12-15 lb AMS/100 gal (or WC+NIS ²)	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 sulfonyleurea 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. Supplemental label (exp. 8/2019) for use on Clearfield and Clearfield Plus winter wheat; include 0.5% HSOC (HSOC-COC ¹ or HSOC-MSO ¹) for Clearfield Plus varieties.
BISON	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	W,S,D,B,O	0.5-1 pt	May use up to 1.33 pt 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 + 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	W,S,D,B,O	1-1.5 pt	Apply from 2 leaf up to and including flag leaf emergence (Zadoks 39). Use 1 pt for broadleaf weeds <4" and 1.5 pt for 4 - 8" broadleaf weeds.
CLARIFIER/CLARITY		SEE STERLING BLUE	
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 4, 7.
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 4, 7.
DICAMBA MAX 4		SEE STERLING BLUE	

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
DIMETRIC/METRICLUDE	W, B	2-leaf to 2 tiller 1-3 oz: coarse and medium soil 2-4 oz: fine soil: 3 tiller-4 tiller (before jointing) 3-5 oz: coarse soil 4-6 oz: medium soil 5-6 oz: fine soil	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.
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. 2ee AL, AR, AZ, GA, ID, KY, LA, MN, MS, MT, NC, ND, NM, OK, OR, SC, SD, TN, UT, VA, WA, WY (exp. 12/2019) for tank mix with Talinor for control of grass and broadleaf weeds in all types of wheat (including durum).
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 2.0/SIERRA	W,S,D	1 oz + 1-2 qt NIS or 0.5 gal HSOC-MSO ¹ /100 gal + 1-2 lb AMS (or use WC+NIS ²)	Do not apply > 1 fl oz/A of Everest 2.0 or Sierra (0.027 lb a.i./A of flubencarbazone-sodium) per year. See label for application restrictions for counties in ID, MN, MT, OR, WA, WY to protect endangered species 2ee AL, AR, CO, GA, ID, IL, KS, KY, LA, MI, MN, MO, MS, MT, NC, ND, NE, NV, OH, OK, OR, SC, SD, TN, UT, VA, WA, WI, WV, WY (exp. 12/2019) for tank mix with Talinor for control of grass and broadleaf weeds in spring wheat, winter wheat and durum.
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.
EXPRESS	W,S,D,B,O, T	0.25-0.5 oz + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb AMS	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, Moxy, Bison recommended. Preslurry in water if using a liquid fertilizer carrier. Use 2 qt/100 gal NIS + 2 qt/A UAN 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, 6.
EXPRESS + 2,4-DAMINE / SHREDDER E-99 or 2,4-D LV4 or 2,4-D LV6 or MCP AMINE / ESTER	W,S,D,B,O, T	0.25-0.5 oz + 0.25-0.75 pt 0.25-0.75 pt 0.17-0.5 pt 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.
FOXFIRE	W,S	8.2 fl oz	For control of certain grasses in winter and spring wheat. For use in MN, MT, ND, SD, and WY. Apply from 2-leaf stage to pre-boot stage. Labeled for aerial application.
GLEAN XP + 2,4-D LV4 or MCP or STERLING BLUE/ BANVEL/ DICAMBA MAX 4	W,S,D,B,O	0.167-0.33 oz + 0.5-1 pt 0.5-1 pt 2-4 fl oz + 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, 4, 6. 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.

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)			
Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
GOLDSKY	W,S,D, T	1 pt + 1-2 qt NIS/100 gal + 1.5 lb AMS (or use WC+NIS ²)	Apply to wheat from 3-leaf to joint stage (Zadoks 31). 24c MT (exp. 12/2019) application from 3-leaf up to before flag leaf emergence (Zadoks 37). 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 + 1-2 qt NIS/100 gal	Apply from 3-leaf to jointing (Zadoks 31). 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 SG	W,S,D,B,O, T	0.75-0.9 oz: wheat, barley, triticale 0.45-0.6 oz: oat + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb AMS	Apply to wheat, barley, triticale, or winter oat after the 2-leaf stage but before flag leaf emergence and from 3-leaf to before jointing on spring oat. Apply to broadleaf weeds past the cotyledon stage but before 2" or 3" for most weeds (<12" for wild garlic) with 4" new growth. Does not provide soil residual control. Use higher rates for heavy weed infestations. May apply sequentially (except for oat) but do not exceed 1.5 oz total. Less antagonistic to wild oat herbicides such as Discover than other SU herbicides. Do not use on Ogle, Porter, or Premier oat varieties. Notes 1, 6.
HARMONY EXTRA SG	W,S,D,B,O, T	0.45-0.9 oz: wheat, barley 0.45-0.6 oz: oats + 1-2 qt NIS/100 gal + 2-4 qt UAN or 2-4 lb 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.) use 1-2 pt NIS. Notes 1, 6.
HARMONY EXTRA SG + 2,4-D AMINE or 2,4-D LV4 or 2,4-D LV6 or MCP AMINE / ESTER	W,S,D,B,O	0.45-0.9 oz (0.45-0.6: oats) + 0.5-0.75 pt 0.5-0.75 pt 0.25-0.75 pt 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. NIS at 2 pt/100 gal may be added at lower rate of 2,4-D or MCPA. 1 pt NIS may be added at 0.5 pt rate 2,4-D or MCPA. Surfactant use may increase crop injury. Notes 1, 2, 5.
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.
HUSKIE	W,S,D,B, T	11-15 fl oz + 0.5-1 lb AMS	Apply from crop emergence (1-leaf) to flag leaf emergence. Broadleaf weeds should be 1-4" tall in most cases. Has limited soil activity. Add adjuvants under challenging conditions in spring wheat, and only when tank mix partner requires in winter wheat. 1-2 qt NIS/100 gal may be used with 1-2 qt UAN or 0.5-1 lb AMS/A. Contact a Bayer CropScience representative for more information. See label for more information and rotational restrictions to lentils. Can be used with a liquid N carrier in winter wheat only. See for tank mixes with Starane Flex, Osprey and Starane Flex, and Osprey and Orion in ID, OR, WA, and 2ee labels in ID, OR, WA (exp. dates 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	W, O	1-2 lb	Use only in areas exceeding 16 inches of rainfall. Do not use on coarse textured soils. May apply in spring or fall.
MAVERICK/OUTRIDER	W,S	0.67 oz + 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 brome-grasses - 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. Maverick/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 4, 6.

* W – winter wheat, S – spring wheat, D – durum wheat, B – barley, O – oat, R – rye, T – triticale. SEE NOTES AT END OF SECTION.

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² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
MCP AMINE or ESTER (PHENOXY)	W,S,D,B,O,R	0.5-1.5 pt	Rates above 1.5 pt labeled for perennial weeds. MCPA: apply to 3-5 leaf spring grain up to early boot (Zadoks 13-40); fall grain - fully tillered grain but before boot. MCP E Phenoxy: apply to 3-5 leaf spring grain up to early boot (Zadoks 13-40). Spray when broadleaves are small. Do not use from boot to dough (Zadoks 40-80). Safer on oats than 2,4-D (use 0.5-1 pt). In grains underseeded with seedling clover (except Dutch and sweet), apply 0.5 pt after clover has 2 or more trifoliates. Amine only in PNW. PHI 7 days. Note 11.
METRICLUDE EXT		SEE DIMETRIC	
MOXY	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 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.
OLYMPUS	W,S,D, T	0.6-0.9 oz: winter wheat, triticale 0.2 oz: spring wheat 1-2 qt NIS/100 gal	Apply in fall or spring to actively growing weeds. In winter wheat, use 0.9 oz 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. See 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, 6.
OPTIFY	W,S,D,B,O,R,T	8-12 fl oz	Plant Growth Regulator. Broadcast, side or top dress. Via irrigation: Apply at 8 fl oz/A. Best results when applied with nutrients. Foliar: Apply directly to foliage of actively growing plants ≥6 fl oz/A in minimum 5 GPA. Repeat application ≥7 days. Do not apply >24 oz/A/season.
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. See for tank mixes with Huskie and Orion and Huskie and Starane Flex in ID, OR, and WA, tank mix with Olympus in ID, MT, OR, and WA.
OSPREY	W	3.2-4.75 oz + 0.75 pt HSOC-MSO ¹	Apply from emergence up to jointing of crops (2 node in ID, OK, WA and 2 tiller in CA) and 1 leaf to 2 tiller for wild oat, Persian dandelion and Italian Ryegrass. Use 3.2 oz for wild oat, windgrass, canarygrass and Persian dandelion. Use 4.75 oz for Italian ryegrass, downy brome, jointed goatgrass, and other grasses. Best control on 1-1f 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. See labels 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, 6.
PALISADE 2EC or PALISADE EZ	W, D, B, O, R, T	5-7 fl oz or 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.
PEAK	W,S,D,B,O,R,T	0.38-0.5 oz + 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 organo-phosphate insecticides or liquid fertilizer carriers. UAN or AMS may be added. Notes 5, 6.
PERFECTMATCH	W,S,D,T	1 pt + 1-2 qt NIS/100 gal + 1.5 lb AMS (or use WC+NIS ²)	Apply to wheat from 3-leaf to joint stage (Zadoks 31). 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 hawkbeard, c. bedstraw, and fiddleneck. 1.5 lb AMS/A may be added in moisture stress or low RH conditions.

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
POWERFLEX HL	W, T	2 oz + 1-2 qt NIS/100 gal + 1.5-3 lb AMS (or use WC+NIS ²)	Apply in fall or spring to winter wheat or triticale from 3-If to joint stage (Zadoks 31). Apply to annual grass from 2-If 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 (HSOC-COC ¹ at 0.5-0.625 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.
PULSAR	W,S,D,B	8.3-12.5 fl oz	Apply to fall seeded barley or wheat before jointing, to spring barley before it exceeds 4-leaf and spring wheat before it exceeds 6-leaf. Apply to small broadleaf weeds (1-4"), or up to pre-bolt. NIS at 1-2 pt/100 gal may be included. Tank mix with MCPA ester at 8.6 fl oz. See label for additional tank mixes. Liquid nitrogen may be used up to 50% of the carrier volume.
QUELEX	W,S,D,B,T	0.75 oz + 1.6-4 pt NIS/100 gal	Apply from 2-leaf to flag leaf emergence (Zadoks 12 to 39). Do not apply >0.75 oz/A/growing season.
RAVE	W,S,D,B	2-4 oz (2 oz on spring barley) + 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 rate for certain weeds. For use in ID, KS, MN, MT, ND, NE, NM, NV, OR, OK, SD, TX, UT, WA, WY, and CO (except San Luis Valley). Not registered in IA, IL, IN, MO, WI and certain other states. Note 1.
RHOMENE	W,S,B, O,R,T	0.5-1 pt	Apply after grain is 4 leaf up to boot stage. Use higher rates for biennial and perennial weeds. 0.25-0.5 pt labeled for use with underseeded legumes.
RIMFIRE MAX	W,S, D	3 oz + 0.75 pt HSOC-MSO ¹ or 2 qt NIS/100 gal and 1-2 qt UAN or 1.5-3 lb 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 6.
RUGGED	W,S,D,B,O,R	0.67-1.33 pt	Apply when grain is in full tiller but before boot stage (Zadoks 25-40). Use 0.67-1.33 pt for spring wheat, barley and rye; 1-1.33 pt for winter wheat and rye; 0.5-1 pt for spring oats; and 1-1.25 pt for fall oats (Southern).
SENTRALLAS	W,S,D,B,O	7-14 fl oz	W,S,D,B: 7-14 fl oz /A; not more than 2 applications/crop season, not >14 fl/oz/A/application and not >17.8 fl oz/A/season; allow at least 21 days before second application. O (spring and winter): 7-9 fl oz/A; not more than 1 application/crop season, not >9 fl/oz/A/application. 2ee CO,MT,ND,SD,WY (exp. 12/2018) tank mix with Varro for grass and broadleaf control in winter and spring wheat.
SHREDDER E-99		SEE 2,4-D	
SIERRA		SEE EVEREST 2.0	
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 (alone or) + 2,4-D LV4 or MCPA	W,S,D,B,O, T	0.3-0.7 pt + 1 pt 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 + MCPA(MCPA, Sword) at 1.25-1.5 pt from 3 leaf up to and including flag leaf emergence. Controls hemp dogbane. Note 2.
STARANE NXT + 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 from 3 leaf to flag leaf emergence to 2-8" broadleaf weeds that are actively growing. May be tank mixed with 2,4-D (0.25-0.5 lb ae), MCPA (0.25-0.5 lb ae), sulfonyleureas and all grass herbicides. Controls hemp dogbane.

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre				Comments/Restrictions	
		STERLING BLUE/ CLARIFIER/ CLARITY/ BANVEL/ DICAMBA MAX 4	2,4,-D IV4	MCPA IV4			
STERLING BLUE/ CLARIFIER/CLARITY or BANVEL/DICAMBA MAX 4 + 2,4-D or MCPA	W,S,D,B,O, T	(rates in oz.)				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.	
		2-4	+	8-12	or		8-12
		2-4	+	8-12	or		8-12
		2-4	+	8	or		8-12
		2-3	+	No	or		8-12
		2-4	+	No	or		8-12
		2-4	+	No	or		8-12
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 0.33 pt before bud stage.	
SUPREMACY	W,S,D,B,O, T	4 or 5 oz + 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 for ≤2" weeds. Maximum for oats is 5 oz/A. Use 6 oz for 4" weeds in ID, WA, and OR. Do not use NIS when tankmixing with an EC herbicide at ≥8 fl oz. Tankmix with MCPA ester or 2,4-D ester or bromoxynil for additional broadleaf control. May use MSO or NIS + AMS, or WC+NIS ² brands.	
TACOMA	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. Mixing with MCPA ester or MCPA ester + Harmony SG may increase safening when applying to barley.	
TACOMA + CURTAIL M or HARMONY EXTRA + STARANE ULTRA or HARMONY SG + MCPA ESTER or HARMONY SG + STARANE ULTRA or HUSKIE or STARANE ULTRA + MCPA ESTER or CURTAIL M + STARANE ULTRA or BANVEL/DICAMBA MAX 4 + MCPA ESTER	W,S,D,B	0.66 pt: wild oat + 1.75 pt 0.3 oz + up to 0.36 pt 0.45-0.75 oz + 0.5-0.75 pt 0.45 oz + up to 0.36 pt 11 oz up to 0.36 pt + 0.5-0.75 pt 0.95 pt + 0.36 pt 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.	
TEAMMATE	W,S,D,T	1 oz + 1-2 qt NIS/100 gal + 1.5 lbs AMS (or use WC+NIS ²)				Apply from 3-leaf to jointing (Zadoks 13 to 31). Do not apply >1 oz/A/year.	
VARRO	W,S,D	6.85 fl oz				Apply to spring and winter wheat from the 1 leaf stage up to: 60 days PHI in MN, ND, and SD; 70 days PHI in all other states except MT. In Montana Only: Do not apply to winter, spring, or durum wheat after jointing. In all states: Do not apply to durum wheat after jointing. 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. Note 6.	
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.	

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

SEE NOTES AT END OF SECTION.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
WEEDMASTER		SEE BRASH	
WELD	W,S,D,B,O	1-1.5 pt	Apply from 3-leaf through flag leaf emergence (Zadoks 39) 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.
WIDEMATCH (alone or) + MCPA or HARMONY SG or 2,4-D	W,S,D,B,O	1-1.33 pt 0.5-1 pt 0.125-0.45 oz 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 2,4-D, or Harmony SG 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	W,S	Rates in oz/A Coarse Medium Fine Delayed PRE 0.7-1 1-1.5 1-2 Early POST 1-2.5 1-2.5 1-2.5	Delayed PRE or early POST only. Do not apply PP surface, PPI, or PRE in wheat. Apply PRE as broadcast spray to soil surface when 80% of germinated seeds have a shoot at least 0.5 inch long until wheat spiking. Apply early POST up to the fourth-tiller growth stage.
ZIDUA SC	W	1.75-4 fl oz	Do not apply >4 fl oz/A (0.130 lb a.i./A)/year.
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 0.5-1.33 pt 0.33-1.33 pt 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, LV4 at 0.5-0.67 pt, LV6 at 0.33-0.5 pt, and Shredder E-99 at 0.33 pt. For fall seeded southern oat, use Amine 4 at 1-1.25 pt, LV4 at 0.67-1.5 pt, LV6 at 0.5-1 pt, or E-99 at 0.5-0.75 pt. Use 1-1.33 pt Amine 4, 0.5-1 pt LV4, 0.33-0.67 pt LV6 for winter wheat and rye. PHI 14 days. Note 2.
Preharvest			
ALLY XP + 2,4-D LV4 AMINE or LV ESTER	W,S,D,B	0.1 oz + 0.5-1 pt + 1-2 qt NIS/100 gal	PREHARVEST. 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 pts 4# 2,4-D for larger weeds. In areas where 2,4-D is restricted, use only Ally + surfactant. Notes 2, 4.
BRASH/WEEDMASTER	W,S,D	Up to 1.4 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.
CLARIFIER/CLARITY		SEE STERLING BLUE	
CORNERSTONE/PLUS/ TOMAHAWK 4 or CORNERSTONE 5 PLUS/ TOMAHAWK 5	W	Up to 32 fl oz or Up to 24 fl oz + 8.5-17 lb AMS/100 gal ^a	PREHARVEST. 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. ^a Include NIS or WC+NIS ² as needed.
DURANGO DMA/ DURAMAX	W, B	Up to 24 fl oz + 8.5-17 lb AMS/100 gal ^a	PREHARVEST. Apply after hard dough stage and ≤ 30% moisture (wheat) or ≤ 20% moisture (feed barley). PHI 7 days. ^a Or WC+NIS ² .
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.
ROUNDUP POWERMAX/ WEATHERMAX**	W,S,D,B	Up to 22 fl oz + 8.5-17 lb AMS/100 gal ^a	PREHARVEST. 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. ^a Or WC+NIS ² .

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

SEE NOTES AT END OF SECTION.

** May use other glyphosate herbicides: Roundup brands, Cornerstone/Tomahawk brands, Durango DMA/Duramax at labeled rates.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

SMALL GRAIN WEED CONTROL

Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
Preharvest (continued)			
RT 3	W,S,D, B	Up to 22 fl oz + 8.5-17 lb AMS/100 gal ^a	PREHARVEST. Apply to wheat or feed barley after hard dough stage. Allow 7 days before grazing or forage or straw harvest. PHI 7-14 days. For use in CO, ID, KS*, MN*, MT, NE*, NM*, NV, ND, OK*, OR, SD, TX, UT, WA, WY. *See county restrictions on label. ^a Or WC+NIS ² .
RUGGED	W,S,D, B, O, R	1 pt	PREHARVEST. Apply to cereal grains in hard dough stage. PHI 14 days.
SHREDDER E-99		SEE 2,4-D	
STERLING BLUE/ CLARIFIER/CLARITY (alone or) + 2,4-D LV4 AMINE or LV ESTER	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.
TOMAHAWK 4/5		SEE CONERSTONE	
VALOR SX	W,S	1.5-2 oz + 1 qt HSOC-MSO ¹ /A + 2-2.5 lbs AMS or 1-2 qt UAN	PREHARVEST. Apply after wheat reaches hard dough stage and grain has less than 30% moisture. PHI 10 days. May be tank mixed with glyphosate.
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.

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

** May use other glyphosate herbicides: Roundup brands, Cornerstone/Tomahawk brands, Durango DMA/Duramax at labeled rates.

¹ Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

² Class Act NG or Flex, Alliance, or Ultra-Lite 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, Finesse Cereal and Fallow, Harmony, Glean XP, Olympus and Osprey. 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 Bayer CropScience or DuPont. 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 4: See restrictions chart for rotational and/or soil pH restrictions.

Note 5: 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 6: 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 7: Apply only once per 12 month period. Do not harvest hay from treated fields.

Note 11: 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.

SMALL GRAIN INSECT CONTROL

Labeled Insecticides

SMALL GRAIN INSECT*	INSECTICIDE	Actara	Baythroid XL	Besiege	Blackhawk	Cruiser 5FS	Cobalt Advanced	Declare	Dimate/Dimethoate 4E	Dipel ES	Endigo ZC	Entrust SC	Grizzly Too	Karate Z/Warrior III/Lambda-Cy-Ag	Lannate LV ¹¹ or SP	Lorsban Advanced	Malathion 5/5EC/8 Flowable	Mustang Maxx	Paradigm
Aphid		B	WBORT	WBORT ⁹		WB	W	WBORT	W		B		WBORT	WBORT	W ¹²	W	WBOR	WBORT	WBORT
Armyworm			WBORT	WBORT	WBORT		W	WBORT		WBO	B	WBORT	WBORT	WBORT	W ¹²	W	WBOR	WBORT	WBORT
Brown Wheat Mite							W		W		B ⁸		WBORT ⁹	WBORT ⁹		W			WBORT ⁹
Cereal Leaf Beetle			WBORT	WBORT	WBORT		W	WBORT			B	WBORT	WBORT	WBORT	W ¹²	W	WBOR ⁶	WBORT	WBORT
Chinch Bug			WBORT	WBORT				WBORT			B		WBORT	WBORT				WBORT	WBORT
Cutworm, Army or Pale Western			WBORT	WBORT			W	WBORT			B		WBORT	WBORT		W		WBORT	WBORT
Fall Armyworm			WBORT	WBORT	WBORT		W	WBORT		WBO	B	WBORT	WBORT	WBORT	W ¹²	W		WBORT	WBORT
Grasshopper			WBORT ⁸	WBORT		W	W	WBORT			B	WBORT ⁸	WBORT	WBORT		W	WBOR	WBORT	WBORT
Greenbug				WBORT		WB	W	WBORT ⁸	W		B		WBORT	WBORT		W	WBOR	WBORT	WBORT
Hessian Fly			W ⁵	WBORT		WB		WBORT			B		WBORT	WBORT					WBORT
Orange w.b. Midge				WBORT			W	WBORT			B		WBORT	WBORT		W			WBORT
Russian Wheat Aphid			WBORT	WBORT		WB	W	WBORT	W		B		WBORT	WBORT	W ¹²	W		WBORT	WBORT
Winter Grain Mite				WBORT ⁹				WBORT			B ⁸		WBORT ⁹	WBORT ⁹			WBOR ⁶		WBORT ⁹

Labeled Insecticides (cont)

SMALL GRAIN INSECT*	INSECTICIDE	Prevathon	Radiant SC	Sivanto prime	Stallion Brand	Transform WG	Xentari	Yuma
Aphid				WBORT	W	WBT		W
Armyworm		WBORT	WBORT ¹⁰		W		WBORT	W
Brown Wheat Mite								W
Cereal Leaf Beetle			WBORT		W			W
Chinch Bug					W			
Cutworm, Army or Pale Western					W			W
Fall Armyworm			WBORT		W		WBORT	
Grasshopper		WBORT	WBORT ⁸		W			W
Greenbug					W ⁸	WBT		W
Hessian Fly								
Orange w.b. Midge								W
Russian Wheat Aphid					W	WBT		W
Winter Grain Mite								

* Many other insects may be controlled, see label.

⁴ Malathion 5/5EC only.

⁵ Supplemental label, 24c, 2ee or Technical Bulletin.

⁶ Malathion 5EC.

⁸ Suppression in labeled crops.

¹⁰ Not for yellow-striped or western yellow-striped.

¹² ID, OR, WA only

W – wheat
 B – barley
 O – oat
 R – rye
 T – triticale



See Insecticide Resistance Management in the TECHNICAL INFORMATION section.



For additional insecticides and seed treatment options see the SEED AND GRAIN section.

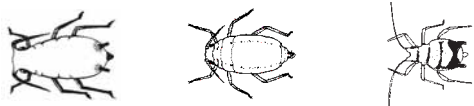

BEE ALERT



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

SMALL GRAIN INSECT CONTROL

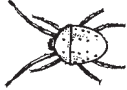

Insect Treatment Guidelines

Insecticide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
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.
☀ See additional pictures of aphids at the end of this section.					
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
ACTARA	B	4 oz	21	–	Note 14.
BAYTHROID XL	W,B,O,R,T	1.8-2.4 fl oz	30	3	Apply early prior to aphid damage and prior to boot stage. Notes 3, 11, 14.
BESIEGE	W,B,O,R,T	6-10 fl oz	30	7,30	Best control before insects begin to roll leaves. Suppression only of Corn Leaf Aphid. Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA by air or 10 GPA by ground. Notes 6, 14.
CRUISER 5FS	W,B	0.75-1.33 fl oz/cwt	–	–	Apply as a slurry to seed prior to planting.
COBALT ADVANCED	W	6-13 fl oz	28	7, 14, 30	Notes 1, 3, 4, 12, 14.
DECLARE	W,B,O,R,T	1.02-1.54 fl oz	30	7,30	Control varies by aphid species. Notes 3, 14.
DIMATE/DIMETHOATE 4E	W	0.5-0.75 pt	35	14	Notes 1, 3, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7,30	Use 4.5 fl oz for corn leaf aphid. Best control obtained before insects begin to roll leaves. PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.
GRIZZLY TOO	W,B,O,R,T	1.28-1.92 fl oz	30	7,30	Suppression of corn leaf aphids at 1.92 fl oz. Best control obtained before insects begin to roll leaves prior to boot stage. Notes 3, 6, 9, 14.
KARATE Z/WARRIOR II	W,B,O,R,T	1.28-1.92 fl oz	30	7,30	Best control obtained before insects begin to roll leaves. Suppression of corn leaf aphid. Notes 3, 6, 9, 14.
LANNATE LV or SP	W	0.75-1.5 pt or 0.25-0.5 lb	7	7	Early application to low populations is required. Apply in ID, OR, WA only. Notes 3, 14.
LORSBAN ADVANCED	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
MALATHION 5/SEC/8 FLOWABLE	W,B,O,R	1-2 pt	7	–	W,O,R: 1.6 pt/A Malathion 5; 1.5 pt/A Malathion 5EC; 1 pt/A Malathion 8 Flowable. B: 1.5-2 pt/A Malathion 5; 1-2 pt/A Malathion 5EC; 1-1.25 pt/A Malathion 8 Flowable.
MUSTANG MAXX	W,B,O,R,T	3.2-4 fl oz	14	–	Control varies with aphid species. Notes 3, 14.
PARADIGM/LAMBDA-CY AG	W,B,O,R,T	2.56-3.84 fl oz	30	7,30	Suppression of corn leaf aphids at 3.84 fl oz. Best control obtained before insects begin to roll leaves prior to boot stage. Do not apply >0.48 pt/A/season. Notes 3, 6, 14.
SIVANTO PRIME	W,B,O,R,T	7-10.5 fl oz	7	21	Minimal interval between applications: 7 days. Maximum per year: 28 fl oz/A. Apply in minimum 10 GPA by ground and 3 GPA by air.
STALLION BRAND	W	5-11.75 fl oz	28	14	Bird cherry oat aphid. PHI 14 days hay, 28 days straw. Notes 3, 4, 14.
TRANSFORM	W,B,T	0.75-1.5 oz	14	7	Do not make applications less than 14 days apart. Do not make >2 applications/crop. Do not apply >2.8 oz (0.09 lb a.i. sulfoxaflor)/A/year. If blooming vegetation is present 12' out from downwind edge of field, a downwind 12' on-field buffer must be observed. Note 14.
YUMA	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
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.
BAYTHROID XL	W,B	1.8-2.4 fl oz	30	3	For 1st and 2nd instar only. Notes 3, 11, 14.
BESIEGE	W,B,O,R,T	5-8 fl oz	30	7,30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA air or 10 GPA ground. Notes 6, 14.

*W – wheat, B – barley, O – oat, R – rye, T – triticale. G/F – grazing and feeding interval days. NO – do not graze or feed. SEE NOTES AT END OF SECTION. PHI – preharvest interval days.

SMALL GRAIN INSECT CONTROL



Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
ARMYWORM (continued)					
BLACKHAWK	W,B,O,R,T	1.7-3.3 oz	21	3	PHI 21 days grain or straw, 3 days forage, fodder, or hay. Note 14.
COBALT ADVANCED	W	11-25 fl oz	28	7, 14, 30	Notes 1, 3, 4, 12, 14.
DECLARE	W,B,O,R,T	1.02-1.54 fl oz	30	7, 30	Notes 3, 14.
DIPEL ES	W,B,O	2-4 pt	NR	NR	1st and 2nd instar. Add contact insecticide if 4-5 instar present. Notes 3, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7, 30	PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.
ENTRUST SC	W,B,O,R,T	3-6 fl oz	21	3	PHI 21 days grain or straw, 3 days forage, fodder, or hay. Notes 13, 14.
GRIZZLY TOO	W,B,O,R,T	1.28-1.92 fl oz	30	7, 30	Notes 3, 6, 9, 14.
KARATE Z/WARRIOR II	W,B,O,R,T	1.28-1.92 fl oz	30	7, 30	Notes 3, 6, 9, 14.
LANNATE LV or SP	W	0.75-1.5 pt or 0.25-0.5 lb	7	7	Apply in ID,OR,WA only. Note 14.
LORSBAN ADVANCED	W	1 pt	28	14	Control of armyworm; suppression if heavy populations or large worms. Notes 1, 3, 4, 14.
MUSTANG MAXX	W,B,O,R,T	1.76-4 fl oz	14	–	Apply 3.2-4 oz for fall and beet. Notes 3, 14.
PARADIGM/LAMBDA-CYAG	W,B,O,R,T	2.56-3.84 fl oz	30	7, 30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.
RADIANT SC	W,B,O,R,T	3-6 fl oz	21	3	Not for yellow- or western-striped. PHI 21 days straw harvest. Notes 3, 14.
STALLION BRAND	W	9.25-11.75 fl oz	28	14	Notes 3, 4, 14.
XENTARI	W,B,O,R,T	0.5-2 lb	0	–	Contains Bt. Apply to small 1-2 instar larva. Add contact insecticide if 4-5 instar present. Notes 3, 14.
YUMA	W	1 pt	28	14	Suppression if heavy populations or large worms. Notes 1, 3, 4, 14.
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.
BESIEGE	W,B,O,R,T	10 fl oz	30	7, 30	Suppression of Brown wheat mite only. Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA by air or 10 GPA by ground. Notes 6, 14.
COBALT ADVANCED	W	6-13 fl oz	28	7, 14, 30	Notes 1, 3, 4, 12, 14.
DIMATE/DIMETHOATE 4E	W	0.33-0.5 pt	35	14	Best results if used >50° F. Notes 1, 3, 14.
ENDIGO ZC	B	4.5 fl oz	30	7, 30	Suppression. PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.
GRIZZLY TOO	W,B,O,R,T	1.92 fl oz	30	7, 30	Notes 3, 6, 9, 14.
LORSBAN ADVANCED	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
PARADIGM	W,B,O,R,T	3.84 fl oz	30	7, 30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.
YUMA	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
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.
BAYTHROID XL	W,B,O,R,T	1-1.8 fl oz	30	3	Notes 3, 11, 14.
BESIEGE	W,B,O,R,T	6-10 fl oz	30	7, 30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA air or 10 GPA ground. Notes 6, 14.
BLACKHAWK	W,B,O,R,T	1.1-3.3 oz	21	3	PHI 21 days grain or straw, 3 days forage, fodder, or hay. Note 14.
COBALT ADVANCED	W	11-25 fl oz	28	7, 14, 30	Apply when eggs are near hatching and larvae is emerging. Notes 1, 3, 4, 12, 14.
DECLARE	W,B,O,R,T	1.02-1.54 fl oz	30	7, 30	Notes 3, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7, 30	PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.

*W – wheat, B – barley, O – oat, R – rye, T – triticale. G/F – grazing and feeding interval days. NO – do not graze or feed. SEE NOTES AT END OF SECTION. PHI – preharvest interval days.

SMALL GRAIN INSECT CONTROL

Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions	
CEREAL LEAF BEETLE (continued)						
ENTRUST SC	W,B,O,R,T	2-6 fl oz	21	3	PHI 21 days grain or straw, 3 days forage, fodder, or hay. Notes 13, 14.	
GRIZZLY TOO	W,B,O,R,T	1.28-1.92 fl oz	30	7,30	Notes 3, 6, 9, 14.	
KARATE Z/WARRIOR II	W,B,O,R,T	1.28-1.92 fl oz	30	7,30	Notes 3, 6, 9, 14.	
LANNATE LV or SP	W	0.75-1.5 pt or 0.25-0.5 lb	7	7	Apply in ID,OR,WA only. Note 3, 14.	
LORSBAN ADVANCED	W	1 pt	28	14	Notes 1, 3, 4, 14.	
MALATHION 5/SEC	W,B,O,R	1-2 pt	7	–	W,O,R: 1-1.5 pt/A Malathion 5/SEC. B: 1-1.5 pt/A Malathion 5; 1-2 pt/A Malathion EC.	
MUSTANG MAXX	W,T	1.76-4 fl oz	14	–	Notes 3, 14.	
PARADIGM/LAMBDA-CY AG	W,B,O,R,T	2.56-3.84 fl oz	30	7,30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.	
RADIANT SC	W,B,O,R,T	2-6 fl oz	21	3	PHI 21 days straw harvest. Notes 3, 14.	
STALLION BRAND	W	5-11.75 fl oz	28	14	Notes 3, 4, 14.	
YUMA	W	1 pt	28	14	Notes 1, 3, 4, 14.	
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.
BAYTHROID XL	W,B,O,R,T	2.4 fl oz	30	3	Notes 3, 11, 14.	
BESIEGE	W,B,O,R,T	10 fl oz	30	7,30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA air or 10 GPA ground. Notes 6, 14.	
DECLARE	W,B,O,R,T	1.54 fl oz	30	7,30	At 3- to 5-day intervals as needed. Notes 3, 14.	
ENDIGO ZC	B	4.5 fl oz	30	7,30	PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.	
GRIZZLY TOO	W,B,O,R,T	1.92 fl oz	30	7,30	Notes 3, 6, 9, 14.	
KARATE Z/WARRIOR II	W,B,O,R,T	1.92 fl oz	30	7,30	Notes 3, 6, 9, 14.	
MUSTANG MAXX	W,B,O,R,T	3.2-4 fl oz	14	–	Notes 3, 14.	
PARADIGM/LAMBDA-CY AG	W,B,O,R,T	3.84 fl oz	30	7,30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.	
STALLION BRAND	W	9.25-11.75 fl oz	28	14	Begin when bugs migrate from small grains or weeds. Notes 3, 4, 14.	
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.
BAYTHROID XL	W,B,O,R,T	1-1.8 fl oz 1.8-2.4 fl oz	30	3	Army cutworm. Pale western cutworm. Note 14.	
BESIEGE	W,B,O,R,T	5-8 fl oz	30	7,30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA air or 10 GPA ground. Notes 6, 14.	
COBALT ADVANCED	W	11-25 fl oz	28	7, 14, 30	For larva <1/2" Notes 1, 3, 4, 12, 14.	
DECLARE	W,B,O,R,T	0.77-1.28 fl oz	30	7,30	Notes 3, 14.	
ENDIGO ZC	B	3.5-4 fl oz	30	7,30	PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.	
GRIZZLY TOO	W,B,O,R,T	0.96-1.6 fl oz	30	7,30	Notes 3, 6, 9, 14.	
KARATE Z/WARRIOR II	W,B,O,R,T	0.96-1.6 fl oz	30	7,30	Notes 3, 6, 9, 14.	
LORSBAN ADVANCED	W	1 pt	28	14	Controls army, suppression of pale western. Notes 1, 3, 4, 14.	
MUSTANG MAXX	W,T	1.28-4 fl oz	14	–	Notes 3, 14.	
PARADIGM/LAMBDA-CY AG	W,B,O,R,T	1.92-3.20 fl oz	30	7,30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.	
STALLION BRAND	W	3.75-11.75 fl oz	28	14	Notes 3, 4, 14.	
YUMA	W	1 pt	28	14	Notes 1, 3, 4, 14.	

*W – wheat, B – barley, O – oat, R – rye, T – triticale.
PHI – preharvest interval days.

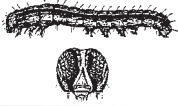


G/F – grazing and feeding interval days.

NO – do not graze or feed.

SEE NOTES AT END OF SECTION.

SMALL GRAIN INSECT CONTROL

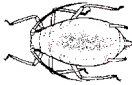

Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
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 in ² of leaf surface; 0.9982 in ² leaf surface when 5 to 7 days old; and about 16.52 in ² during days 10 to 14 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.
BAYTHROID XL	W, B, O, R, T	1.8-2.4 fl oz	30	3	Controls 1st and 2nd instar. Notes 3,11, 14.
BESIEGE	W, B, O, R, T	6-10 fl oz	30	7,30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA air or 10 GPA ground. Notes 6, 14.
BLACKHAWK	W, B, O, R, T	1.7-3.3 oz	21	3	PHI 21 days grain or straw, 3 days forage, fodder, or hay. Note 14.
DECLARE	W, B, O, R, T	1.02-1.54 fl oz	30	7,30	Notes 3,14.
DIPEL ES	W, B, O	2-4 pt	NR	NR	1st and 2nd instar. Add contact insecticide if 4-5 instar present. Notes 3, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7,30	PHI 7 days for grazing/forage and 30 days for straw. Notes 3,8.
GRIZZLY TOO	W, B, O, R, T	1.28-1.92 fl oz	30	7,30	Notes 3,6,9, 14.
KARATE Z/WARRIOR II	W, B, O, R, T	1.28-1.92 fl oz	30	7,30	Notes 3,6,9, 14.
LANNATE LV or SP	W	0.75-1.5 pt or 0.25-0.5 lb	7	7	Apply in ID,OR,WA only. Notes 3, 14.
MUSTANG MAXX	W, B, O, R, T	3.2-4 fl oz	14	–	Notes 3, 14.
PARADIGM/LAMBDA-CY AG	W, B, O, R, T	2.56-3.84 fl oz	30	7,30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.
RADIANT SC	W, B, O, R, T	3-6 fl oz	21	3	PHI 21 days straw harvest. Notes 3, 14.
STALLION BRAND	W	9.25-11.75 fl oz	28	14	Notes 4, 14.
XENTARI	W, B, O, R, T	0.5-2 lb	0	–	Contains Bt. Apply to small 1-2 instar larva. Add contact insecticide if 4-5 instar present. Notes 3, 14.
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.
BAYTHROID XL	W, B, O, R, T	1.8-2.4 fl oz	30	3	Notes 3, 11, 14.
BESIEGE	W, B, O, R, T	6-10 fl oz	30	7,30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA air or 10 GPA ground. Notes 6, 14.
COBALT ADVANCED	W	6-13 fl oz	28	7, 14, 30	Notes 1, 3, 4, 12, 14.
DECLARE	W, B, O, R, T	1.54 fl oz	30	7,30	Notes 3,14.
DIMATE/DIMETHOATE 4E	W	0.75 pt	35	14	Notes 1, 3, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7,30	PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.
ENTRUST SC	W, B, O, R, T	3-6 fl oz	21	3	PHI 21 days grain or straw, 3 days forage, fodder, or hay. Suppression only. Note 14.
GRIZZLY TOO	W, B, O, R, T	1.28-1.92 fl oz	30	7,30	Notes 3, 6, 9, 14.
KARATE Z/WARRIOR II/ or LAMBDA-CY AG	W, B, O, R, T	1.28-1.92 fl oz 2.56-3.84 fl oz	7	7,30	Notes 3, 6, 9, 14.
LORSBAN ADVANCED	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
MALATHION 5/SEC/8 FLOWABLE	W, B, O, R	1-2 pt	7	–	W,O,R: 1.6 pt/A Malathion 5; 1.5 pt/A Malathion 5EC; 1 pt/A Malathion 8 Flowable. B: 1.5-2 pt/A Malathion 5; 1-2 pt/A Malathion 5EC; 1-1.25 pt/A Malathion 8 Flowable.
MUSTANG MAXX	W, B, O, R, T	3.2-4 fl oz	14	–	Notes 3, 14.
PARADIGM/LAMBDA-CY AG	W, B, O, R, T	2.56-3.84 fl oz	30	7,30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.

*W – wheat, B – barley, O – oat, R – rye, T – triticale. G/F – grazing and feeding interval days. NO – do not graze or feed. SEE NOTES AT END OF SECTION.
PHI – preharvest interval days.

SMALL GRAIN INSECT CONTROL



Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
GRASSHOPPER (continued)					
PREVATHON	W, B, O, R, T	8-20 fl oz	14	—	Do not make more than 2 applications/year.
RADIANT SC	W, B, O, R, T	3-6 fl oz	21	3	Suppression. PHI 21 days straw harvest. Notes 3, 14.
STALLION BRAND	W	5-11.75 fl oz	28	14	Notes 3, 4, 14.
YUMA	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
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.
BESIEGE	W, B, O, R, T	10 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA by air or 10 GPA by ground. Notes 6, 14.
COBALT ADVANCED	W	6-13 fl oz	28	7, 14, 30	Notes 1, 3, 4, 12, 14.
CRUISER SFS	W, B	0.75-1.33 fl oz/cwt	—	—	Apply as a slurry to seed prior to planting.
DECLARE	W, B, O, R, T	1.54 fl oz	30	7, 30	Greenbug known to have many biotypes. May provide suppression only. Consider 2nd application of alternative MOA insecticide. Notes 3, 14.
DIMATE/DIMETHOATE 4E	W	0.5-0.75 pt	35	14	May not give acceptable control at temperatures below 60°F. Notes 1, 3, 14.
ENDIGO ZC	B	4.5 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8.
GRIZZLY TOO	W, B, O, R, T	1.92 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. Notes 3, 6, 9, 14.
KARATE Z/WARRIOR II	W, B, O, R, T	1.92 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. Notes 3, 6, 9, 14.
LORSBAN ADVANCED	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
MALATHION 5/SEC/8 Flowable	W, B, O, R	1-2 pt	7	—	W,O,R: 1.5 pt/A Malathion 5; 1.5 pt/A Malathion 5EC; 1 pt/A Malathion 8 Flowable. B: 1.5 pt/A Malathion 5; 1-2 pt/A Malathion 5EC; 1-1.25 pt/A Malathion 8 Flowable.
MUSTANG MAXX	W, B, O, R, T	3.2-4 fl oz	14	—	Notes 3, 14.
PARADIGM/LAMBDA-CY AG	W, B, O, R, T	3.84 fl oz	30	7, 30	Do not apply >0.48 pt/A/season. Notes 3, 6, 14.
SIVANTO PRIME	W, B, O, R, T	7-10.5 fl oz	7	21	Minimal interval between applications: 7 days. Maximum per year: 28 fl oz/A. Apply in minimum 10 GPA by ground and 3 GPA by air.
STALLION BRAND	W	9.25-11.75 fl oz	28	14	Suppression. Notes 3, 4, 14.
TRANSFORM WG	W, B, T	0.75-1.5 oz	14	7	Do not make applications less than 14 days apart. Do not make >2 applications/crop. Do not apply >2.8 oz (0.09 lb a.i. sulfoxaflor)/A/year. If blooming vegetation is present 12' out from downwind edge of field, a downwind 12' on-field buffer must be observed. Note 14.
YUMA	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
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.
BAYTHROID XL	W	1.8-2.4 fl oz	30	3	2ee NC, VA (exp. date not given).
BESIEGE	W, B, O, R, T	6-10 fl oz	30	7, 30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA by air or 10 GPA by ground. Notes 6, 14.
CRUISER SFS	W, B	0.75-1.33 fl oz/	—	—	Apply as a slurry to seed prior to planting. Notes 1, 4.
DECLARE	W, B, O, R, T	1.54 fl oz	30	7, 30	Apply when adults appear. Notes 3, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7, 30	Apply when adults emerge. PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.
GRIZZLY TOO	W, B, O, R, T	1.28-1.92 fl oz	30	7, 30	Apply when adults emerge. Notes 3, 6, 9, 14.
KARATE Z/ WARRIOR II	W, B, O, R, T	1.28-1.92 fl oz	30	7, 30	Apply when adults emerge. Notes 3, 6, 9, 14.
PARADIGM/LAMBDA-CY AG	W, B, O, R, T	2.56-3.84 fl oz	30	7, 30	Apply when adults emerge. Notes 3, 6, 9, 14.

*W – wheat, B – barley, O – oat, R – rye, T – triticale. G/F – grazing and feeding interval days. NO – do not graze or feed. SEE NOTES AT END OF SECTION.
PHI – preharvest interval days.

SMALL GRAIN INSECT CONTROL






Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
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.
BESIEGE	W, B, O, R, T	6-10 fl oz	30	7, 30	Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA air or 10 GPA ground. Notes 6, 14.
COBALT ADVANCED	W	11-25 fl oz	28	7, 14, 30	Notes 1, 3, 4, 12, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7, 30	PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.
GRIZZLY TOO	W, B, O, R, T	1.28-1.92 fl oz	30	7, 30	Notes 3, 6, 9, 14.
KARATE Z/WARRIOR II	W, B, O, R, T	1.28-1.92 fl oz	30	7, 30	Notes 3, 6, 9, 14.
LORSBAN ADVANCED	W	1 pt	28	–	Notes 1, 3, 4, 14.
PARADIGM/LAMBDA-CY AG	W, B, O, R, T	2.56-3.84 fl oz	30	7, 30	Notes 3, 6, 9, 14.
YUMA	W	1 pt	28	–	Notes 1, 3, 4, 14.
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				
BAYTHROID XL	W, B, O, R, T	1.8-2.4 fl oz	30	3	Best control obtained before insects begin to roll leaves. Notes 3, 11, 14.
BESIEGE	W, B, O, R, T	6-10 fl oz	30	7, 30	Best Control obtained before insects begin to roll leaves. Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA by air or 10 GPA by ground. Notes 6, 14.
COBALT ADVANCED	W	6-13 fl oz	28	7, 14, 30	Notes 1, 3, 4, 12, 14.
CRUISER SFS	W, B	0.75-1.33 fl oz/cwt	–	–	Apply as a slurry to seed prior to planting.
DECLARE	W, B, O, R, T	1.54 fl oz	30	7, 30	Best if applied before insects begin to roll leaves. Notes 3, 14.
DIMATE/DIMETHOATE 4E	W	0.75 pt	35	14	Notes 1, 3, 14.
ENDIGO ZC	B	3.5-4.5 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. PHI 7 days for grazing/forage and 30 days for straw. Notes 3, 8, 14.
GRIZZLY TOO	W, B, O, R, T	1.28-1.92 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. Notes 3, 6, 9, 14.
KARATE Z/WARRIOR II	W, B, O, R, T	1.28-1.92 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. Notes 3, 6, 9, 14.
LANNATE LV or SP	W	0.75-1.5 pt or 0.25-0.5 lb	7	7	Apply in ID, OR, WA only. Notes 3, 14.
LORSBAN ADVANCED	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.
MUSTANG MAXX	W, B, O, R, T	3.2-4 fl oz	14	–	Best control obtained before insects begin to roll leaves. Notes 3, 14.
PARADIGM/LAMBDA-CY AG	W, B, O, R, T	2.56-3.84 fl oz	30	7, 30	Best control obtained before insects begin to roll leaves. Notes 3, 6, 9, 14.
STALLION BRAND	W	9.25-11.75 fl oz	28	14	Notes 3, 4, 14.
TRANSFORM	W, B, T	0.75-1.5 oz	14	7	Do not make applications less than 14 days apart. Do not make >2 applications/crop. Do not apply >2.8 oz (0.09 lb a.i. sulfoxaflor)/A/year. If blooming vegetation is present 12' out from downwind edge of field, a downwind 12' on-field buffer must be observed. Note 14.
YUMA	W	0.5-1 pt	28	14	Notes 1, 3, 4, 14.

*W – wheat, B – barley, O – oat, R – rye, T – triticale. G/F – grazing and feeding interval days. NO – do not graze or feed. SEE NOTES AT END OF SECTION. PHI – preharvest interval days.

SMALL GRAIN INSECT CONTROL

Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
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.
BESIEGE	W, B, O, R, T	10 fl oz	30	7, 30	Suppression Only. Do not exceed 18 fl oz/A/year. Apply in minimum 5 GPA by air or 10 GPA by ground. Notes 6, 14.
ENDIGO ZC	B	4.5 fl oz	30	7, 30	PHI 7 days for grazing/forage and 30 days for straw. Suppression. Notes 3, 8, 14.
GRIZZLY TOO	W, B, O, R, T	1.92 fl oz	30	7, 30	Suppression only. Notes 3, 6, 9, 14.
MALATHION SEC	W, B, O, R	1-2 pt	7	7	W, O, R: 1.5 pt/A . B: 1-2 pt/A.
SIVANTO PRIME	W, B, O, R, T	7-10.5 fl oz	7	21	Minimal interval between applications: 7 days. Maximum per year: 28 fl oz/A. Apply in minimum 10 GPA by ground and 3 GPA by air.
WARRIOR II	W, B, O, R, T	1.92 fl oz	30	7, 30	Suppression only. Notes 3, 6, 9, 14.

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

Note 1: Do not make more than 2 applications per season.

Note 3: May be applied through sprinkler irrigation system (see label).

Note 4: For use in AZ, CA, CO, ID, KS, MN, MT, NE, NM, NV, ND, OK, OR, SD, TX, UT, WA and WY.

Note 6: PHI - 30 days grain, 30 days feeding treated straw to meat or dairy animals, 7 days for grazing or forage.

Note 8: PHI – 30 days grazing, forage, or feeding straw to meat or dairy.

Note 9: Do not apply >0.24 pt Grizzly Too/Karate/Warrior II/Lambda-Cy Ag/A/season.

Note 11: Maximum 4.8 fl oz/A/season.

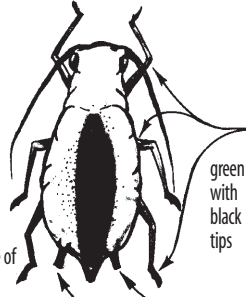
Note 12: Cobalt Advanced - PHI 14 days for forage and hay, 28 days grain, 7 days grazing, 30 days feeding straw.

Note 13: Maximum 3 applications, 2 sequential before rotating. Minimum 4 days between applications.

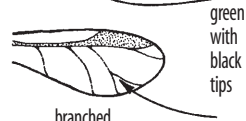
Note 14: May be applied by air.

GREENBUG

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



green with black tips



green with black tips

branched once

CORN LEAF APHID

BODY COLOR:
Bluish-green (lacks green stripe down the back).



LEGS
all black

CORNICLES
all black

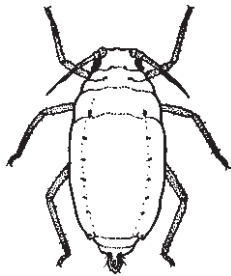
FRONT WINGS
Median Vein



branched twice

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.

CORNICLES:
Reduced in size, almost nonexistent.

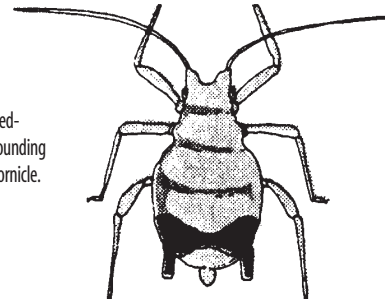
TIP OF ABDOMEN:
Double tail.



side view

BIRD CHERRY-OAT APHID

BODY COLOR:
Olive-green with red-orange patch surrounding the base of each cornicle.



SMALL GRAIN DISEASE CONTROL

Labeled Fungicides

SMALL GRAIN DISEASE*	FUNGICIDE	Absolute Maxx	Alto 100SL	Aproach Prima	Badge SC/Badge X2	Bio-Tam	Caramba	Cuprofix Ultra 40 Dispers	Dithane F45	Evito 480SC	Evito T	Headline SC	Kocide 2000/3000	Koverall	Manzate Pro-Stick	Nexicor	Onset 3.6L	Penncozeb 75DF	Preemptor SC	Previsto	Priaxor
Barley Scald		B														B					
Barley Stripe																B					
Black Point				WT			WBORT					WBT									WBRT
Eye Spot																					WT
Foot Rot			WT			WBORT															
Glume Blotch		WB	WT	WT												WBOT					
Helminthosporium Leaf Spot					WBOR			WBO	WBORT			O		WBORT	WBORT	O		WBORT		WOB	O
Helminthosporium Blotch					WBOR		WBORT	WBO					WBO			O				WOB	
Helminthosporium Leaf Blight			WT		WBOR																
Kernel Blight							WBORT									BWT					B
Net Blotch		B					WBORT						B			BR	BOR				BR
Powdery Mildew		WB	WT	WT	WBOR		WBORT			W		WBRT				WBRT			W		WBRT
Rust		WB	WT	WT			WBORT		WBT			BO		WBORT		BO	WB	WB			
Rust, Leaf		WB		WT			WBORT		OR	W	W	WBORT			WBORT			ORT	W		WBORT
Rust, Stem		WB		WT	WBOR		WBORT			W	W	WBORT				WBORT			W		WBORT
Rust, Stripe		WB		WT			WBORT			W	W	WBORT				WBRT			W		WBORT
Scab (Fusarium head blight) ²				WT ³	WBOR	WBORT	WBORT										W ³ B ³	WBOT			
Scald							WBORT					B				BR					BR
Septoria Glume Blotch			WT				WBORT		WRT	W	W	WBORT		WBORT	WBORT	BR		WBORT	W		WBRT
Septoria Leaf Blight		W	WT																		
Septoria Leaf Blotch					WBOR		WBORT	WBO	BO	W	W	WBORT	WBO			WBORT			W	WOB	WBORT
Septoria Leaf Spot									WBORT					WBORT	WBORT				WBORT		
Spot Blotch		B	WT	WT	WBOR		WBORT					WBOT				WBRT					WBORT
Stagonospora Blotch					WBOR																
Strawbreaker																					
Tan Spot		W	WT	WT			WBORT		WBORT	W	W	WBT		WBORT	WBORT	WBRT		WBORT	W		WBRT

* Many other diseases may be controlled, see label.

W – wheat, B – barley, O – oat, R – rye, T – triticale,

¹ 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.

³ Suppression.

⁴ Recommended to be used only on winter wheat. May be very harsh on barley and spring wheat especially with an herbicide.

 See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

SMALL GRAIN DISEASE CONTROL

Labeled Fungicides (continued)

SMALL GRAIN DISEASE*	FUNGICIDE	Proline	Prosaro	Quilt/Quilt Xcel	Serenade ASO	Stratego	Stratego YLD ⁴	Tetranban	Topaz/Tilt/Propimax	Topguard	Topguard EQ	Topsin M/70WP/W5B	Trivapro	Trivapro A+B (Co-Pack)	TwinLine	Vertisan
Barley Scald		B	B	BORT		B			BORT					WBORT		
Barley Stripe				BORT				BOR	BORT							
Black Point														WBORT	WBORT	
Eye Spot				W								W ¹ T ¹				
Foot Rot				WOR					WBORT			W ¹ T ¹				
Glume Blotch		W	W	WBORT		WB	B		WBORT				WBORT	WBORT		WORT
Helminthosporium Leaf Spot												WBORT				
Helminthosporium Blotch															WBORT	
Helminthosporium Leaf Blight				WBORT					WBORT				WBORT			
Kernel Blight				WBORT				BOR							WBORT	
Net Blotch		B	B	BORT		B	B	BOR	WBORT					WBORT	WBORT	
Powdery Mildew		WB	WB	BORT	WBORT	WB	WB	WBORT	WBORT	WT	WT		WBORT	WBORT	WBORT	WORT ³
Rust		WBORT	WB	WBORT	WBORT	WB	WB		WBORT	WT				WBORT	WBORT	
Rust, Leaf		W	WB	WBT		WBO	W	WBORT			WT		WBORT	WBORT	WBORT	WORT
Rust, Stem		W	WB	W		WB	W	WT					WBORT	WBORT	WBORT	WORT
Rust, Stripe			WB			WB	W	WT					WBORT	WBORT	WBORT	WORT
Scab (Fusarium head blight) ²		W ³ B ³ T ³	WB						W ³ B ³ T ³	W ³ T ³						WORT ³
Scald		B					B								WBORT	B
Septoria Glume Blotch								WT		WT	WT			WBORT	WBORT	
Septoria Leaf Blight				WBORT		W			WBORT				WBORT	WBORT		
Septoria Leaf Blotch		W	W			WBO	W	WT		WT	WT	W			WBORT	
Septoria Leaf Spot																
Spot Blotch		B	B	WBORT		WB	B		WBORT			R	WBORT	WBORT	WBORT	B
Stagonospora Blotch			B			WB	WB									
Strawbreaker												W ¹ T ¹				
Tan Spot		W	W	WBORT		W	W	WT	WBORT		WT		WBORT	WBORT	WBORT	WORT

SMALL GRAIN DISEASES

Small Grain 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 imidacloprid. Moderate control of BYD with tolerant varieties.

BARLEY SCALD	Attacks barley only. Destroy barley residue. Use seed treatment and resistant varieties.
GLUME BLOTCH	Enhanced 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.

SMALL GRAIN DISEASE CONTROL

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	40, 35	30, 30	Apply Absolute Maxx preventatively for best results. Tank mixing with grass or broadleaf herbicides in spring 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. Do not harvest for hay or straw within 45 days after application. Registered for use in CO, KS, NE, OK, SD, and TX only.
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 cyproconazole containing products. Also may be used in early season suppression of certain diseases. See label for rates and footnote information. Notes 1,2.
APPROACH	W,B,O,R,T	12 fl oz	45	17, 7	Apply no later than the beginning of flowering (Feekes 10.5). Notes 1,2.
APPROACH PRIMA	W, T	3.4-6.8 fl oz	45, 21	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,O,B,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 interval is 10 days; do not apply >3.73 pt/A/year. Seed Dressing (W,B only for bacterial leaf 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,O,B,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.
BIO-TAM	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. Note 2.
CARAMBA	W,B,O,R,T	10-17 fl oz	30	0	Begin applications prior to disease development and at least 30 days prior to harvest. For optimum suppression of Fusarium head scab, apply at the beginning of anthesis (flowering). Notes 1,2.
CONFINE EXTRA	W,B,O,R,T	1-3 qt	-	-	Minimum 20 GPA ground and 10 GPA aerial. Prevention: Apply lower rate at 2-4 week intervals after establishment. Do not apply at intervals <3-days. Control: Apply higher rate at 2-3 week intervals. Do not apply at intervals <3-days. See label to apply in irrigation at 2-4 qt/100 gal/A.
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. Notes 1,2.
DITHANE F45	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. Notes 1,2.
EVITO 480SC	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. See 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). See labels for most states (exp. dates not given) for aerial application. Notes 1,2.
EVITO T	W	4-6 fl oz	40	7	Apply no later than Feekes 10.5. For optimum results, apply at Feekes 5 (Zadoks 31) and again at Feekes 10.5 (Zadoks 54). Maximum of 2 applications. PHI 40 days on grain or straw, 7 days on forage, hay or grazing. Note 1.
HEADLINE SC	W,B,O,R,T	6-9 fl oz	A	0, 14	Begin applications prior to disease development. ^A 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. Supplemental label (exp. date not given) allows 3-6 fl oz/A for early season control of tan spot, septoria leaf and glume blotch, spot blotch, and net blotch. PHI 0 days for rye, 14 days for barley in specific areas, and 14 days for others. Notes 1,2.
KOCIDE 2000 or 3000	W,B,O	1-1.5 lb or 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. Note 1.

*W – wheat, B – barley, O – oat, R – rye, T – triticale. G/F – grazing and feeding interval days. NO – do not graze or feed. SEE NOTES AT END OF SECTION. PHI – preharvest interval days.

SMALL GRAIN DISEASE CONTROL

Disease Treatment Guidelines (continued)					
Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
KOVERALL	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. Notes 1, 2.
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. Notes 1, 2.
NEXICOR	W, B, O, R, T	7-13 fl oz	Feekes 10.3-10.5, Zadoks 55-59	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 55 for barley, oats; Feekes 10.5, Zadoks 59 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. Note 1.
PENNZOZEB 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. Notes 1, 2.
PREEMPTOR SC	W	2-6 fl oz	40, 15 ^A	7	Apply 2-3 fl oz/A for control of early season Septoria, tan spot, powdery mildew, and suppression of rust. Minimum application interval of 14 days. Apply 4-6 fl oz/A when flag leaf is 50% to fully emerged to maximize yield potential, and when conditions favor disease development. No more than 2 applications/year or more than 12 fl oz/A/year. Do not apply past Feekes 10.5. ^A PHI 40 days for grain or straw, 15 days for hay.
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.
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.
PROLINE	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	–	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. Note 1.
PROSARO 421 SC	W, B	6.5-8.2 fl oz	30	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. See 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. Notes 1, 2.
QUILT	W, B, O, R, T	7-14 fl oz	Feekes 10.54	7	When applied in early season 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. Notes 1, 2.
QUILT XCEL	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. See CO, KS, NE (exp. 3/2020) for lower use rate for low-level flag leaf diseases in wheat. Notes 1, 2.
SERENADE ASO	W, B, O, R, T	2-6 qt: foliar 0.5-2 qt: soil applied	–	–	Supplemental labels (exp. dates not given). Bacillus subtilis is a biological fungicide. Foliar: Begin application when environmental conditions and plant stage 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. Soil applied: Drench (at any stage of growth), shanked-in, or in-furrow.

*W – wheat, B – barley, O – oat, R – rye, T – triticale. G/F – grazing and feeding interval days. NO – do not graze or feed. SEE NOTES AT END OF SECTION. PHI – preharvest interval days.

SMALL GRAIN DISEASE CONTROL

Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	G/F	Comments/Restrictions
STRATEGO	W, B, O, T	10 fl oz: wheat 7 fl oz: barley, oat	35, 40, 40, 35	30, NO	Do not harvest forage or graze (or hay) if 2 applications are made. Apply preventatively when conditions favor disease through Feekes 8 or ligule of flag leaf just visible. A second application, at least 14 days apart, can be made. PHI 45 days for hay. Maximum of 14 fl oz/A/season in barley, oats. Notes 1, 2.
STRATEGO 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 Feekes 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. Notes 1, 2.
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/PROPIMAX	W, B, O, R, T	2-4 fl oz	45, ^A	30	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. ^A PHI 30 days forage or hay for all crops and up to Feekes 10.5. PHI 45 days for grain and straw in barley, oats, rye, and triticale. Notes 1, 2.
TOPGUARD	W, T	10-14 fl oz	30, 15 ^A	0	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. ^A PHI 30 days for grain, 15 days for hay.
TOPGUARD EQ	W, T	4-7 fl oz	30	7	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 M 70WP/WSB	W, T	1 lb	—	NO, 90	Fall seeded wheat or triticale in OR, WA, and ID. Apply in a single application by air or ground after tillering but before stem elongation has begun. Thorough coverage is needed. Maximum of one application per season. PHI 90 days for hay. Notes 1, 2.
TRIVAPRO	W, B, O, R, T	9.4-13.7 fl oz	Feekes 10.5.4	45-barley grain/straw; 14-grain (except barley); 7-forage/hay	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. 2ee multiple states (exp. 12/2020) for 9 fl oz/A at Feekes 4-6. 2ee CO, ID, MT, ND, OR, WA, WY (exp. 2/2022) for control of kernel blight.
TRIVAPRO A+B (CO-PACK)	W, B, O, R, T	4 fl oz A + 10.5 fl oz B	Feekes 10.54	NL(A) 7(B)	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. 2ee OR, WA, ID (exp. 3/2021) and for most other states (exp. 12/2019) for lower use rates in tank mix to control/suppress disease at Feekes 2-6.
TWINLINE	W, B, O, R, T	6-11 fl oz	30	0, 14	Begin applications prior to disease development. Apply no later than the beginning of flowering (Feekes 10.5). PHI 14 days barley, 0 days others. For early season control or suppression of various diseases in barley, triticale, and wheat apply at 6-9 fl oz up to beginning of flowering (Feekes 10.5). Notes 1, 2.
VERTISAN	W, O, R, T B	10-24 fl oz 14-24 fl oz	30, —	0	Apply prior to disease development and continue on 7-14 day interval. Maximum 2 sequential applications before switching to a different mode of action. Maximum 48 fl oz/A/year. Do not apply after Feekes 10.5.1. PHI 30 days barley. Notes 1, 2.

*W – wheat, B – barley, O – oat, R – rye, T – triticale.
PHI – preharvest interval days. NO – not permitted.

NOTE 1: May be applied by air.

NOTE 2: May be applied by chemigation.

SMALL GRAIN DISEASE CONTROL

Foliar Spray Efficacy^{2,3}

Disease	ACTION	Powdery Mildew	Rust, - Leaf	Rust, - Stem	Rust, - Stripe	Scab (Fusarium Head Blight)	Septoria Leaf Blotch	Glume Blotch	Tan Spot	Net Blotch	Barley Scald
HOST PLANT - WHEAT		++	++	++	++	++	++	++	++	—	—
HOST PLANT - BARLEY		++	++	++	++	++	++	+	+	++	++
ABSOLUTE MAXX	P,C	G	G/E	E	G/E	NR	G/E	G/E	G/E	G/E	—
APPROACH	P	G	G/E	G/E	E	NR	G/E	—	G/E	—	—
APPROACH PRIMA	P,C	G/E	G/E	—	E	NR	G/E	—	G/E	—	—
CARAMBA	P,C	G/E	E	E	E	G	G/E	G/E	G/E	E	G/E
EVITO 480SC	P,C*	G	G/E	—	NR	NR	—	—	G/E	—	—
HEADLINE SC	P,C*	G	E	G	G/E	NR	G/E	G/E	E	E	G
DITHANE F45/KOVERALL/MANZATE/PENNCOZEB	P	P	F/G	—	—	—	G	G	F	G	G
ONSET	P,C	G	E	E	E	F	G/E	G/E	G/E	—	—
PRIAXOR	P/C	G	E	G/E	E	NR	G/E	G/E	E	—	—
PROLINE	P,C	G	G	G/E	G/E	G	G/E	G/E	G/E	G/E	E
PROSARO	P,C	G	E	E	E	G	G/E	G/E	G/E	E	E
QUILT	P,C	G/E	E	G/E	E	NR	G/E	G/E	G/E	E	E
QUILT XCEL	P,C	G/E	E	G/E	E	NR	E	G/E	G/E	—	—
STRATEGO	P,C	G	G/E	G/E	G/E	NR	G/E	G/E	G/E	E	G/E
STRATEGO YLD	P,C	G/E	G/E	G/E	G/E	NR	G/E	G/E	G/E	—	—
TOPAZ/TILT/PROPIMAX	P,C	G/E	G/E	G/E	G/E	P	G/E	G/E	G/E	E	E
TOPGUARD	P,C	E	G/E	G/E	G/E	S	G/E	G/E			
TWINLINE	P,C*	G	E	G/E	E	NR	G/E	G/E	E	E	G

++ = Frequent, economically important.

+ = Rare, economically unimportant.

— = Does not occur or missing rating.

E = Excellent G = Good F = Fair

S = Suppression P = Poor N = None NR = Not recommended

P = Protectant or preventative

C = Curative or systemic

* Partially systemic.

² Efficacy ratings are developed by the North Central Committee on Management of Small grain Diseases (NCERA-184). Ratings are based on research and may be higher than the label indicates, particularly for head scab. Some ratings are modified by individual state university pathologists.

³ Most fungicides provide 21 days of protection against fungal diseases (> 21 days of residual against rust diseases).

SMALL GRAIN SEED TREATMENT PERFORMANCE RATINGS

E EXCELLENT
G GOOD
F FAIR
P POOR
N NONE or NOT LABELED **L** LABELED
U UNKNOWN

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

COMMERCIAL

Allegiance FL	P	P	E	P	G	E	P	P	P	N	N	N	N	N	N	N	N
Allegiance LS	P	P	E	P	G	E	P	P	P	N	N	N	N	N	N	N	N
Apron XL	P	P	E	N	G	E	P	P	P	N	N	N	N	N	N	N	N
Avonni	N	N	F	G	N	N	N	N	N	N	N	N	N	N	N	N	N
Cercobin	N	N	N	F	F	L	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
Cruiser Maxx Cereals	U	U	L	U	L	L	U	L	L	L	U	U	U	L	N	U	U
Cruiser Maxx Vibrance Cereals	E	G	E	E	E	E	F	E	E	E	N	N	N	G	N	N	G
Dividend Extreme	E	G	E	E	G	E	G	G	G	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
EverGol Energy	E	E	E	E	E	E	N	E	E	N	N	N	N	N	N	N	N
Gaicho 600	N	N	N	N	N	N	N	N	N	G	E	G	G	E	N	G	E
Gaicho XT	E	G	E	E	G	E	P	P	E	G	N	U	N	G	N	U	N
Maxim 4FS	P	P	N	G	G	G	G	P	P	N	N	N	N	N	N	N	N
Maxim XL	P	P	E	G	G	E	P	P	P	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
Nipsit Inside	N	N	N	N	N	N	N	N	N	L	N	L	L	N	N	L	N
Nipsit Suite Cereals OF	E	E	E	E	E	E	E	E	E	N	N	N	N	N	N	N	G
Nitro Shield IV	N	N	N	N	N	N	N	N	N	L	N	L	N	N	N	L	N
Rancona Crest	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
Rancona Summit	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	N	N	N	N	N	N	N	N
Rizolex	N	U	N	E	G	E	G	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
Stamina F3 Cereals	E	E	E	E	E	E	E	E	E	N	N	N	N	N	N	N	N
Vibrance	N	N	N	E	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
Warden Cereals II	N	G	E	E	G	G	G	L	L	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	G
Warden Cereals WR II	G	G	E	E	G	G	G	G	G	E	E	N	E	N	N	E	E
Warden Cereals 360	G	G	E	E	G	G	G	G	G	E	E	N	E	N	N	E	E

* Efficacy ratings are influenced by insect population.

SMALL GRAIN SEED TREATMENT

SMALL GRAIN SEED TREATMENT PERFORMANCE RATINGS

E	EXCELLENT
G	GOOD
F	FAIR
P	POOR
N	NONE or NOT LABELED
L	LABELED
U	UNKNOWN

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
Avonni	N	N	F	G	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Cercobin	N	N	N	F	F	L	N	N	N	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	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
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	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 F3 Cereals	E	E	E	E	E	E	E	E	E	N	N	N	N	N	N	N	N	N
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 WR II	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.

SMALL GRAIN SEED TREATMENT

SMALL GRAIN SEED TREATMENT TECHNICAL INFORMATION

Small Grain Seed Treatments - Rate Table

Product	Formulation	Colorant Added	Color	Labeled Intervals (days)		Labeled for	
				PHI	Grazing/Forage	On Farm	Commercial
Allegiance-FL	L	N	–	NR	NR		X
Allegiance-LS	L	N	–	NR	NR	x ¹	X
Apron XL	L	N	–	NR	NR	x	X
Ascend SL	L	N	–	NR	NR	x	X
Avonni	L	N	–	NR	NR	x	X
Cercobin	L	N	–	21	45	x	X
Cruiser 5FS	L	N	–	NR	NR		X
Cruiser Maxx Cereals	L	Y	–	NR	45	x	X
Cruiser Maxx Vibrance Cereals	L	Y	RED	NR	45	x	X
Dividend Extreme	L	Y	RED	NR	Barley - 30; Triticale & Wheat - 55	x	X
Dynasty	L	N	–	NR	NR	x	X
EverGol Energy	L	N	–	NR	NO		X
Gaicho 600	L	N	–	NR	45		X
Gaicho XT	L	Y	RED	NR	45		X
Maxim 4FS	L	N	–	NR	Cereals, Grasses, Nongrasses - 30; Others - NR	x	X
Maxim XL	L	N	–	NR	30	x	X
Mertect 340-F	L	N	–	NR	Forage of peas - No; Others - NR	x	X
Nipsit Inside	L	N	–	NR	NR		X
Nipsit Suite Cereals OF	L	Y	RED	NR	NR	x	
Nitro Shield IV	L	N	–	NR	45**		X
Rancona Crest	L	Y	RED	NR	NR	x	X
Rancona Pinnacle	L	Y	RED	NR	NR	x	X
Rancona Summit	L	Y	RED	NR	DNU		X
Raxil PRO MD	L	N	RED	NR	31	x	X
Rizolex	L	N	–	NR	NR	x	X
Stamina	L	N	–	NR	NR	x	X
Stamina F3 Cereals	L	Y	RED	NR	NR	x	X
Systiva XS	L	N	–	NR	NR		X
Vibrance	L	N	–	NR	NR	x	X
Vibrance Extreme	L	Y	RED	NR	NR	x	X
Warden Cereals II	L	Y	RED	NR	NR	x	X
Warden Cereals HR	L	Y	RED	NR	45	x	X
Warden Cereals WR11	L	Y	RED	NR	45	x	X
Warden Cereals 360	L	Y	RED	NR	45		X

*based on 13,000 wheat/barley seeds per pound

**45 days for wheat, barley, oat, rye, triticale and sorghum

¹ Not labeled for on-farm use in CA

SMALL GRAIN SEED TREATMENT

SMALL GRAIN SEED TREATMENT TECHNICAL INFORMATION

Small Grain Seed Treatments - Rate Table

Product	Use Rates		Seed Load Total Active Ingredients (mg/seed)	mg AI/seed*				
	fl oz/cwt*	fl oz/140,000 seeds		Fungicides				
			Azoxystrobin	Difenoconazole	Fludioxonil	Fluxapyroxad	Ipconazole	
Allegiance-FL	0.1-0.375	0.01-0.04	0.0007-0.0027					
Allegiance-LS	0.175-0.66	0.018-0.07	0.0008-0.0029					
Apron XL	0.04-0.085	0.004-0.009	0.0003-0.0007					
Ascend SL	3.4-6.7	1.5867-3.1267	0.0006-0.0011					
Avonni	0.015-0.3	0.0016-0.32						
Cercobin	0.153-0.307	0.016-0.33	0.0017-0.0034					
Cruiser 5FS	0.025-1.33	0.0027-1.432	0.00034-0.01811					
Cruiser Maxx Cereals	5.0	0.54	0.008		0.0042			
Cruiser Maxx Vibrance Cereals	5.0-10.0	0.54-1.08	0.01-0.02		0.0042-0.0084			
Dividend Extreme	2.0-4.0	0.22-0.44	0.005-0.01		0.0042-0.0084			
Dynasty	0.153-0.459	0.0714-0.2142	0.0015-0.0045	0.0015-0.0045				
EverGol Energy	1.0	0.11	0.004					
Gaicho 600	0.13-2.4	0.014-0.2585	0.0177-0.03265					
Gaicho XT	3.4-4.5	0.3662-0.4847	0.01194-0.0158					
Maxim 4FS	0.08-0.16	0.0086-0.0172	0.00087-0.00174			0.00087-0.00174		
Maxim XL	0.167-0.334	0.018-0.036	0.00123-0.00245			0.00086-0.00173		
Mertect 340-F	0.17-3.9	0.0183-0.42	0.0019-0.04348					
Nipsit Inside	0.25-1.79	0.0269-0.1928	0.0034-0.02433					
Nipsit Suite Cereals OF	5.0-7.5	0.5385-0.8078	0.005-0.00756					
Nitro Shield IV	1.0-3.0	0.1077-0.3231	0.01087-0.0326					
Rancona Crest	5.0-8.33	0.54-0.9	0.019-0.031					0.0005-0.0009
Rancona Pinnacle	5.0-8.33	0.54-0.9	0.0012-0.002					0.0005-0.0009
Rancona Summit	4.0	1.8667	0.0098					0.0038
Raxil PRO MD	5.0-7.5	0.5385-0.8078	0.00278-0.00418					
Rizolex	0.3	0.14	0.0148					
Stamina	0.4-0.8	0.0431-0.0862	0.00181-0.00363					
Stamina F3 Cereals	4.6	0.5	0.005					
Systiva XS	0.24-2.36	0.0258-0.2542	0.00177-0.01742				0.00177-0.01742	
Vibrance	0.08-0.16	0.0086-0.0172	0.00093-0.00187					
Vibrance Extreme	2.8-5.6	0.3016-0.6031	0.00611-0.01223		0.00419-0.00838			
Warden Cereals II	2.8-5.6	0.3-0.6	0.006-0.012		0.0042-0.0084			
Warden Cereals HR	5.0-8.33	0.54-0.9	0.019-0.031					0.0005-0.0009
Warden Cereals WR11	5.0	0.54	0.015		0.0042	0.0008		
Warden Cereals 360	5.0	0.54	0.013		0.0042			

*based on 13,000 wheat/barley seeds per pound

SMALL GRAIN SEED TREATMENT

SMALL GRAIN SEED TREATMENT TECHNICAL INFORMATION

Small Grain Seed Treatments - Rate Table (Continued)

Product	mg AI/seed*							
	Fungicides (Continued)							
	Mefenoxam	Metalaxyl	Metconazole	Penflufen	Prothioconazole	Pyraclostrobin	Sedaxane	Tebuconazole
Allegiance-FL		0.0007-0.0027						
Allegiance-LS		0.0008-0.0029						
Apron XL	0.0003-0.0007							
Ascend SL								
Avonni								
Cercobin								
Cruiser 5FS								
Cruiser Maxx Cereals	0.0007							
Cruiser Maxx Vibrance Cereals	0.0011-0.0022						0.0009-0.0018	
Dividend Extreme	0.001-0.002							
Dynasty								
EverGol Energy		0.0014		0.0009	0.0017			
Gaicho 600								
Gaicho XT		0.0007-0.0009						0.0005-0.0007
Maxim 4FS								
Maxim XL	0.00036-0.00073							
Mertect 340-F								
Nipsit Inside								
Nipsit Suite Cereals OF		0.00105-0.00157	0.00052-0.00077					
Nitro Shield IV								
Rancona Crest		0.0007-0.0012						
Rancona Pinnacle		0.0007-0.0012						
Rancona Summit		0.006						
Raxil PRO MD		0.00071-0.00106			0.00174-0.00261			0.00034-0.00051
Rizolex								
Stamina						0.00181-0.00363		
Stamina F3 Cereals		0.001				0.0018		
Systiva XS								
Vibrance							0.00093-0.00187	
Vibrance Extreme	0.00105-0.0021						0.00087-0.00175	
Warden Cereals II	0.0011-0.0021						0.0009-0.0018	
Warden Cereals HR		0.0007-0.0012						
Warden Cereals WR11	0.001						0.0018	
Warden Cereals 360	0.0011						0.0011	

*based on 13,000 wheat/barley seeds per pound

SMALL GRAIN SEED TREATMENT

SMALL GRAIN SEED TREATMENT TECHNICAL INFORMATION

Small Grain Seed Treatments - Rate Table (Continued)

Product	mg AI/seed*									
	Fungicides (Continued)				Insecticides			Plant Growth Regulators		
	Thiabendazole	Thiophanate-methyl	Tolclofos-methyl	Triticonazole	Clothianidin	Imidacloprid	Thiamethoxam	Cytokinin	Indole-Butyric Gibberellic Acid	Acid
Allegiance-FL										
Allegiance-LS										
Apron XL										
Ascend SL								0.0003-0.0006	0.0001-0.0002	0.0001-0.0003
Avonni										
Cercobin		0.0017-0.0034								
Cruiser 5FS							0.00034-0.01811			
Cruiser Maxx Cereals							0.0035			
Cruiser Maxx Vibrance Cereals							0.0035-0.007			
Dividend Extreme										
Dynasty										
EverGol Energy										
Gaicho 600						0.0177-0.03265				
Gaicho XT						0.01073-0.0142				
Maxim 4FS										
Maxim XL										
Mertect 340-F	0.0019-0.04348									
Nipsit Inside					0.0034-0.02433					
Nipsit Suite Cereals OF					0.00348-0.00522					
Nitro Shield IV						0.01087-0.0326				
Rancona Crest						0.0175-0.0292				
Rancona Pinnacle										
Rancona Summit										
Raxil PRO MD										
Rizolex			0.0148							
Stamina										
Stamina F3 Cereals				0.0018						
Systiva XS										
Vibrance										
Vibrance Extreme										
Warden Cereals II										
Warden Cereals HR						0.0175-0.0292				
Warden Cereals WRll							0.007			
Warden Cereals 360							0.007	0.0001	0.00002	0.00003

*based on 13,000 wheat/barley seeds per pound

