



Current Report

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Management of Insect and Mite Pests in Small Grains

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Arthropod pests of small grains are varied and sometimes difficult to manage. Chemical pesticides should not be used as a substitute for good agronomic practices or as "preventative insurance" because it is rarely economically or environmentally justifiable. Some small grain pest problems can be avoided by following good cultural practices, such as selecting varieties that are adapted to Oklahoma growing conditions, planting at an optimal date and providing proper fertilization and good weed control.

Pesticide recommendations in this publication were correct as of the "Modified Date." Always check the label that came with the purchased insecticide for the most current rates and restrictions. Refer to the following OSU publications for additional information.

- CR-7191 The Cereal Aphid Expert System and Gance 'n Go Sampling for Greenbugs: Questions and Answers
- PSS-2777 Clearfield Wheat Production Systems in Oklahoma
- EPP-7176 Common Insect and Mite Pests of Small Grains
- EPP-7183 Small Grain Aphids in Oklahoma
- EPP-7196 Grasshopper Management in Rangeland, Pasture and Crops
- EPP-7661 Major Foliar Fungal Diseases of Wheat in Oklahoma
- E-918 Wheat Management in Oklahoma
- L-306 Gance 'n Go Sampling for Greenbugs in Winter Wheat: Spring Edition
- L-307 Gance 'n Go Sampling for Greenbugs in Winter Wheat: Fall Edition
- L-316 Identification of Grasses Commonly Found in Oklahoma

Management of Insect and Mite Pests in Small Grains

Pest, Damage, and Treatment Threshold	(Group)	Insecticide & Formulation	Rate of Product per Acre	Comments
Aphids	Planting Time			
Corn leaf aphid: blue green with black legs, cornicles and antennae; antennae less than 1/2 length of body.	(4A)	Cruiser 5FS	0.75 to 1.33 fl oz/ cwt seed	Wheat and barley. No grazing restriction. Do not use treated seed as feed.
English grain aphid: lime green, "spindly legs" with black antennae, cornicles and legs. Antennae more than 1/2 length of body.	(4A)	Gaucho 480	1 to 3 fl oz/ cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed.
Bird cherry oat aphid: olive green with brownish-red spot on back around base of cornicles.	Post-Plant			
Rice root aphid is similar in appearance to bird cherry oat aphid, but tends to feed on crown, beneath the soil.	(1B)	Dimethoate 4E	0.5 to 0.75 pt	Wheat only. 14 day waiting period for grazing; 35 day waiting period for harvest. Two applications per season.
Damage: Corn leaf aphid and English grain aphid do not usually require control.	(1B)	Di-Syston 8	4 to 12 fl oz	Wheat and barley only. 1.0 lb rate in wheat for fall application only. Do not graze; 30 day waiting period for harvest.
Bird cherry oat aphid can reduce yield, and is an important vector of Barley Yellow Dwarf virus.	(3)	Karate w Zeon	1.28 to 1.92 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing; 30 day waiting period for harvest.
	(3)	Warrior w Zeon	2.56 to 3.84 fl oz	
	(1A)	Lannate LV	0.75 to 1.5 pt	10 day waiting period for grazing, 7 day waiting period for harvest.
	(1A)	Lannate SP	0.25 to 0.5 lb	
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	0.5 to 1 pt	14 day waiting period for grazing; 28 day waiting period for harvest. Two applications per season.
	(1B)	Malathion	1.5 pt	7 day waiting period for grazing or harvest.

Pest, Damage, and Treatment Threshold	(Group)	Insecticide & Formulation	Rate of Product per Acre	Comments
<p>Threshold: Treat for bird cherry oat aphids if numbers exceed 30 per stem, or calculate threshold using worksheet found in EPP-7183: Small Grain Aphids in Oklahoma. Consider using low rate of Cruiser or Gaucho seed treatment if planting for forage + grain. There is no established threshold for English grain aphid, corn leaf aphid, or rice root aphid.</p>	(1B)	Methyl parathion 4E	0.5 to 1.5 pt	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
	(3)	Mustang MAX	3.2 to 4.0 pt	Control may be variable. 14 day waiting period for grazing or harvest.
	(3)	Proaxis 0.5 CS	2.56 to 3.84 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.
	(3)	Prolex 1.25 CS	1.02 to 1.54 fl oz	
<p>Army cutworm Gray striped caterpillar that curls up in to a tight "C" when disturbed. Evident from January through March.</p> <p>Damage: Cuts plants at soil line, can kill plants if it enters the crown.</p> <p>Threshold: Two to three caterpillars per foot of row if conditions are dry, if moisture is adequate, four to five per foot of row.</p>	(3)	Baythroid 2	1 to 1.8 fl oz	7 day waiting period for grazing, 30 days for harvest.
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	1 pt	14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season.
	(3)	Karate w Zeon	0.96 to 1.6 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing; 30 day waiting period for harvest.
	(3)	Warrior w Zeon	1.92 to 3.2 fl oz	
	(3)	Mustang MAX	1.28 to 4 fl oz	14 day waiting period for grazing or harvest.
	(3)	Proaxis 0.5 CS	1.92 to 3.2 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.
(3)	Prolex 1.25 CS	0.77 to 1.28 fl oz		
<p>Armyworm Dark green or brown caterpillar with five stripes along body.</p> <p>Damage: Feeds on flag leaf, awns, and may "clip" heads.</p> <p>Threshold: Treat if 4 to 5 unparasitized armyworms are found per ft of row.</p>	(3)	Baythroid 2	1.8 to 2.4 fl oz	7 day waiting period for grazing, 30 days for harvest.
	(3)	Karate w Zeon	1.28 to 1.92 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing; 30 day waiting period for harvest.
	(3)	Warrior w Zeon	2.56 to 3.84 fl oz	
	(1A)	Lannate LV	0.75 to 1.5 pt	10 day waiting period for grazing, 7 day waiting period for harvest.
	(1A)	Lannate SP	0.25 to 0.5 lb	
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	1 pt	14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season.
	(1B)	Methyl parathion 4E	1.5 pt	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
	(3)	Mustang MAX	1.76 to 4 fl oz	14 day waiting period for grazing or harvest.
	(1B)	PennCap-M	2 to 3 pt	15 day waiting period for grazing or harvest.
	(3)	Proaxis 0.5 CS	2.56 to 3.84 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.
(3)	Prolex 1.25 CS	1.02 to 1.54 fl oz		
(1A)	Sevin XLR	1 to 1.5 qt	21 day waiting period for harvest. Apply when temperatures are expected to exceed 55°F.	
(5)	Tracer	1 to 3 fl oz	14 day waiting period for grazing; 21 day waiting period for harvest.	

Pest, Damage, and Treatment Threshold	(Group)	Insecticide & Formulation	Rate of Product per Acre	Comments
<p>Brown wheat mite Tiny red to dark brown mites that feed on leaves, associated with dry, hot weather.</p> <p><u>Damage:</u> Plants appear to be drought stricken.</p> <p><u>Threshold:</u> Treat if mites and damage are evident.</p>	(1B)	Dimethoate 4E	0.33 to 0.5 pt	Wheat only. 14 day waiting period for grazing; 35 day waiting period for harvest. Two applications per season.
	(1B)	Di-Syston 8	4 to 12 fl oz (foliar)	Wheat and barley only; do not graze; 30 day waiting period for harvest.
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	0.5 to 1 pt	14 day waiting period for grazing; 28 day waiting period for harvest. Two applications per season.
	(1B)	Methyl parathion 4E	1 pt	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
<p>Fall armyworm Large, brown, green or black caterpillar with stripes, up to 1 ½ inches long. Has a light colored, inverted “Y” on head.</p> <p><u>Damage:</u> Eats small plants in fall.</p> <p><u>Threshold:</u> Treat if three to four larvae are found per foot of row AND feeding damage is evident.</p>	(3)	Baythroid 2	1.8 to 2.4 fl oz	7 day waiting period for grazing; 30 days for harvest.
	(3)	Karate with Zeon Warrior with Zeon	1.28 to 1.92 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing; 30 day waiting period for harvest. Do not apply more than 0.06 lb ai./season.
	(3)		2.56 to 3.84 fl oz	
	(1A)	Lannate LV Lannate SP	0.75 to 1.5 pt	10 day waiting period for grazing; 7 day waiting period for harvest.
	(1A)		0.25 to 0.5 lb	
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	1 pt	14 day waiting period for grazing; 28 day waiting period for harvest. Two applications per season.
	(1B)	Methyl parathion 4E	1.5 pt	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
	(3)	Mustang MAX	3.2 to 4.0 fl oz	14 day waiting period for grazing or harvest.
	(3)	Proaxis 0.5 CS Prolex 1.25 CS	2.56 to 3.84 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.
	(3)		1.02 to 1.54 fl oz	
(1A)	Sevin XLR	1 to 1.5 qt	21 day waiting period for harvest, apply when temperatures are expected to exceed 55°F.	
(5)	Tracer	1.5 to 3 fl oz	14 day waiting period for grazing; 21 day waiting period for harvest.	
<p>False wireworm/ Wireworm Slender, hard bodied, wormlike larvae.</p> <p><u>Damage:</u> Feeds on seed and newly germinated plants below the soil surface. Results in bare patches with no stand emergence. More severe when dry soils delay germination.</p> <p><u>Threshold:</u> Treat if one larva is found per foot².</p>	(4A)	Cruiser 5FS	0.75 to 1.33 fl oz/cwt seed	Wheat and barley. Do not use surplus treated seed for feed or food. Follow label instructions for application and storage conditions.
	(4A)	Gaicho 480	1 to 3 fl oz/cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed.
	(2A)	Lindane 30 C	1.35 fl oz/cwt seed 1.4 fl oz/cwt seed	Barley Wheat, rye, and oats.

Pest, Damage, and Treatment Threshold	(Group)	Insecticide & Formulation	Rate of Product per Acre	Comments	
<p>Grasshopper</p> <p><u>Damage:</u> May occur in mid-May through early June and August through October. May destroy field margins in fall, or chew leaves and clip heads in spring.</p> <p><u>Threshold:</u> Seven to 10 per yd² in vegetation next to wheat. Three per yd² in the field. See EPP-7196 for additional information.</p>	(3)	Baythroid 2	1.8 to 2.4 fl oz	7 day waiting period for grazing; 30 days for harvest.	
	(1B)	Dimethoate 4E	0.75 pt	Wheat only. 14 day waiting period for grazing; 35 day waiting period for harvest. Two applications per season.	
	(1A)	Furadan F	0.25 to 0.5 pt	Do not graze or feed treated forage to livestock.	
	(3)	Karate with Zeon Warrior with Zeon	1.28 to 1.92 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing; 30 day waiting period for harvest.	
	(3)		2.56 to 3.84 fl oz		
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	0.5 to 1 pt	14 day waiting period for grazing; 28 day waiting period for harvest. Two applications per season.	
	(1B)	Malathion 5E	1.5 pt	7 day waiting period for grazing or harvest.	
	(1B)	Methyl parathion 4E	0.75 to 1 pt	15 day waiting period for grazing or harvest.	
	(3)	Mustang MAX	3.2 to 4.0 fl oz	14 day waiting period for grazing or harvest.	
	(1B)	Pennacp-M	2 to 3 pt	15 day waiting period for grazing or harvest.	
	(3)	Proaxis 0.5 CS Prolex 1.25 CS	2.56 to 3.84 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.	
(3)	1.02 to 1.54 fl oz				
(1A)	Sevin XLR	0.5 to 1.5 qt	Apply 0.5 to 0.75 qt for small nymphs, apply 1 to 1.5 qt for mature grasshoppers. Wheat only; 21 day waiting period for harvest.		
<p>Greenbug</p> <p>Lime-green aphid with darker green stripe down back. Tips of legs, cornicles and most of antennae are black.</p> <p><u>Damage:</u> Injures plants by injecting toxin, leaves turn yellow, then die. Occasional problem in fall or spring; occurs more commonly in warm, dry conditions.</p> <p><u>Threshold:</u> Treatment thresholds depend on value of crop, and cost of control. To determine treatment threshold, and obtain a Glance 'n Go sampling form, use the Cereal Aphid Expert System: http://entopl.okstate.edu/gbweb/ or request a CD-Rom Copy and a set of laminated Glance 'n Go forms from Tom Royer (rtom@okstate.edu) 127 NRC, Stillwater, OK 74078 or contact you local county OCES office for information on determining thresholds and sampling.</p>	Seed Treatment				
	(4A)	Cruiser 5FS	0.75 to 1.33 fl oz/cwt seed	Wheat and barley. No grazing restriction. Do not use treated seed as feed.	
	(4A)	Gaucho 480	1 to 3 fl oz/cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed.	
	Post-Plant				
	(1B)	Dimethoate 4E	0.5 to 0.75 pt	Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.	
	(1A)	Furadan 4F	0.5 pt	Apply before heads emerge from boot. Do not graze or feed treated forage to livestock.	
	(3)	Karate with Zeon Warrior with Zeon	1.92 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing; 30 day waiting period for harvest.	
	(3)		3.84 fl oz		
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	0.5 to 1 pt	14 day waiting period for grazing; 28 day waiting period for harvest. Two applications per season.	
	(1B)	Malathion	0.5 to 1.5 pt	7 day waiting period for grazing or harvest.	
	(1B)	Methyl parathion 4E	0.5 to 1.5 pt	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.	
	(3)	Mustang MAX	3.2 to 4 fl oz	Control may be variable. 14 day waiting period for grazing or harvest.	
	(1B)	Pennacp-M	2 to 3 pt	15 day waiting period for grazing or harvest.	
	(3)	Proaxis 0.5 CS Prolex 1.25 CS	3.84 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.	
(3)	1.54 fl oz				

Pest, Damage, and Treatment Threshold	(Group)	Insecticide & Formulation	Rate of Product per Acre	Comments
<p>Hessian fly Small, fragile mosquito-like fly (adult); larva is whitish, shiney, about 3/16 inch long. Flaxseed (puparium) is 3/16 inch long, dark brown, inserted at joint of stem.</p> <p><u>Damage:</u> Stunts plants in fall, causes lodging of heads in spring.</p> <p><u>Threshold:</u> No established threshold. Delayed planting will reduce the incidence of Hessian fly infestations, but there is no established "fly free" planting date for most of Oklahoma. Some wheat varieties are resistant to the common Hessian fly biotypes (A, B, C, and D) found in Oklahoma.</p>	(4A)	Cruiser 5FS	0.75 to 1.33 fl oz/ cwt seed	Do not use surplus treated seed for feed or food. Follow label instructions for application and storage conditions.
	(4A)	Gaucho 480	1 to 3 fl oz/ cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed.
<p>Pale western cutworm Caterpillar is gray with no prominent stripes.</p> <p><u>Damage:</u> Cuts plants below soil surface. Generally found in the Oklahoma Panhandle, about 2 to 3 weeks later than army cutworm.</p> <p><u>Threshold:</u> Treat if two or more larvae are found per linear foot of row.</p>	(3)	Baythroid 2	1.0 to 1.8 fl oz	7 day waiting period for grazing; 30 days for harvest.
	(3)	Karate with Zeon	0.96 to 1.6 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing; 30 day waiting period for harvest.
	(3)	Warrior with Zeon	1.92 to 3.2 fl oz	
	(3)	Mustang MAX	1.76 to 4 fl oz	14 day waiting period for grazing or harvest.
	(3)	Proaxis 0.5 CS	1.92 to 3.2 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.
	(3)	Prolex 1.25 CS	0.77 to 1.28 fl oz	

Pest, Damage, and Treatment Threshold	(Group)	Insecticide & Formulation	Rate of Product per Acre	Comments
<p>Russian wheat aphid Lime to green colored, “powdery” body, with an elongated, spindle-shaped body. Has a “double tail” appearance when viewed from the side. Lacks prominent cornicles.</p> <p><u>Damage:</u> Infested leaves may have longitudinal white or purple streaks. Leaves may roll up and look like “onion leaves.” If heavily infested, plants may become prostrate or flattened.</p> <p><u>Thresholds:</u> Treatment thresholds are variable, depending upon growth stage and crop condition. See EPP-7183 for treatment guidelines.</p>	<u>Planting Time</u>			
	(4A)	Cruiser 5FS	0.75 to 1.33 fl oz/cwt seed	Wheat and barley. No grazing restriction. Do not use treated seed as feed.
	(4A)	Gaucho 480	1 to 3 fl oz/cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed.
	<u>Post-Plant</u>			
	(3)	Baythroid 2	1.8 to 2.4 fl oz	7 day waiting period for grazing; 30 days for harvest.
	(1B)	Dimethoate 4E	0.5 to 0.75 pt	Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.
	(1B)	Di-Syston 8	4 to 16 fl oz	Wheat and barley only. 16 oz rate in wheat for fall application only. Do not graze; 30 day waiting period for harvest.
	(1A)	Furadan 4F	0.3 to 0.5 pt	Apply with methyl parathion. Do not graze or feed treated forage to livestock.
	(3)	Karate with Zeon	1.28 to 1.92 fl oz	Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest.
	(3)	Warrior with Zeon	2.56 to 3.84 fl oz	
	(1B)	Lorsban 4E (Warhawk) (Whirlwind)	0.5 to 1 pt	14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season.
	(1B)	Methyl parathion 4E	0.5 to 1.5 pt	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
(3)	Mustang MAX	3.2 to 4.0 pt	Control may be variable. 14 day waiting period for grazing or harvest.	
(3)	Proaxis 0.5 CS	2.56 to 3.84 fl oz	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.	
(3)	Prolex 1.25 CS	1.02 to 1.54 fl oz		
<p>Wheat curl mite Tiny sausage-shaped mites that feed on leaves and heads.</p> <p><u>Damage:</u> They do not cause direct damage, but are a vector for Wheat Streak Mosaic Virus.</p> <p><u>Threshold:</u> None</p>	No effective chemical control is registered.			Delayed planting and management of volunteer wheat may reduce problems.
<p>White grub “C” shaped, whitish grub with a tan head and swollen tip of abdomen, measuring up to 1½ inches long.</p> <p><u>Damage:</u> Feeds on roots. Cause stand loss, poor emergence and thin stands.</p> <p><u>Threshold:</u> None</p>	No effective chemical control is registered.			

Pest, Damage, and Treatment Threshold	(Group)	Insecticide & Formulation	Rate of Product per Acre	Comments
Winter grain mite Tiny dark brown mites with red legs and a red spot on its abdomen. Prefer cool, moist climate, and are more active on cloudy days or evenings. <u>Damage:</u> Leaves appear stunted and silver colored. <u>Threshold:</u> No established threshold; treat if injury symptoms and mites are present. Daytime temperatures that exceed 75° F will reduce populations.	(1B)	Di-Syston 8	4 to 12 fl oz/acre	Wheat and barley only. Do not graze; 30 day waiting period for harvest.
	(1B)	Malathion	2 pt	7 day waiting period for grazing or harvest.
	(1B)	Methyl parathion 4E	0.5 to 1.5 pt	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.

^R = Restricted Use

Pre-harvest Intervals and grazing restrictions

Baythroid 2E	7 day PHI for grazing, 30 day PHI for harvest. Two applications per season.
Cruiser 5FS	No grazing restriction.
Dimethoate	14 day PHI for grazing, 35 days for harvest. Do not make more than 2 applications per season.
Di-Syston 8	Check label for various restrictions.
Furadan 4F	DO NOT GRAZE. See label for further restrictions.
Gaucho 480	45 day PHI for harvest or grazing.
Lorsban 4E	14 day PHI for grazing, 28 day PHI for harvest. Two applications per season.
Methomyl	14 day PHI for harvest or grazing.
Mustang MAX	14 day PHI for grazing or harvest.
Proaxis 0.5EC	30 day PHI for harvest or grazing.
Prolex 1.25 CS	30 day PHI for harvest or grazing.
Sevin XLR	No PHI for grazing, 21 day PHI for harvest.
Tracer	14 day PHI for grazing, 21 day PHI for harvest.
Thimet G	28 day PHI for harvest or grazing.
Warrior 1CS	30 day PHI for harvest or grazing.

* Group numbers in parentheses (#) preceding the insecticide name are used to designate the mode of action of the insecticide according to the classification system developed by the Insecticide Resistance Action Committee, (IRAC) in 2005. It is intended to help in the selection of insecticides for preventative resistance management. If you make multiple applications for a specific pest during a growing season, simply select a registered insecticide with a different number for each application. To further delay resistance from developing, integrate other control methods into your pest management programs.

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- It dispenses no funds to the public.
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- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

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