



Current Report

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Management of Insect and Mite Pests in Small Grains

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There are several arthropod pests that damage small grains sporadically throughout the region. Chemical pesticides should not be used as a substitute for good agronomic practices or as "preventative insurance" because this approach can cause pest resurgence issues and is rarely economically or environmentally justifiable. Many small grain pest problems can be reduced 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 "Edited Date" listed on the OSU Fact Sheet database. 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-7088 Effect of Planting Date and Seed Treatment on Diseases and Insect Pests of Wheat

- CR-7191 The Cereal Aphid Expert System and Glance 'n Go Sampling for Greenbugs: Questions and Answers
- CR-7668 Foliar Fungicides and Wheat Production in Oklahoma-April 2009
- EPP-7086 Hessian Fly Management in Oklahoma Winter Wheat
- 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
- PSS-2132 No-till Wheat Production in Oklahoma
- PSS-2139 Farmer-saved Wheat Seed in Oklahoma: Questions and Answers
- PSS-2142 Wheat Variety Comparison
- PSS-2774 Cheat Control in Oklahoma Winter Wheat
- PSS-2777 Clearfield Wheat Production Systems in Oklahoma

Management of Insect and Mite Pests in Small Grains

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, [MOA Group] and (Active Ingredient)</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
Aphids			
Corn leaf aphid: blue green with black legs, cornicles and antennae; antennae less than 1/2 length of body.	<u>Planting Time</u>		
	Cruiser 5FS [4A] (thiamethoxam)	0.75 to 1.33 fl oz/ cwt seed	Wheat and barley. No grazing restriction. Do not use treated seed as feed.
	Gaucho 480 [4A] Gaucho XT [4A] (imidacloprid)	1 to 3 fl oz/cwt seed 3.4 fl oz/cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed. (other names include Sativa IM Max, Senator)
English grain aphid: lime green, "spindly legs" with black antennae, cornicles and legs. Antennae more than 1/2 length of body.	<u>Post-Plant</u>		
	Cobalt [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
Bird cherry oat aphid: olive green with brownish-red spot on back around base of cornicles.	Dimethoate 4E [1B]	0.5 to 0.75 pt	Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.
Rice root aphid is similar in appearance to bird cherry oat aphid, but tends to feed on crown, beneath the soil.	Karate w Zeon [3] (lambda cyhalothrin)	1.92 fl oz (0.03 lb ai/A)	Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest. (many other names, including Grizzly, Kaiso, Silencer, and Taiga)
Greenbug: See greenbug section			

Pest, Damage and Treatment Threshold	Insecticide, [MOA Group] and (Active Ingredient)	Rate of Product per Acre	Comments
<p>Russian wheat aphid: see Russian wheat aphid section.</p> <p>Damage: Corn leaf aphid and English grain aphid do not usually require control.</p> <p>Bird cherry oat aphid can reduce yield, and is an important vector of Barley Yellow Dwarf virus.</p> <p>Threshold: Treat for bird cherry oat aphids if numbers exceed 30 per stem. Consider using low rate of seed treatment if planting for forage + grain. There is no threshold for English grain aphid, corn leaf aphid, or rice root aphid.</p>	<p>Lorsban^r 4E [1B] (chlorpyrifos)</p> <p>Malathion [1B]</p> <p>Methyl parathion^r 4E [1B]</p> <p>Mustang MAX^r [3] (zeta-cypermethrin)</p> <p>Proaxis 0.5 CS^r [3] (gamma-cyhalothrin)</p>	<p>0.5 to 1 pt (0.25 to 0.5 lb ai/A)</p> <p>1.5 pt (0.93 lb ai/A)</p> <p>0.5 to 1.5 pt (0.25 to 0.75 lb ai/A)</p> <p>3.2 to 4.0 pt (0.02 to 0.025 lb ai/A)</p> <p>3.84 fl oz (0.015 lb ai/A)</p>	<p>14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season. (other names, Hatchet, Warhawk)</p> <p>7 day waiting period for grazing or harvesting.</p> <p>15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.</p> <p>Control may be variable. 14 day waiting period for grazing or harvesting. (other names, Respect, Respect EC)</p> <p>Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvesting.</p>
<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: 2 to 3 caterpillars per foot of row if conditions are dry, if moisture is adequate, 4 to 5 per foot of row.</p>	<p>Baythroid^r XL [3] (beta cyfluthrin)</p> <p>Cobalt [3, 1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)</p> <p>Karate/Warrior II [3] (lambda cyhalothrin)</p> <p>Mustang MAX^r [3] (zeta-cypermethrin)</p> <p>Proaxis 0.5 CS^r [3] (gamma-cyhalothrin)</p> <p>Stallion [1B, 3] (chlorphrofos + zeta-cypermethrin)</p> <p>Tombstone [3] (cyfluthrin)</p>	<p>1 to 1.8 fl oz. (0.08 to 0.014 lbi ai/A)</p> <p>13 to 25 fl oz 11 to 25 fl oz</p> <p>0.96 to 1.60 fl oz (0.015 to 0.02 lb ai/A)</p> <p>1.28 to 4.0 fl oz (0.008 to 0.025 lb ai/A)</p> <p>1.92 to 3.20 fl oz (0.0075 to 0.0125 lb ai/A)</p> <p>3.75 to 11.75 fl oz</p> <p>1.0 to 1.8 fl oz (0.016 to 0.028 lb ai/A)</p>	<p>7 day waiting period for grazing, 30 days for harvest.</p> <p>14 day waiting period for forage and hay, 28 days for grain or straw.</p> <p>Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest. (many other names, including Grizzly, Kaiso, Silencer, and Taiga)</p> <p>14 day waiting period for grazing or harvesting.</p> <p>Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.</p> <p>14 day waiting period for grazing, 30 days for harvest</p> <p>3 day waiting period for grazing, 30 days for harvest.</p>
<p>Armyworm Dark green or brown caterpillar with 5 stripes along body.</p> <p>Damage: Feed 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>	<p>Baythroid^r XL [3] (cyfluthrin)</p> <p>Cobalt^r 3, [1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)</p> <p>Karate/Warrior [3] (lambda cyhalothrin)</p> <p>Lannate^r LV [1A] Lannate^r SP [1A]</p> <p>Methyl parathion^r 4E [1B]</p>	<p>1.8 to 2.4 fl oz (0.014 to 0.019 lb ai/A)</p> <p>13 to 25 fl oz 11 to 25 fl oz</p> <p>1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)</p> <p>0.75 to 1.5 pt 0.25 to 0.5 lb</p> <p>1.5 pt (0.75 lb ai/A)</p>	<p>1st and 2nd instars only. 7 day waiting period for grazing, 30 days for harvest.</p> <p>14 day waiting period for forage and hay, 28 days for grain or straw.</p> <p>Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest.</p> <p>10 day waiting period for grazing, 7 day waiting period for harvest.</p> <p>15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.</p>

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, [MOA Group and (Active Ingredient)]</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
Armyworm (cont'd)	Mustang MAX ^r [3] (zeta-cypermethrin)	1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)	14 day waiting period for grazing or harvesting. (other names, Respect, Respect EC)
	Penncap-M ^r [1B]	2 to 3 pt	15 day waiting period for grazing or harvesting.
	Proaxis 0.5 CS ^r [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	Wheat, wheat hay, triticale. 30 day waiting period for grazing or harvest.
	Radiant [5] (spinetoram)	3 to 6 oz	1 day waiting period for harvest.
	Tombstone [3] (cyfluthrin)	1.8 to 2.4 fl oz (0.028 to 0.038 lb ai/A)	3 day waiting period for grazing, 30 days for harvest.
	Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 fl oz	14 day waiting period for grazing, 28 days for harvest.
	Tracer [5] (spinosad)	1 to 3 fl oz	0 day waiting period for grazing, 3 days for forage, 21 day waiting period for harvest. (other names, Blackhawk)
Brown wheat mite Tiny red to dark brown mites that feed on leaves, associated with dry, hot weather. Damage: Plants appear to be drought stricken Threshold: Treat if mites and damage are evident.	Cobalt ^r [3, 1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz 11 to 25 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Dimethoate ^r 4E [1B]	0.33 to 0.5 pt (0.165 to 0.25 lb ai/A)	Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.
	Lorsban ^r 4E [1B] (chlorpyrifos)	0.5 to 1 pt (0.25 to 0.5 lb ai/A)	14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season. (other names, Hatchet, Warhawk)
	Methyl parathion 4E ^r [1B]	1 pt (0.5 lb ai/A)	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
Fall armyworm Large, brown, green or black caterpillar with stripes, up to 1.5 inches. Has a light colored, inverted "Y" on head. Damage: Eat small plants in Fall. Threshold: Treat if 3 to 4 larvae are found per foot of row AND feeding damage is evident.	Baythroid ^r XL [3] (cyfluthrin)	1.8 to 2.4 fl oz (0.014 to 0.019 lb ai/A)	1 st and 2 nd instars only. 7 day waiting period for grazing; 30 days for harvest.
	Cobalt ^r [3, 1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	13 to 25 fl oz 11 to 25 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Karate/Warrior [3] (lambda cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest. Do not apply more than 0.06 lb ai./season.
	Lannate ^r LV [1A] Lannate ^r SP [1A]	0.75 to 1.5 pt 0.25 to 0.5 lb	10 day waiting period for grazing, 7 day waiting period for harvest.
	Methyl parathion ^r 4E [1B]	1.5 pt (0.75 lb ai/A)	15 day waiting period for grazing or harvest. Temperatures should be above 50° F for application.
	Mustang MAX ^r [3] (zeta-cypermethrin)	3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)	14 day waiting period for grazing or harvesting. (other names, Respect, Respect EC)
	Proaxis 0.5 CS ^r [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	Wheat, wheat hay, triticale. 30 day waiting period for grazing or harvest.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, [MOA Group] and (Active Ingredient)</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
	Radiant [5] (spinetoram)	3 to 6 fl oz	1 day waiting period for harvest.
	Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 fl oz	14 day waiting period for grazing, 28 days for harvest.
	Tracer [5] (spinosad)	1.5 to 3 fl oz	0 day waiting period for grazing, 3 days for forage, 21 day waiting period for harvest. (other names, Blackhawk)
False wireworm/Wireworm Slender, hard bodied, wormlike larvae. Damage: Feed on kernels and newly germinated plants below the soil surface Threshold: Treat if 2 larvae are found per foot ²	Cruiser 5FS [4A] (thiamethoxam)	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.
	Gaucho 480 [4A] Gaucho XT [4A] (imidacloprid)	1 to 3 fl oz/cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed. (other names include Sativa IM Max, Senator) Gaucho and Cruiser are not labeled specifically for false wireworm; performance varies with soil moisture and soil temperature.
Grasshopper Damage: 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. Threshold: 7 to 10 per yd ² in vegetation next to wheat 3 per yd ² in the field. For additional information, see EPP-7196: <i>Grasshopper Management in Rangeland, Pastures, and Crops.</i>	Cobalt ^r [3, 1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz 11 to 25 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Dimethoate 4E [1B]	0.75 pt (0.375 lb ai/A)	Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.
	Lorsban 4E [1B] (chlorpyrifos)	0.5 to 1 pt (0.25 to 0.5 lb ai/A)	14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season. (other names, Hatchet, Warhawk)
	Malathion 5E [1B]	1.5 pt (0.93 lb ai/A)	7 day waiting period for grazing or harvest.
	Methyl parathion 4E [1B]	0.75 to 1 pt (0.375 to 0.5 lb ai/A)	15 day waiting period for grazing or harvest.
	Mustang MAX ^r [3] (zeta-cypermethrin)	3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)	14 day waiting period for grazing or harvest. (other names, Respect, Respect EC)
	PennCap-M [1B]	2 to 3 pt	15 day waiting period for grazing or harvest.
	Sevin XLR [1A]	0.5 to 1.5 qt (0.5 to 1.5 lb ai/A)	Wheat only; 21 day waiting period for harvest.
	Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 fl oz	14 day waiting period for grazing, 28 days for harvest.
	Tombstone [3] (cyfluthrin)	1.8 to 2.4 fl oz 0.028 to 0.038 fl oz/A	3 day waiting period for grazing; 30 days for harvest
Greenbug Lime-green aphid with darker green stripe down back. Tips of legs, cornicles and most of antennae are black. Damage: Injures plants by injecting toxin, leaves turn yellow, then die. Occasional	Seed Treatment Cruiser 5FS [4A] (thiamethoxam)	0.75 to 1.33 fl oz/ cwt seed	Wheat and barley. No grazing restriction. Do not use treated seed as feed.
	Gaucho 480 [4A] Gaucho XT [4A] (imidacloprid)	1 to 3 fl oz/cwt seed 3.4 fl oz/cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed. (other names include Sativa IM Max, Senator)

Pest, Damage and Treatment Threshold	Insecticide, [MOA Group] and (Active Ingredient)	Rate of Product per Acre	Comments
<p>problem in fall or spring; occurs more commonly in warm, dry conditions.</p> <p>Threshold: 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://entoplp.okstate.edu/gbweb/</p> <p>Or request a CD-Rom Copy and a set of laminated Glance 'n Go forms from Tom Royer (tom.royer@okstate.edu) 127 NRC, Stillwater, OK 74078</p> <p>Or contact you local county OCES office for information on determining thresholds and sampling.</p>	<p style="text-align: center;">Post-Plant</p> <p>Cobalt^r [3, 1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)</p> <p>Dimethoate^r 4E [1B]</p> <p>Karate/Warrior [3] (lambda cyhalothrin)</p> <p>Lorsban^r 4E [1B] (chlorpyrifos)</p> <p>Malathion [1B]</p> <p>Methyl parathion^r 4E [1B]</p> <p>Mustang MAX^r [3] (zeta-cypermethrin)</p> <p>Penncap-M^r [1B]</p> <p>Proaxis 0.5 CS^r [3] (gamma-cyhalothrin)</p>	<p>7 to 13 fl oz 11 to 25 fl oz</p> <p>0.5 to 0.75 pt (0.25 to 0.375 lb ai/A)</p> <p>1.92 fl oz (0.03 lb ai/A)</p> <p>0.5 to 1 pt (0.25 to 0.5 lb ai/A)</p> <p>0.5 to 1.5 pt (0.31 to 0.93 lb ai/A)</p> <p>0.5 to 1.5 pt (0.25 to 0.75 al ai/A)</p> <p>3.2 to 4 fl oz (0.02 to 0.025 lb ai/A)</p> <p>2 to 3 pt</p> <p>3.84 fl oz (0.015 lb ai/A)</p>	<p>14 day waiting period for forage and hay, 28 days for grain or straw.</p> <p>Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.</p> <p>Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest. (many other names, including Grizzly, Kaiso, Taiga)</p> <p>14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season. (other names, Hatchet, Warhawk)</p> <p>7 day waiting period for grazing or harvesting.</p> <p>15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.</p> <p>14 day waiting period for grazing or harvesting. (other names, Attendant, sativa IM Max, Senator)</p> <p>15 day waiting period for grazing or harvesting.</p> <p>Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest. (Other names: Declare, Prolex)</p>
<p>Hessian fly Small, fragile mosquito-like fly (adult) larva is whitish, shiny, about 3/16 inches. Flaxseed (puparium) is 3/16 inches, dark brown, inserted at joint of stem.</p> <p>Damage: Stunts plants in fall, causes lodging of heads in spring.</p> <p>Threshold: 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>	<p>Cruiser 5FS [4A] (thiamethoxam)</p> <p>Gaucho 480 [4A] Gaucho XT [4A] (imidacloprid)</p>	<p>0.75 to 1.33 fl oz/ cwt seed</p> <p>1 to 3 fl oz/cwt seed 3.4 fl oz/cwt</p>	<p>Do not use surplus treated seed for feed or food. Follow label instructions for application and storage conditions.</p> <p>Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed.</p> <p>Seed treatments will not provide control of spring brood Hessian fly. Seed treatment combined with later planting will improve effects of insecticide.</p> <p>Consider using a resistant variety for added protection, see PSS-2142, <i>Wheat Variety Comparison</i> for variety ratings of resistance to Hessian fly.</p>

Pest, Damage and Treatment Threshold	Insecticide, [MOA Group] and (Active Ingredient)	Rate of Product per Acre	Comments
<p>Pale western cutworm Caterpillar is gray with no prominent stripes.</p> <p>Damage: Cuts plants below soil surface. Generally found in the Oklahoma Panhandle, about 2 to 3 weeks later than army cutworm.</p> <p>Threshold: Treat if 2 or more larvae are found per linear foot of row.</p>	Baythroid [®] XL [3] (beta cyfluthrin)	1.0 to 1.8 fl oz (0.008 to 0.014 lb ai/A)	7 day waiting period for grazing; 30 days for harvest.
	Cobalt [®] [3, 1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	13 to 25 fl oz 11 to 25 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Karate/Warrior [3] (lambda cyhalothrin)	0.96 to 1.6 fl oz (0.015 to 0.025 lb ai/A)	Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest. (many other names, including Grizzly, Kaiso, Taiga).
	Mustang MAX [®] [3] (zeta-cypermethrin)	1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)	14 day waiting period for grazing or harvest. (other names, Respect, Respect EC)
	Proaxis 0.5 CS [®] [3] (gamma-cyhalothrin)	1.92 to 3.20 fl oz (0.0075 to 0.0125 lb ai/A)	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.
	Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)	3.75 to 11.75 fl oz	14 day waiting period for grazing, 28 days for harvest.
<p>Russian wheat aphid Lime-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>Damage: 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>Threshold: Treatment threshold is variable, depending upon growth stage and crop condition. See EPP-7183 for treatment guidelines.</p>	<u>Planting Time</u>		
	Cruiser 5FS [4A] (thiamethoxam)	0.75 to 1.33 fl oz/ cwt seed	Wheat and barley. No grazing restriction. Do not use treated seed as feed.
	Gaucho 480 [4A] Gaucho XT [4A] (imidacloprid)	1 to 3 fl oz/cwt seed	Wheat and barley. 45 day waiting period for grazing. Do not use treated seed as feed. (other names, include Sativa IM Max, Senator)
	<u>Post-Plant</u>		
	Baythroid [®] XL [3] (cyfluthrin)	1.8 to 2.4 fl oz (0.014 to 0.019 lb ai/A)	7 day waiting period for grazing; 30 days for harvest.
	Cobalt [®] [3, 1B] Cobalt Advanced [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz 6 to 13 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Dimethoate 4E [1B]	0.5 to 0.75 pt (0.25 to 0.375 lb ai/A)	Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.
	Karate/Warrior [3] (lambda cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	Wheat, wheat hay, and triticale. 7 day waiting period for grazing and 30 day waiting period for harvest. (many other names, including Grizzly, Kaiso, Taiga)
	Lorsban [®] 4E [1B] (chlorpyrifos)	0.5 to 1 pt (0.25 to 0.5 lb ai/A)	14 day waiting period for grazing, 28 day waiting period for harvest. Two applications per season. (other names, Hatchet, Warhawk)
	Methyl parathion [®] 4 E [1B]	0.5 to 1.5 pt (0.25 to 0.75 lb ai/A)	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
	Mustang MAX [®] [3] (zeta-cypermethrin)	3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)	14 day waiting period for grazing or harvest. (other names, Respect, Respect EC)
	Proaxis 0.5 CS [®] [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	Wheat, wheat hay, triticale. 30 day waiting period for grazing or harvest.
	Tombstone [3] (cyfluthrin)	1.8 to 2.4 fl oz (0.028 to 0.038 lb ai/A)	3 day waiting period for grazing; 30 days for harvest.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, [MOA Group] and (Active Ingredient)</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
<p>Wheat curl mite Tiny sausage-shaped mites that feed on leaves and heads.</p> <p>Damage: They do not cause direct damage, but are a vector for Wheat Streak Mosaic Virus and the virus that causes High Plains disease.</p> <p>Threshold: 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.</p> <p>Damage: Feed on roots. Cause stand loss, poor emergence and thin stands.</p> <p>Threshold: None</p>	No effective chemical control is registered.		While there is no effective insecticide registered for white grub control, systemic seed treatments such as Gaucho or Cruiser may provide some suppression because they are labeled for control of white grubs in other crops; however, there is no Oklahoma data to support that possibility.
<p>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.</p> <p>Damage: Leaves appear stunted and silver colored.</p> <p>Threshold: No established threshold; treat if injury symptoms and mites are present. Daytime temperatures that exceed 75° F will reduce populations.</p>	Malathion [1B]	2 pt (1.25 lb ai/A)	7 day waiting period for grazing or harvest.
	Methyl parathion ^f 4E [1B]	0.5 to 1.5 pt (0.25 to 0.75 lb ai/A)	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for on cloudy application. *Other products, such as dimethoate (Dimate and others) and chlorpyrifos (Lorsban, Whirlwind and others) can be applied under 2ee regulations, however since this pest is not specifically labeled, the user assumes all responsibility for the application and results.

Pre-harvest Intervals and grazing restrictions

Baythroid XL	7 day PHI for grazing, 30 days for harvest. Two applications/season.
Cobalt ¹	14 day PHI for grazing, 28 days for harvest. Two applications/season.
Cruiser 5FS	No grazing restriction.
Dimethoate	14 day PHI for grazing, 35 days for harvest. Two applications/season.
Gaucho 480, XT	45 day PHI for harvest or grazing.
Karate/Warrior II	7 day PHI for grazing, 30 days for harvest.
Lorsban 4E	14 day PHI for grazing, 28 days for harvest. Two applications/season.
Methomyl	14 day PHI for harvest or grazing.
#Methyl parathion	15 day waiting period for grazing or harvest.
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.
Radiant	1 day PHI for harvest.
Sevin XLR	No PHI for grazing, 21 day PHI for harvest.
Stallion	14 day PHI for grazing, 28 day PHI for harvest.
Tracer	14 day PHI for grazing, 21 day PHI for harvest.

* Group numbers in brackets [#] 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 2011. 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.

All uses of methyl parathion will be prohibited as of December 31, 2013.

The pesticide information presented in this publication was current with federal and state regulations at the time of printing. The user is responsible for determining that the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label directions. The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

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