



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. Pesticides should not be a substitute for good agronomic practices or used as "preventative insurance". Pesticide misuse can cause pest resurgence issues and is rarely economically or environmentally justifiable. Many small grain pest problems can be managed 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.

The information 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.

Pesticide recommendations in this publication were correct as of the "Modified Date" but always check the label that came with the purchased insecticide for the most current rates and restrictions

The first name listed is the trade name of a product registered for use in corn for the listed pest. The name in (parentheses) listed below the trade name is the name of the active ingredient. The active ingredient name is provided because in many cases, there are other registered products containing the same active ingredient that may cost less, so producers should compare prices.

The number [in brackets] following a product is its Mode of Action number [MOA]. The more frequently insecticides with

the same MOA are used, the more likely resistance will occur. This number provides an easy way to select different modes of action to avoid selecting for pests that are resistant to a certain mode of action.

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-7668 Foliar Fungicides and Wheat Production in Oklahoma
- EPP-7086 Hessian Fly Management in Oklahoma Winter Wheat
- EPP-7093 Mites in Small Grains
- EPP-7094 Common Small Grain Caterpillars in Oklahoma
- EPP-7196 Grasshopper Management in Rangeland, Pasture and Crops
- EPP-7328 Wheat Streak Mosaic, High Plains Disease and Triticum Mosaic: Three virus diseases of wheat in Oklahoma.
- PSS 2132 No-till Wheat Production in Oklahoma
- PSS-2139 Farmer-saved Wheat Seed in Oklahoma: Questions and Answers
- PSS-2142 2013 Wheat Variety Comparison
- 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, Formulation, [MOA Group] and (Active Ingredient)</i>	<i>Rate of Product and (lb active ingredient) per Acre</i>	<i>Comments</i>
Aphids Corn leaf aphid: blue green with black legs, cornicles and antennae; antennae less than ½ length of body English grain aphid: lime green, "spindly legs" with black antennae, cornicles and legs. Antennae more than ½ length of body. Bird cherry oat aphid: olive green with brownish-red spot on back around base of cornicles.	Planting Time		Do not use treated seed as feed. Many seed treatment active ingredients are combined with fungicides and sold under various trade names. Some have grazing waiting periods, so read label carefully. 30-day PHI.
	Cruiser 5FS [4A] (thiamethoxam)	0.75 to 1.33 fl oz/cwt seed	
	Gaucho 480 [4A] Gaucho XT [4A] (imidacloprid)	1 to 3 fl oz/cwt seed 3.4 fl oz/cwt seed	
	Nipsit [4A] (clothianidin)	0.75 to 1.79 fl oz/cwt seed	
	Post-Plant		
	Besiege [3,28] (lambda-cyhalothrin +	6.0 to 10.0 fl oz	

Pest, Damage and Treatment Threshold	Insecticide, Formulation, [MOA Group] and (Active Ingredient)	Rate of Product and (lb active ingredient) per Acre	Comments
<p>Aphids (cont'd) Rice root aphid is similar in appearance to bird cherry oat aphid, but tends to feed on crown, beneath the soil.</p> <p>Greenbug: See greenbug section</p> <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>chlorantraniliprole)</p> <p>Cobalt [1B,3] or (chlorpyrifos + gamma-cyhalothrin)</p> <p>Cobalt Advanced[1B,3] (chlorpyrifos + lambda-cyhalothrin)</p> <p>Dimethoate 4EC [1B] (dimethoate)</p> <p>Karate/Warrior II [3] (lambda-cyhalothrin)</p> <p>Lorsban 4E [1B] (chlorpyrifos)</p> <p>Malathion 57 EC [1B] (malathion)</p> <p>Mustang MAXX [3] (zeta-cypermethrin)</p> <p>Proaxis 0.5 CS [3] (gamma-cyhalothrin)</p> <p>Sivanto [4D] (flupyradifurone)</p> <p>Transform [4C] (sulfoxaflor)</p>	<p>7 to 13 fl oz</p> <p>6 to 13 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>1.6 pt (0.93 lb ai/A)</p> <p>3.2 to 4.0 pt (0.02 to 0.025 lb ai/A)</p> <p>2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)</p> <p>7.0 to 10.5 fl oz (0.09 to 0.137 lb ai/A)</p> <p>0.75 to 1.5 oz (0.023 to 0.047 lb ai/A)</p>	<p>14-day waiting period for forage and hay, 28-days for grain or straw.</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, 30 days for harvest. (other names; Grizzly, Kaiso, Silencer, 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. (other names, Fyfanon).</p> <p>Control may be variable. 14-day waiting period for grazing or harvesting. (other names, Respect, Respect EC).</p> <p>Wheat, wheat hay, triticale. 30-day waiting period for harvest and fodder, 7-days for grazing harvest (check label for aphid species).</p> <p>7-day waiting period for forage, 21-days for harvest.</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 XL [3] (beta-cyfluthrin)</p> <p>Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole)</p> <p>Cobalt [1B,3] or (chlorpyrifos + gamma-cyhalothrin)</p> <p>Cobalt Advanced[1B,3] (chlorpyrifos + lambda-cyhalothrin)</p> <p>Fastac CS [3] (alpha-cypermethrin)</p> <p>Karate/Warrior II [3] (lambda-cyhalothrin)</p> <p>Mustang MAXX [3] (zeta-cypermethrin)</p> <p>Proaxis 0.5 CS [3] (gamma-cyhalothrin)</p> <p>Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)</p>	<p>1 to 1.8 fl oz. (0.016 to 0.028 lb ai/A)</p> <p>5.0 to 8.0 fl oz</p> <p>13 to 25 fl oz</p> <p>11 to 25 fl oz</p> <p>1.3 to 3.8 fl oz (0.008 to 0.025 lbi ai/A)</p> <p>0.96 to 1.60 fl oz (0.015 to 0.025 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>7-day waiting period for grazing, 30 days for harvest.</p> <p>30-day PHI.</p> <p>14-day waiting period for forage and hay, 28-days for grain or straw.</p> <p>14-day waiting period for forage and hay, 28-days for grain or straw.</p> <p>14-day PHI.</p> <p>Wheat, wheat hay, and triticale. 7-day waiting period for grazing, 30 days for harvest. (other names; Grizzly, Kaiso, Silencer, Taiga).</p> <p>14-day waiting period for grazing or harvesting.</p> <p>Wheat, wheat hay, triticale. 30-day waiting period for harvest and fodder, 7-days for grazing harvest (other names: Declare, Prolex).</p> <p>14-day Phi for forage, 28 days for grain or straw.</p>

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] and (Active Ingredient)</i>	<i>Rate of Product and (lb active ingredient) per Acre</i>	<i>Comments</i>
Army cutworm (cont'd)	Tombstone [3] (cyfluthrin)	1.0 to 1.8 fl oz (0.016 to 0.028 lb ai/A)	3-day waiting period for grazing, 30- day for harvest.
Armyworm Dark green or brown caterpillar with five stripes along body. <u>Damage:</u> Feed on flag leaf, awns and may "clip" heads. <u>Threshold:</u> Treat if 4 to 5 unparasitized armyworms are found per ft of row.	Baythroid XL [3] (beta-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.
	Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole)	6.0 to 10 fl oz	30-day PHI.
	Blackhawk [5] (spinosad)	1.1 to 3.3 oz (0.025 to 0.075 lb ai/A)	3-day for forage or hay, 21-day waiting period for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 25 fl oz	14-day waiting period for forage and hay, 28-days for grain or straw.
	Cobalt Advanced [1B,3] (chlorpyrifos + lambda-cyhalothrin)	11 to 25 fl oz	14-day waiting period for forage and hay, 28-days for grain or straw.
	Coragen [28] (chlorantraniliprole)	3.5 to 7.5 fl oz (0.045 to 0.098 lb ai)	1 day PHI.
	Fastac [3] (alpha-cypermethrin)	1.8 to 3.8 fl oz (0.012 to 0.025 lb ai/A)	14-day PHI.
	Karate/Warrior II [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, 30-days for harvest. (other names; Grizzly, Kaiso, Silencer, Taiga).
	Lannate LV [1A] (methomyl)	0.75 to 1.5 pt (0.225 to 0.45 lb ai/A)	10-day waiting period for grazing, 7-day waiting period for harvest. (other names, Annihilate).
	Mustang MAXX [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).
	Prevathon [28] (chlorantraniliprole)	14 to 20 fl oz (0.047 to 0.067 lb ai/A)	Barley, oats, triticale, wheat: 1-day PHI.
	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 harvest and fodder, 7-days for grazing harvest (other names: Declare, Prolex).
	Radiant [5] (spinetoram)	3 to 6 oz	21-day waiting period for grain, 4 days for forage.
	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 lb ai/A)	3-day waiting period for grazing, 30- day for harvest.
Brown wheat mite Tiny red to dark brown mites that feed on leaves, associated with dry, hot weather. <u>Damage:</u> Plants appear to be drought stricken <u>Threshold:</u> Treat if mites and damage are evident.	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	14-day waiting period for forage and hay, 28-days for grain or straw.
	Cobalt Advanced [1B,3] (chlorpyrifos + lambda-cyhalothrin)	6 to 13 fl oz	(Cobalt advanced is chlorpyrifos + lambda cyhalothrin, different rates).
	Dimethoate 4E [1B] (dimethoate)	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 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).

Pest, Damage and Treatment Threshold	Insecticide, Formulation, [MOA Group] and (Active Ingredient)	Rate of Product and (lb active ingredient) per Acre	Comments
<p>Fall armyworm Large, brown, green or black caterpillar with stripes, up to 1.5 inches. Has a light colored, inverted "Y" on head.</p> <p><u>Damage:</u> Eat small plants in Fall</p> <p><u>Threshold:</u> Treat if 3-4 larvae are found per foot of row AND feeding damage is evident.</p>	<p>Baythroid XL [3] (beta-cyfluthrin)</p> <p>Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole)</p> <p>Blackhawk [5] (spinosad)</p> <p>Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)</p> <p>Cobalt Advanced [1B,3] (chlorpyrifos + lambda-cyhalothrin)</p> <p>Coragen [28] (chlorantraniliprole)</p> <p>Fastac [3] (alpha-cypermethrin)</p> <p>Karate/Warrior II [3] (lambda-cyhalothrin)</p> <p>Lannate LV [1A] (methomyl)</p> <p>Mustang MAXX [3] (zeta-cypermethrin)</p> <p>Prevathon [28] (chlorantraniliprole)</p> <p>Proaxis 0.5 CSr [3] (gamma-cyhalothrin)</p> <p>Radiant [5] (spinetoram)</p> <p>Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)</p>	<p>1.8 to 2.4 fl oz (0.014 to 0.019 lb ai/A)</p> <p>6.0 to 10 fl oz</p> <p>1.7 to 3.3 oz (0.04 to 0.075 lb ai/A)</p> <p>13 to 25 fl oz</p> <p>11 to 25 fl oz</p> <p>3.5 to 7.5 fl oz (0.045 to 0.098 lb ai)</p> <p>3.2 to 3.8 fl oz (0.02 to 0.025 lb ai/A)</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 (0.225 to 0.45 lb ai/A)</p> <p>1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)</p> <p>14 to 20 fl oz (0.047 to 0.067 lb ai/A)</p> <p>2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)</p> <p>3 to 6 oz</p> <p>9.25 to 11.75 fl oz</p>	<p>1st and 2nd instars only. 7-day waiting period for grazing, 30 days for harvest.</p> <p>30 day PHI.</p> <p>3-day for forage or hay, 21-day waiting period for harvest.</p> <p>14-day waiting period for forage and hay, 28-days for grain or straw.</p> <p>14-day waiting period for forage and hay, 28-days for grain or straw.</p> <p>1-day PHI.</p> <p>14-day PHI.</p> <p>Wheat, wheat hay, and triticale. 7-day waiting period for grazing, 30 days for harvest. (other names; Grizzly, Kaiso, Silencer, Taiga).</p> <p>10-day waiting period for grazing, 7-day waiting period for harvest.</p> <p>14-day waiting period for grazing or harvesting. (other names, Respect, Respect EC).</p> <p>Barley, oats, triticale, wheat: 1-day PHI.</p> <p>Wheat, wheat hay, triticale. 30-day waiting period for harvest and fodder, 7-days for grazing harvest (other names: Declare, Prolex).</p> <p>21-day waiting period for grain, 4 days for forage.</p> <p>14-day waiting period for grazing, 28-days for harvest.</p>
<p>False wireworm/Wireworm Slender, hard bodied, wormlike larvae.</p> <p><u>Damage:</u> Feed on kernels and newly germinated plants below the soil surface</p> <p><u>Threshold:</u> Treat if 2 larvae are found per foot²</p>	<p>Cruiser 5FS [4A] (thiamethoxam)</p> <p>Gaucho 480 [4A] Gaucho XT [4A] (imidacloprid)</p> <p>Nipsit [4A] (clothianidin)</p>	<p>0.75 to 1.33 fl oz/cwt seed</p> <p>1 to 3 fl oz/cwt seed</p> <p>0.25 to 1.79 fl oz/cwt seed</p>	<p>Wheat and barley. 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. (other names; Attendant, Sativa IM Max, Senator).</p> <p>Do not use treated seed as feed.</p> <p>Products are not labeled <u>specifically</u> for false wireworm; performance varies with soil moisture and soil temperature.</p>

Pest, Damage and Treatment Threshold	Insecticide, Formulation, [MOA Group] and (Active Ingredient)	Rate of Product and (lb active ingredient) per Acre	Comments
<p>Grasshopper <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> 11-20 per yd² in vegetation next to wheat 3-7 per yd² in the field. See EPP-7196 for additional information.</p> <p>See EPP-7196: Grasshopper Management in Rangeland, Pastures, and Crops</p>	<p>Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)</p> <p>Cobalt Advanced [1B,3] (chlorpyrifos + lambda-cyhalothrin)</p> <p>Coragen [28] (chlorantraniliprole)</p> <p>Dimethoate 4E [1B] (dimethoate)</p> <p>Lorsban 4E [1B] (chlorpyrifos)</p> <p>Malathion 5E [1B] (malathion)</p> <p>Mustang MAXX [3] (zeta-cypermethrin)</p> <p>Prevathon [28] (chlorantraniliprole)</p> <p>Sevin XLR [1A] (carbaryl)</p> <p>Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)</p> <p>Tombstone [3] (cyfluthrin)</p>	<p>7 to 13 fl oz</p> <p>6 to 13 fl oz</p> <p>2.0 to 5.0 fl oz (0.026 to 0.065 lb ai)</p> <p>0.75 pt (0.375 lb ai/A)</p> <p>0.5 to 1 pt (0.25 to 0.5 lb ai/A)</p> <p>1.6 pt (0.93 lb ai/A)</p> <p>3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)</p> <p>8 to 20 fl oz (0.027 to 0.067 lb ai/A)</p> <p>0.5 to 1.5 qt (0.5 to 1.5 lb ai/A)</p> <p>5.0 to 11.75 fl oz</p> <p>1.8 to 2.4 fl oz (0.028 to 0.038 fl oz/A)</p>	<p>14-day waiting period for forage and hay, 28-days for grain or straw.</p> <p>14-day waiting period for forage and hay, 28-days for grain or straw.</p> <p>1-day PHI.</p> <p>Wheat only. 14-day waiting period for grazing, 35-day waiting period for harvest. Two applications per season.</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 harvest.</p> <p>14-day waiting period for grazing or harvesting. (other names, Respect, Respect EC).</p> <p>Barley, oats, triticale, wheat 1-day PHI.</p> <p>Wheat only; 21-day waiting period for harvest.</p> <p>14-day waiting period for grazing, 28-days for harvest.</p> <p>3-day waiting period for grazing; 30 days for harvest.</p>
<p>Greenbug 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</p> <p>Cereal Aphid Expert System: http://entopl.okstate.edu/gbweb/index3.htm</p> <p>Or contact your local county OCES office for information on determining thresholds and sampling.</p>	<p>Planting Time</p> <p>Cruiser 5FS [4A] (thiamethoxam)</p> <p>Gaucht 480 [4A]</p> <p>Gaucht XT [4A] (imidacloprid)</p> <p>Nipsit [4A] (clothianidin)</p> <p>Post-Plant</p> <p>Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)</p> <p>Cobalt Advanced [1B,3] (chlorpyrifos + lambda-cyhalothrin)</p> <p>Dimethoate 4E [1B] (dimethoate)</p> <p>Karate/Warrior II [3] (lambda-cyhalothrin)</p>	<p>0.75 to 1.33 fl oz/cwt seed</p> <p>1 to 3 fl oz/cwt seed</p> <p>3.4 fl oz/cwt seed</p> <p>0.75 to 1.79 fl oz/cwt seed</p> <p>7 to 13 fl oz</p> <p>6 to 13 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>Wheat and barley. No grazing restriction. Do not use treated seed as feed.</p> <p>Wheat and barley. 45-day waiting period for grazing. Do not use treated seed as feed. (other names; Attendant, Sativa IM Max, Senator).</p> <p>Do not use treated seed as feed.</p> <p>14-day waiting period for forage and hay, 28-days for grain or straw.</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, 30 days for harvest. (other names; Grizzly, Kaiso, Silencer, Taiga).</p>

Pest, Damage and Treatment Threshold	Insecticide, Formulation, [MOA Group] and (Active Ingredient)	Rate of Product and (lb active ingredient) per Acre	Comments
Greenbug (cont'd)	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 [1B] (malathion)	1.5 pt (0.93 lb ai/A)	7-day waiting period for grazing or harvesting. (other names, Fyfanon).
	Mustang MAXX [3] (zeta-cypermethrin)	3.2 to 4 fl oz (0.02 to 0.025 lb ai/A)	14-day waiting period for grazing or harvesting. (other names; Attendant, Sativa IM Max, Senator).
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	3.84 fl oz (0.015 lb ai/A)	Wheat, wheat hay, triticale. 30-day waiting period for harvest and fodder, 7-days for grazing harvest (other names: Declare, Prolex).
	Sivanto [4D] (flupyradifurone)	7.0 to 10.5 fl oz (0.09 to 0.137 lb ai/A)	7-day waiting period for grazing, 21-days for harvest.
	Transform WG [4C] (sulfoxaflor)	0.75 to 1.5 oz (0.023 to 0.047 lb ai/A)	7-day waiting period for grazing, 14 days for grain harvest.
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. <u>Damage:</u> Stunts plants in fall, causes lodging of heads in spring. <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. See EPP-7086 Hessian Fly Management in Oklahoma Winter Wheat.	Cruiser 5FS [4A] (thiamethoxam)	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.
	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.
	Nipsit [4A] (clothianidin)	1.79 fl oz/cwt seed	Do not use treated seed as feed.
			Seed treatments will not provide control of spring brood Hessian fly. Seed treatment combined with later planting will improve effects of insecticide.
			Consider using a resistant variety for added protection, see PSS-2142, Wheat Variety Comparison for variety ratings of resistance to Hessian fly.
Pale western cutworm Caterpillar is gray with no prominent stripes. <u>Damage:</u> Cuts plants below soil surface. Generally found in the Oklahoma Panhandle, about 2 to 3 weeks later than army cutworm. <u>Threshold:</u> Treat if 2 or more larvae are found per linear foot of row.	Baythroid XL [3] (beta-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 [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 25 fl oz	14-day waiting period for forage and hay, 28-days for grain or straw.
	Cobalt Advanced [1B,3] (chlorpyrifos + lambda-cyhalothrin)	11 to 25 fl oz	14-day waiting period for forage and hay, 28-days for grain or straw.
	Fastac [3] (alpha-cypermethrin)	1.8 to 3.8 fl oz (0.012 to 0.025 lb ai/A)	14-day PHI.
	Karate/Warrior II [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. (other names; Grizzly, Kaiso, Taiga).
	Mustang MAXX [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).
	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, triticale. 30-day waiting period for harvest and fodder, 7-days for grazing harvest (other names: Declare, Prolex).

Pest, Damage and Treatment Threshold	Insecticide, Formulation, [MOA Group] and (Active Ingredient)	Rate of Product and (lb active ingredient) per Acre	Comments
<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><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.</p>	<p style="text-align: center;"><u>Planting Time</u></p> <p>Cruiser 5FS [4A] (thiamethoxam) 0.75 to 1.33 fl oz/cwt seed</p> <p>Gaucho 480 [4A] 1 to 3 fl oz/cwt seed Gaucho XT [4A] (imidacloprid)</p> <p style="text-align: center;"><u>Post-Plant</u></p> <p>Baythroid XL [3] (beta cyfluthrin) 1.8 to 2.4 fl oz (0.014 to 0.019 lb ai/A)</p> <p>Cobalt [1B,3] or (chlorpyrifos + gamma-cyhalothrin) 7 to 13 fl oz</p> <p>Cobalt Advanced [1B,3] (chlorpyrifos + lambda-cyhalothrin) 6 to 13 fl oz</p> <p>Dimethoate 4E [1B] (dimethoate) 0.5 to 0.75 pt (0.25 to 0.375 lb ai/A)</p> <p>Karate/Warrior II [3] (lambda-cyhalothrin) 1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)</p> <p>Lorsban 4E [1B] (chlorpyrifos) 0.5 to 1 pt (0.25 to 0.5 lb ai/A)</p> <p>Mustang MAXX [3] (zeta-cypermethrin) 3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)</p> <p>Proaxis 0.5 CS [3] (gamma-cyhalothrin) 2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)</p> <p>Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin) 9.25 to 11.75 fl oz</p> <p>Sivanto [4D] (flupyradifurone) 7.0 to 10.5 fl oz (0.09 to 0.137 lb ai/A)</p> <p>Tombstone [3] (cyfluthrin) 1.8 to 2.4 fl oz (0.028 to 0.038 lb ai/A)</p>	<p>Wheat and barley. No grazing restriction. Do not use treated seed as feed.</p> <p>Wheat and barley. 45-day waiting period for grazing. Do not use treated seed as feed. (other names; Attendant, Sativa IM Max, Senator).</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>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. (other names; 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>14-day waiting period for grazing or harvesting. (other names, Respect, Respect EC).</p> <p>Wheat, wheat hay, triticale. 30-day waiting period for harvest and fodder, 7-days for grazing harvest (other names: Declare, Prolex).</p> <p>14-day waiting period for grazing, 28-days for harvest.</p> <p>14-day waiting period for grazing, 21-days for harvest.</p> <p>3-day waiting period for grazing; 30 days for harvest.</p>	
<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 and the virus that causes High Plains disease.</p> <p><u>Threshold:</u> None</p>	<p>No effective chemical control is registered.</p>	<p>Delayed planting and management of volunteer wheat may reduce problems.</p>	

Pest, Damage and Treatment Threshold	Insecticide, Formulation, [MOA Group] and (Active Ingredient)	Rate of Product and (lb active ingredient) per Acre	Comments
<p>White grub “C” shaped whitish grub with a tan head and swollen tip of abdomen, measuring up to 1½ inches.</p> <p><u>Damage:</u> Feed on roots. Cause stand loss, poor emergence and thin stands.</p> <p><u>Threshold:</u> None</p>			<p>No effective chemical control is registered.</p> <p>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>
<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><u>Damage:</u> Leaves appear stunted and silver colored.</p> <p><u>Threshold:</u> No established threshold; treat if injury symptoms and mites are present. Day time temperatures that exceed 75° F will reduce populations.</p>	Malathion [1B] (malathion)	2 pt (1.25 lb ai/A)	<p>7-day waiting period for grazing or harvest.</p> <p>*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.</p>

Pre-harvest Intervals and grazing restrictions

Baythroid XL	3-day PHI for grazing, 30-days for harvest. Two applications/season
Blackhawk	3-day PHI for grazing, 21-day PHI for harvest
Cobalt	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
Fastac	14-day PHI
Gaucho 480, XT	45-day PHI for harvest or grazing
Karate/Warrior II	7-day PHI for grazing, 30-days for harvest
Lannate	14-day PHI for harvest or grazing
Lorsban 4E	14-day PHI for grazing, 28-days for harvest. Two applications/season.
Mustang MAXX	14-day PHI for grazing or harvest
Nipsit	Do not feed treated grain.
Prevathon	14-day PHI
Proaxis 0.5EC	30-day PHI for harvest or hay, 7-days for grazing
Prolex 1.25 CS	30-day PHI for harvest or grazing
Radiant	4-day PHI for grazing, 21-days for harvest
Sivanto	7-day PHI for grazing, 21-day PHI for harvest
Stallion	14-day PHI for grazing, 28-day PHI for harvest
Transform	7-day PHI for grazing, 14-day PHI for grain or straw 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). 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.

The pesticide information presented in this publication was current with federal and state regulations at the time of revision. READ and FOLLOW all LABEL directions.

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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