



Pest e-alerts



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Time to Think about Controlling Leaf Curl Disease of Peaches and Nectarines

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It is now time to think about controlling leaf curl disease of peaches and nectarines. If you have had a history of leaf curl in your area, then preventative applications of fungicides will be necessary to reduce potential damage as a result of this disease.

The pathogen that causes leaf curl is a fungus called *Taphrina deformans*. The pathogen is found in all major production areas of peaches, nectarines, and cherries. In Oklahoma, leaf curl can be a significant problem in years where cool, wet weather prevails during early bud development. Optimal temperature for infection by the fungus is 70°F. However, the fungus can infect at temperatures ranging from 50°F - 85°F.

Symptoms on young developing leaves include yellow to reddish areas that can have a puckered appearance. In the puckered areas, a white coating of spores of the fungus may be present. Infected leaves will turn crisp and eventually fall from the tree. In years where weather is favorable for leaf curl, severe defoliation of trees not treated with fungicide can result. This defoliation can cause tremendous stress and weaken trees that are infected.

While this disease can be severe, it is easily controlled with properly timed fungicide sprays. It is critical to apply fungicides before early season bud development (bud swell). If fungicides are

applied too late (advanced bud swell or bud break) limited or no control will be achieved. Copper compounds such as copper hydroxide and Bordeaux mixture are highly effective in preventing leaf curl development. Usually one application of fungicide is sufficient to control leaf curl. However, if environmental conditions cause delayed bud break, then a second application of fungicide might be necessary. Do not apply sprays if temperatures are below freezing. Finally, applying fungicide after dormant pruning will help you achieve thorough coverage of the tree.

A New Tool Available for Prevention of Grapevine Trunk Canker Diseases

Damon L. Smith, Horticulture Crops Extension Pathologist

Over the last several years I have received some questions about managing trunk canker diseases in grapevine. Some of these diseases are caused by fungi in the group *Botryosphaeria* and *Eutypa lata* (pathogen that causes dead-arm disease or Eutypa dieback). These fungi primarily infect after dormant pruning has been completed. Dormant pruning provides “wounds” or openings that these fungi can use to gain entry into the wood of vines. If pruning is done during wet and warm periods, the risk of trunk canker development increases.



Controlling trunk canker diseases has been challenging in many grape-growing regions. Late-winter pruning and sanitation have served as the primary means to limit the damage to vines by *Botryosphaeria* spp. and *Eutypa lata*. Fungicides applied preventatively after pruning have shown mixed results, and this is likely due to the lack of efficacy of those fungicides on the fungi involved.

Thanks to some research in California and the Texas Hill Country and High Plains vineyards, Rally® 40WSP has been successfully demonstrated as an effective fungicide for controlling canker diseases in grapes. This research has resulted in the supplemental labeling of Rally® 40WSP for control of trunk canker diseases in several states including Oklahoma.

Spray timing and integration of other disease management practices will be critical in the effectiveness of Rally® 40WSP for controlling trunk diseases. Rally® 40WSP should be applied preventatively immediately after (within 24 hours) **FINAL** dormant-pruning of vines. Some growers may choose to do some “rough pruning” during the winter with a second round of careful pruning before bud-break. If this is the strategy of choice, then no application of Rally® 40WSP is needed after the first “rough pruning.” Sanitation is also important. Be sure to remove and destroy all old vine material from the vines. Avoid making large cuts on cordons and trunks until as late in the dormant period as possible. This will allow the vine to recover quicker from these cuts as the plants will soon be active and the window of opportunity for

infection by fungi will be greatly reduced. Thorough coverage of wood and cut surfaces with Rally® 40WSP will provide two weeks of protection according to the label. Spraying can be done with a conventional vineyard sprayer calibrated to deliver either 5oz of fungicide in 50 gallons of water per acre, 4 oz of fungicide in 42 gallons of water per acre, or 3 oz of fungicide in 33 gallons of water per acre directly to the vines and cut surfaces. A second application may be necessary if weather conditions are consistently wet and/or rainy. Be sure to carefully consult, and have in your possession, both the general label and the new supplemental label for Rally® 40WSP so that you are familiar with the detailed instructions prior to using this product.

Reference:

Adams, P.S. Supplemental Labeling of Rally® 40WSP Fungicide to Aid in the Control of Certain Vine Diseases Following Pruning in Grapevines. Texas AgriLife Extension Bulletin. January 29, 2010.

Wheat Disease Update

Bob Hunger, Extension Wheat Pathologist



Oklahoma: I recently visited plots/trials around Stillwater. I was able to find scattered and small viable pustules of leaf rust and powdery mildew, but only in wheat that was planted early and not grazed (and hence quite rank). Differences between resistant and susceptible breeder lines in my soilborne/spindle streak nursery are visible, but no new growth has started so symptoms are difficult to discern. I also saw a few aphids, both greenbug and bird cherry-oat (I suspect); but again, these were very sparse.

Army Cutworms Reported in Some Wheat Fields

Tom A. Royer, Extension Entomologist

Winter wheat in Oklahoma plays host to a “squad” of armyworms, including the armyworm, fall armyworm, wheat head armyworm, and the army cutworm. Each occurs at a different time during the wheat growing season, but they share their “army” namesake because when numerous, they will often form “divisions” and march from field to field in search of food. We have received scattered reports of “armyworm” activity over the past few weeks. If they are active at this time, it almost has to be army cutworms.

This insect is not a typical pest of wheat because it is quite tolerant to cold and actively feeds throughout the winter months. Adult army cutworm moths actually spend the summer in the Rocky Mountains and migrate to Oklahoma each fall. They seek bare or sparsely vegetated field (like a newly prepared field ready for wheat planting) and lay eggs from August through

October. The eggs hatch soon after being deposited, which explains why a producer might see different sizes of larvae in a field. Army cutworms feed throughout the winter and molt seven times before they turn into pupae in the soil. Most larvae will be gone by mid-March and adult moths begin emerging in April and fly back to the Rocky Mountains to spend the summer. On a side note, the adult moths are an important source of food for grizzly bears in Yellowstone National Park during the summer. A single grizzly will eat from 10,000 to 40,000 moths per day!

Army cutworms can cause severe loss of wheat stands if not controlled. Cutworm damage often goes unnoticed through the winter because the caterpillars grow slowly and don't get big enough to cause noticeable damage until temperatures warm in the spring. Signs of injury include wheat that seems to be "slow growing" or fails to green up. Unfortunately, that is also an indication of poor growing conditions due to drought (which cutworms also like), so it becomes important to check the fields for cutworms.



Sample a field by stirring or digging the soil to a depth of two inches at 5 or more locations. The cutworms will be "greenish grey", and will probably curl up into a tight "C" when disturbed.



The suggested treatment threshold is 2-3 cutworms per linear foot of row. Current recommendations for army cutworm control are listed in CR-7194, *Management of Insect and Mite Pests in Small Grains* (attached)

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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-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	Planting Time		
Corn leaf aphid: blue green with black legs, cornicles and antennae; antennae less than ½ length of body.	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.
English grain aphid: lime green, “spindly legs” with black antennae, cornicles and legs. Antennae more than ½ length of body.	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.
	Post-Plant		
Bird cherry oat aphid: olive green with brownish-red spot on back around base of cornicles.	Cobalt ^r [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
Rice root aphid is similar in appearance to bird cherry oat aphid, but tends to feed on crown, beneath the soil.	Dimethoate ^r 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.
Greenbug: See greenbug section	Karate ^r 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, Taiga)

<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>
Russian wheat aphid: see Russian wheat aphid section. Damage: Corn leaf aphid and English grain aphid do not usually require control. Bird cherry oat aphid can reduce yield, and is an important vector of Barley Yellow Dwarf virus. 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.	Lannate ^r LV ^r [1A] Lannate ^r SP ^r [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.
	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)
	Malathion [1B]	1.5 pt	7 day waiting period for grazing or harvesting.
	Methyl parathion ^r 4E [1B]	0.5 to 1.5 pt	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 pt (0.02 to 0.025 lb ai/A)	Control may be variable. 14 day waiting period for grazing or harvesting.
	Proaxis 0.5 CS ^r [3] (gamma-cyhalothrin)	3.84 fl oz (0.015 lb ai/A)	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvesting.
Army cutworm Gray striped caterpillar that curls up in to a tight "C" when disturbed. Evident from January through March. Damage: Cuts plants at soil line, can kill plants if it enters the crown. Threshold: 2 to 3 caterpillars per foot of row if conditions are dry, if moisture is adequate, 4 to 5 per foot of row.	Baythroid ^r XL [3] (cyfluthrin)	1 to 1.8 fl oz. (0.08 to 0.014 lbi ai/A)	7 day waiting period for grazing, 30 days for harvest.
	Cobalt ^r [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	13 to 25 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Karate ^r w Zeon [3] (lambda cyhalothrin)	0.96 to 1.60 fl oz (0.015 to 0.02 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 ^r [3] (zeta-cypermethrin)	1.28 to 4.0 fl oz (0.008 go 0.025 lb ai/A)	14 day waiting period for grazing or harvesting.
	Proaxis 0.5 CS ^r [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.
Armyworm Dark green or brown caterpillar with 5 stripes along body. Damage: Feed on flag leaf, awns and may "clip" heads. Threshold: Treat if 4 to 5 unparasitized armyworms are found per ft of row.	Baythroid ^r 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 ^r 3, [1B] (chlorpyrifos + gamma-cyhalothrin)	13 to 25 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Karate w Zeon [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.
	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	15 day waiting period for grazing or harvest. Temperatures should be above 50°F for application.
	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.
	Pennacap-M ^r [1B]	2 to 3 pt	15 day waiting period for grazing or harvesting.

<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)	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.
	Tracer [5] (spinosad)	1 to 3 fl oz	14 day waiting period for grazing, 21 day waiting period for harvest.
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] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 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	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	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)	7 day waiting period for grazing; 30 days for harvest.
	Cobalt ^r [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	13 to 25 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Karate w Zeon [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	15 day waiting period for grazing or harvest. Temperatures should be above 50° 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.
	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.
Tracer [5] (spinosad)	1.5 to 3 fl oz	14 day waiting period for grazing, 21 day waiting period for harvest.	
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. Gaucho and Cruiser are not labeled specifically for false wireworm; performance varies with soil moisture and soil temperature.

<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>Grasshopper</p> <p>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. 1 to 2 inches, outer wings leathery, inner wings clear or colored. Enlarged hind legs designed for jumping.</p> <p>Threshold: 7 to 10 per yd² in vegetation next to wheat 3 per yd² in the field.</p> <p>For additional information, see EPP-7196: <i>Grasshopper Management in Rangeland, Pastures, and Crops.</i></p>	Cobalt ^r [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Dimethoate 4E [1B]	0.75 pt	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	7 day waiting period for grazing or harvest.
	Methyl parathion 4E [1B]	0.75 to 1 pt	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.
	Pennacap-M [1B]	2 to 3 pt	15 day waiting period for grazing or harvest.
	Sevin XLR [1A]	0.5 to 1.5 qt	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>Damage: 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>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://entopl.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 your local county OCES office for information on determining thresholds and sampling.</p>	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.
	Post-Plant		
	Cobalt ^r [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	14 day waiting period for forage and hay, 28 days for grain or straw.
	Dimethoate ^r 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.
	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, Taiga)
	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)
	Malathion [1B]	0.5 to 1.5 pt	7 day waiting period for grazing or harvesting.
	Methyl parathion ^r 4E [1B]	0.5 to 1.5 pt	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 fl oz (0.02 to 0.025 lb ai/A)	Control may be variable. 14 day waiting period for grazing or harvesting.
	Pennacap-M ^r [1B]	2 to 3 pt	15 day waiting period for grazing or harvesting.
	Proaxis 0.5 CS ^r [3] (gamma-cyhalothrin)	3.84 fl oz (0.015 lb ai/A)	Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvesting.

Pest, Damage and Treatment Threshold	Insecticide, [MOA Group] and (Active Ingredient)	Rate of Product per Acre	Comments
<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. Consider using a resistant variety. See PSS-2142 <i>Wheat Variety Comparison</i> for varieties that are resistant to Hessian fly.</p>	<p>Cruiser 5FS [4A] (thiamethoxam)</p> <p>Gaicho 480 [4A] Gaicho 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>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>	<p>Baythroid[®] XL [3] (cyfluthrin)</p> <p>Cobalt[®] [3, 1B] (chlorpyrifos + gamma-cyhalothrin)</p> <p>Karate w Zeon [3] (lambda cyhalothrin)</p> <p>Mustang MAX[®] [3] (zeta-cypermethrin)</p> <p>Proaxis 0.5 CS[®] [3] (gamma-cyhalothrin)</p>	<p>1.0 to 1.8 fl oz (0.008 to 0.014 lb ai/A)</p> <p>13 to 25 fl oz</p> <p>0.96 to 1.6 fl oz (0.015 to 0.025 lb ai/A)</p> <p>1.76 to 4.0 fl oz (0.011 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>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, Taiga).</p> <p>14 day waiting period for grazing or harvest.</p> <p>Wheat, wheat hay, and triticale. 30 day waiting period for grazing or harvest.</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>
<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.
	<u>Post-Plant</u>		
	Baythroid ^r 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 ^r [3, 1B] (chlorpyrifos + gamma-cyhalothrin)	7 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	Wheat only. 14 day waiting period for grazing, 35 day waiting period for harvest. Two applications per season.
	Karate w Zeon [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, Kairo, Taiga)
	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 ^r 4 E [1B]	0.5 to 1.5 pt	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)	Control may be variable. 14 day waiting period for grazing or harvest.	
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.	
<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.

Pest, Damage and Treatment Threshold	Insecticide, [MOA Group] and (Active Ingredient)	Rate of Product 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>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 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>	<p>Malathion [1B]</p> <p>Methyl parathion¹ 4E [1B]</p>	<p>2 pt</p> <p>0.5 to 1.5 pt</p>	<p>7 day waiting period for grazing or harvest.</p> <p>15 day waiting period for grazing or harvest. Temperatures should be above 50°F for on cloudy application.</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.

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 w Zeon	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.
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.

* 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 2008. 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 Oklahoma Cooperative Extension Service Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- 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.

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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