



# Current Report

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## Management of Insect and Mite Pests in Canola

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There are several arthropod pests that damage canola sporadically throughout the region. 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 canola 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. The number [in brackets] following a product is its Mode of Action number [MOA]. The first name listed is the trade name of a product registered for use in rangeland or pasture for the listed pest. The pesticide name in (parentheses) is the active ingredient name and can be used to select other registered products containing the same active ingredient if available for sale in Oklahoma. Such products may cost less, so producers should compare prices. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Oklahoma Cooperative Extension Service is implied.

**Kristopher Giles**  
 Professor and Research Entomologist

Refer to the following publications for additional information on pest management in canola.

- BAE-1110 Storing Oklahoma Winter Canola
- CR-2133 Crop and Forage Recordkeeping Software
- CR-2144 2008-2009 Winter Canola Performance Tests
- EPP-7085 Pest Management Needs Assessment for Oklahoma Canola Producers
- EPP-7089 Caterpillars in Canola
- EPP-7196 Grasshopper Management in Rangeland, Pastures, and Crops
- PSS-2130 Producing Winter Hardy Canola in Oklahoma
- PSS-2131 Winter Canola Planting Guide for the Southern Great Plains

An additional source of information is MF-2734, "Great Plains Canola Production Handbook," is a joint publication of Kansas State University, Oklahoma State University and the University of Nebraska. It is available by contacting the following website: [www.oznet.ksu.edu](http://www.oznet.ksu.edu)

### Management of Insect and Mite Pests in Canola

Pest, Damage and Treatment Threshold	Insecticide, [MOA Group] and (Active Ingredient)	Rate of Product per Acre	Comments
<b>Aphids</b>			
<b>Cabbage aphid:</b> small blue-gray aphid with short cornicles, and is usually covered with a powdery wax secretion.	<b>Planting Time</b> DynaShield [4A] (imidacloprid)	10.24 to 25.6 fl oz/ cwt seed	Research data indicates that aphids are a consistent pest of winter canola in fall and winter. The use of seed treatments is highly recommended for early-season management of aphids. Additional foliar insecticide applications may be necessary for late-season control of aphids. Green peach aphid is known to have resistance to pyrethroid [MOA group 3] insecticides.
<b>Green peach aphid:</b> Pale green to yellow (sometimes pink) with long cornicles and three dark lines on abdomen.	Helix EXtra [4A] (thiamethoxam)	23 fl oz/cwt seed	
	Poncho [4A] (clothianidin)	3.84 to 10.23 fl oz/ cwt seed	
<b>Turnip aphid:</b> Pale gray green with short, swollen cornicles, 1/16 inch. Winged adults can be recognized by presence of transverse dark bands on last two abdominal segments.	<b>Post-Plant</b> Azadirachtin [un]	1 pt	No PHI for harvest (Aza-direct, Ecozin).
<b>Damage:</b> High populations can cause stunting and discoloration of leaves. Feeding by cabbage aphid can stop terminal growth and reduce yield. Damage is of little consequence after pod formation is completed.	Brigade 2EC [3] (bifenthrin)	2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)	35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).
<b>Threshold</b> Treat rosette stage plants only when aphids exceed 100 to 200 per plant. Treat bud and early bloom stage when infested plants (racemes) exceed 15 percent. Don't treat at late flower of pod stage.	Hero [3] (zeta cypermethrin+ bifenthrin)	4.5 to 5.95 fl oz/A (0.04 to 0.053 lb ai/a)	35 day PHI for harvest.
	Methyl parathion [1B]	1 pt	28 day PHI for harvest. Do not graze treated fields.
	Mustang MAX EC [3] (zeta cypermethrin)	4.0 fl oz (0.025 lb ai/A)	7 day PHI for harvest. Do not make applications less than seven days apart.
	Proaxis 0.5 CS [3] (gamma cyhalothrin)	3.84 fl oz (0.015 lb ai/A)	30 day PHI for harvest or grazing.
	Warrior with Zeon [3] (lambda cyhalothrin)	3.84 fl oz (0.03 lb ai/A)	30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga). Spray in evening during bloom to avoid killing honeybees. Notify beekeepers before spraying if possible.

<b>Pest, Damage and Treatment Threshold</b>	<b>Insecticide, [MOA Group] and (Active Ingredient)</b>	<b>Rate of Product per Acre</b>	<b>Comments</b>
<p><b>Army cutworm</b> Gray striped caterpillar that curls up in to a tight "C" when disturbed. Evident from January through March.</p> <p><b>Damage:</b> Cuts plants at soil line, can kill plants if it enters the crown.</p> <p><b>Threshold:</b> 1 to 2 per foot of row.</p>	<p>Brigade 2EC [3] (bifenthrin)</p> <p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3] (gamma cyhalothrin)</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p> <p>2.8 to 5.95 fl oz/A (0.025 to 5.95 fl oz/A)</p> <p>4.0 fl oz (0.025 lb ai/A)</p> <p>1.92 to 3.84 fl oz (0.0075 to 0.015 lb ai/A)</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p> <p>35 day PHI for harvest.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>
<p><b>Beet Armyworm</b> Green caterpillar, darker above with a white stripe along the side of the body and a small black spot above the second pair of true legs, three pairs of true (thoracic legs) and four pair of abdominal prolegs.</p> <p><b>Damage:</b> Caterpillars can reduce seedling stand and chew conspicuous, irregular-shaped holes in leaves.</p> <p><b>Threshold:</b> Seedling, treat when scouting indicates 1 or more per row-ft. Treat when defoliation becomes severe, and larvae are present.</p>	<p>Azadirachtin (un)</p> <p><i>B. thuringiensis</i> [11]</p> <p>Battalion 0.2 EC [3] (deltamethrin)</p> <p>Brigade 2EC [3] (bifenthrin)</p> <p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Methyl parathion [1B]</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3]</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>Apply per label</p> <p>Apply per label</p> <p>5.8 fl oz (0.099 lb ai/A)</p> <p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p> <p>4.5 to 5.95 fl oz/A (0.04 to 0.053 lb ai/a)</p> <p>1 pt</p> <p>4.0 fl oz (0.025 lb ai/A)</p> <p>1.92 to 3.84 fl oz (0.0075 to 0.015 lb ai/A)</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>No PHI for harvest.</p> <p>No PHI for harvest.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p> <p>35 day PHI for harvest.</p> <p>28 day PHI for harvest. Do not graze treated fields.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>
<p><b>Cabbage looper</b> Green caterpillar, with a thin white line along each side of the body, three pairs of thoracic legs and three pair of abdominal prolegs.</p> <p><b>Damage:</b> Caterpillars chew conspicuous, irregular-shaped holes in leaves.</p> <p><b>Threshold:</b> Treat when defoliation becomes severe, and larvae are present.</p>	<p>Azadirachtin (un)</p> <p><i>B. thuringiensis</i> [11]</p> <p>Brigade 2EC [3] (bifenthrin)</p> <p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Methyl parathion [1B]</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3]</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>Apply per label</p> <p>Apply per label</p> <p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p> <p>2.8 to 5.95 fl oz/A (0.025 to 5.95 fl oz/A)</p> <p>1 pt</p> <p>4.0 fl oz (0.025 lb ai/A)</p> <p>1.92 to 3.84 fl oz (0.0075 to 0.015 lb ai/A)</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>No PHI for harvest.</p> <p>No PHI for harvest.</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p> <p>35 day PHI for harvest.</p> <p>28 day PHI for harvest. Do not graze treated fields.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>
<p><b>Diamondback moth</b> Adult moths are light grayish-brown with a white diamond-shaped marking along back when wings are folded. Larvae are slightly tapered at each end and pale green in color. Wriggle rapidly when disturbed.</p> <p><b>Damage:</b> Larvae feed on all plant parts, preferring the undersides of older leaves.</p> <p><b>Threshold:</b> No threshold has been established.</p>	<p>Azadirachtin (un)</p> <p><i>B. thuringiensis</i> [11]</p> <p>Brigade 2EC [3] (bifenthrin)</p> <p>Coragen [28] (chlorantraniloprole)</p> <p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Methyl parathion [1B]</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3]</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>Apply per label</p> <p>Apply per label</p> <p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p> <p>3.5 to 5.0 fl oz (0.045 to 0.065 lb ai/A)</p> <p>4.5 to 5.95 fl oz/A (0.04 to 0.053 lb ai/a)</p> <p>1 pt</p> <p>4.0 fl oz (0.025 lb ai/A)</p> <p>1.92 to 3.84 fl oz (0.0075 to 0.015 lb ai/A)</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>No PHI for harvest. (Aza-direct, Ecozin).</p> <p>No PHI for harvest. (Dipel, Javelin, Leipnox, Xentari).</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p> <p>21 day PHI for harvest.</p> <p>35 day PHI for harvest.</p> <p>28 day PHI for harvest. Do not graze treated fields.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>
<p><b>False chinch bug</b> Adults 1/8 inch, long dirty gray, with brown or black markings, piercing mouthparts.</p>	<p>Azadirachtin [un]</p> <p>Brigade 2EC [3] (bifenthrin)</p>	<p>Apply per label</p> <p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p>	<p>No PHI for harvest.</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p>

<b>Pest, Damage and Treatment Threshold</b>	<b>Insecticide, [MOA Group] and (Active Ingredient)</b>	<b>Rate of Product per Acre</b>	<b>Comments</b>
<p><b>Damage:</b> Feed in groups. Large numbers may cause wilting of heads or small plants.</p> <p><b>Threshold:</b> <i>Flowering:</i> Treat when there is an AVERAGE of 5 to 10 per head. <i>Early seed pod:</i> Treat when there is an AVERAGE of 10 to 20 per head.</p>	<p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Methyl parathion [1B]</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3]</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>4.5 to 5.95 fl oz/A (0.04 to 0.053 lb ai/a)</p> <p>1 pt</p> <p>4.0 FL oz (0.025 lb ai/A)</p> <p>3.84 fl oz</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>35 day PHI for harvest.</p> <p>28 day PHI for harvest. Do not graze treated fields.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing. (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>
<p><b>Flea beetle</b> Shiny black beetle about 1/16 inch long that jumps when disturbed.</p> <p><b>Damage:</b> Early spring. Feeding damage results in plant tissue that is scraped from leaf and/or small holes chewed in leaves. Can cause delayed development in cool growing conditions.</p> <p><b>Threshold:</b> No threshold has been established.</p>	<p><b>Planting Time</b></p> <p>DynaShield [4A] (imidacloprid)</p> <p>Helix EXtra [4A] (thiamethoxam)</p> <p>Poncho [4A] (clothianidin)</p> <p><b>Post-Plant</b></p> <p>Azadirachtin [un]</p> <p>Battalion 0.2 EC [3] (deltamethrin)</p> <p>Brigade 2EC [3] (bifenthrin)</p> <p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Methyl parathion [1B]</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3]</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>10.24 to 25.6 fl oz/ cwt seed</p> <p>23 fl oz/cwt seed</p> <p>3.84 to 10.23 fl oz/cwt seed</p> <p>Apply per label</p> <p>5.8 fl oz</p> <p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p> <p>4.5 to 5.95 fl oz/A (0.04 to 0.053 lb ai/a)</p> <p>1 pt</p> <p>4.0 fl oz (0.025 lb ai/A)</p> <p>3.84 fl oz</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>Harvested seed can only be used for industrial purposes, <u>not for edible oil</u>.</p> <p>30 waiting period for planting all crops except winter wheat following harvest.</p> <p>May plant field immediately with corn, or canola. 30 post-harvest waiting period for cereal grains, grasses soybeans and dried beans. 4 month waiting period for all other crops.</p> <p>No PHI for harvest.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p> <p>35 day PHI for harvest.</p> <p>28 day PHI for harvest. Do not graze treated fields.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>
<p><b>Harlequin bug</b> Black shield-shaped with orange, red and yellow markings. Measures 3/8 inch long. Eggs barrel shaped and laid in clusters.</p> <p><b>Damage:</b> Adults and nymphs pierce stalks, leaves with sucking mouthparts.</p> <p><b>Threshold:</b> No threshold has been established.</p>	<p>Azadirachtin (un)</p> <p>Brigade 2EC [3] (bifenthrin)</p> <p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Methyl parathion [1B]</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3]</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>Apply per label</p> <p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p> <p>4.5 to 5.95 fl oz/A (0.04 to 0.053 lb ai/a)</p> <p>1 pt</p> <p>4.0 fl oz</p> <p>1.92 to 3.84 fl oz (0.0075 to 0.015 lb ai/A)</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>No PHI for harvest.</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p> <p>35 day PHI for harvest.</p> <p>28 day PHI for harvest. Do not graze treated fields.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 Day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>
<p><b>Grasshopper</b> 1 to 2 inches, outer wings leathery, inner wings clear or colored. Enlarged hind legs designed for jumping. <b>Damage:</b> Chew leaves. Leaves may have ragged edges or leaf blade may be completely chewed. Small plants may be killed.</p> <p><b>Threshold:</b> 15 to 20 per square yard. If nymph populations exceed threshold field borders (25 to 40 per square yard), treat before they move into canola. For additional information, see EPP-7196, <i>Grasshopper Management in Rangeland, Pastures, and Crops</i>.</p>	<p>Battalion 0.2 EC [3] (deltamethrin)</p> <p>Brigade 2EC [3] (bifenthrin)</p> <p>Hero [3] (zeta cypermethrin + bifenthrin)</p> <p>Methyl parathion [1B]</p> <p>Mustang MAX EC [3] (zeta cypermethrin)</p> <p>Proaxis 0.5 CS [3]</p> <p>Warrior with Zeon [3] (lambda cyhalothrin)</p>	<p>5.8 fl oz</p> <p>2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)</p> <p>4.5 to 5.95 fl oz/A (0.04 to 0.053 lb ai/a)</p> <p>1 pt</p> <p>4.0 fl oz (0.025 lb ai/A)</p> <p>1.92 to 3.84 fl oz (0.0075 to 0.015 lb ai/A)</p> <p>0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)</p>	<p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).</p> <p>35 day PHI for harvest.</p> <p>28 day PHI for harvest. Do not graze treated fields.</p> <p>7 day PHI for harvest. Do not make applications less than seven days apart.</p> <p>30 day PHI for harvest or grazing.</p> <p>30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).</p>

<b>Pest, Damage and Treatment Threshold</b>	<b>Insecticide, [MOA Group] and (Active Ingredient)</b>	<b>Rate of Product per Acre</b>	<b>Comments</b>
<p><b>Lygus bug</b> Several species. Generally oval, about 1/4 inch long, brown with some yellow or reddish markings.</p> <p><b>Damage:</b> Feed on developing seeds, flowers, and leaves. Feed on buds. Thresholds are for infestations before or during petal fall.</p> <p><b>Threshold:</b> North Dakota thresholds are 15 per 10 sweeps before petal fall, and 20 per 10 sweeps after petal fall.</p>	Azadirachtin (un)	Apply per label	No PHI for harvest. (Aza-direct, Ecozin).
	Battalion 0.2 EC [3] (deltamethrin)	5.8 fl oz	7 day PHI for harvest. Do not make applications less than seven days apart.
	Brigade 2EC [3] (bifenthrin)	2.1 to 2.6 fl oz (0.033 to 0.04 lb ai/A)	35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper).
	Methyl parathion [1B]	1 pt	28 day PHI for harvest. Do not graze treated fields.
	Mustang MAX EC [3] (zeta cypermethrin)	4.0 fl oz (0.025 lb ai/A)	7 day PHI for harvest. Do not make applications less than seven days apart.
	Proaxis 0.5 CS [3]	1.92 to 3.84 fl oz (0.0075 to 0.015 lb ai/A)	30 day PHI for harvest or grazing.
Warrior with Zeon [3] (lambda cyhalothrin)	0.96 to 1.92 fl oz (0.15 to 0.03 lb ai/A)	30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga).	
<p><b>White grub</b> Large, "C" shaped grub with a white body and a brown head.</p> <p><b>Damage:</b> Grubs feed on roots of seedling plants. Damage potential is dependent on planting date and speed of growth of the plant.</p> <p><b>Threshold:</b> Seed treatments are registered for protection against early season damage. Treat if field history indicates a problem.</p>	<b>Planting Time</b>		Do not use treated seed for feed, food or oil purposes.
	DynaShield [4A] (imidacloprid)	10.24 to 25.6 fl oz/ cwt seed	Harvested seed can only be used for industrial purposes, <u>not for edible oil.</u>
	Helix EXtra [4A] (thiamethoxam)	23 fl oz/cwt seed	30 day post-harvest waiting period for planting all crops except winter wheat.
	Poncho [4A] (clothianidin)	3.84 to 10.23 fl oz/cwt seed	30 day post-harvest waiting period for planting all crops except corn.
<p><b>Wireworm</b> Hard-shelled, smooth, cylindrical, yellowish to brown worms. Two to six year life cycle.</p> <p><b>Damage:</b> Feed on seed, seedling. Cause stand loss.</p> <p><b>Threshold:</b> Seed treatments are registered for protection against early season damage. Treat if field history indicates a problem.</p>	<b>Planting Time</b>		Do not use treated seed for feed, food or oil purposes.
	DynaShield [4A] (imidacloprid)	10.24 to 25.6 fl oz/ cwt seed	Harvested seed can only be used for industrial purposes, <u>not for edible oil.</u>
	Helix EXtra [4A] (thiamethoxam)	23 fl oz/cwt seed	30 day post-harvest waiting period for planting all crops except winter wheat.
	Poncho [4A] (clothianidin)	3.84 to 10.23 fl oz/cwt seed	May plant field immediately with corn or canola. 30 day post-harvest waiting period for cereal grains, grasses, soybeans, and dried beans. Four month waiting period for all other crops.

### Pre-harvest Intervals and grazing restrictions

Azadirachtin (neem)	0 day PHI for harvest
<i>Bacillus thuringiensis</i>	0 day PHI for harvest.
Battalion <sup>r</sup>	7 day PHI for harvest
Brigade <sup>r</sup>	35 day PHI for harvest.
Coragen	21 day PHI for harvest.
DynaShield	Harvested seed can only be used for industrial purposes, <u>not for edible oil.</u>
Hero	35 day PHI for harvest.
Helix <sup>r</sup> EXtra	No PHI listed. Do not graze.
Methyl parathion <sup>r</sup>	28 day PHI for harvest. Do not graze treated fields.
Mustang <sup>r</sup> MAX	7 day PHI for harvest.
Prosper <sup>r</sup> FX	No PHI listed.
Proaxis <sup>r</sup>	30 day PHI for harvest or grazing.
Warrior <sup>r</sup>	30 day PHI for harvest or grazing.

r = restricted use

\* Group numbers in brackets [#] after 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 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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