

MANAGEMENT OF INSECT AND MITE PESTS IN CANOLA

Pest, Damage, and Treatment Threshold	Insecticide Formulation and (MOA Group)	Rate of Product per Acre	Comments	
<p>Aphids Cabbage aphid: small blue-gray aphid with short cornicles, and is usually covered with a powdery wax secretion.</p> <p>Green peach aphid: Pale green to yellow with long cornicles and three lark lines on abdomen.</p> <p>Turnip aphid: Pale gray green with short, swollen cornicles, 1/16 inches. Winged adults can be recognized by presence of transverse dark bands on last two abdominal segments.</p> <p><u>Damage:</u> 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.</p> <p><u>Threshold</u> Treat rosette stage plants when aphids exceed 100 to 200 per plant. Treat bud and early bloom stage when infested plants (racemes) exceed 15%.</p>	<p><u>Planting Time</u></p> <p>Helix EXtra (4A)</p> <p>Prosper FX (4A)</p> <p><u>Post-Plant</u></p> <p>Azadirachtin (20B)</p> <p>Brigade 2EC (3) (bifenthrin)</p> <p>Methyl parathion (1B)</p> <p>Mustang MAX (3)</p> <p>Proaxis 0.5 CS (3)</p> <p>Warrior with Zeon (3) (lambda cyhalothrin)</p>	<p>23 fl oz/cwt seed</p> <p>21.3 fl oz/cwt seed</p> <p>1 pt</p> <p>2.1 to 2.6 fl oz</p> <p>1 pt</p> <p>4.0 fl oz</p> <p>3.84 fl oz</p> <p>3.84 fl oz</p>	<p>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.</p> <p>No PHI for harvest (Aza-direct, Ecozin)</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper)</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>Spray in evening during bloom to avoid killing honeybees. Notify beekeepers before spraying if possible.</p>	
	<p>Army cutworm Gray striped caterpillar that curls up in to a tight “C” when disturbed. Evident from January through March</p> <p><u>Damage:</u> Cuts plants at soil line, can kill plants if it enters the crown</p> <p><u>Threshold:</u> 4-5 per foot of row.</p>	<p>Brigade 2EC (3) (bifenthrin)</p> <p>Mustang MAX (3)</p> <p>Proaxis 0.5 CS (3)</p> <p>Warrior with Zeon (3) (lambda cyhalothrin)</p>	<p>2.1 to 2.6 fl oz</p> <p>4.0 fl oz</p> <p>3.84 fl oz</p> <p>3.84 fl oz</p>	<p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper)</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>

MANAGEMENT OF INSECT AND MITE PESTS IN CANOLA (CONT'D)

Pest, Damage, and Treatment Threshold	Insecticide Formulation and (MOA Group)	Rate of Product per Acre	Comments
Beet Armyworm 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. <u>Damage:</u> Caterpillars can reduce seedling stand and chew conspicuous, irregular-shaped holes in leaves. <u>Threshold:</u> Seedling, treat when scouting indicates 1 or more per row-ft. Treat when defoliation becomes severe, and larvae are present.	Azadirachtin (20B)	Apply per label	No PHI for harvest
	<i>B. thuringiensis</i> (11B1,2)	Apply per label	No PHI for harvest
	Battalion 0.2 EC	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	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 (3)	4.0 fl oz	7 day PHI for harvest. Do not make applications less than seven days apart
	Proaxis 0.5 CS (3)	3.84 fl oz	30 Day PHI for harvest or grazing
Cabbage looper Green caterpillar, with a thin white line along each side of the body, three pairs of thoracic legs and three pair of abdominal prolegs. <u>Damage:</u> Caterpillars chew conspicuous, irregular-shaped holes in leaves. <u>Threshold:</u> Treat when defoliation becomes severe, and larvae are present.	Azadirachtin (20B)	Apply per label	No PHI for harvest
	<i>B. thuringiensis</i> (11B1, 2)	Apply per label	No PHI for harvest
	Brigade 2EC (3) (bifenthrin)	2.1 to 2.6 fl oz	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 (3)	4.0 fl oz	7 day PHI for harvest. Do not make applications less than seven days apart
	Proaxis 0.5 CS (3)	3.84 fl oz	30 Day PHI for harvest or grazing
	Warrior with Zeon (3) (lambda cyhalothrin)	3.84 fl oz	30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga)
Diamondback moth 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. <u>Damage:</u> Larvae feed on all plant parts, preferring the undersides of older leaves. <u>Threshold:</u> No threshold has been established.	Azadirachtin (20B)	Apply per label	No PHI for harvest (Aza-direct, Ecozin)
	<i>B. thuringiensis</i> (11B1, 2)	Apply per label	No PHI for harvest (Dipel. Javelin, Leipnox, Xentari)
	Brigade 2EC (3) (bifenthrin)	2.1 to 2.6 fl oz	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 (3)	4.0 fl oz	7 day PHI for harvest. Do not make applications less than seven days apart
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Pest, Damage, and Treatment Threshold	Insecticide Formulation and (MOA Group)	Rate of Product per Acre	Comments
<p>False chinch bug Adults 1/8 inch, long dirty gray, with brown or black markings, piercing mouthparts.</p> <p><u>Damage:</u> Feed in groups. Large numbers may cause wilting of heads or small plants.</p> <p><u>Threshold:</u> 140 or more per head</p> <p>Flowering: Treat when there is an AVERAGE of five to 10 per head. Early seed pod: Treat when there is an AVERAGE of 10 to 20 per head.</p>	<p>Azadirachtin (20B)</p> <p>Brigade 2EC (3) (bifenthrin)</p> <p>Methyl parathion (1B)</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</p> <p>1 pt</p> <p>3.84 fl oz</p> <p>3.84 fl oz</p>	<p>No PHI for harvest</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper)</p> <p>28 day PHI for harvest. Do not graze treated fields</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>Flea beetle Shiny black beetle about 1/16 inch long that jumps when disturbed.</p> <p><u>Damage:</u> 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><u>Threshold:</u> No threshold has been established.</p>	<p><u>Planting Time</u></p> <p>Helix EXtra (4A)</p> <p>Prosper FX (4A)</p> <p><u>Post-Plant</u></p> <p>Azadirachtin (20B)</p> <p>Battalion 0.2 EC</p> <p>Brigade 2EC (3) (bifenthrin)</p> <p>Methyl parathion (1B)</p> <p>Mustang MAX (3)</p> <p>Proaxis 0.5 CS (3)</p> <p>Warrior with Zeon (3) (lambda cyhalothrin)</p>	<p>23 fl oz/cwt seed</p> <p>21.3 fl oz/cwt seed</p> <p>Apply per label</p> <p>5.8 fl oz</p> <p>2.1 to 2.6 fl oz</p> <p>1 pt</p> <p>4.0 fl oz</p> <p>3.84 fl oz</p> <p>3.84 fl oz</p>	<p>30 waiting period for planting all crops except winter wheat following harvest. Do not use treated seed for feed, food or oil purposes.</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>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>Harlequin bug Black shield-shaped with orange, red and yellow markings. Measures 3/8 inch long. Eggs barrel shaped and laid in clusters.</p> <p><u>Damage:</u> Adults and nymphs pierce stalks, leaves with sucking mouthparts.</p> <p><u>Threshold:</u> No threshold has been established.</p>	<p>Azadirachtin (20B)</p> <p>Brigade 2EC (3) (bifenthrin)</p> <p>Methyl parathion (1B)</p> <p>Mustang MAX (3)</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</p> <p>1 pt</p> <p>4.0 fl oz</p> <p>3.84 fl oz</p> <p>3.84 fl oz</p>	<p>No PHI for harvest</p> <p>35 day PHI for harvest. (other names: Annex, Bifenture, Discipline, Empower, Fanfare, Sniper)</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>

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Grasshopper 1-2 inches, outer wings leathery, inner wings clear or colored. Enlarged hind legs designed for jumping. <u>Damage:</u> Chew leaves. Leaves may have ragged edges or leaf blade may be completely chewed. Small plants may be killed. <u>Threshold:</u> 15-20 per square yard. If nymph populations exceed threshold field borders (25-40 per square yard), treat before they move into sorghum.	Battalion 0.2 EC	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	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 (3)	4.0 fl oz	7 day PHI for harvest. Do not make applications less than seven days apart
	Proaxis 0.5 CS (3)	3.84 fl oz	30 Day PHI for harvest or grazing
	Warrior with Zeon (3) (lambda cyhalothrin)	3.84 fl oz	30 day PHI for harvest or grazing (other names: Grizzly Z, Lambda Cy, Silencer, Tiaga)
Lygus bug Several species. Generally oval, about 1/4 inch long, brown with some yellow or reddish markings. <u>Damage:</u> Feed on developing seeds, flowers, and leaves. Feed on buds. Thresholds are for infestations before or during petal fall. <u>Threshold:</u> North Dakota thresholds are 15 per 10 sweeps before petal fall, and 20 per 10 sweeps after petal fall.	Azadirachtin (20B)	Apply per label	No PHI for harvest (Aza-direct, Ecozin)
	Battalion 0.2 EC	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	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 (3)	4.0 fl oz	7 day PHI for harvest. Do not make applications less than seven days apart
	Proaxis 0.5 CS (3)	3.84 fl oz	30 Day PHI for harvest or grazing
White grub Large, "C" shaped grub with a white body and a brown head. <u>Damage:</u> Grubs feed on roots of seedling plants. Damage potential is dependent on planting date and speed of growth of the plant. <u>Threshold:</u> Seed treatments are registered for protection against early season damage. Treat if field history indicates a problem.	<u>Planting Time</u>		Do not use treated seed for feed, food or oil purposes.
	Helix EXtra (4A)	23 fl oz/cwt seed	30 post-harvest waiting period for planting all crops except winter wheat.
	Prosper FX (4A)	21.3 fl oz/cwt seed	30 post-harvest waiting period for planting all crops except corn.
Wireworm Hard-shelled, smooth, cylindrical, yellowish to brown worms. 2-6 year life cycle. <u>Damage:</u> Feed on seed, seedling. Cause stand loss. <u>Threshold:</u> Seed treatments are registered for protection against early season damage. Treat if field history indicates a problem.	<u>Planting Time</u>		Do not use treated seed for feed, food or oil purposes.
	Helix EXtra (4A)	23 fl oz/cwt seed	30 post-harvest waiting period for planting all crops except winter wheat.
	Prosper FX (4A)	21.3 fl oz/cwt seed	30 post-harvest waiting period for planting all crops except corn.

MANAGEMENT OF INSECT AND MITE PESTS IN CANOLA (CONT'D)

Pre-harvest Intervals and grazing restrictions

Azadirachtin (neem)	0 day PHI for harvest
<i>Bacillus thuringiensis</i>	0 day PHI for harvest.
Battalion ^r	7 day PHI for harvest
Brigade ^r	35 day PHI for harvest.
Helix ^r EXtra	No PHI listed. Do not graze
Methyl parathion ^r	28 day PHI for harvest. Do not graze treated fields
Mustang ^r MAX	7 day PHI for harvest
Prosper ^r FX	No PHI listed
Proaxis ^r	30 Day PHI for harvest or grazing
Warrior ^r	30 day PHI for harvest or grazing

r = restricted use

*** Group numbers in parentheses (#) 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 2005. It is intended to help in the selection of insecticides for preventative resistance management. If you make multiple applications for a specific pest during a growing season, simply select a registered insecticide with a different number for each application. To further delay resistance from developing, integrate other control methods into your pest management programs**

