



# Current Report

**EXTENSION**

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## Management of Insect and Mite Pests in Sunflowers

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Unmanaged sunflower pests can reduce yield and quality of seed and oil. 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 sunflower pest problems can be avoided by developing an Integrated Pest Management (IPM) plan that includes preventive pest management practices, such as planting high-quality, vigorous, Oklahoma-proven hybrid seed, planting it at the proper time for optimal health and yield, providing proper fertilization and weed control, and using crop rotations.

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.

- EPP-7196 Grasshopper Management in Rangeland, Pastures, and Crops (OSU)
- MF2384 High Plains Sunflower Production Handbook (Kansas State) <http://www.bookstore.ksre.ksu.edu/pubs/mf2384.pdf>

## Management of Insect and Mite Pests in Sunflowers

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
<b>Cutworms (black, granulate, sandhill)</b>  Striped or solid colored, robust caterpillars that “roll” up when disturbed, and prefer to live under ground.  Damage: Cutworms generally feed at night and live under the soil during the day. Plants will be cut at or slightly above the soil level, causing stand reductions.  Threshold: Scout fields at seedling emergence. Threshold is one cutworm per square foot combined with a 25% stand reduction. Treat when worms are less than ½ inch long.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	28-day waiting period for harvest; do not graze.
	Baythroid XL [3] (beta-cyfluthrin)	0.8 to 1.6 fl oz (0.007 to 0.013 lb ai/A)	30-day waiting period for harvest; do not graze.
	Besiege [28,3] (lambda-cyhalothrin + chlorantraniliprole)	5.0 to 8.0 fl oz	45-day waiting period for harvest. Do not use adjuvant with application. Follow drift precautions to protect pollinators.
	Cobalt Advanced [1B,3] (chlorpyrifos + gamma cyhalothrin)	16 to 38 fl oz	45-day waiting period for harvest; do not graze.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	21-day waiting period for harvest; do not graze.
	Karate w Zeon [3] (lambda-cyhalothrin)	0.96 to 1.60 fl oz (0.015 to 0.025 lb ai/A)	45-day waiting period for harvest.
	Lorsban 4E [1B] (chlorpyrifos)	2 pts (1 lb ai/A)	42-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	1.28 to 4 fl oz (0.008 to 0.025 lb ai/A)	30-day waiting period for harvest; do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 3.2 fl oz (0.0075 to 0.0125 lb ai/A)	45-day waiting period for harvest.
	Sevin XLR [1A] (carbaryl)	1.5 quarts (1.5 lb ai/A)	30-day wait for grazing, 60 days for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	3.75 to 11.75 oz	42-day waiting period for harvest.
	Tombstone [3] (cyfluthrin)	0.80 to 1.60 fl oz (0.013 to 0.025 lb ai/A)	30-day waiting period for harvest.
<b>Grasshopper</b> 1-2 inches long, outer wings leathery, inner wings clear or colored. Enlarged hind legs designed for jumping.  Damage: Chew leaves, leaving ragged edges or completely chewing leaf blade. Damage developing seed heads, causing yield loss.  Threshold: See EPP-7196: Grasshopper Management in Rangeland, Pastures and Crops	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	28-day waiting period for harvest for harvest; do not graze.
	Baythroid XL [3] (beta-cyfluthrin)	2.0 to 2.8 fl oz (0.016 to 0.022 lb ai/A)	30-day waiting period for harvest for harvest; do not graze.
	Besiege [28,3] (lambda-cyhalothrin + chlorantraniliprole)	6.0-10.0 fl oz	45-day waiting period for harvest. Do not use adjuvant with application. Follow drift precautions to protect pollinators.
	Cobalt Advanced [1B,3] (chlorpyrifos + gamma cyhalothrin)	6 to 13 fl oz	45-day waiting period for harvest for harvest; do not graze.
	Coragen [28] (chlorantraniliprole)	2.0 to 5.0 fl oz (0.026 to 0.065 lb ai/A)	1-day PHI.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	21-day waiting period for harvest for harvest; do not graze.
	Karate w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
<b>Grasshopper (cont'd)</b>	Lorsban 4E [1B] (chlorpyrifos)	1 pt (0.5 lb ai/A)	42-day waiting period for harvest for harvest, do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.6 to 4 fl oz (0.016 to 0.025 lb ai/A)	30-day waiting period for harvest for harvest; do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	45-day waiting period for harvest for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	42-day waiting period for harvest.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.
<b>Foliar-feeding caterpillars (painted lady, woolly bear)</b> Various caterpillars, painted lady and woolly bear caterpillars have hairy bodies.  Damage: Feed on leaves  Threshold: Treat when defoliation exceeds 25% and caterpillars are still present.	Besiege [28,3] (lambda-cyhalothrin + chlorantraniliprole)	6.0 to 10.0 fl oz	45-day waiting period for harvest. Do not use adjuvant with application. Follow drift precautions to protect pollinators.
	Cobalt Advanced [1B,3] (chlorpyrifos + gamma cyhalothrin)	16 to 38 fl oz	45-day waiting period for harvest for harvest, do not graze.
	Karate w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	1.28 to 4 fl oz (0.008 to 0.025 lb ai/A)	30-day waiting period for harvest. Check label for species labeled rate.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	45-day waiting period for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	3.75.0 to 11.75 fl oz	42-day waiting period for harvest. Check label for rates for specific caterpillar pests.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.
<b>Seed weevils (Red and Gray)</b> Reddish weevil about 1/8-inch- long, and grey weevil about 1/4-inch long. Larvae are white, about 1/6-inch long when mature.  Damage: Larvae feed inside seed, cut exit hole when mature, and burrow into ground.  Threshold: Scout for red weevil when 85% of plants are past R-4 growth stage. Treat when counts exceed 10 weevils per head. Continue to scout to determine if second spray is needed.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	28-day waiting period for harvest for harvest; do not graze.
	Baythroid XL [3] (beta-cyfluthrin)	2.0 to 2.8 fl oz (0.016 to 0.022 lb ai/A)	30-day waiting period for harvest; do not graze.
	Besiege [28,3] (lambda-cyhalothrin + chlorantraniliprole)	6.0 to 10.0 fl oz	45-day waiting period for harvest. Do not use adjuvant with application. Follow drift precautions to protect pollinators.
	Cobalt Advanced [1B,3] (chlorpyrifos + gamma cyhalothrin)	16 to 38 fl oz	45-day waiting period for harvest.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	21-day waiting period for harvest.
	Karate w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1.0 to 1.5 pt (0.5 to 0.75 lb ai/A)	42-day waiting period for harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.6 to 4 fl oz (0.016 to 0.025 lb ai/A)	30-day waiting period for harvest.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	45-day waiting period for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	42-day waiting period for harvest.
	Tombstone [3] (cyfluthrin)	2.0 to 2.8 fl oz (0.031 to 0.044 lb ai/A)	30-day waiting period for harvest.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
<b>Stem weevil</b> 1/8 inch long, grayish-brown with varying white spots on wing covers. Adults emerge in mid-late June.  Damage: Adults insert eggs in stalks. feeding causes weakening of stalk, easily lodged heads.  Threshold: Begin scouting in mid-June. Treat when counts reach 1 weevil per three plants. In areas with history of problem, treat when plants reach 8- to 10-leaf stage if planted before June 1.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	28-day waiting period for harvest for harvest; do not graze.
	Baythroid XL [3] (beta-cyfluthrin)	1.6 to 2.4 fl oz (0.013 to 0.019 lb ai/A)	30-day waiting period for harvest; do not graze.
	Besiege [28,3] (lambda-cyhalothrin + chlorantraniliprole)	6.0 to 10.0 fl oz	45-day waiting period for harvest. Do not use adjuvant with application. Follow drift precautions to protect pollinators.
	Cobalt Advanced [1B,3] (chlorpyrifos + gamma cyhalothrin)	16 to 38 fl oz	45-day waiting period for harvest; do not graze.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	21-day waiting period for harvest; do not graze.
	Karate w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1.0 to 1.5 pt (0.5 to 0.75 lb ai/A)	42-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.6 to 4 fl oz (0.016 to 0.025 lb ai/A)	30-day waiting period for harvest, do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	45-day waiting period for harvest.
	Sevin XLR [1A] (carbaryl)	1 to 1.5 quarts (1 to 1.5 lb ai/A)	30-day wait for grazing, 60 days for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	42-day waiting period for harvest.
	Tombstone [3] (cyfluthrin)	1.6 to 2.4 fl oz (0.025 to 0.038 lb ai/A)	30-day waiting period for harvest.
<b>Sunflower beetle</b> Similar to Colorado potato beetle, light yellow with dark brown stripes and measures about 3/4 inch long. Larvae are yellow and humpbacked.  Damage: Feed on foliage, chewing holes in leaves.  Thresholds: Seedlings: 1 adult per plant. Larger plants: 10 to 15 larvae + 25% defoliation.	Asana XL [3] (esfenvalerate)	1.45 to 5.8 fl oz (0.0075 to 0.03 lb ai/A)	28-day waiting period for harvest for harvest, do not graze.
	Besiege [28,3] (lambda-cyhalothrin + chlorantraniliprole)	5.0 to 8.0 fl oz	45-day waiting period for harvest. Do not use adjuvant with application. Follow drift precautions to protect pollinators.
	Cobalt Advanced [1B,3] (chlorpyrifos + gamma cyhalothrin)	16 to 38 fl oz	45-day waiting period for harvest; do not graze.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	21-day waiting period for harvest; do not graze.
	Karate w Zeon [3] (lambda cyhalothrin)	0.96 to 1.60 fl oz (0.015 to 0.025 lb ai/A)	45-day waiting period for harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1.0 to 1.5 pt (0.5 to 0.75 lb ai/A)	42-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.6 to 4 fl oz (0.016 to 0.025 lb ai/A)	30-day waiting period for harvest; do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 3.2 fl oz (0.0075 to 0.0125 lb ai/A)	45-day waiting period for harvest.
	Sevin XLR [1A] (carbaryl)	1 to 1.5 quarts (1 to 1.5 lb ai/A)	30-day wait for grazing, 60 days for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	42-day waiting period for harvest.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre</i>	<i>Comments</i>
<b>Sunflower beetle (cont'd)</b>	Tombstone [3] (cyfluthrin)	0.8 to 1.6 fl oz (0.013 to 0.025 lb ai/A)	30-day waiting period for harvest.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.
<b>Sunflower (Head) moth</b> Adult is small white moth, 3/8 inch long that folds wings around body when resting. Larvae are brown/purple with longitudinal white stripes.  Damage: Young larvae feed on pollen and florets. Older larvae burrow into head and feed on developing seed. Larvae spin webbing on surface of flower head. Damage enables head rots to develop.  Threshold: Begin scouting when lowers first open and scout every few days. It is best to scout in evening with flashlight. Treat when moth numbers reach 1 to 2 moths per five plants at 20% bloom.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	28-day waiting period for harvest for harvest; do not graze.
	Baythroid XL [3] (beta-cyfluthrin)	2.0 to 2.8 fl oz (0.016 to 0.022 lb ai/A)	30-day waiting period for harvest; do not graze.
	Besiege [28,3] (lambda-cyhalothrin + chlorantraniliprole)	6.0 to 10.0 fl oz	45-day waiting period for harvest. Do not use adjuvant with application. Follow drift precautions to protect pollinators.
	Cobalt Advanced [1B,3] (chlorpyrifos + gamma cyhalothrin)	16 to 38 fl oz	45-day waiting period for harvest; do not graze.
	Coragen [28] (chlorantraniliprole)	3.5 to 7.5 fl oz (0.026 to 0.056 lb ai/A)	1-day PHI.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	21-day waiting period for harvest; do not graze.
	Karate w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1.0 to 1.5 pt (0.5 to 0.75 lb ai/A)	42-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.6 to 4 fl oz (0.016 to 0.025 lb ai/A)	30-day waiting period for harvest; do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	45-day waiting period for harvest.
	Sevin XLR [1A] (carbaryl)	1.5 quarts (1.5 lb ai/A)	30-day wait for grazing, 60 days for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	42-day waiting period for harvest.
	Tombstone [3] (cyfluthrin)	2.0 to 2.8 fl oz (0.031 to 0.044 lb ai/A)	30-day waiting period for harvest.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	45-day waiting period for harvest.

## Pre-harvest Intervals

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Asana XL	28 day PHI, do not feed or graze
Baythroid 2, XL	30 day PHI for harvest or grazing
Besiege	45 day PHI, do not feed or graze
Cobalt	45 day PHI, do not feed or graze
Coragen	1 day PHI
Delta Gold	21 day PHI, do not feed or graze
Lorsban 4E	42 day PHI, do not feed or graze
Mustang MAXX EC	30 day PHI, do not feed or graze
Proaxis	45 Day PHI
Sevin XLR	30 day PHI for grazing, 60 day PHI for harvest
Stallion	42-day PHI
Tombstone	30-day PHI
Warrior II w Zeon	45 day PHI

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\* MOA group numbers in brackets [#] following the insecticide name are used to designate the mode of action of the insecticide according to the classification system developed by the Insecticide Resistance Action Committee (IRAC) in 2011. It is intended to help in the selection of insecticides for preventative resistance management. If you make multiple applications for a specific pest during a growing season, simply select a registered insecticide with a different number for each application. To further delay resistance from developing, integrate other control methods into your pest management programs.

\*\* The first name listed is a commercial trade name of a product. The chemical name in parentheses refers to the name of the active ingredient and is included because there are a number of registered products that contain the same active ingredient. Such products may be less expensive to purchase, so producers should compare prices.



# **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.

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