

## 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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## EXTENSION

# Management of Insect and Mite Pests in Soybean

Tom A. Royer  
Extension Entomologist

When thresholds are exceeded, uncontrolled soybean pests will reduce yield and quality of seed and oil. Yet soybeans have fewer serious insect pests compared to other cultivated crops, and there are many non-pest and beneficial insects that occur in soybean fields. Pesticides are not a substitute for good agronomic practices. They should not be used as "preventative insurance" because it is rarely economically or environmentally justifiable, and may disrupt the beneficial insect activity that is present. Many soybean pest problems can be avoided by implementing an Integrated Pest Management (IPM) plan that includes preventive pest management practices, such as planting high-quality, vigorous, varieties adapted for Oklahoma; planting at the proper time for optimal health and yield; providing proper fertilization and weed control; and using crop rotations.

The decision to use an insecticide in soybean should be made after carefully surveying for pests and associated damage. From mid-season to pod-fill, scouting for insects that feed on foliage or pods can be conducted by shaking plants over a drop cloth or shake sheet and is particularly useful if beans planted in 30-inch to 40-inch rows. Drop cloth sampling should be conducted weekly after the plants reach 12 inches. A drop cloth can be purchased or made using a piece of white or off-white cloth measuring 24 inches x 42 inches. Staple each end of the cloth to a thin strip of wood approximately 1/2 inch to 1 inch wide and 24 inches long.

To begin the survey, select a site at random in the field, kneel between the two rows and unroll the cloth from one row over to the opposite row. Extend each arm forward parallel with the row on either side. Vigorously shake the vines over the cloth. Your arms, from your elbows to your fingertips, will allow you to sample approximately 1.5 row-feet of plants on each side of the row. Thus, a total of three row-feet may be sampled at each site. Count the insects that fall to the cloth. Repeat this process until approximately 10 sites have been sampled per field (up to 50 acres in size). Infestations are then evaluated as to the number of various species per 30 row-feet.

Another scouting routine is the sweep net method, which can be used for beans planted in rows or drilled. Using a standard 15-inch diameter sweep net, make 10 consecutive sweeps (180 degrees) while walking through the field. Swing the net from side to side with each step. After 10 successive

sweeps, the insects should be identified and counted as they are removed from the net. Repeat this procedure five times, totaling 50 sweeps and compare counts with economic thresholds established for individual pests. This method is particularly useful on seedling and drilled or broadcast beans.

For foliage-feeding pests, an alternative sampling strategy is to estimate percentage of defoliation. Determine the percent defoliation of the plants in the entire field (not on individual plants) by taking several leaves at random from several selected plants. Then estimate the amount of leaf that has been eaten by foliage feeders. This approach requires practice and a well-trained eye.

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 OSU Extension 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.

- EPP 7156 Field Key to Larvae in Soybeans
- EPP-7660 Seedling, Root Diseases of Soybean
- EPP-7662 Stem and Pod Diseases of Soybean
- EPP-7672 Diseases of Soybean
- EPP-7084 Pest Management Needs Assessment for Oklahoma Soybean Producers
- EPP-7196 Grasshopper Management in Rangeland, Pastures and Crops

## Management of Insect and Mite Pests in Soybeans I: Stem and Seedling Feeders

For the most part, stem and seedling feeders are not a problem if the grower gets a good stand of beans. They generally do most of their damage before the soybeans reach 12 inches tall. Thus growers must be ready to make a well-timed insecticide application if warranted. Isolated infestations can often be tolerated because soybeans will compensate if there are at least four plants per row-foot.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Threecornered Alfalfa Hopper</b>  Adult is bright green, triangular and ¼ inch. Nymph buff colored or green with 12 pair of spines on top of body.  Damage: Adults and nymphs feed on stems. May girdle stems at, or above soil level, causing lodging when the plants get larger.  Threshold: Scout fields at seedling emergence. Threshold is when nymphs are still present + 10% to 15% girdled stems.	Acenthrin [1B,3] (acephate + bifenthrin)	8 to 21 oz	14-day waiting period for harvest; do not graze or cut for hay or forage.
	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb.)	21-day waiting period for harvest; do not graze.
	Baythroid XL [3] (beta-cyfluthrin)	1.6 to 2.8 fl oz (0.013 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing.
	Belay [4A] (clothianidin)	3 to 6 fl oz (0.05 to 0.1 lb.)	21-day waiting period for harvest; do not graze.
	Besiege [3, 28] (lambda-cyhalothrin + chlorantraniliprole)	5.0 to 8.0 fl oz	30-day waiting period for harvest; do not graze.
	Brigadier [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	45-day waiting period for feeding of dry vines, 18 days for green vines.
	Capture [3] (bifenthrin)	2.8 to 8.5 fl oz (0.033 to 0.1 lb.)	18-day waiting period for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30-day waiting period for harvest; do not graze.
	Concero [5,3] (spinosad + gamma-cyhalothrin)	A 1-gallon container will treat from 42 to 64 acres	45-day wait for harvest; do not graze.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb.)	21-day waiting period for harvest; do not graze.
	Dimate 4E (dimethoate)	1 pt (0.5 lb.)	21-day waiting period for harvest.
	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period for harvest.
	Endigo ZC [4A,3] (lambda-cyhalothrin + thiamethoxam)	3.5 to 4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha-cypermethrin)	2.8 to 3.8 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; to not graze.
	Hero [3,3] (bifenthrin+zeta-cypermethrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze.
Leverage 360 [4A,3] (imidacloprid + cyfluthrin)	2.8 fl oz	21-day waiting period for harvest; 15 days for forage.	
Mustang MAXX EC [3] (zeta-cypermethrin)	2.8 to 4 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze.	
Orthene 97 [1B] (acephate)	12 to 16 oz (0.75 to 1.0 lb.)	14-day waiting period for harvest; do not graze or cut for hay.	
Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 3.20 fl oz (0.0075 to 0.0125 lb.)	45-day waiting period for harvest; do not graze.	
Sevin XLR Plus [1A] (carbaryl)	1 qt (1.0 lb.)	14-day waiting period for grazing, 21 days for harvest.	
Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 fl oz	28-day waiting period for harvest; do not graze.	

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Threecornered Alfalfa Hopper (cont'd)</b>	Tempest [3, 4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	21-day waiting period for harvest; 18 days for green vines, 45 days for dry vines.
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin+ imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	0.96 to 1.60 (0.015 to 0.025 lb.)	30-day waiting period for harvest do not graze.
<b>Lesser cornstalk borer</b>	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	26 to 38 oz	30-day waiting period for harvest; do not graze. Check label. Can be applied as a pre-plant or post plant foliar spray, rates vary with application.
Bluish green caterpillar found at or below soil surface in tubes or sacs made of soil particles woven together with silken material.	Concero [5,3] (spinosad + gamma-cyhalothrin)	A 1-gallon container will treat from 32 to 42 acres	45-day wait for harvest; do not graze.
Damage: Caterpillars girdle stems and roots.	Elevest [3,28] (bifenthrin + chlorantraniliprole)	5.6 to 9.6 fl oz (0.098 to 0.167 lb.)	18-day waiting period for harvest; do not graze.
Threshold: This pest is difficult to control. Treat if more than four plants per row-foot have been killed.	Endigo ZC [4A,3] (lambda-cyhalothrin + thiamethoxam)	4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha-cypermethrin)	3.2 to 3.8 fl oz (0.02 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Hero [3,3] (bifenthrin+ zeta-cypermethrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze.
	Lorsban 4E [1B] (chlorpyrifos)	1 to 2 pts (0.5 to 1.0 lb.)	A second application in 5 days may be necessary for satisfactory control.
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin + imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest; do not graze.

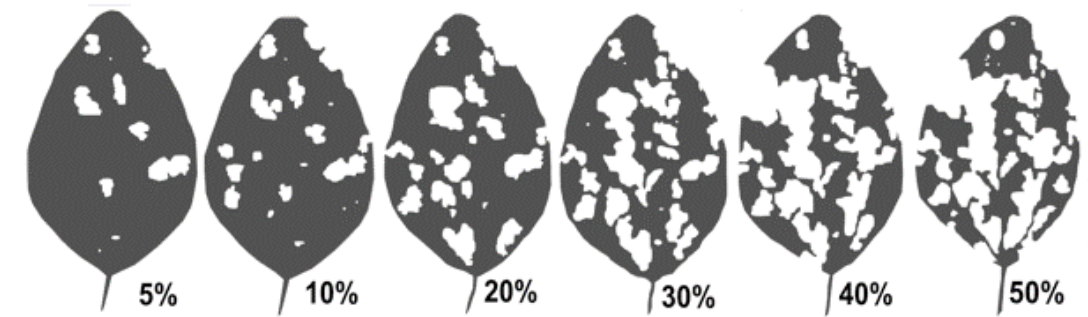
### Management of Insect and Mite Pests in Soybeans II: Foliage Feeders

The economic thresholds for foliage-feeding pests are considered as a group. Base treatment thresholds by estimating percent leaf loss as well as the presence of defoliators. Research from various states has shown that soybeans can withstand 35% foliage loss up to one week before bloom. During bloom and pod fill, the threshold falls to 15% to 20% defoliation, and then increases to 35% to 40% defoliation once pods have filled.

<b>Aphids*</b>	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb.)	21-day waiting period for harvest; do not graze.
Small, soft bodied insects, green or yellow.	Baythroid XL [3] (beta-cyfluthrin)	2.0 to 2.8 fl oz (0.016 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing.
Damage: Suck plant juices, cause yellowing of leaves, produce honeydew and associated sooty mold.	Belay [4A] (clothianidin)	3 to 6 fl oz (0.05 to 0.1 lb.)	21-day waiting period for harvest; do not graze.
Threshold: None established. Most aphids not a problem.	Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole)	5.0 to 8.0 fl oz	30-day waiting period for harvest; do not graze.
*So far, soybean aphid does not occur in damaging numbers in Oklahoma.	Brigade [3] (bifenthrin)	2.1 to 6.4 fl oz (0.033 to 0.1 lb.)	18-day waiting period for harvest.
	Brigadier [3,4A] (bifenthrin + imidacloprid)	3.8 to 6.1 fl oz	45-day wait for feeding of dry vines, 18 days for green vines.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 26 fl oz	30-day waiting period for harvest; do not graze.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Aphids (cont'd)</b>	Delta Gold [3] (deltamethrin)	1.5 to 2.4 fl oz (0.018 to 0.028 lb.)	21-day waiting period for harvest; do not graze.
	Endigo ZC [4A,3] (lambda-cyhalothrin + thiamethoxam)	3.5 to 4.0 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha-cypermethrin)	2.8 to 3.8 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; to not graze.
	Justice [4A,3] (acetamiprid + bifenthrin)	2.5 to 3.0 fl oz	30-day waiting period for harvest; do not graze.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze.
	Leverage 360 [4A,3] (imidacloprid + cyfluthrin)	2.8 fl oz	21-day waiting period for harvest; 15 days for forage.
	Lorsban 4E [1B] (chlorpyrifos)	1 to 2 pts (1.0 lb a)	28-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.8 to 4 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Orthene 97 [1B] (acephate)	12 to 16 oz (0.75 to 1.0 lb.)	14-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.)	45-day waiting period for harvest; do not graze.
	Sherpa [4A] (imidacloprid)	3.75 fl oz (0.047 lb.)	7-day waiting period for harvest; do not graze.
	Sivanto [4D] (flupyradifurone)	7.0 to 10.5 fl oz (0.09 to 0.137 lb.)	7-day waiting period.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	28-day waiting period for harvest; do not graze.
	Tempest [3,4A] (bifenthrin + imidacloprid)	3.8 to 6.1 fl oz	21-day waiting period for harvest; 18 days for green vines, 45 days for dry vines.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	0.96 to 1.60 (0.015 to 0.025 lb.)	30-day waiting period for harvest; do not graze or feed for forage.
	<b>Bean leaf beetle</b>	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb.)
Baythroid XL [3] (beta-cyfluthrin)		1.6 to 2.8 fl oz (0.013 to 0.022 lb)	21-day waiting period for harvest; 15 days for grazing.
Belay [4A] (clothianidin)		3 to 6 fl oz (0.05 to 0.1 lb.)	21-day waiting period for harvest; do not graze.
Besiege [3, 28] (lambda-cyhalothrin + chlorantraniliprole)		5.0 to 8.0 fl oz	30-day waiting period for harvest; do not graze.
Brigade [3] (bifenthrin)		2.1 to 6.4 fl oz (0.033 to 0.10 lb.)	18-day waiting for harvest.
Beetles measure ¼ inch, yellow-crimson wing covers with four black spots and a black triangle just behind thorax. Some may not have spots, but all have triangle marking  Damage: Feed on leaves and pods.  Threshold: Threshold based on growth stage of plant, level of defoliation and presence of beetles. For pod-feeding, treat when 10% pods damaged and beetles present.	Brigadier [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	45-day waiting period for feeding of dry vines, 18 days for green vines.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30-day waiting period for harvest; do not graze.

**Levels of soybean defoliation. Check growth stage to determine defoliation impact on yield.**



**Pre-harvest Intervals**

Agri-Mek	7-day PHI forage or hay, 28 days for harvest.
Asana XL	21-day PHI, do not feed or graze.
Baythroid 2,XL	21-day PHI, 15 days for grazing.
Besiege	30-day waiting period for harvest, do not graze.
Brigade	14-day PHI, do not graze.
Brigadier	45-day PHI, 14 days for green vines.
Cobaltr	30-day PHI, do not graze.
Coragen	1-day PHI.
Delta Gold	21-day PHI, do not graze.
Diamond	30-day PHI, do not graze.
Dimate	21-day PHI.
Dimilin	21-day PHI.
Elevest	18-day PHI, do not graze.
Endigo	30-day PHI, do not graze.
Fastac EC	21-day PHI, do not graze.
Hero	21-day PHI, do not graze.
Justice	30-day waiting period for harvest, do not graze.
Larvin	28-day PHI, do not graze.
Leverage	21-day PHI, 15 days for forage.
Lorsban 4E	28-day PHI, do not feed or graze.
Mustang MAX EC	21-day PHI, do not feed or graze.
Orthene	14-day PHI, do not graze or cut for hay.
Proaxis	45-day PHI, do not graze.
Radiant	28-day PHI.
Sevin XLR	14-day PHI for grazing, 21-day PHI for harvest.
Sherpa	7-day PHI for harvest.
Sivanto	7-day PHI for grazing, 21-day PHI for harvest.
Stallion	28-day PHI, do not graze.
Steward	21-day PHI, do not graze.
Tempest	21-day PHI, 18 days for green vines, 45 days for dry vines.
Tombstone	45-day PHI, 15 days for forage.
Tracer	28-day PHI, do not graze.
Warrior II	30-day PHI, do not graze.

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

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<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Stink bugs</b>	Acephate [1B,3]	12 to 21 oz	14-day waiting period for harvest; do not graze or cut for hay or forage.
Shield shaped bugs ranging from ½ inch to ¾ inch long. May be green or brown. Nymphs are colorful.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb.)	21-day waiting period for harvest; do not graze.
Damage: Nymphs and adults suck sap from bean pods and cause discoloration of seed from digestive juices.	Baythroid XL [3] (beta-cyfluthrin)	1.6 to 2.8 fl oz (0.013 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing forage.
Threshold:	Belay [4A] (clothianidin)	3 to 6 fl oz (0.05 to 0.1 lb.)	21-day waiting period for harvest; do not graze.
Sweep net: Treat if you capture nine or more stink bugs per 25 sweeps.	Brigade (bifenthrin)	2.6 to 6.4 fl oz (0.04 to 0.10 lb.)	30-day waiting period for harvest; do not graze.
Beat sheet: Treat when one or more stinkbugs per row-foot are found.	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30-day waiting period for harvest; do not graze.
	Delta Gold [3] (deltamethrin)	1.5 to 2.4 fl oz (0.018 to 0.028 lb.)	21-day waiting period for harvest; do not graze.
	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period for harvest; do not graze: rates vary by stink bug species.
	Endigo ZC [4A,3] (lambda-cyhalothrin + thiamethoxam)	4.0 to 4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha-cypermethrin)	3.2 to 3.8 fl oz (0.022 to 0.025 lb.)	21-day waiting period for harvest; to not graze.
	Hero [3,3] (bifenthrin+ zeta-cypermethrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze.
	Justice [3,4A] (acetamiprid+ bifenthrin)	5.0 fl oz	30-day waiting period for harvest; do not graze.
	Leverage 360 [4A, 3] (Imidacloprid + cyfluthrin)	2.8 fl oz	21-day waiting period for harvest; 15 days for forage.
	Mustang MAXX EC [3] (zeta-cypermethrin)	3.2 to 4 fl oz (0.02 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Orthene 97 [1B] (acephate)	8 to 16 oz (0.5 to 1.0 lb.)	14-day waiting period for harvest; do not graze or cut for hay.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	3.20 to 3.84 fl oz (0.0125 to 1.5 lb.)	30-day waiting period for harvest; do not graze.
	Sevin XLR [1A] (carbaryl)	1 to 1.5 qt (1.0 to 1.5 lb.)	14-day waiting period for grazing, 21 days for harvest.
	Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 fl oz	28-day waiting period for harvest; do not graze.
	Tombstone [3] (cyfluthrin)	1.6 to 2.8 fl oz (0.025 to 0.044 lb.)	45-day waiting period for harvest; 15 days for forage.
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin + imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest; do not graze.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	0.96 to 1.60 fl oz (0.015 to 0.025 lb.)	30-day waiting period for harvest; do not graze.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Bean leaf beetle (cont'd)</b>	Concero [5,3] (spinosad + gamma cyhalothrin)	A 1-gallon container will treat from 42 to 64 acres	45-day wait for harvest; do not graze.
	Delta Gold [3] (deltamethrin)	1.5 to 2.4 fl oz (0.018 to 0.028 lb.)	21-day waiting period for harvest; do not graze.
	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period to harvest. Do not graze.
	Endigo ZC [4A,3] (lambda-cyhalothrin + thiamethoxam)	4.0 to 4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha-cypermethrin)	2.8 to 3.8 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; to not graze.
	Justice [3,4A] (acetamiprid+ bifenthrin)	2.5 to 3.0 fl oz	30-day waiting period for harvest; do not graze.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	2.6 to 6.1 fl oz	21-day waiting period for harvest; do not graze.
	Leverage 360 [4A, 3] (imidacloprid + cyfluthrin)	2.8 fl oz	21-day waiting period for harvest; 15 days for forage.
	Lorsban 4E [1B] (chlorpyrifos)	1 to 2 pts (0.5 to 1.0 lb.)	28-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.8 to 4 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Orthene 97 [1B] (acephate)	12 to 16 oz (0.75 to 1.0 lb.)	14-day waiting period for harvest; do not graze or cut for hay.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 3.2 fl oz (0.0075 to 0.0125 lb.)	45-day waiting period for harvest; do not graze.
	Sevin XLR [1A] (carbaryl)	0.5 to 1 quarts (0.5 to 1 lb.)	14-day waiting period for grazing, 21 days for harvest. Do not apply with 2,4DB in tank mix.
	Sherpa [4A] (imidacloprid)	3.75 fl oz (0.047 lb.)	7-day waiting period for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	28-day waiting period for harvest; do not graze.
	Tempest [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	21-day waiting period for harvest; 18 days for green vines, 45 days for dry vines.
	Tombstone [3] (cyfluthrin)	0.8 to 2.8 fl oz (0.013 to 0.044 lb.)	45-day waiting period for harvest; 15 days for forage. Check label, rates vary based on growth stage of soybean.
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin + imidacloprid)	3.5 to 4.8 fl oz (0.061 to 0.084 lb.)	21-day wait for harvest; do not graze.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	0.96 to 1.60 (0.015 to 0.025 lb.)	30-day waiting period for harvest do not graze.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Blister beetle</b>	Baythroid XL [3] (beta-cyfluthrin)	1.6 to 2.8 fl oz (0.013 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing.
Various colors, black, grey striped with broad head, narrow neck.	Belay [4A] (clothianidin)	3 to 6 fl oz (0.05 to 0.1 lb.)	21-day waiting period for harvest; do not graze.
Damage: Leaf feeders, often localized, attracted to flowering plants.	Besiege [3, 28] (lambda-cyhalothrin + chlorantraniliprole)	8.0 to 10.0 fl oz	30-day waiting period for harvest; do not graze.
Threshold: Threshold based on growth stage of plant, level of defoliation and presence of beetles.	Brigade [3] bifenthrin	2.1 to 6.4 fl oz (0.08 to 0.10 lb.)	18-day waiting period for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 26 fl oz	30-day waiting period for harvest; do not graze.
	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period for harvest; do not graze.
	Endigo ZC [4A,3] (lambda-cyhalothrin + thia-methoxam)	4.0 to 4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha-cypermethrin)	2.8 to 3.8 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; to not graze.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.8 to 4 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	3.2 to 3.84 fl oz (0.0125 to 0.015 lb.)	45-day waiting period for harvest; do not graze.
	Sevin XLR [1A] (carbaryl)	0.5 to 1.0 qt (0.5 to 1.0 lb ai)	14-day waiting period for grazing, 21 days for harvest. Do not apply with 2,4DB in tank mix.
	Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	28-day waiting period for harvest; do not graze.
	Tombstone [3] (cyfluthrin)	1.6 to 2.8 fl oz (0.025 to 0.044 lb.)	45-day waiting period for harvest; 15 days for forage. Check label, rates vary based on growth stage of soybean.
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin + imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest; do not graze.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	0.96 to 1.60 (0.015 to 0.025 lb.)	30-day waiting period for harvest; do not graze.
<b>Foliage Feeding Caterpillars:</b>	Acenthrin [1B,3] (acephate + bifenthrin)	8 to 21 oz	14-day waiting period for harvest; do not graze or cut for hay or forage.
While these caterpillars cause similar injury and damage, the insecticide labeled rates differ, depending on the species. CONSULT LABELS FOR RATES FOR SPECIFIC CATERPILLARS.	Asana XL [3] (esfenvalerate)	2.9 to 9.6 fl oz (0.015 to 0.05 lb.)	21-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar.
<u>Fall armyworm</u> Large, striped, non-bristled caterpillar up to 1.5 inches. Has a light-colored inverted "Y" on head.	Baythroid XL [3] (beta-cyfluthrin)	0.8 to 2.8 fl oz (0.07 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing. Check label, rates vary with caterpillar.
	Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole)	5.0 to 10.0 fl oz	30-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar in question.
	Blackhawk [5] (spinosad)	1.1 to 2.2 fl oz (0.031 to 0.062 lb.)	28-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar in question.

CR-7167.6

## Management of Insect and Mite Pests in Soybeans III: Pod Feeders

Pod feeders cause the greatest loss to soybean because plants cannot compensate readily, and the damage is direct to the seeds. Control of corn earworms is suggested if you find two or more per row-foot. Control of stink bugs is suggested when one or more per row-foot is found.

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Corn Earworm</b>	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb.)	21-day waiting period for harvest; do not graze.
Up to 1 inch. Color varies from green, to brown to yellow and pink.	Baythroid XL [3] (beta-cyfluthrin)	1.6 to 2.8 fl oz (0.013 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing.
Damage: Larva consumes foliage, flowers and pods.	Blackhawk [5] (spinosad)	1.7 to 2.2 fl oz (0.047 to 0.062 lb.)	28-day waiting period for harvest; do not graze or feed for forage.
Threshold:	Brigadier [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	45-day wait for feeding of dry vines, 18 days for green vines.
Sweep net: Treat when you find 12 to 15 or more caterpillars per 25 sweeps.	Cobalt [1B,3] (chlorpyrifos + gamma cyhalothrin)	19 to 38 fl oz	30-day waiting period for harvest; do not graze.
Beat sheet: Treat when one to two or more caterpillars are found per row-foot.	Coragen [28]	3.75 to 7.5 fl oz/A (0.045 to 0.098 lb.)	1-day waiting period for harvest.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb.)	21-day waiting period for harvest; do not graze.
	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period for harvest; do not graze.
	Endigo ZC [4A, 3] (lambda-cyhalothrin + thiamethoxam)	3.5 to 4.0 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha cypermethrin)	2.8 to 3.8 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze.
	Justice [3,4A] (acetamiprid+ bifenthrin)	2.5 to 3.0 fl oz	30-day waiting period for harvest; do not graze.
	Larvin EC [1A] (thiodicarb)	10 to 30 fl oz (0.25 to 0.75 lb.)	28-day waiting period for harvest; do not graze or feed for forage.
	Leverage 360 [4A, 3] (imidacloprid + cyfluthrin)	2.8 fl oz	21-day waiting period for harvest; 15 days for forage.
	Lorsban 4E [1B] (chlorpyrifos)	1.0 to 2 pts (0.50 to 1.0 lb.)	28-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.8 to 4 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 3.20 fl oz (0.0075 to 0.0125 lb.)	30-day waiting period for harvest; do not graze.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 fl oz	28-day waiting period for harvest; do not graze.
	Tempest [3, 4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	21-day waiting period for harvest; 18 days for green vines, 45 days for dry vines.
	Tombstone [3] (cyfluthrin)	1.6 to 2.8 fl oz (0.025 to 0.044 lb.)	45-day waiting period for harvest; 15 days for forage.
	Triple Crown [3, 4A] (zeta cypermethrin+ bifenthrin + imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest; do not graze.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	0.96 to 1.60 fl oz (0.015 to 0.025 lb.)	30-day waiting period for harvest; do not graze.

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<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Japanese beetle (cont'd)</b>	Mustang MAXX EC [3] (zeta-cypermethrin)	2.8 to 4 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	3.20 to 3.84 fl oz (0.0125 to 0.015 lb.)	30-day waiting period for harvest; do not graze.
	Sevin XLR [1A] (carbaryl)	0.5 to 1.0 qt (0.5 to 1.0 lb.)	14-day waiting period for grazing, 21 days for harvest. Do not apply with 2,4DB in tank mix.
	Sherpa [4A] (imidacloprid)	3.75 fl oz (0.047 lb.)	7-day waiting period for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	28-day waiting period for harvest; do not graze.
	Tempest [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	21-day waiting period for harvest; 18 days for green vines, 45 days for dry vines.
	Tombstone [3] (cyfluthrin)	1.6 to 2.8 fl oz (0.025 to 0.044 lb.)	45-day waiting period for harvest; 15 days for forage. Check label, rates vary based on growth stage of soybean.
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin + imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest; do not graze.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.6 to 1.92 fl oz (0.025 to 0.03 lb.)	30-day waiting period for harvest; do not graze.
<b>Spidermites</b>	Agri-Mek SC [6] (abamectin)	1.75 to 3.5 fl oz (0.096 to 0.19 lb.)	7-day wait for forage or hay, 28 days for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 26 fl oz	30-day waiting period for harvest; do not graze.
	Dimate 4E [1B] (dimethoate)	1 pt (0.5 lb.)	21-day waiting period for harvest.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	10.3 fl oz	21-day waiting period for harvest; do not graze.
	Lorsban 4E [1B] (chlorpyrifos)	0.5 to 1.0 pt (0.375 to 0.5 lb.)	28-day waiting period for harvest; do not graze.
	1/100 inch, greenish to dull orange, two large "spots" on each side of body. Produce eggs and webbing.  Damage: Mites feed on underside of leaves. Feeding causes small white spots to occur on leaves called "stippling." Leaves eventually turn yellow, bronzed and brown before dropping from plant.  Threshold: Treat if significant pod or seed filling has not occurred, and leaves are not yellow, but mites are present. Control is difficult; consider using drop nozzles, high water gallonage.		

CR-7167.10

<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Foliage Feeding Caterpillars: (cont'd)</b>			
<u>Garden webworm</u> Larvae are green with black spots on each body segment, up to 1 inch. Produce webbing that they use to attach leaves together.	Brigade [3] (bifenthrin)	2.1 to 6.4 fl oz (0.04 to 0.10 lb.)	18-day waiting period for harvest.
	Brigadier [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	45-days for feeding of dry vines, 18 days for green vines.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	7 to 38 fl oz	30-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar.
<u>Green cloverworm</u> Green with white stripe along each side, three pair of abdominal prolegs + one pair of anal prolegs. They are 1 inch when full grown.	Concero [5,3] (spinosad + gamma cyhalothrin)	A 1-gallon container will treat from 42 to 64 acres	45-day wait for harvest; do not graze.
	Coragen [28] (chlorantraniliprole)	3.5 to 7.5 fl oz (0.045 to 0.098 lb.)	1-day wait for harvest.
<u>Loopers</u> Green, with two pair of abdominal prolegs, one pair of anal prolegs and light, longitudinal stripe.	Delta Gold [3] (deltamethrin)	1.0 to 2.4 fl oz (0.012 to 0.028 lb.)	21-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar.
	Diamond 0.8 EC [15] (novaluron)	6 to 12 fl oz	30-day waiting period for harvest; do not graze Check label, rates vary with caterpillar.
<u>Velvetbean caterpillar</u> Green or brown, with light narrow lines, four pair of abdominal prolegs. Wiggle violently when disturbed.	Dimilin 2L [15] (diflubenzuron)	2 to 4 fl oz (0.031 to 0.063 lb.)	21-day waiting period for harvest. Check label, rates vary with caterpillar. Suppression only for soybean looper, not registered for garden webworm.
Damage: Caterpillars feed on foliage.	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period for harvest; do not graze Check label, rates vary with caterpillar.
Threshold: Threshold based on growth stage of plant, level of defoliation and presence of caterpillars.	Endigo ZC [4A,3] (lambda-cyhalothrin + thiamethoxam)	3.5 to 4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage. Check label, rates vary with caterpillar.
	Fastac EC [3] (alpha-cypermethrin)	1.8 to 3.8 fl oz (0.008 to 0.025 lb.)	21-day waiting period for harvest; to not graze.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar.
	Intrepid 2F [18] (methoxyfenozide)	4.0 to 8.0 fl oz (0.06 to 0.12 lb.)	7-day waiting period for forage, 14 days for harvest. Not registered for garden webworm.
	Intrepid Edge [5,18] (methoxyfenozide + spinetoram)	4.0 to 6.4 fl oz	28-day waiting period for harvest.
	Justice [3,4A] (acetamiprid+ bifenthrin)	3.0 to 5.0 fl oz	30-day PHI, suppression only for resistant soybean loopers.
	Larvin EC [1A] (thiodicarb)	10 to 30 fl oz (0.25 to 0.75 lb.)	28-day waiting period for harvest; do not graze or feed for forage Check label, rates vary with caterpillar.
	Leverage 360 [4A,3] (imidacloprid + cyfluthrin)	2.8 fl oz	21-day waiting period for harvest; 15 days for forage.
	Lorsban 4E [1B] (chlorpyrifos)	0.5 to 2 pts (0.375 to 1.0 lb a)	28-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar. Not registered for garden webworm.
	Mustang MAXX EC [3] (zeta-cypermethrin)	2.8 to 4 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 3.84 fl oz (0.0075 to 0.015 lb.)	45-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar.

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<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Foliage Feeding Caterpillars: (cont'd)</b>			
	Radiant [5] (spinetoram)	2 to 4 fl oz (0.015 to 0.31 lb.)	28-day waiting period for harvest; not registered for yellow-striped or western yellow striped armyworm.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	3.75 to 11.75 fl oz	28-day waiting period for harvest; do not graze. Check label, rates vary with caterpillar.
	Steward [22] (indoxacarb)	4.6 to 11.3 fl oz (0.045 to 0.11 lb.)	21-day wating period for harvest; do not graze Check label, rates vary with caterpillar.
	Tempest [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	21-day waiting period for harvest; 18 days for green vines, 45 days for dry vines.
	Tombstone [3] (cyfluthrin)	0.8 to 2.8 fl oz (0.0125 to 0.044 lb.)	45-day waiting period for harvest; 15 days for forage. Check label, rates vary with caterpillar
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin + imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest; do not graze
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.60 to 1.96 fl oz (0.025 to 0.03 lb.)	30-day waiting period for harvest; do not graze or feed for forage. Check label, rates vary with caterpillar.
<b>Grasshoppers</b>			
1 inch to 2 inches, outer wings leathery, inner wings clear or colored. Enlarged hind legs designed for jumping.	Asana XL [3] (esfenvalerate)	3.9 to 9.6 fl oz (0.02 to 0.05 lb.)	Rate depends on grasshopper growth stage. 21-day waiting period for harvest; do not graze.
Damage: Chew leaves, leaving ragged edges or completely chew leaves.	Baythroid XL [3] (beta-cyfluthrin)	2.0 to 2.8 fl oz (0.016 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing.
Threshold: Threshold based on growth stage of plant, level of defoliation and presence of grasshoppers.	Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole)	8.0 to 10.0 fl oz	30-day waiting period for harvest; do not graze.
	Brigade (bifenthrin)	2.1 to 6.4 fl oz (0.04 to 0.10 lb.)	18-day waiting period for harvest.
	Brigadier [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	45-days for feeding of dry vines, 18 days for green vines.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	30-day waiting period for harvest; do not graze.
	Coragen [28] (chlorantraniliprole)	2.0 to 5.0 fl oz (0.026 to 0.065 lb.)	1-day waiting period for harvest.
	Delta Gold [3] (deltamethrin)	1.5 to 2.4 fl oz (0.018 to 0.028 lb.)	21-day waiting period for harvest; do not graze.
	Dimate 4E (dimethoate)	1 pt (0.5 lb.)	21-day waiting period for harvest.
	Dimilin 2L (diflubenzuron)	2 fl oz (0.03125 lb.)	21-day waiting period for harvest. Apply when grasshoppers are 2nd and 3rd instars, see label for additional information.
	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period for harvest; do not graze.
	Endigo ZC [4A,3] (lambda-cyhalothrin + thiamethoxam)	4.0 to 4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
	Fastac EC [3] (alpha-cypermethrin)	3.2 to 3.8 fl oz (0.022 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	2.6 to 6.1 fl oz	21-day waiting period for harvest; do not graze.

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<i>Pest, Damage, and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] &amp; (Active Ingredient)</i>	<i>Rate of Product per Acre (rate lb ai/Acre)</i>	<i>Comments</i>
<b>Grasshoppers (cont'd)</b>			
	Leverage 360 [4A,3] (Imidacloprid + cyfluthrin)	2.8 fl oz	21-day waiting period for harvest; 15 days for forage.
	Lorsban 4E [1B] (chlorpyrifos)	0.5 to 1.0 pt (0.375 to 0.5 lb.)	28-day waiting period for harvest; do not graze.
	Mustang MAXX EC [3] (zeta-cypermethrin)	3.2 to 4 fl oz (0.02 to 0.025 lb.)	21-day waiting period for harvest; do not graze.
	Orthene 97 [1B] (acephate)	4 to 8 oz (0.25 to 0.5 lb.)	14-day waiting period for harvest; do not graze or cut for hay.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	3.2 to 3.84 fl oz (0.0125 to 0.015 lb.)	45-day waiting period for harvest; do not graze.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 fl oz	28-day waiting period for harvest; do not graze.
	Tempest [3,4A] (bifenthrin + imidacloprid)	3.8 to 6.1 fl oz	21-day waiting period for harvest; 18 days for green vines, 45-days for dry vines.
	Tombstone [3] (cyfluthrin)	2.0 to 2.8 fl oz (0.031 to 0.044 lb.)	45-day waiting period for harvest; Check label, rates vary based on growth stage of soybean.
	Triple Crown [3, 4A] (zeta-cypermethrin+ bifenthrin + imidacloprid)	4.8 fl oz (0.084 lb.)	21-day waiting period for harvest; do not graze.
	Warrior II w Zeon [3] (lambda-cyhalothrin)	1.60 to 1.96 fl oz (0.025 to 0.03 lb.)	30-day waiting period for harvest; do not graze.
<b>Japanese beetle</b>			
Adults are 1/2 inch long, metallic green and bronze beetles with a row of five white tufts on the side of the body below the bronze wing covers and two white patches at the tip of the abdomen.	Acenthrin [1B,3] (acephate + bifenthrin)	8 to 21 oz	14-day waiting period for harvest; do not graze or cut for hay or forage.
Damage	Baythroid XL [3] (beta-cyfluthrin)	1.6 to 2.8 fl oz (0.013 to 0.022 lb.)	21-day waiting period for harvest; 15 days for grazing.
	Brigade [3] bifenthrin	2.1 to 6.4 fl oz (0.08 to 0.10 lb.)	18-day waiting period for harvest; do not graze.
	Besiege [3,28] (lambda-cyhalothrin + chlorantraniliprole)	8.0 to 10.0 fl oz	30-day waiting period for harvest; do not graze.
Adult beetles feed on foliage, causing skeletonization of leaves. They typically feed on upper canopy.	Brigadier [3,4A] (bifenthrin + imidacloprid)	5.1 to 6.1 fl oz	45-days for feeding of dry vines, 18 days for green vines.
Threshold: Seedlings: 10% to 15% stand loss	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30-day waiting period for harvest; do not graze.
Growth stage and % Defoliation Before bloom: 35% Bloom to pod fill: 15-20% Full pod fill to maturity: 35-40%	Elevest [3,28] (bifenthrin + chlorantraniliprole)	4.8 to 9.6 fl oz (0.084 to 0.167 lb.)	18-day waiting period for harvest; do not graze.
	Endigo ZC [4A, 3] (lambda-cyhalothrin + thiamethoxam)	4.0 to 4.5 fl oz	30-day waiting period for harvest; do not graze or feed for forage.
Estimate defoliation by examining upper, middle and lower leaves. Japanese beetles tend to feed only on the upper leaf canopy, and it is easy to overestimate the amount of defoliation that they are causing.	Fastac EC [3] (alpha-cypermethrin)	2.8 to 3.8 fl oz (0.018 to 0.025 lb.)	21-day waiting period for harvest; to not graze.
	Hero [3,3] (zeta-cypermethrin + bifenthrin)	4.0 to 10.3 fl oz	21-day waiting period for harvest; do not graze.
	Justice [3,4A] (acetamiprid+ bifenthrin)	3.0 to 5.0 fl oz	30-day waiting period for harvest; do not graze.

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