

2009 Soybean Insect Control Recommendations

Introduction

Many different insects can be found on soybeans in Tennessee. Some are detrimental, while others are beneficial. The most economical and effective insect control program must begin with scouting, proper insect identification and a determination of possible economic damage.

Serious reductions in yield and quality may result if an outbreak of an insect pest occurs and is not controlled. Some of these pests feed on leaves and stems; others are primarily pod feeders. Many times insecticides are not needed for control, but in some cases, damaging localized populations are not noticed until serious damage has occurred. Soybean fields should be scouted weekly, paying special attention during the time of early bloom (R1) to full seed (R6).

Insect Identification

Foliage Feeders

Loopers: Loopers are often the most common “worms” on soybeans. They are light green and have two pairs of abdominal prolegs (excluding the pair on the last abdominal segment). The body is thickest at the rear and tapers to the head. These insects form the characteristic hump or “loop” when crawling. When populations are heavy, loopers eat much of the leaf surface, causing plants to look very ragged. Some insecticides are effective for looper control, but populations are usually held in check by naturally occurring diseases. Note: Although many pyrethroids are labeled for soybean looper control, resistance has been found in many soybean fields, and these insecticides are not recommended for control of soybean looper.

Green Cloverworm: This species is commonly found in Tennessee soybean fields. The green cloverworm is a slender green caterpillar with three pairs of abdominal prolegs. It becomes very active and falls to the ground when disturbed. The feeding damage produced by the green cloverworm is similar to that of loopers. Although they are present most of the growing season, they are damaging only with very high populations or in combination with other defoliators.

Japanese Beetle: Japanese beetle adults are metallic green or greenish-bronze beetles, ½ inch long, with reddish wing covers. They have white spots near the tip of the abdomen and on the sides. As they feed on soybean foliage, Japanese beetles skeletonize the leaves. This pest rarely occurs at economically damaging levels.

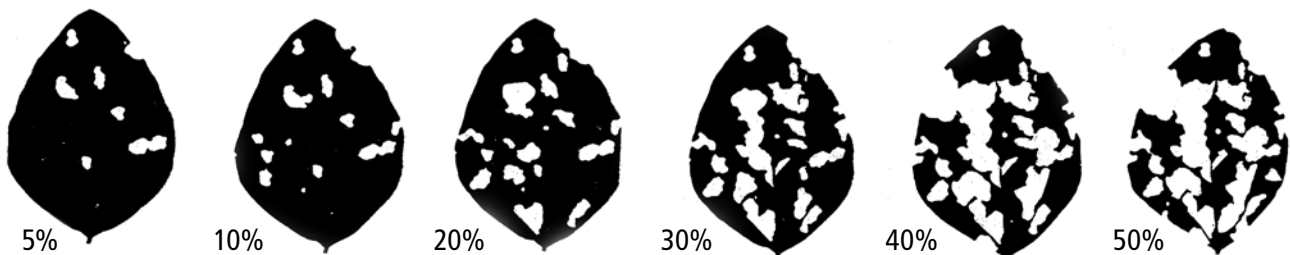
Bean Leaf Beetle: The bean leaf beetle feeds on leaves and sometimes on small pods. The beetles may feed through the pod and eat the beans, leaving damage that resembles bollworm feeding. The adults can cause severe damage on small plants. The larvae feed on roots and nodules and underground portions of the stems. Adults are reddish to tan, usually with four dark spots on each wing.

Mexican Bean Beetle: Mexican bean beetles damage plants by feeding on the underside of the leaf surface, resulting in a skeletonized appearance. Both adults and larvae feed in a similar manner. Adults are copper brown with 16 black spots on the back. Larvae are yellow to brown with many spines on the back and sides. Both adults and larvae are about ¼ inch long. This pest rarely occurs at economically damaging levels.

Blister Beetles: Blister beetles are elongated, soft-winged beetles that feed on leaves. One species, the striped blister beetle, has alternating dark brown and yellow stripes running the length of the body. Another species, the margined blister beetle, is black with a gray stripe along margins of the wing covers. These insects usually feed in groups in one or several areas of the field.

Soybean Aphid: Also called Chinese aphid, this is a relatively new pest for Tennessee, discovered first in Middle Tennessee. Its distribution probably includes all soybean growing areas in Tennessee, but pest numbers are generally low and scattered at this time. Aphids pierce leaf tissue during feeding in order to suck sap from soybean leaves. Soybean mosaic virus and other viral diseases are sometimes transmitted by aphids during feeding.

Figure 1 – Percent Defoliation



Pod Feeders

Fall Armyworm: The fall armyworm is a multi-colored, striped caterpillar with an inverted “Y” on the head and four pairs of abdominal prolegs. Armyworms may feed on leaves, stems, pods and beans. They may appear in large numbers and quick control is important.

Corn Earworm: The corn earworm, also called the bollworm or podworm, can seriously reduce yields since it feeds directly on beans by eating a hole in the pod and consuming the seed. Large caterpillars may be green, brown or yellow. The body is stocky and the head is usually pale brown or orange. Light and dark stripes run the length of the body. The larva has four pairs of abdominal prolegs. Young blooms and tender leaves are sometimes eaten. Beans should be checked during flowering and early pod set.

Stink Bugs: Stink bugs suck the juices from immature soybean seeds. This feeding introduces disease organisms into developing seeds, reduces germination and lowers milling quality. Damaged beans appear wrinkled and are smaller than normal. Adults are shield-shaped, either green or brown and are about ½ inch long.

Stem and Seedling Feeders

Threecornered Alfalfa Hopper: The adult threecornered alfalfa hopper is a green, wedge-shaped insect about ¼ inch long. Adults and nymphs feed by inserting their piercing-sucking mouthparts into the stem a few inches above the soil line. This feeding around the stem girdles the plant, often causing it to lodge later in the season. It is primarily a problem in reduced tillage fields. Maintaining a clean field border helps to reduce population numbers.

Scouting Procedures

A good sampling plan is to check 6 feet of row at five locations or take 25 sweeps at four locations in average-sized fields (about 50 acres). Increase sampling points proportionately with the acreage in a field. Make sure sample points are scattered over the entire field. Look for:

- **Seedling/Stem Feeding**
Check seedlings very closely until the plants are about 12 inches tall. The stems become woody and severe damage from seedling pests becomes less likely at this time. Look for insects that may be on the plant (threecornered alfalfa hopper) or in the soil around the base of the plants (lesser corn stalk borer, cutworms). Evaluate stand loss (percentage of dead or dying plants) and try to determine if future stand loss is probable (insects easily found and actively damaging plants).
- **Foliage Feeders**
Determine which insects are eating the foliage and estimate percent defoliation. Use a sweep net or a drop cloth (shake sheet) to sample for insect pests. At each sample point, estimate percent foliage loss so that an average can be calculated for the field. For soybean aphids, begin scouting in early July. Look for aphids on the undersides of upper leaves in vegetative and flowering soybeans. Estimate aphid density per plant at 5-10 locations throughout the field.
- **Pod-Feeders:** After full bloom (when pods are being “set”) look closely for any pod-feeding caterpillars (corn earworms and fall armyworms) and stink bugs that are dislodged onto the shake cloth or into the sweep net. Count these carefully.

Expected Occurrence of Insect Pests in Soybean

Below is a timetable of when common pests are typically encountered in soybean, although conditions vary from season-to-season or farm-to-farm within a season.

| Stage of Plant Development | Common Pests | Occasional Pests |
|-----------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------|
| Seedling | Threecornered alfalfa hopper | Thrips, grasshoppers, bean leaf beetle, cutworms, grape colaspis, white grubs |
| V5 - R1 (Early flowering) | --- | Threecornered alfalfa hopper |
| R1 - R5 (Early flowering to early podfill) | Stink bugs, green cloverworm | Threecornered alfalfa hopper, blister beetles, corn earworm, fall armyworm, loopers, soybean aphid |
| R5 + (mid to late podfill) | Stink bugs, loopers, green cloverworm | Blister beetles, fall armyworm, loopers, soybean aphid |

Insecticide Seed Treatments

Insecticide seed treatments (e.g., Cruiser and Gaucho) are available from seed companies or local distributors. Seed treatments will help control some seed and seedling pests such as thrips, bean leaf beetle, grape colaspis, threecornered alfalfa hopper, wireworms and white grubs. Data indicates that insecticide seed treatments provide an average yield increase of 1-3 bushels per acre in Tennessee, with the higher responses typically occurring in early-planted soybeans.

| Suggested Threshold Levels for Insect Pests of Soybean | | | | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|---------------|----------------|
| Threecornered Alfalfa Hopper | Threecornered alfalfa hopper – 10% of young plants (up to 10-12 inches) are infested with adults and/or nymphs, 1 hopper per sweep for larger plants | | | | |
| Defoliating pests (loopers, cloverworms, blister beetles, etc.) | 30% to bloom (R1), 20% from bloom to late pod fill (R1-R7), 30% from late pod fill to maturity (R7 +) | | | | |
| Soybean Aphid | Soybean aphid – Treat when an average of 250 aphids or more are found per plant and soybeans are blooming (R1-R2) or at early pod stage (R3) | | | | |
| Corn Earworm or Fall Armyworm | 3 or 4 per foot of row or 9 or more per 25 sweeps | | | | |
| Stink Bugs | | Drop Cloth | | Sweep Net* | |
| | Time of season | No./3 ft of row | No./6 ft of row | No./25 Sweeps | No./100 Sweeps |
| | Bloom – Mid-Podfill (R5.5) | 1 | 2 | 3 | 12 |
| | Mid-Podfill – Maturity | 3 | 6 | 9 | 36 |
| * In soybeans planted on 36-inch or wider rows, sweep only one row. In narrow-row soybeans, allow the normal arch of a sweep net to continue through the adjacent rows. | | | | | |

Recommended Chemical Controls for Soybean Insects

| Insects & Chemicals (Trade Names) | Lbs Active Ingredient Per Acre | Amount Formulation Per Acre | Acres a Gallon Will Cover |
|----------------------------------------------|---------------------------------------|------------------------------------|----------------------------------|
| CUTWORMS | | | |
| bifenthrin (Brigade 2) | 0.047 – 0.10 | 3 – 6.4 oz | 42.7 – 20 |
| carbaryl (Sevin 80S) | 1.0 – 1.5 | 1.25 – 1.875 lb | --- |
| (Sevin XLR Plus) | 1.0 – 1.5 | 32 – 48 oz | 4 – 2.7 |
| chlorpyrifos (Lorsban 4E, Nufos 4E) | 0.5 – 1.0 | 16 – 32 oz | 8 – 4 |
| esfenvalerate (Asana XL 0.66E) | 0.03 – 0.05 | 5.8 – 9.6 oz | 22 – 13 |
| permethrin (Pounce 3.2E) | 0.05 – 0.10 | 2 – 4 oz | 64 – 32 |
| thiodicarb (Larvin 3.2) | 0.5 – 0.75 | 20 – 30 oz | 6.4 – 4.3 |
| β-cyfluthrin (Baythroid XL 1) | 0.065 – 0.0125 | 0.8 – 1.6 oz | 160 – 80 |
| γ-cyhalothrin (Prolex 1.25) | 0.0075 – 0.0125 | 0.77 – 1.28 oz | 166 – 126 |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.015 – 0.025 | 0.96 – 1.60 oz | 133 – 80 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.008 – 0.025 | 1.28 – 4.0 oz | 100 – 32 |

| Insects & Chemicals (Trade Names) | Lbs Active Ingredient Per Acre | Amount Formulation Per Acre | Acres a Gallon Will Cover |
|--------------------------------------------------|--------------------------------|-----------------------------|---------------------------|
| THREECORNERED ALFALFA HOPPER | | | |
| acephate 90 (Orthene 90S) | 0.75 – 0.99 | 0.83 – 1.10 lb | --- |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 1.0 | 1.25 lb | --- |
| (Sevin XLR Plus) | 1.0 | 32 oz | 4 |
| esfenvalerate (Asana XL 0.66E) | 0.03 – 0.05 | 5.8 – 9.6 oz | 22 – 13 |
| β -cyfluthrin (Baythroid XL 1) | 0.025 – 0.044 | 1.6 – 2.8 oz | 80 – 45 |
| γ -cyhalothrin (Prolex 1.25) | 0.0075 – 0.0125 | 0.77 – 1.28 oz | 166 – 126 |
| λ -cyhalothrin (Karate 2.08, Warrior II) | 0.015 – 0.025 | 0.96 – 1.6 oz | 133 – 80 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |
| BEAN LEAF BEETLE | | | |
| acephate 90 (Orthene 90S) | 0.75 – 0.99 | 0.83 – 1.10 lb | --- |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 0.5 – 1.0 | 0.67 – 1.25 lb | --- |
| (Sevin XLR Plus) | 0.5 – 1.0 | 16 – 32 oz | 8 – 4 |
| chlorpyrifos (Lorsban 4E, Nufos 4E) | 0.5 – 1.0 | 16 – 32 oz | 8 – 4 |
| esfenvalerate (Asana XL 0.66E) | 0.03 – 0.05 | 5.8 – 9.6 oz | 22 – 13 |
| methomyl (Lannate LV 2.4) | 0.23 – 0.45 | 12 – 24 oz | 10.4 – 5.3 |
| methyl parathion 4 (Methyl 4E) | 1.0 | 32 oz | 4 |
| permethrin (Pounce 3.2E) | 0.05 – 0.1 | 2 – 4 oz | 64 – 32 |
| β -cyfluthrin (Baythroid XL 1) | 0.0125 – 0.022 | 1.6 – 2.8 oz | 80 – 45 |
| γ -cyhalothrin (Prolex 1.25) | 0.0075 – 0.0125 | 0.77 – 1.28 oz | 166 – 100 |
| λ -cyhalothrin (Karate 2.08, Warrior II) | 0.015 – 0.025 | 0.96 – 1.6 oz | 133 – 80 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |
| GRASSHOPPERS | | | |
| acephate 90 (Orthene 90S) | 0.30 – 0.50 | 0.33 – 0.56 lb | --- |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 0.5 – 1.5 | 0.67 – 1.875 lb | --- |
| (Sevin XLR Plus) | 0.5 – 1.5 | 16 – 48 oz | 8 – 2.7 |
| carbofuran (Furadan 4F) | 0.125 – 0.25 | 4 – 8 oz | 32 – 16 |
| chlorpyrifos (Lorsban 4E, Nufos 4E) | 0.25 – 0.50 | 8 – 16 oz | 16 – 8 |
| diflubenzuron (Dimilin 2L), for immatures | 0.031 | 2 oz | 64 |
| esfenvalerate (Asana XL 0.66E) | 0.03 – 0.05 | 5.8 – 9.6 oz | 22 – 13 |
| methyl parathion 4 (Methyl 4E) | 1.0 | 32 oz | 4 |
| β -cyfluthrin (Baythroid XL 1) | 0.0155 – 0.022 | 2.1 – 2.8 oz | 60 – 45 |
| γ -cyhalothrin (Prolex 1.25) | 0.0125 – 0.015 | 1.28 – 1.54 oz | 100 – 83 |

| Insects & Chemicals (Trade Names) | Lbs Active Ingredient Per Acre | Amount Formulation Per Acre | Acres a Gallon Will Cover |
|-----------------------------------------|--------------------------------|-----------------------------|---------------------------|
| GRASSHOPPERS CONTINUED | | | |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.025 – 0.030 | 1.6 – 1.9 oz | 80 – 67 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.020 – 0.025 | 3.2 – 4.0 oz | 40 – 32 |
| MEXICAN BEAN BEETLE | | | |
| acephate 90 (Orthene 90S) | 0.75 – 0.99 | 0.83 – 1.10 lb | --- |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 0.5 – 1.0 | 0.67 – 1.25 lb | --- |
| (Sevin XLR Plus) | 0.5 – 1.0 | 16 – 32 oz | 8 – 4 |
| chlorpyrifos (Lorsban 4E, Nufos 4E) | 0.5 – 0.75 | 16 – 24 oz | 8 – 5.3 |
| dimethoate 4 | 0.5 | 16 oz | 8 |
| esfenvalerate (Asana XL 0.66E) | 0.015 – 0.03 | 2.9 – 5.8 oz | 44 – 22 |
| methomyl (Lannate LV 2.4) | 0.23 – 0.45 | 12 – 24 oz | 10.4 – 5.3 |
| methyl parathion 4 (Methyl 4E) | 0.5 | 16 oz | 8 |
| permethrin (Pounce 3.2E) | 0.05 – 0.1 | 2.0 – 4.0 oz | 64 – 32 |
| β-cyfluthrin (Baythroid XL 1) | 0.0125 – 0.022 | 1.6 – 2.8 oz | 80 – 45 |
| γ-cyhalothrin (Prolex 1.25) | 0.0075 – 0.0125 | 0.77 – 1.28 oz | 166 – 100 |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.015 – 0.025 | 0.96 – 1.6 oz | 133 – 80 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |
| BLISTER BEETLE | | | |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 0.5 – 1.0 | 0.67 – 1.25 lb | --- |
| (Sevin XLR Plus) | 0.5 – 1.0 | 16 – 32 oz | 8 – 4 |
| methyl parathion 4 (Methyl 4E) | 0.5 | 16 oz | 8 |
| β-cyfluthrin (Baythroid XL 1) | 0.0125 – 0.022 | 1.6 – 2.8 oz | 80 – 45 |
| γ-cyhalothrin (Prolex 1.25) | 0.0125 – 0.015 | 1.28 – 1.54 oz | 100 – 83 |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.025 – 0.03 | 1.6 – 1.9 oz | 80 – 67 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |
| JAPANESE BEETLE | | | |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 1.0 | 1.25 lb | --- |
| (Sevin XLR Plus) | 0.5 – 1.0 | 16 – 32 oz | 8 – 4 |
| esfenvalerate (Asana XL 0.66E) | 0.03 – 0.05 | 5.8 – 9.6 oz | 22 – 13.3 |
| permethrin (Pounce 3.2E) | 0.05 – 0.10 | 2 – 4 oz | 64 – 32 |
| β-cyfluthrin (Baythroid XL 1) | 0.0125 – 0.022 | 1.6 – 2.8 oz | 80 – 45 |

| Insects & Chemicals (Trade Names) | Lbs Active Ingredient Per Acre | Amount Formulation Per Acre | Acres a Gallon Will Cover |
|--------------------------------------------------|---------------------------------------|------------------------------------|----------------------------------|
| JAPANESE BEETLE CONTINUED | | | |
| γ -cyhalothrin (Prolex 1.25) | 0.0125 – 0.015 | 1.28 – 1.54 oz | 100 – 83 |
| λ -cyhalothrin (Karate 2.08, Warrior II) | 0.025 – 0.03 | 1.6 – 1.9 oz | 80 – 67 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |
| GREEN CLOVERWORM | | | |
| acephate 90 (Orthene 90S) | 0.75 – 0.99 | 0.83 – 1.10 lb | --- |
| Bacillus thuringiensis (e.g., Dipel, Javelin) | See label | See label | See label |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 0.5 – 1.0 | 0.67 – 1.25 lb | --- |
| (Sevin XLR Plus) | 0.5 – 1.0 | 16 – 32 oz | 8 – 4 |
| chlorpyrifos (Lorsban 4E, Nufos 4E) | 0.25 – 0.5 | 8 – 16 oz | 16 – 8 |
| esfenvalerate (Asana XL 0.66E) | 0.015 – 0.03 | 2.9 – 5.8 oz | 44 – 22 |
| indoxacarb (Steward 1.25) | 0.055 – 0.11 | 5.6 – 11.2 oz | 22.8 – 11.5 |
| methomyl (Lannate LV 2.4) | 0.23 – 0.145 | 12 – 24 oz | 10.7 – 5.3 |
| methoxyfenozide (Intrepid 2) | 0.063 – 0.125 | 4 – 8 oz | 32 – 16 |
| methyl parathion 4 (Methyl 4E) | 0.375 – 0.50 | 12 – 16 oz | 10.6 – 8 |
| permethrin (Pounce 3.2E) | 0.05 – 0.1 | 2 – 4 oz | 64 – 32 |
| spinosad (Tracer) | 0.031 – 0.062 | 1 – 2 oz | 128 – 64 |
| thiodicarb (Larvin 3.2) | 0.25 – 0.4 | 10 – 16 oz | 12.8 – 8 |
| β -cyfluthrin (Baythroid XL 1) | 0.025 – 0.044 | 1.6 – 2.8 oz | 80 – 45 |
| γ -cyhalothrin (Prolex 1.25) | 0.0075 – 0.0125 | 0.77 – 1.28 oz | 166 – 100 |
| λ -cyhalothrin (Karate 2.08, Warrior II) | 0.015 – 0.025 | 0.96 – 1.6 oz | 133 – 80 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |
| SOYBEAN LOOPER | | | |
| Bacillus thuringiensis (e.g., Dipel, Javelin) | See label | See label | See label |
| indoxacarb (Steward 1.25) | 0.055 – 0.11 | 5.6 – 11.3 oz | 22.8 – 11.5 |
| methoxyfenozide (Intrepid 2) | 0.063 – 0.125 | 4 – 8 oz | 32 – 16 |
| spinosad (Tracer 4) | 0.031 – 0.062 | 1 – 2 oz | 128 – 64 |
| thiodicarb (Larvin 3.2) | 0.45 – 0.75 | 18 – 30 oz | 7.0 – 4.3 |
| CORN EARWORM | | | |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 1.0 – 1.5 | 1.25 – 1.875 lb | --- |
| (Sevin XLR Plus) | 1.0 – 1.5 | 32 – 48 oz | 4 – 2.7 |
| esfenvalerate (Asana XL 0.66E) | 0.03 – 0.05 | 5.8 – 9.6 oz | 22 – 13 |
| methomyl (Lannate LV 2.4) | 0.23 – 0.45 | 12 – 24 oz | 10.7 – 5.3 |

| Insects & Chemicals (Trade Names) | Lbs Active Ingredient Per Acre | Amount Formulation Per Acre | Acres a Gallon Will Cover |
|----------------------------------------------|---------------------------------------|------------------------------------|----------------------------------|
| CORN EARWORM CONTINUED | | | |
| permethrin (Pounce 3.2E) | 0.1 – 0.2 | 4 – 8 oz | 32 – 16 |
| spinosad (Tracer 4) | 0.047 – 0.062 | 1.5 – 2.0 oz | 85 – 64 |
| thiodicarb (Larvin 3.2) | 0.25 – 0.4 | 10 – 16 oz | 12.8 – 8 |
| β-cyfluthrin (Baythroid XL 1) | 0.0125 – 0.022 | 1.6 – 2.8 oz | 80 – 46 |
| γ-cyhalothrin (Prolex 1.25) | 0.0075 – 0.0125 | 0.77 – 1.28 oz | 166 – 100 |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.015 – 0.025 | 0.96 – 1.6 oz | 133 – 80 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |
| FALL ARMYWORM | | | |
| acephate 90 (Orthene 90S) | 0.75 – 0.99 | 0.83 – 1.10 lb | --- |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| carbaryl (Sevin 80S) | 1.0 – 1.5 | 1.25 – 1.875 lb | --- |
| (Sevin XLR Plus) | 1.0 – 1.5 | 32 – 48 oz | 4 – 2.7 |
| indoxacarb (Steward 1.25) | 0.055 – 0.11 | 5.6 – 11.3 oz | 22.8 – 11.5 |
| methomyl (Lannate LV 2.4) | 0.23 – 0.45 | 12 – 24 oz | 10.7 – 5.3 |
| methoxyfenozide (Intrepid 2) | 0.063 – 0.125 | 4 – 8 oz | 32 – 16 |
| spinosad (Tracer 4) | 0.047 – 0.062 | 1.5 – 2.0 oz | 85 – 64 |
| thiodicarb (Larvin 3.2) | 0.25 – 0.4 | 10 – 16 oz | 12.8 – 8 |
| β-cyfluthrin (Baythroid XL 1) | 0.0125 – 0.022 | 1.6 – 2.8 oz | 80 – 45 |
| γ-cyhalothrin (Prolex 1.25) | 0.065 – 0.075 | 1.28 – 1.54 oz | 100 – 83 |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.025 – 0.03 | 1.6 – 1.92 oz | 80 – 67 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.020 – 0.025 | 3.2 – 4.0 oz | 40 – 32 |
| STINK BUGS | | | |
| acephate 90 (Orthene 90S) | 0.50 – 0.99 | 0.56 – 1.10 lb | --- |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| methyl parathion 4 (Methyl 4E) | 0.3 – 1.0 | 12 – 32 oz | 10.6 – 4 |
| β-cyfluthrin (Baythroid XL 1) | 0.025 – 0.044 | 1.6 – 2.8 oz | 80 – 45 |
| γ-cyhalothrin (Prolex 1.25) | 0.0125 – 0.015 | 1.28 – 1.54 oz | 100 – 80 |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.025 – 0.030 | 1.6 – 1.9 oz | 80 – 67 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.020 – 0.025 | 3.2 – 4.0 oz | 40 – 32 |
| SPIDER MITES | | | |
| bifenthrin (Brigade 2) | 0.063 – 0.10 | 4 – 6.4 oz | 32 – 20 |
| chlorpyrifos (Lorsban 4E, Nufos 4E) | 0.25 – 0.5 | 8 – 16 oz | 16 – 8 |
| dimethoate 4 | 0.5 | 16 oz | 8 |
| SOYBEAN APHID | | | |
| acephate 90 (Orthene 90S) | 0.75 – 0.99 | 0.83 – 1.10 lb | --- |

| Insects & Chemicals (Trade Names) | Lbs Active Ingredient Per Acre | Amount Formulation Per Acre | Acres a Gallon Will Cover |
|----------------------------------------------|---------------------------------------|------------------------------------|----------------------------------|
| SOYBEAN APHID CONTINUED | | | |
| bifenthrin (Brigade 2) | 0.08 – 0.10 | 5.12 – 6.4 oz | 25 – 20 |
| chlorpyrifos (Lorsban 4E) | 0.50 – 1.0 | 16 – 32 oz | 16 – 8 |
| γ-cyhalothrin (Prolex 1.25) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45.7 – 32 |
| λ-cyhalothrin (Karate 2.08, Warrior II) | 0.025 – 0.030 | 1.6 – 1.9 oz | 133 – 80 |
| Z-cypermethrin (Mustang Max 0.8E) | 0.0175 – 0.025 | 2.8 – 4.0 oz | 45 – 32 |

Premixed Insecticide Product

The following products are available as premixes of two insecticides. The use of premixes may provide suppression or control of multiple pests, and thus are typically recommended when several pests are present at treatment level.

| Trade Name (Insecticides) | Amount Product per Acre | Acres Treated per Gal of Product | Primary Target Pests (see label for other pests that may be controlled) |
|-----------------------------------------|--------------------------------|-----------------------------------------|--------------------------------------------------------------------------------|
| Cobalt (chlorpyrifos, γ-cyhalothrin) | 19 – 38 oz | 6.7 – 3.3 | Stink bugs, bollworm, green cloverworm, threecornered alfalfa hopper |
| Endigo ZC (thiamethoxam, λ-cyhalothrin) | 3.5 – 4.5 oz | 36.6 – 28.4 | Stink bugs, bollworm, green cloverworm, threecornered alfalfa hopper |
| Hero (bifenthrin, Z-cypermethrin) | 4 – 10.3 oz | 32 – 12.4 | Stink bugs, bollworm, green cloverworm, threecornered alfalfa hopper |
| Leverage (imidacloprid, cyfluthrin) | 3.8 oz | 33.7 | Stink bugs, bollworm, green cloverworm, threecornered alfalfa hopper |