

2011

CONTROL

# Soybean

## INSECT PESTS



# Control Soybean Insects • 2011

Soybeans can be damaged by insects any time from plant emergence until near harvest in Louisiana. Many kinds of insects feed on leaves, stems, roots, nodules and pods, but only a few require control with insecticides. Soybean plants can compensate for considerable insect injury, and naturally occurring predators and parasites frequently control insect pests adequately. However, they are often overwhelmed by pest insect numbers in late season. To prevent severe yield reductions or a total crop loss, an insecticide must be applied when this occurs.

## Scouting for Insects

The need for insecticide use on soybeans is determined by the numbers of insect pests present or the amount of damage they cause. Scout all fields for insects and their damage at least weekly after blooming begins. This provides the information you need to make treatment decisions. Scouting soybeans for insects is critical from the time the plants start blooming until the beans in the pods are mature. Continue scouting until about two weeks before harvest.

Insect counts made near the field margins may not be representative of the insects present in a field. Some insects, like stink bugs, infest field margins first, then spread over the field. At least five different locations should be sampled to get an average insect count that is representative of conditions in the field. The locations sampled should be scattered.

The method used to scout for insects will be influenced by the row spacing used to plant the soybeans. Where rows are 30 inches or wider, a shake cloth or an insect sweep net may be used. Narrower row spacings will require an insect sweep net.

The shake cloth should be 2 ½ feet long and wide enough to cover the middle between rows. Attach a 4-foot length of ½-inch doweling to both ends. The shake cloth can be heavy cloth or plastic. Sample insects with the shake cloth by placing it between two rows and shaking the 2 ½ feet of plants on each row over the cloth. Shake vigorously to dislodge the insects from the plants. Count the insects that fall to the cloth, starting with stink bugs and three-cornered alfalfa hoppers. Corn earworms are counted separately from leaf-feeding worms like soybean loopers, velvetbean caterpillars and green cloverworms, which should be counted together as a group. Record these counts as the number of each insect per foot of row.

Sweep net sampling should be done with a heavy duty insect sweep net 15 inches in diameter. Insect numbers should be counted on the basis of the number caught in 100 sweeps with the net. One sweep is the passage of the net across one row of soybeans. The bottom edge of the net should pass through the plants about 12 inches below the tops of the plants. The correct sweeping movements will resemble a horizontal figure 8 motion. Sweeps should be taken throughout a field to ensure that the sample is representative. Carefully examine the contents of the sweep net, and count the various kinds of insects caught. Record these counts as the number of each insect per 100 sweeps.

## Insect Pests

Insects most frequently requiring the use of insecticides on soybeans in Louisiana include the stink bug complex, soybean looper, velvetbean caterpillar, three-cornered alfalfa hopper and bean leaf beetle. The corn earworm requires insecticides less frequently.

Occasional pests include green cloverworms, beet armyworms, fall armyworms, banded cucumber beetles, salt-marsh caterpillars, yellow-striped armyworms, lesser cornstalk borers, cutworms, grasshoppers, blister beetles, potato leafhoppers and thrips. These rarely require insecticide applications.

The roots and nitrogen-fixing nodules of soybean plants are damaged by several insects that inhabit the soil. They include the bean leaf beetle larvae, soybean nodule fly larvae, white grubs, seed corn maggot and wireworms. No treatment thresholds have been determined yet, and control measures for this kind of damage are not recommended. Insecticide seed treatments (IST) are currently being evaluated. Recent data suggest the most efficient use of an IST would be in fields that are planted in less than ideal conditions during the early spring. Products labeled include Cruiser, Gaucho and Nipsit Inside.

### ***Bean Leaf Beetle***

Adult beetles overwinter in litter near soybean fields. They feed on beans in gardens and infest soybean fields and feed on emerging seedling soybean plants. Infestation levels in early season may occasionally cause excessive defoliation on seedling beans. They lay eggs in soil near seedling soybeans, and larvae that hatch feed on soybean roots and nitrogen-fixing nodules. The next generation of adult beetles emerges four or five weeks later. Bean leaf beetle

adults damage soybean leaves by eating round holes in them. During late season, they damage bean pods by eating the green covering from spots on the pods. In some cases, they will feed on the bean inside the pod. Bean leaf beetles also transmit bean pod mottle virus, a serious disease. Under dry weather conditions and heavy pressure, multiple applications may be required to control a continuous emergence of adult bean leaf beetles. In some situations bean leaf beetle foliage feeding may compound the effects of other defoliating pests such as the soybean looper and velvetbean caterpillar.

**Trap Crop Plantings:** The original trap crop recommendation was designed to concentrate a large percentage of over-wintered bean leaf beetles into a small percentage (about 5% or less) of the soybean acreage, thus reducing the need to treat the remainder of the field or farm later in the season. Small plots of soybeans are planted 10 to 14 days earlier than the remainder of the acreage in areas where this pest is a problem. The first field generation can be controlled with foliar insecticides four to five weeks after planting. Early planted field peas can also be used as a bean leaf beetle trap crop.

The widespread adoption of early planting and early maturing varieties in some areas has made it difficult to plant a trap crop early enough to be effective. The trap crop is, however, an effective management tool in theory. Early planted fields of Maturity Group IV and V soybeans may in effect serve as trap crops and require closer attention for bean leaf beetles. Therefore, scouting for bean leaf beetle on early-planted soybeans during the seedling growth stages has become an important period of sampling and management.

### ***Three-cornered Alfalfa Hopper***

The three-cornered alfalfa hopper damages soybean plants with its feeding punctures. These punctures are arranged so they girdle the main stem near ground level on plants less than 12 to 15 inches tall. On larger plants they move upward and girdle leaf petioles and feed on the stems that attach the blooms and pods to the plants. This girdling of main stems of small plants causes some stand reduction but rarely, if ever, reduces yields. However, yield reductions are caused by the feeding this insect does when soybeans are blooming and filling the pods. The adults are green, triangular-shaped, 3/8 to 1/4 inch long and active in winter. They overwinter on pine and other evergreen plants which provide food in winter.

### ***Velvetbean Caterpillar***

The leaves of soybean plants are eaten by velvetbean caterpillars, starting with the leaves near the top. The caterpillars move downward and defoliate the plants if uncontrolled. The caterpillars vary from green to black with several light stripes which extend the length of the body. The larvae has four pairs of abdominal prolegs. They don't overwinter in Louisiana. The adult moths fly in from Central and South America in late June or early July. They produce three generations a year in Louisiana. This pest can develop large populations rapidly and can inflict substantial damage in a short time. Damaging numbers usually occur in south Louisiana from the last half of August through September. Velvetbean caterpillar are also found in the northern soybean parishes, but the infestation levels are usually not as high. The moths are brownish with a dark line across the wings when at rest.

Dimilin 2L applied at 2 ounces product per acre will provide preventive control of the velvetbean caterpillar. As a preventive treatment, Dimilin should be applied when the vegetative growth of soybeans is completed and as pod formation begins (at or shortly after bloom). The probability of a velvetbean caterpillar problem is higher on later maturing soybeans.

### ***Green Cloverworm***

Green cloverworms feed on soybean leaves and contribute to defoliation, but their numbers are not very high in most soybean fields. They are pale green with two narrow white stripes along each side of the body and three pairs of abdominal prolegs. The moths are dark brown to sooty black and triangular-shaped when at rest.

### ***Soybean Looper***

Loopers found on soybeans in Louisiana are usually soybean loopers. They damage soybeans by feeding on the leaves, starting with leaves at the middle of the plants and working upward. They don't overwinter in Louisiana. The moths fly in from Central and South America each year. Damaging infestations occur from early August through September. Soybean loopers usually reach higher populations in areas where cotton and soybeans are grown together. This insect is now commonly found in southern soybean parishes where cotton is not grown. Infestations there are not as explosive, but they can build up to the economic threshold. Planting an early maturing soybean variety will allow the soybean crop to mature earlier, and it may escape damaging populations of the soybean looper.

Looper larvae are pale green with two pairs of abdominal prolegs. The body tapers toward the head.

They have a white line along each side of the body and two white lines along the middle of the back. In summer they may be completely green, but in late August black spots develop all over the body, especially on the head and the three pairs of front legs. The moths are bronze with two silver markings near the middle of each front wing.

### **Corn Earworm**

Infestations occur most often during bloom and up to three weeks after bloom. Corn earworms eat round holes in the pod, then eat the bean inside the pod. They are usually more of a problem in fields where soybeans don't lap the middles. They are also called bollworms on cotton, tomato fruitworms on tomatoes, and podworms on soybeans. Corn earworms can severely reduce soybean yields. They have four pairs of abdominal prolegs. The body is covered with bumps, with a stiff hair in the center of each bump. The moth is reddish-brown, with a dark spot near the center of each front wing.

### **Stink Bugs**

The stink bug is the most important pest of soybeans in Louisiana. Of the different species of stink bugs which infest soybeans and cause economic damage, the southern green stink bug, the green stink bug and several species of brown stink bugs were known pests of Louisiana soybean. Historically, the southern green stink bug was by far the most numerous and most important of these. During the late 1990s, however, the brown stink bug complex became more common and is harder to control with recommended insecticides. During the early to mid-2000's, a new stink bug species was recognized as a serious soybean pest. The redbanded stink bug, *Piezodorus guildinii* (Westwood), was first observed in south Louisiana in 2000 and is currently distributed throughout most soybean parishes. In many soybean fields after insecticide treatments are applied, this species is the most common stink bug pest outnumbering the southern green and brown stink bugs.

Stink bugs damage soybeans after pods start forming. They insert their beaks in the pod and suck out the contents of the bean inside the pod. Feeding while the beans are in the milk stage can result in a complete loss of the beans. Research has shown that stink bug damage during the R3 to R5 growth stages can result in delayed maturity, commonly referred to as green beans. Stink bug feeding on beans in the dough stage causes a sunken area or discolored spot on the beans.

They overwinter as adults and feed on several other crops during spring and early summer. They invade soybean fields when pods start to form, starting on the margins of fields. Early infestations will be highest on field margins. Spot spraying field margins for them

can eliminate the need to spray the entire field for stink bugs later. If a trap crop is not planted, scouting for stink bugs should begin with the earliest maturing soybeans on the farm. Stink bugs will be found first on the early maturing varieties (Groups IV and V). In areas with substantial corn acreage, stink bug migration into soybeans will occur in mid-summer as the corn crop begins to mature and dry down. After this time multiple insecticide applications may be required to maintain effective control.

A species of stink bug which feeds almost exclusively on morning glory occurs in soybean fields infested with this weed. This species is not a pest and should not be controlled. The adult can readily be recognized by a white, heart-shaped spot in the middle of the upper surface. In early September this species turns a dark brown to deep red, resembling the brown stink bugs, but it still can be recognized by the white spot.

**Trap crop plantings:** The objective of a stink bug trap crop is to concentrate a large percentage of stink bugs into a small percentage of acreage so they can be killed with insecticide before they infest the surrounding soybeans. This can be done in several ways, but planting the trap crop early is not the only requirement. Effective trap crops for brown and southern green stink bugs must also bloom and set pods earlier than the surrounding soybeans. Trap crops should also be located in areas next to over-wintering habitat or parts of the field where stink bugs tend to colonize first. A bean leaf beetle trap crop can be used if the soybeans or field peas fit the above requirements. Another approach is to plant a small portion (15% or less) of the soybean acreage with a variety that blooms and set pods earlier than the surrounding soybeans. Maturity Group IV soybeans use to fit this requirement, but widespread adoption of early maturing varieties in some areas has made them less effective as a trap crop. Also, stink bugs may infest other early season crops such as corn and then migrate into soybeans later in the summer.

If a trap crop can be planted that will fulfill the above requirements, then it should be scouted and treated at a lower threshold. After bloom, treat the trap crop with a recommended insecticide when you find one stink bug on six feet of row or six stink bugs in 100 sweeps. Repeat application on an as needed basis.

### **Fall Armyworm**

Fall armyworms will damage seedling soybeans in a manner similar to cutworms. Early season damage usually results from grassy areas within the field which attract adult moths and support the feeding larvae. They damage older soybeans by feeding on the leaves. They usually eat the grass in a field before eating the soybean foliage. These worms should be counted with other foliage feeding worms to determine when to

apply an insecticide. A light-colored inverted Y on the front of the head is the easiest way to recognize them. The most effective way to control them is to prevent grass from becoming established in the soybeans.

### ***Beet Armyworm***

The beet armyworm became more common in soybeans during the 1990s. This worm resembles the corn earworm and fall armyworm, but it is smooth and usually greenish. Also, beet armyworms normally have a distinct dark spot on each side of the second body segment behind the head. The beet armyworm is primarily a foliage feeder, although research indicates it does not consume as much foliage as either the soybean looper or velvetbean caterpillar. Pod feeding is rare, but it has been known to occur in special situations. Beet armyworm infestations may not be evenly distributed over the field.

### ***Salt-Marsh Caterpillar***

These woolly-bear caterpillars occasionally feed on soybean foliage. Infestations are often limited to field margins but might be found in low numbers throughout a field.

### ***Banded Cucumber Beetle***

Banded cucumber beetles damage soybeans by eating holes in the leaves. Their damage is not severe, and large numbers are required before insecticides are necessary.

### ***Colaspis Beetles***

Colaspis beetles are small (less than 1/4 inch in length), pale-brown and oval shaped. The wings have longitudinal rows of indentations which give them a striped appearance. The adults feed on leaves. They rarely cause economic damage alone, but contribute to foliage loss when other leaf feeding beetles are present. The larva is a white-shaped grub, about 5/16 inch in length. It feeds beneath the soil surface on lateral roots and the underground stem. Damage results in stunted or dead seedlings. Significant stand loss in soybeans is not common, but when it occurs, it is usually found in poorly drained areas or high organic soil.

### ***Blister Beetles***

Blister beetles are found in soybean fields only rarely and are limited to a small spot in the field. These elongated beetles have relatively soft wing covers that leave the tip of the abdomen exposed. They can be black, gray or yellow and black striped. They feed in a group on soybean foliage.

### ***Grasshoppers***

Several species of grasshoppers will feed on soybean foliage, usually during extended dry periods. Their damage is usually limited to field margins.

### ***Lesser Cornstalk Borer***

The lesser cornstalk borer has been a serious soil insect problem in some fields. Most problems occurred in late planted soybeans that followed wheat or rye grass. Drought and high temperatures are also usually associated with the problem. Some other states recommend Lorsban 15G applied at planting in a T-band at 8 ounces granules per 1000 row feet, for preventive control.

## **General Precautions**

Follow these suggestions when handling insecticides:

1. Always read the insecticide label. The label is the law.
2. Study and follow worker protection standards given on the label.
3. Do not open containers in closed rooms.
4. Avoid breathing the fumes of insecticides.
5. Wear a recommended respirator when handling or applying insecticides.
6. Wear plastic-coated gloves when handling or applying pesticides.
7. If liquid concentrates are spilled on skin or clothing, remove clothing and bathe with soap and water immediately. Change and launder clothing following exposure to insecticides.
8. Store insecticides away from children and animals.
9. Avoid contamination of ponds and streams.
10. Avoid drift of insecticides onto pastures, feed or food crops and other non-target areas.
11. Follow label information concerning disposal of empty containers.
12. Do not allow dairy cattle or beef cattle to graze fields treated with insecticides, unless the label allows it.

## **Cautions**

The recommended insecticides will give effective control at the given rates when applied properly. Do NOT use excessive amounts of insecticide because it results in unnecessary expense, pollute the environment, cause unnecessary destruction of predators and parasites, increase residue hazards and increase the possibility of resistance developing in pest populations.

## Insecticide Use Limitations

(see labels for complete information)

**Asana XL** – Toxic to bees, fish and aquatic invertebrates. Do not feed or graze livestock on treated plants. Do not exceed 0.2 lb. AI/acre per season. Don't apply within 21 days of harvest. Reentry interval: 12 hr.

**Baythroid XL** – Toxic to fish and invertebrates. Pre-harvest interval: 45 days. Maximum AI/acre per season: 0.0875 lb. Do not feed green forage within 15 days of application. Reentry interval: 12 hr.

**Belt** – Toxic to aquatic invertebrates. Do not apply directly to water or to areas where surface water is present. Product may leach when applied to permeable soils, especially with a shallow water table. Pre-harvest interval: 14 days for dry seed and 3 days for forage and hay. Maximum amount of active ingredient allow per crop season is 0.188 per acre. Reentry interval: 12 hours.

**Brigade** – Toxic to fish and aquatic invertebrates. Do not exceed 0.3 lb. AI/acre per season. Pre-harvest interval is 18 days. Reentry interval: 12 hr.

**Cyfluthrin** – Same as Baythroid except maximum AI/acre per season is 0.175 lb.

**Declare** – Toxic to fish, aquatic organisms and wildlife. Do not apply within 45 days of harvest. Do not graze or harvest treated soybean forage, straw or hay for livestock feed. Do not apply more than 0.03 lb. AI/acre per season. Reentry interval: 24 hr.

**Dimilin** – Toxic to aquatic invertebrates. Do not make more than two applications per season. Pre-harvest interval: 21 days. Reentry interval: 12 hr.

**Endigo** – Toxic to fish and aquatic organisms. Do not exceed 9 fl. oz. per acre per season. Pre-harvest interval: 30 days. Do not

apply within 45 days of planting if planted with a neonicotinoid seed treatment.

**Hero** – Toxic to fish and aquatic invertebrate oysters and shrimps. Do not apply more than 0.4 lb. AI/acre per year. Pre-harvest interval is 21 days. Do not graze or harvest forage, straw or hay for livestock. Reentry interval: 12 hr.

**Intrepid** – Drift and runoff may be toxic to sensitive aquatic vertebrates. Do not apply by air within 150 ft. or by ground within 25 ft. of surface water. Do not apply more than 1 lb AI/acre per season. Pre-harvest interval: 14 days for grain; 7 days for hay and forage. Reentry interval: 48 hr.

**Karate** – Toxic to fish, aquatic organisms and bees. Do not apply within 30 days of harvest. Do not graze or harvest treated soybean forage, straw or hay for livestock feed. Do not apply more than 0.06 lb. AI/acre per season. Reentry interval: 24 hr.

**Larvin** – Toxic to fish, aquatic invertebrates, birds and mammals. Don't feed forage, hay or straw to livestock. Don't apply less than 28 days before harvest. Reentry interval: 48 hr. Maximum AI/acre per season: 3 lb.

**Lannate** – Don't apply within 14 days of harvest. Do not apply more than 1.35 lb. AI/acre per season or make more than 3 applications per acre per season. Toxic to bees, fish, aquatic invertebrates and small animals. Reentry interval: 48 hr.

**Leverage 360** – Extremely toxic to fish and aquatic invertebrates. Direct sprays and residues are highly toxic to bees. Avoid drift and runoff when treating. Use of this product on highly permeable soils with a shallow water table may result in groundwater contamination. Pre-harvest interval; 21

days for seed and 15 days for hay and green forage. Maximum product allowed per crop season: 9 fluid ounces. Reentry interval: 12 hours.

**Lorsban** – Toxic to bees, birds, fish and other wildlife. Do not apply within 28 days of harvest. Do not graze treated areas or otherwise feed treated soybean forage, hay or straw to livestock. Do not apply more than 3 lb. AI/acre per season. Reentry interval: 24 hr.

**Methyl parathion** – Highly toxic to aquatic invertebrates, wildlife and bees. Don't apply within 20 days of harvest or grazing. Don't apply more than two times per season. Reentry interval: 4 days.

**Mustang Max** – Highly toxic to bees, fish and aquatic vertebrates. Do not apply more than 0.15 lb. AI/acre per season. Pre-harvest interval: 21 days. Reentry interval: 12 hr.




**Orthene (acephate)** – Toxic to birds and bees. Do not harvest for hay or forage. Do not apply more than 1.5 AI/acre per season. Pre-harvest interval is 14 days.

**Sevin** – Do not apply a combination of Sevin and 2, 4DB herbicides to soybeans. Toxic to bees, estuarine and aquatic invertebrates. Pre-harvest interval: 21 days for dried beans and 14 days for grazing or forage. Reentry interval: 12 hr.


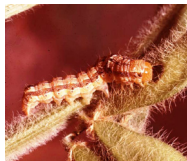

**Steward** – Toxic to birds, fish and aquatic invertebrates. Do not feed or graze livestock on treated fields. Do not apply more than 0.44 lb. AI/acre per year. Pre-harvest interval: 21 days. Reentry interval: 12 hr.

**Tracer** – Highly toxic to mollusks. Direct spray highly toxic to bees. Do not apply more than 0.186 lb. AI/acre per year. Do not feed treated forage or hay to cattle. Pre-harvest interval: 28 days. Reentry interval: 4 hr.






# Louisiana Soybean Insecticide Guide 2011

Insect	Insecticide (Lb. AI/ Gallon)	Pounds Active Ingredient Per Acre	Acres Treated Per Gallon	When to Treat
Bean Leaf Beetle				
	Sevin/carbaryl (4)	0.5	8	Feeding damage on 10% of pods or 2 beetles per sweep per sweep after pod set. <sup>3</sup>
	Methyl parathion (4)	0.25	16	
	Asana XL (0.66)	0.03-0.05	22-13	
	Karate Z (2.08)	0.02-0.025	104-83	
	Larvin (3.2)	0.45	7	
	Declare (1.25)	0.01-0.0125	125-100	
	Brigade (2)	0.033 – 0.1	60.6 – 20	
	Hero (1.24) (plant trap crop) <sup>1</sup>	0.025 – 0.06	49.6 – 20.6	
Three-cornered Alfalfa Hopper				
	Baythroid XL	0.013-0.022	77-45	Three nymphs per row foot or 1 adult per sweep, starting at pod set.
	Asana XL (0.66)	0.03-0.05	22-13	
	Declare (1.25)	0.0125	100	
	Karate Z (2.08)	0.025	83	
	Mustang Max/Respect (0.8)	0.017-0.025	47-32	
	Cyfluthrin (2)	0.025-0.044	80-45	
	Orthene (Acephate 90)	0.75	NA	
	Hero (1.24)	0.04 – 0.1	31 – 12.4	
Velvetbean Caterpillar <sup>2, 5, 7</sup>				
	Baythroid XL (1)	0.013-0.022	77-45	8 worms 1/2-inch or longer per row foot or 300 in 100 sweeps.
	Sevin/carbaryl (4)	0.25-0.5	16-8	
	Lannate (2.4)	0.125	19	
	Methyl parathion (4)	0.25-0.5	16-8	
	Belt (4)	0.0625	64	
	Intrepid (2)	0.06-0.12	33.3-16.6	
	Declare (1.25)	0.0075-0.0125	166-100	
	Larvin (3.2)	0.25-0.4	13-8	
	Karate Z (2.08)	0.015-0.025	139-83	
	Lorsban/chlorpyrifos (4)	0.5	8	
	Tracer (4)	0.031-0.062	129-65	
	Mustang Max/Respect (0.8)	0.017-0.025	47-32	
	Cyfluthrin (2)	0.028	71	
	Hero (1.24)	0.04-0.1	31-12.4	
Dimilin (2)	0.031	65	Dimilin is a preventive treatment. Apply at or shortly after bloom.	





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Insect	Insecticide (Lb. AI/ Gallon)	Pounds Active Ingredient Per Acre	Acres Treated Per Gallon	When to Treat
<b>Green Cloverworm</b> <sup>2, 5, 7</sup>				
	Sevin/carbaryl (4)	0.25-0.5	16-8	8 worms 1/2-inch or longer per row foot or 300 in 100 sweeps.
	Lannate (2.4)	0.125	19	
	Methyl parathion (4)	0.25	16	
	Belt (4)	0.0625	64	
	Larvin (3.2)	0.25-0.4	13-8	
	Tracer (4)	0.031-0.062	129-65	
	Mustang Max/Respect (0.8)	0.0175-0.025	46-32	
	Karate (2.08)	0.015-0.025	139-83	
	Declare (1.25)	0.0075-0.0125	167-100.	
	Baythroid XL (1)	0.007-0.013	143-77	
	Steward (1.25)	0.055-0.11	23-11.4	
	Hero (1.24)	0.025 – 0.06	49.6 – 20.6	
<b>Corn Earworm</b>				
	Lannate (2.4)	0.25-0.45	9.6-5.3	After blooms appear, 3 worms per row foot or 38 in 100 sweeps.
	Larvin (3.2)	0.25-0.4	13-8	
	Sevin/carbaryl (4)	0.75-1.0	5.3-4	
	Asana XL (0.66)	0.03-0.05	22-13	
	Belt (4)	0.0625	64	
	Tracer (4)	0.047-0.062	85-65	
	Orthene (Acephate 90)	0.75	NA	
	Mustang Max/Respect (0.8)	0.0175-0.025	46-32	
	Karate Z (2.08)	0.015-0.025	139-83	
	Declare (1.25)	0.075-0.0125	167-100	
	Cyfluthrin (2)	0.025-0.044	80-45	
	Baythroid XL (1)	0.013-0.022	77-45	
	Steward (1.25)	0.055-0.11	23-11.4	
	Brigade (2)	0.033 – 0.1	60.6 – 20	
Hero (1.24)	0.04 – 0.1	31 – 12.4		
<b>Green/Southern Green Stink Bugs</b>				
	Baythroid XL (1)	0.013-0.022		After pods appear, 1 stink bug per row foot, or 36 in 100 sweeps. Stink bugs should be 1/4 inch or larger. Treat soybeans grown for seed at 1 stink bug per 6 row feet or 6 stink bugs in 100 sweeps.
	Orthene (Acephate 90)	0.75	NA	
	Methyl parathion (4)	0.25-0.5	16-8	
	Mustang Max/Respect (0.8)	0.02-0.025	40-32	
	Karate Z (2.08)	0.025-0.03	83-69	
	Declare(1.25)	0.0125-0.015	100-83	
	Cyfluthrin (2)	0.025-0.044	80-45	
	Brigade (2)	0.033 – 0.1	60.6 – 20	
	Hero (1.24)	0.04 – 0.1	31 – 12.4	
	Leverage 360	see label	45.7	
Trap Crop <sup>4</sup>				

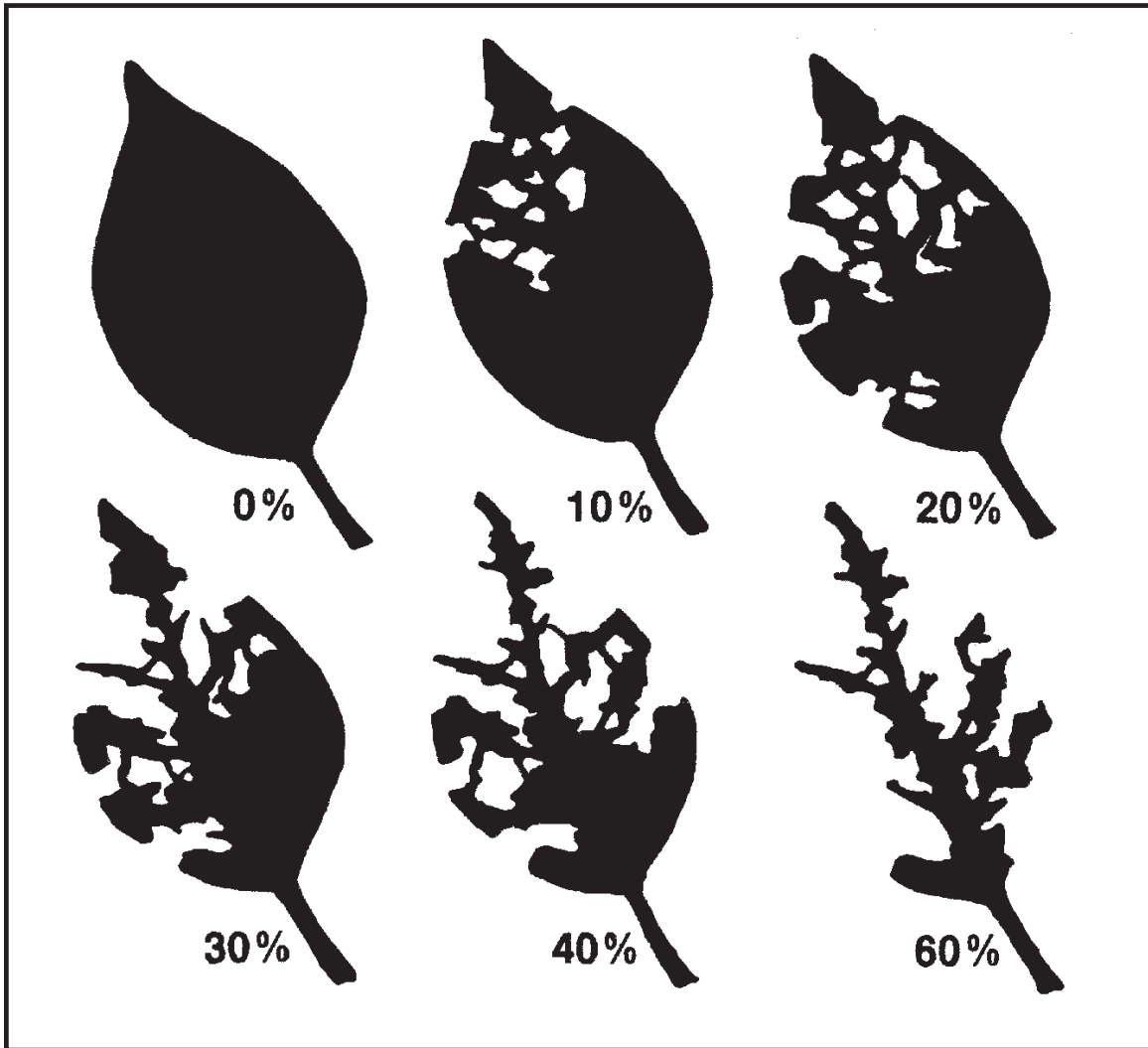
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Insect	Insecticide (Lb. AI/ Gallon)	Pounds Active Ingredient Per Acre	Acres Treated Per Gallon	When to Treat
<b>Brown Stink Bugs</b>				
	Baythroid XL (1)	0.022	45	Treatment threshold same as for green/southern green stink bugs.
	Leverage 360	see label	45.7	
	Orthene (Acephate 90)	0.75	NA	
	Methyl parathion (4)	0.5-1.0	8-4	
	Cyfluthrin (2)	0.044	45	
	Mustang Max/Respect (0.8)	0.025	32	
	Brigade (2)	0.1	20	
	Hero (1.24)	0.1	12.4	
<b>Redbanded Stink Bug<sup>9</sup> (<i>Piezodorus guildinii</i>)</b>				
	<i>Control</i>			24 stink bugs in 100 sweeps
	Orthene (Acephate 90)	0.75	NA	
	Endigo	see label	32-28.4	
	Leverage 360	see label	45.7	
	Brigade (2)	0.1	20	
	Hero (1.24)	0.1	12.4	
	<i>Suppression</i>			
	Cyfluthrin (2)	0.044	45	
<b>Soybean Looper<sup>2, 5, 7</sup></b>				
	Larvin (3.2)	0.45-0.75	7-4.3	8 worms 1/2-inch or longer per row foot or 150 in 100 sweeps.
	Belt (4)	0.0625	64	
	Tracer <sup>10</sup> (4)	0.031-0.062	129-65	
	Steward (1.25)	0.055-0.11	23-11.4	
	Intrepid (2)	0.09-0.125	22-16	
	Lannate <sup>8</sup> (2.4)	0.45	5.3	
<b>Fall Armyworm<sup>5</sup></b>				
	Sevin/carbaryl (4)	0.5	8	When seedling beans in are reduced to 6 or less plants per foot of row. In older soybeans, treat when defoliation becomes excessive. <sup>5</sup>
	Methyl parathion (4)	0.5	8	
	Lannate (2.4)	0.3-0.45	8-5.3	
	Larvin (3.2)	0.45-0.75	7-4.3	
	Tracer (4)	0.047-0.062	85-65	
	Steward (1.25)	0.075-0.11	16.7-11.4	
	Belt (4)	0.0625	64	
<b>Salt-marsh Caterpillar<sup>5, 7</sup></b>				
	Lannate (2.4)	0.45	5.3	Spot treat for 8 worms per row foot or when seedling soybeans are reduced to 6 or less plants per row foot.
	Orthene (Acephate 90)	0.75	NA	
	Intrepid (2)	0.06-0.125	33.3-16	

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Insect	Insecticide (Lb. AI/ Gallon)	Pounds Active Ingredient Per Acre	Acres Treated Per Gallon	When to Treat
Banded Cucumber Beetle				
	Methyl parathion (4)	0.25	16	4 beetles per sweep. <sup>3</sup>
	Sevin/carbaryl (4)	0.5	8	
	Karate Z (2.08)	0.02-0.025	104-83	
	Declare (1.25)	0.01-0.0125	125-100	
Blister Beetles <sup>7</sup>				
	Sevin/carbaryl (4)	0.80	5	Spot treat the infested area when defoliation becomes excessive. <sup>5</sup>
	Methyl parathion (4)	0.25	16	
Beet Armyworm <sup>2, 5, 7</sup>				
	Lorsban/chlorpyrifos (4)	0.75	5.3	12 worms 1/2 inch or longer per row foot or 150 worms in 100 sweeps. If pod feeding occurs, treat for 10% pod damage.
	Larvin (3.2)	0.6-0.75	5.3-4.3	
	Tracer (4)	0.062	65	
	Steward (1.25)	0.11	11.3	
	Intrepid (2)	0.09-0.125	22-16	
	Belt (4)	0.0625	64	
Grasshoppers				
	Dimilin (2)	0.031	65	<b>Not effective on adults.</b> Treat for small (2nd and 3rd stage nymphs) grasshoppers to prevent excessive foliage loss or stand loss.
<p><sup>1</sup> See page 2 for discussion on bean leaf beetle trap crop.</p> <p><sup>2</sup> These four defoliating caterpillars should be counted together and an insecticide should be applied when any combination of the four reaches 300 worms in 100 sweeps, but any time soybean loopers and/or beet armyworms exceed 150 worms in 100 sweeps, treatment should be made</p> <p><sup>3</sup> Banded cucumber beetles and bean leaf beetles sometimes occur at the same time and can be counted together. Use two beetles per sweep as a threshold, but count each banded cucumber beetle as one-half beetle.</p> <p><sup>4</sup> See page 3 for discussion on stink bug trap crops</p> <p><sup>5</sup> Prior to blooming, soybeans can tolerate 30% to 35% defoliation. During bloom and pod set (R1-R5), defoliation should not exceed 20% to 25%. See footnote 7 for defoliation allowances in the R6-R7 growth stages.</p> <p><sup>6</sup> LSU AgCenter research indicates that low rates of Tracer will not give satisfactory control of rapid, heavy outbreaks of soybean looper. Also, ground application is more effective than aerial application with this insecticide.</p> <p><sup>7</sup> Research has shown that soybeans must have at least one-third of their foliage up to 12 days before the R7 stage. The R7 stage is defined as an average of at least one brown or mature pod per plant. Once a soybean field is in the R7 stage, then it is no longer necessary to protect the foliage.</p> <p><sup>8</sup> Recent LSU AgCenter research has shown satisfactory control with Lannate at 0.45 lb. AI/acre. In past years, however, this pest has been highly resistant to Lannate at some locations. Producers should be aware that the current use of Lannate might still give inconsistent results.</p> <p><sup>9</sup> Effective control of <i>Piezodorus guildinii</i>, the redbanded stink bug, has been difficult to achieve with labeled insecticides. Multiple applications may be required to achieve season long control.</p> <p><sup>10</sup> LSU AgCenter research indicates that low rates of Tracer will not give satisfactory control of rapid outbreaks of soybean looper that far exceed the economic threshold. Also, ground application is more effective than aerial application.</p>				

## Defoliation Estimates for Foliage Feeding Pests





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