



# Soybean Insect Survey and Control in Oklahoma

Phil Mulder

Extension Entomologist

## Surveying for Insects

Soybeans have few serious insect pests compared to other cultivated crops. However, an abundance of non-pest and beneficial insects are typically present in soybean fields. Beneficial insects usually keep harmful insect populations below economic thresholds. Before employing chemical control measures for insects in soybeans, growers should be relatively sure that yield increases and/or the elimination of further damage will offset chemical and application costs. Evaluation of the extent of insect infestations and timing insecticide applications are best accomplished by regularly surveying fields.

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. This method is often referred to as the drop cloth method. The plant-shaking method is a useful tool for weekly surveying soybeans after the beans obtain one foot in height. The equipment needed for this method consists of a piece of white or off-white cloth that measures 24" x 42". Each end of the cloth is stapled to a thin strip of wood, approximately 1/2" to 1" wide and 24" 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. The surveyor then needs to vigorously shake the vines over the cloth. Your arms, from your elbows to your fingertips, will allow you to sample approximately 1 1/2 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. This process should be repeated 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 method for scouting fields is the sweep net method. A standard 15-inch

Oklahoma Cooperative Extension Fact Sheets  
are also available on our website at:  
<http://osufacts.okstate.edu>

diameter sweep net is used to make 10 consecutive sweeps (180 degrees) while walking through the field. The net is swung 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 5 times for a total of 50 sweeps and compare counts with economic thresholds established for individual pests. This method is particularly useful on seedling and broadcast beans.

Estimating percent defoliation is another way to determine when to treat for foliage feeders. 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 is tricky and requires a well-trained eye.

## Precautions

All insecticides are toxic and must be handled with caution. Before you do anything with a chemical; read and then follow all directions given on the label, pay special attention to all safety precautions, and handle insecticides in such a way as to avoid breathing the vapors and to prevent spillage. If spillage occurs and any personal contamination occurs, wash the contaminated area thoroughly with soap and large quantities of water immediately and then change clothing. If contamination is extensive or involves one of the more toxic materials, contact your local physician.

Insecticides should always be stored in a dry, well-ventilated area that can be kept locked when not in use. All toxic chemicals should remain in their original containers. Keep labels as legible as possible.

## Suggestions for Soybean Insect Control

I. STEM AND SEEDLING FEEDERS — For the most part, these insects are not a problem if the grower gets a good stand of beans. Stem and seedling feeders will generally do most of their damage before the soybeans are 12" tall. Thus, growers must be ready to make well-timed applications of insecticides. Isolated infestations can normally be tolerated because soybeans usually compensate if there are at least four plants per row-foot.

Insect	Damage	Insecticide and Rate Per Acre	Comments
Threecornered Alfalfa Hopper	Adults and nymphs feed on stems. May girdle stems at or above soil level. This frequently causes lodging when the plants get larger.	Asana <sup>r</sup> XL 5.8-9.6 oz. Sevin XLR+ 1.0 qt. Dimethoate 4.0 EC 1 pt. Larvin <sup>r</sup> 18.0-30.0 oz. (suppression) Methyl Parathion <sup>r</sup> 0.75-2.0 pt. Sevin 80S 1.25 lbs. Warrior <sup>r</sup> 1.92-3.2 oz.	Before bloom treatment is suggested if 10-15% of plants are girdled and nymphs are still present.
Lesser Cornstalk Borer	Girdle stems/roots. Bluish-green worm found at the soil surface or beneath the surface in tubes or sacs that are made of soil particles woven together with silken material.	Lorsban <sup>r</sup> 4E - 1.0-2.0 pts.  Lorsban <sup>r</sup> 15G - 0.5lb/1000 ft. of row Warrior <sup>r</sup> 3.84 oz.	This pest can be difficult to control. A second application in 5 days may be necessary for satisfactory control. Do not make more than 1 application per season. Suppression only.

II. FOLIAGE FEEDERS— The economic threshold level or criteria for treatment for defoliators is considered as a group. In sampling populations of these insects, an estimate of percent leaf loss is the best way to assess the damage as a basis for initiating control of defoliators. Research in various states has shown that soybean plants can withstand 35 percent foliage loss up to one week before blooming. After blooming and during pod fill, no more than 15 to 20 percent defoliation should be allowed. After full pod, defoliation of 35 to 40 percent can be tolerated.

Insect	Damage	Insecticide and Rate Per Acre	Comments
Aphids	Suck plant juices, causes yellowing of leaves and produces sticky honeydew	Methyl Parathion 4EC 0.75-2.0 pts.  Proaxis <sup>r</sup> 1.92-3.2 oz.	
Bean Leaf Beetle	Adults eat round holes in leaves and often feed on small pods.	Ambush <sup>r</sup> 25W 3.2-6.4 oz. Asana <sup>r</sup> XL 5.8-9.6 oz. Dimethoate (Cygon) 1 pt. Lannate <sup>r</sup> LV 0.75-1.5 pt. Larvin <sup>r</sup> 18.0-30.0 oz. Lorsban <sup>r</sup> 4E 1.0-2.0 pts. Pounce <sup>r</sup> 3.2EC 2.0-4.0 oz. Proaxis <sup>r</sup> 1.92-3.2 oz. Prolex <sup>r</sup> 0.77-1.28 oz. Sevin80S 0.625-1.25 lbs. Sevin XLR+ 0.5-1.0 qt. Warrior <sup>r</sup> 1.92-3.2 oz.	Control is suggested if feeding damage is found on 10% of pods.
Blister Beetles	Usually infest isolated parts of the field.	Proaxis <sup>r</sup> 3.2-3.84 oz. Prolex <sup>r</sup> 1.28-1.54 oz. Sevin80S 0.625-1.25 lbs. Sevin XLR+ 0.5-1.0 qt. Methyl Parathion 4EC 0.75-2.0 pt. Warrior <sup>r</sup> 3.2-3.84 oz.	Beetles are generally localized within the field.
Fall Armyworm	Infestations may occur from July through September. Identified by inverted "Y" on head capsule.	Dimilin2L <sup>r</sup> 4 oz. Lannate <sup>r</sup> LV 0.75-1.5 pt. Larvin <sup>r</sup> 10.0-30.0 oz. Methyl Parathion <sup>r</sup> 4EC 2.0 pt. Proaxis <sup>r</sup> 3.2-3.84 oz. Prolex <sup>r</sup> 1.28-1.54 oz. Sevin80S 1.25-1.875 lbs. Sevin XLR+ 1.0-1.5 qts. Tracer 1.5-2.0 oz. Warrior <sup>r</sup> 3.2-3.84 oz.	During late season can be very damaging.

Insect	Damage	Insecticide and Rate Per Acre	Comments
Garden Webworms	Usually occur from July through August on late planted soybeans. They cause webbing on the leaves, terminals, and the worms feed inside the web.	Methyl Parathion <sup>r</sup> 4EC 0.75-2 pts. Pounce <sup>r</sup> 4.0-8.0 oz. Proaxis <sup>r</sup> 3.2-3.84 oz. Prolex <sup>r</sup> 1.28-1.54 oz. Warrior <sup>r</sup> 3.2-3.84 oz.	Severe infestations may cause stand loss if early infestations occur.
Green Cloverworm	May be found feeding on leaves in June or July, but the biggest population usually occurs in mid-August. Consume whole leaves.	Ambush <sup>r</sup> 25W 3.2-6.4 oz. Asana <sup>r</sup> XL 2.9-5.8 oz. <i>Bacillus thuringiensis</i> (e.g. Bactur, Biobit, Dipel, Javelin, Thuricide, etc.) See label rates. Dimilin <sup>r</sup> 2L 2.0-4.0 oz. Lannate <sup>r</sup> LV 0.4-1.5 pt. Larvin <sup>r</sup> 10.0-30.0 oz. Lorsban <sup>r</sup> 4E 0.5-1.0 pt. Methyl Parathion <sup>r</sup> 4EC 2 pts. Pounce <sup>r</sup> 3.2EC 2.0-4.0 oz. Proaxis <sup>r</sup> 1.92-3.2 oz. Prolex <sup>r</sup> 0.77-1.28 oz. Sevin 80S 0.625-1.25 lbs. Sevin XLR+ 0.5-1.0 qt. Tracer 1.0-2.0 oz. Warrior <sup>r</sup> 1.92-3.2 oz.	These are bacterial/microbial insecticides.
Loopers	Mid-late season pests. Long green worms that move with a looping action.	Ambush <sup>r</sup> 25W 3.2-12.8 oz. Asana <sup>r</sup> XL 5.8-9.6 oz. <i>Bacillus thuringiensis</i> (e.g. Bactur, Biobit, Dipel, Javelin, Thuricide, etc.) See label rate. Dimilin <sup>r</sup> 2L 4.0 oz. - soybean looper only Larvin <sup>r</sup> 18.0-30.0 oz. Pounce <sup>r</sup> 3.2 EC 2.0-8.0 oz. Proaxis <sup>r</sup> 1.92-3.84 oz. Prolex <sup>r</sup> 0.77-1.54 oz. Warrior <sup>r</sup> 1.92-3.84 oz.	Control suggested when 8 worms (1/2" in length) are found per foot of row or when 150 larvae are collected from 100 sweeps.
Grasshoppers	Threat more pronounced during hot, dry weather	Asana <sup>r</sup> XL 5.8-9.6 oz. Dimethoate 4EC 1 pt. Dimilin <sup>r</sup> 2L 2.0 oz. Lorsban 4E <sup>r</sup> 0.5-1.0 pt. Proaxis <sup>r</sup> 3.2-3.84 oz. Prolex <sup>r</sup> 1.28-1.54 oz. Warrior <sup>r</sup> 3.2-3.84 oz.	Treat border areas for small nymphs before adults migrate into fields. Dimilin for nymphs only.
Velvetbean Caterpillar	Mid-to late-season pest. Long green to brown caterpillar, with light and dark stripes along their backs and sides. They thrash vigorously when disturbed.	Ambush <sup>r</sup> 25W 3.2-6.4 oz. Asana <sup>r</sup> XL 2.9-5.8 oz. Dimilin <sup>r</sup> 2L 2.0-4.0 oz. Larvin <sup>r</sup> 10.0-30.0 oz. Lorsban 4E <sup>r</sup> 0.5-1.0 pt. Lannate LV 0.4-1.5 pt. Pounce <sup>r</sup> 3.2 EC 2.0-4.0 oz. Proaxis <sup>r</sup> 1.92-3.2 oz. Prolex <sup>r</sup> 0.77-1.28 oz. Sevin 80S 0.625-1.25 lbs. Warrior <sup>r</sup> 1.92-3.2 oz.	Threshold: 3 per sweep or 8/row foot

III. POD FEEDERS — The greatest loss to soybeans is caused by insects that attack pods. 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.

Insect	Damage	Insecticide and Rate Per Acre	Comments
Corn Earworm (also called the soybean podworm and the cotton bollworm)	Moths usually fly into soybean fields and lay eggs in August. Peak populations generally occur in mid-August. Small worms hatch and start feeding on foliage, later moving to pods. Research has found that one worm will average damaging 20 pods.	Ambush <sup>r</sup> 25W 6.4-12.8 oz. Asana <sup>r</sup> XL 5.8-9.6 oz. Lannate LV <sup>r</sup> 0.4-1.5 oz. Larvin <sup>r</sup> 10.0-30.0 oz. Lorsban 4E <sup>r</sup> 1.0-2.0 pt. Methyl Parathion <sup>r</sup> 2 pt. Pounce <sup>r</sup> 3.2EC 4.0-8.0 oz. Proaxis <sup>r</sup> 1.92-3.2 oz. Prolex <sup>r</sup> 0.77-1.28 oz. Sevin XLR+ 0.5-1.5 qt. Sevin 80S 0.625-1.875 lbs. Tracer 1.5-2.0 oz. Warrior <sup>r</sup> 1.92-3.2 oz.	Probably most destructive pest of soybeans because of direct yield losses.
Stink Bugs	Lower quality results from nymphs and adults sucking sap from bean pods and the insertion of digestive juices into the bean which causes deterioration.	Asana <sup>r</sup> XL 5.8-9.6 oz. Larvin <sup>r</sup> 18.0-30.0 oz. (suppression) Lorsban 4E <sup>r</sup> 2 pt. Methyl Parathion 4EC <sup>r</sup> 0.75-2.0 pts. Proaxis <sup>r</sup> 3.2-3.84 oz. Prolex <sup>r</sup> 1.28-1.54 oz. Sevin XLR+ 1.0-1.5 qt. Sevin 80S 1.25-1.875 lbs. Warrior <sup>r</sup> 3.2-3.84 oz.	Susceptible until maturity.  Southern green stink bug

<sup>r</sup> Restricted Use Pesticide

NOTE: **Ambush<sup>r</sup>** — Do not make more than two, 12.8-oz applications per season. Can be applied up to 60 days before harvest. Do not graze treated areas or harvest for forage or hay.

**Asana<sup>r</sup> XL** — 21 days to harvest. Do not feed or graze livestock on treated plants. Do not exceed 0.20 lb. ai/A per season.

**Carbaryl (Sevin)** — No waiting period before harvest. Possible injury to young foliage may occur if Sevin is applied when foliage is wet, or rain or high humidity is expected.

**Dimethoate** — 21 days to harvest and 5 days wait to grazing.

**Dimilin<sup>r</sup>** — 21 days to harvest. No more than 2 applications per season. Do not cut for hay or allow milk or meat animals to graze fields. Do not rotate crops other than soybeans or cotton until 6 months following last application.

**Ethyl parathion** — 15 day waiting period before harvest.

**Lannate<sup>r</sup> (WSP, L, LV)** — 14 day waiting period before harvest. Under 0.45 ai/A applied, allow 3 days before grazing forage and 7 days before feeding hay. At 0.45-0.90 lb ai/A applied, allow 10 days before grazing forage and 12 days before feeding hay.

**Larvin<sup>r</sup>** — Do not feed forage, hay, or straw to livestock. Do not apply less than 28 days before harvest.

**Lorsban** — Do not apply more than 3 lb. of AI per acre per season. Wait 28 days to harvest. Do not graze treated areas or feed forage to meat or dairy animals within 14 days of treatment.

**Methyl parathion** — 20 day waiting period to harvest or grazing.

**Pounce<sup>r</sup>** — Do not make more than two 8.0-oz applications per season. Do not apply within 60 days of harvest. Do not graze or feed soybean forage. Do not plant rotational crops within 60 days of last application.

**Seven XLR +** — 21 days to harvest - 14 days to graze or harvest for forage. Do not apply with 2,4-DB herbicide to avoid crop injury. Do not apply more than a total of 6 quarts per acre per crop.

**Warrior<sup>r</sup>** — 45 days to harvest. Do not apply more that 0.48 pts per acre per season. Do not graze or harvest treated soybean forage straw or hay for livestock feed.

**Proaxis<sup>r</sup>** — 45 days to harvest. Do not apply more than 0.48 pts per acre per season. Do not graze or harvest treated soybean forage, straw, or hay for livestock feed. This chemical is Gamma-cyhalothrin, if it is used in the same season as lambda-cyhalothrin (Warrior<sup>r</sup>), then read the label carefully for use rate limitations.

**Prolex<sup>r</sup>** — 45 days to harvest. Do not apply more than 0.19 pts per acre per season. Do not graze or harvest treated soybean forage, straw, or hay for livestock feed. This chemical is Gamma-cyhalothrin, if it is used in the same season as lambda-cyhalothrin (Warrior<sup>r</sup>), then read the label carefully for use rate limitations.

The pesticide information presented in this publication was current with federal and state regulations at the time of printing. The user is responsible for determining that the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label directions. The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 0704