



Field Key to Larvae in Soybeans

Phillip G. Mulder

Professor of Entomology

Richard Grantham

Director, Plant Disease and Insect Diagnostics Laboratory

Don C. Arnold

Retired Survey Entomologist

This key is designed to serve as a guide to identification of the more typical larvae of the common insect species found in Oklahoma soybean fields during the mid- and late-season. A 10 to 15 power hand lens will be most helpful in using this key. The identifying characters used are based upon those found on full-grown or nearly full-grown larvae and may not necessarily occur on newly hatched larvae. If the larva in question does not fit the proper description furnished, recheck the specimen with the key. If it continues to key out improperly or is not one of the species listed, and proper identification is desired, place the larva in a small bottle containing 70% alcohol and mail to: Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, Oklahoma 74078. Please do not send specimens for identification unless they are causing or suspected of causing damage to the crop. Please include information as to the type and amount of damage noted as well as the date and community where the larva was collected. This information will assist in getting a more accurate and rapid reply to your questions.

Some insects found in soybean fields cannot be identified with this key. This would include adult insects, arthropods other than insects, and such insects as stink bugs and three-cornered alfalfa hoppers, which do not have a larval stage. Be sure you have insect larvae before attempting to use this key.

Occasional early season pests, such as cutworms, have not been included in the key as they are not normally serious in Oklahoma. If found, they should run to the last couplet in the chart, "species not included in the key." If they are causing serious damage, please send in specimens for identification.

This key should not be used for larvae occurring in crops other than soybeans. Other keys are available for other crops and can be obtained from the local county Extension office.

Survey Methods

Insect counts in soybeans are reported on a per linear foot basis. While the plants are small, the population can be counted by inspection of the plants. However, after the plants have become larger, bend the plants over and shake them vigorously, then count the insects on the ground between rows. Some insects will fly or move away rapidly, so it is best to shake only a few plants at a time. At least five inspections (at least 3 row feet in each inspection) should be made and the number of insects reported as the number per linear foot

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

of row. Plants can also be shaken into a sweep net or onto a sheet to obtain a count.

The sweep method can also be used. As the surveyor faces a row, he reaches over the first and sweeps the second row as far as he can reach to the left and right. Counts should be made after each sweep since it is difficult to move about in soybeans and some of the insects may escape from the net before reaching the next sampling point. At least five samples should be made at well-spaced locations throughout a field. Counts should be reported as the number per ten sweeps.

Descriptions of Larvae

Green Cloverworm (*Plathypena scabra*)

This is the only species commonly found in soybeans which has four pairs of prolegs. The body color is green. The younger larvae have two longitudinal white stripes on each side, but these are absent in the last instar. They may be up to 1 inch in length when fully grown. They are primarily foliage feeders.

Cabbage Looper (*Trichoplusia ni*)

These larvae move in a characteristic "looping" manner. They are larger at the back end and taper toward the head. The body is green with narrow white lines running the length of the body and is without black spots. These larvae are up to 1 2/3 inches in length when fully grown. They are usually found feeding on leaves, giving the foliage a ragged appearance.

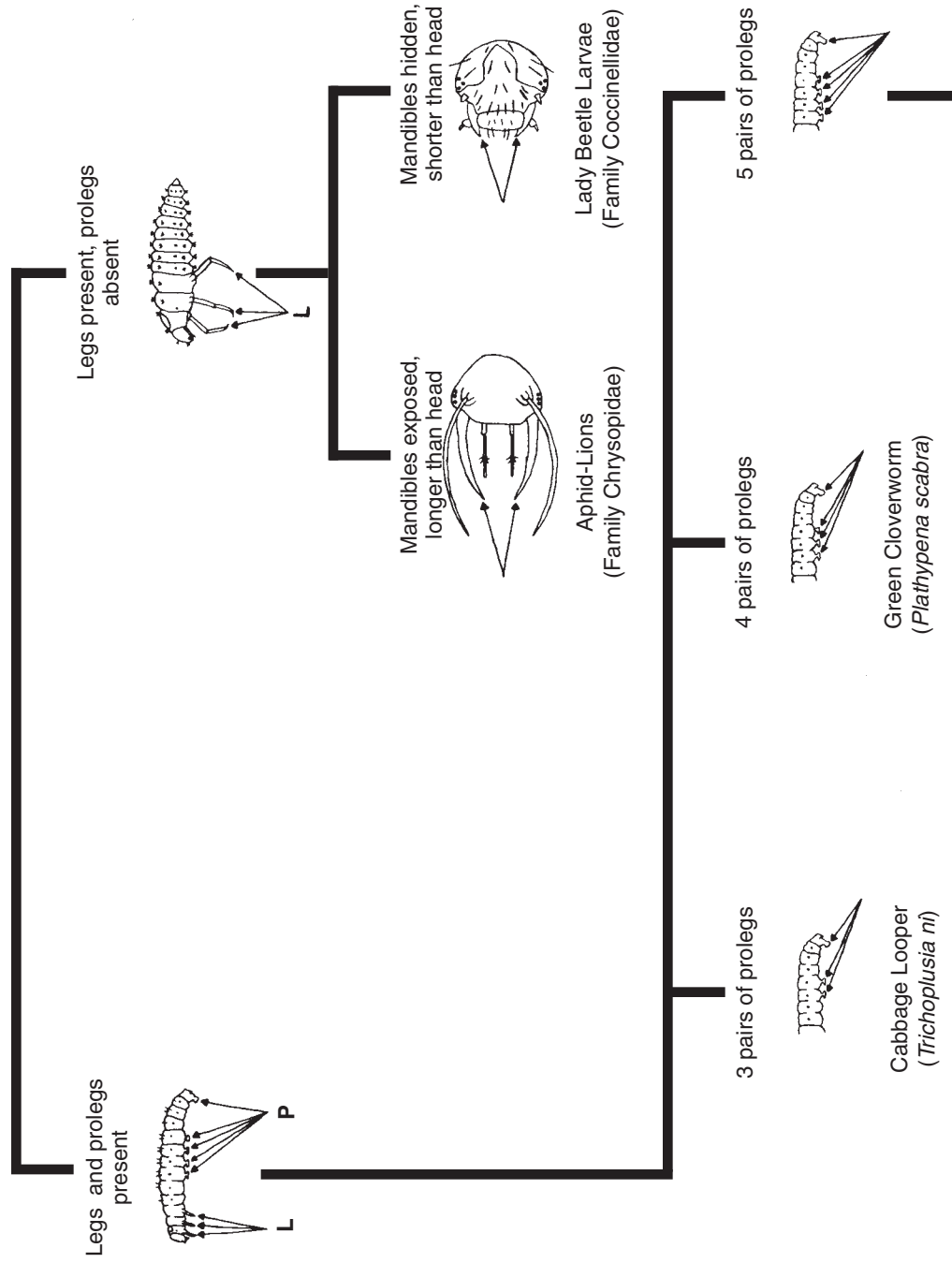
Corn Earworm (*Heliothis zea*)

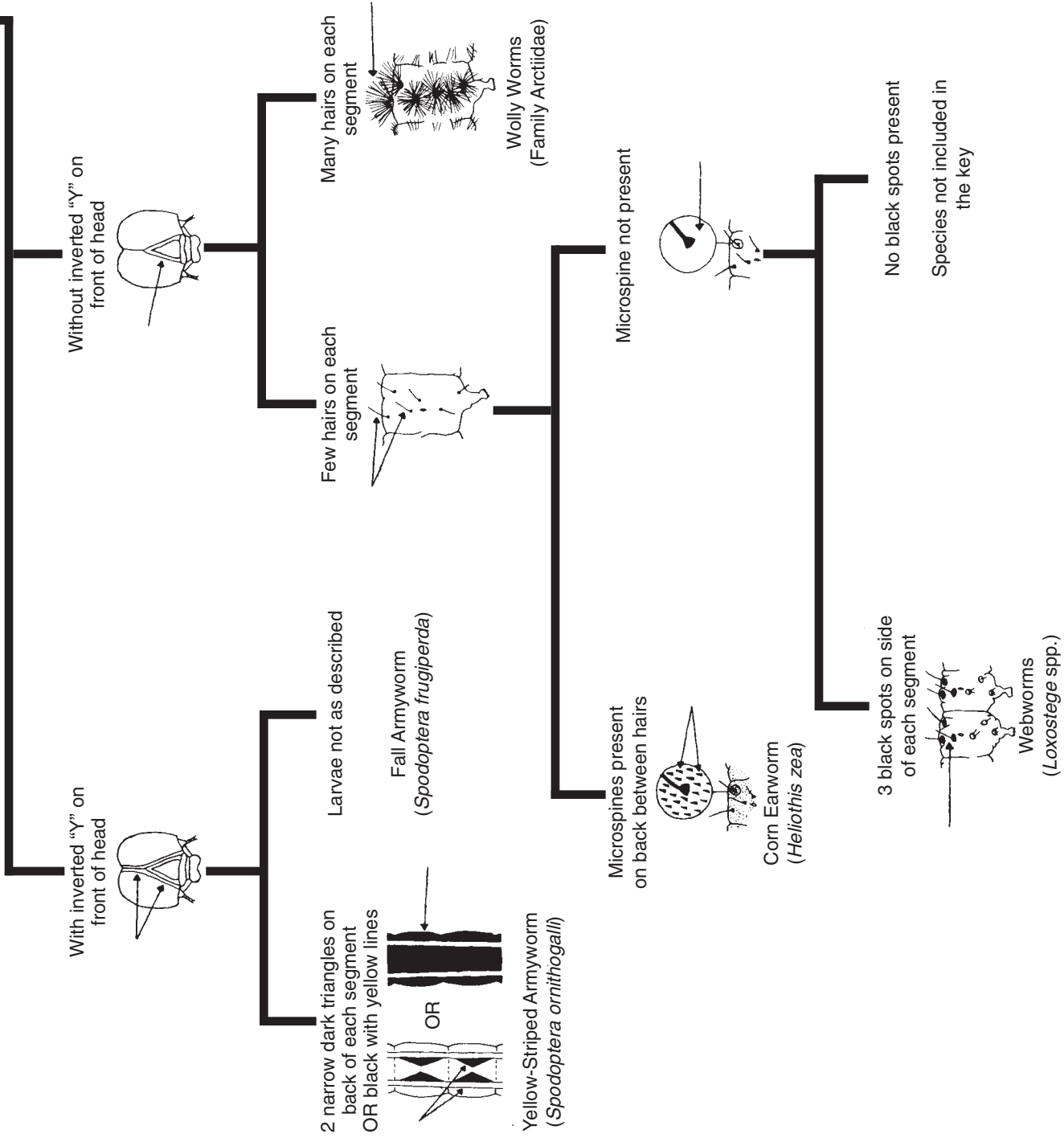
The main distinguishing characteristic of this species is the distinct, short, sharp microspines, resembling whiskers, which are present between the longer hairs on the back. This gives the larvae an "unshaven" appearance when viewed with a 10X-15X hand lens. (Do not confuse the pebbled or granular skin of other larvae with the microspines.) The body color varies greatly from light to dark green, pink, or brownish-yellow. When fully grown, the larvae measures up to 1 1/2 inches in length. This destructive pest causes damage by feeding on the foliage and on the developing pods.

Fall Armyworm (*Spodoptera frugipedra*)

These larvae usually have a distinct, broad, white inverted "Y" present on the front of the head (not to be confused with a

A Field Key to Some Common Larvae Found in Soybeans in Oklahoma





narrow inverted "V" found on a few other species). The body varies from light tan to green to dark brown or nearly black in color with three widely separated narrow yellowish-white stripes down the back. On each side are three more broad longitudinal lines side by side; the top, brown; the middle, reddish; and the bottom, yellow with reddish mottlings. These larvae measure up to 1 1/3 inches in length when fully grown. They are primarily foliage feeders.

Yellow-Striped Armyworm (*Spodoptera ornithogalli*)

These larvae vary in color from pale gray to jet black, but all will have two yellow stripes down the back. The gray individuals have two narrow dark triangles on the back of each segment, but these cannot be distinguished in the darker forms. The head is mostly brown. These larvae measure up to 1 1/3 inches in length when fully grown. They are primarily foliage feeders.

Webworms (Several spp.)

This may be one of three closely related species, the garden webworm (*Achyra rantalis*), the alfalfa webworm (*Loxostege cereralis*), or the beet webworm (*Loxostege sticticalis*), which cannot be easily separated in the field. Although the control is the same, please send in specimens for identification to ensure reporting. All of these larvae are greenish-yellow in color with three distinct, elongate, black spots arranged in a triangle on the upper portion of the side of each segment with the exception of the front three. The fully grown larvae measure about 1 inch in length. These larvae are foliage feeders and may move into soybean fields from other nearby crops or weeds. They usually spin webs over the leaves upon which they are feeding and have thus acquired their common name "webworms."

Woolly Worms (Family Arctiidae)

This may be one of several members of this family. The most common one in the state is the salt-marsh caterpillar (*Estigmene acrea*), which is covered with long black, brown, or yellowish hairs. The larvae of this species may become almost 2 inches in length when fully grown. The pests in this family are primarily foliage feeders. If found causing serious damage, send in specimens for identification.

Lady Beetle Larvae (Family Coccinellidae)

The body color is generally dark with bright yellow, orange, or red markings. The body is covered with numerous spines. In a few species, the body is covered with a waxy secretion and resembles mealybugs, but a check of the mouthparts will clear up the confusion. (Mealybugs have piercing-sucking mouthparts while lady beetle larvae have biting mouthparts.) The group is highly beneficial with both the larvae and adults feeding on spider mites, eggs, and young of many pests. The convergent lady beetle (*Hippodamia convergens*) is a common species.

Aphid-Lions (Family Chrysopidae)

These small active, light brown larvae measure up to 1/2 inch in length when fully grown. Both the larvae (aphid-lions) and adults (lacewing flies) are beneficial, since they feed upon insect eggs and small larvae. (Be sure that the specimen suspected of being in this group has biting mouthparts. There are several other groups, such as true bugs, Order Hemiptera, which are similar in body shape, but different from them by having piercing-sucking mouthparts.)

Use Safety Precautions in Control Practices

Due to the nature of this fact sheet and the rapid changes accompanying the use of chemicals, no control recommendations have been included in this publication. However, production practices adopted within the past two decades have made chemicals essential for efficient food, feed, and fiber production. Chemical controls are available for the pests included in this publication and will likely be used when economic levels of infestation develop. Because of this, each individual should be aware of the safety precautions necessary when using insecticides.

Improper use or failure to follow safety precautions when using insecticides may cause injury to man or animals. Pesticides should be used only when needed and they should be handled with care.

Always store insecticides where they can not contaminate food, feed, or water.

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, the 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. 0413 Revised GH.