



Field Key to Larvae in Alfalfa

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This key is designed to serve as a guide to identification of the more typical larvae of the common insect species found in Oklahoma alfalfa 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 alfalfa fields cannot be identified with this key. This would include adult insects, arthropods other than insects, and such insects as corn leaf aphids and chinch bugs, 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 alfalfa. Other keys are available for other crops and can be obtained from the local county Extension office.

Survey Methods

Insect counts in alfalfa are taken on a per 10 sweep basis during the actively growing season. Using a standard 15-inch sweep net, a sweep consists of a half circle or a 180° arc allowing the net to sweep into the foliage as the surveyor walks across the field. A sweep is taken with every one or two steps. To get a good overall count, 10 sweeps should be taken in at least 5 well-spaced places in the field. Numbers for each species should be averaged and reported as the number per 10 sweeps. Larger populations (aphids, etc.) can be reported as the number per sweep.

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Newly cut or overwintering alfalfa infestations are recorded as the number per square foot of crown. A wire form containing 1 square foot can be used as a measurement gauge. All insects within this area are counted and recorded as the number of insects per square foot. Depending on the size of the field, 3-5 counts should be taken in each field.

Newly planted alfalfa should be checked on a per linear foot basis. Count and report the number of insects present on the plants in a foot of drill row. Counts should be made in at least 5 locations throughout the field.

Descriptions of Larvae

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.

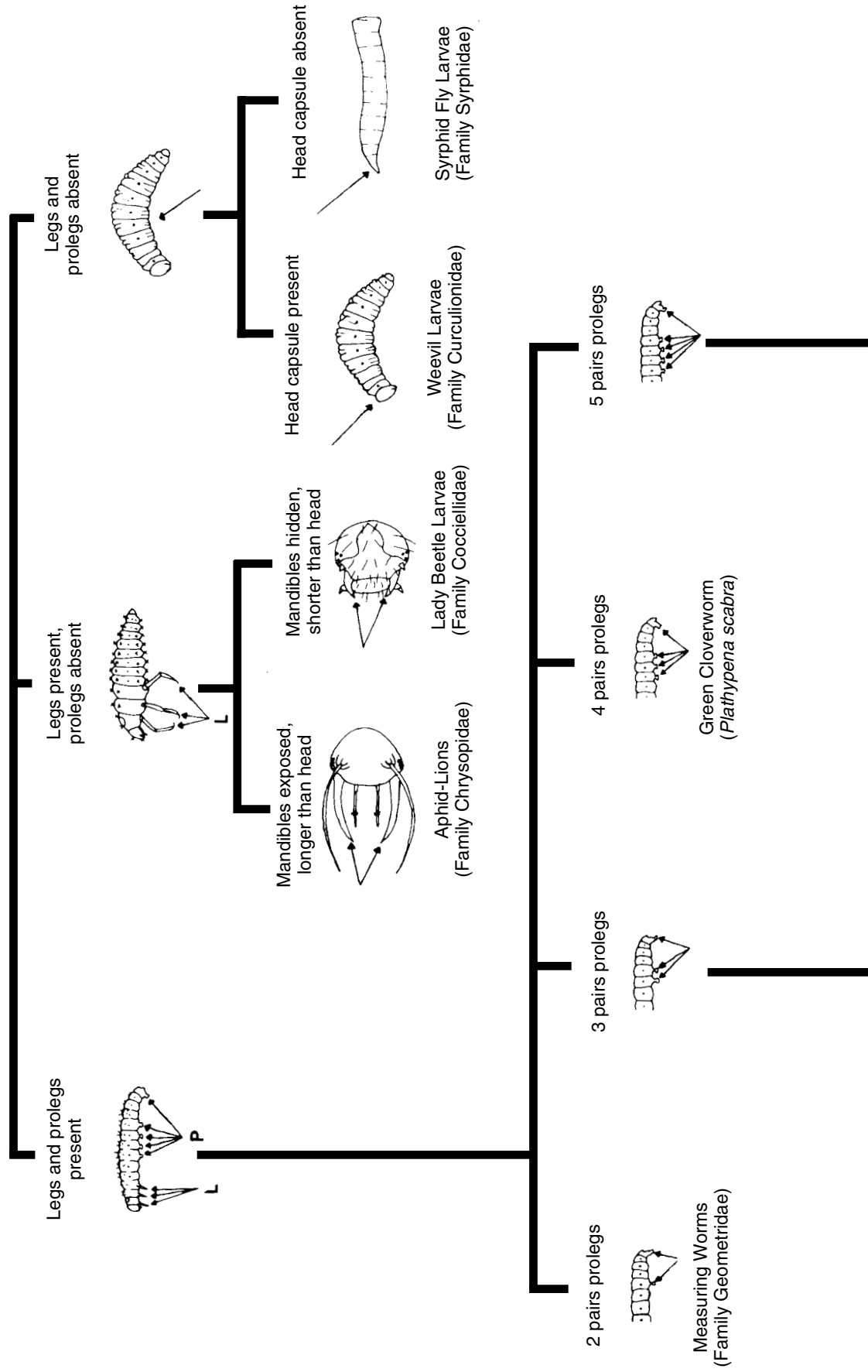
Webworms (Several spp.)

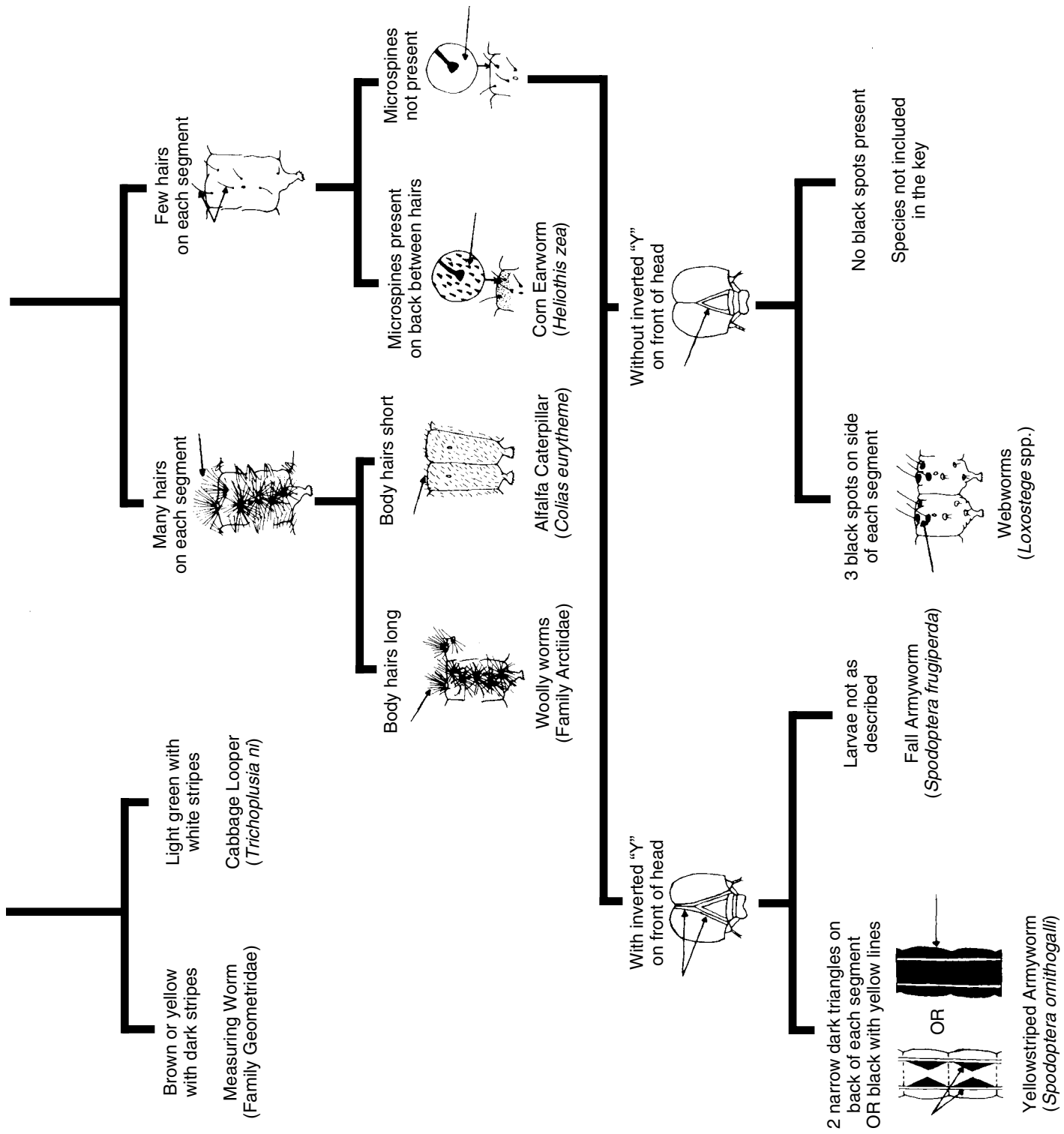
This may be one of three closely related species, the garden webworm (*Achyra rantalis*), the alfalfa webworm (*Loxostege cerealis*), or the beet webworm (*Loxostege sticticalis*), which can not be easily separated in the field. Although the control is the same, please send in specimens for identification to ensure accurate 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 alfalfa fields from other crops or weeds nearby. They usually spin webs over the leaves upon which they are feeding, hence the common name "webworms."

Green Cloverworm (*Plathypena scabra*)

This is the only species commonly found in alfalfa that has four pairs of prolegs. The body color is green. The younger

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





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.

Alfalfa Caterpillar (*Colias eurytheme*)

These larvae are covered with many short hairs. The body color is green with a narrow white stripe down each side. Inside each stripe is a very fine red line. They measure up to 1 1/2 inches in length when fully grown. They are 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.

Fall Armyworm (*Spodoptera frugiperda*)

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

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.

Measuring Worms (Family Geometridae)

These larvae may have two or three pairs of prolegs. Those with three pairs are usually brown or yellowish brown with dark stripes. They may measure 1 inch or more when fully grown. They are 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.

Weevil Larvae (Family Curculionadae)

These larvae are greenish in color, C-shaped, more or less cylindrical, and legless. Alfalfa Weevil (*Hypera postica*) is very common, but the cloverleaf weevil (*Hypera punctata*) and clover head weevil (*Hypera meles*) may also be found.

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 or tube-like mouthparts, while lady beetle larvae have biting mouthparts.) The group is highly beneficial, with both the larvae and adults feeding on aphids, spider mites, eggs, and young of many pests.

Syrphid Fly Larvae (Family Syrphidae)

This may be one of several members of this family. They are cylindrical and somewhat peg-shaped with protruberances on most segments. They usually are light green in color and the entire body is covered with short, colorless microspines. They are found crawling about on the plants, feeding on aphids.

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 aphids, 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 differ from them by having piercing-sucking mouthparts.)