



Field Key to Larvae in Sorghums

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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 sorghum 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 sorghum 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 sorghum. Other keys are available for other crops and can be obtained from the local county Extension office.

Survey Methods

Insect counts in both grain and forage sorghums are taken on a per plant or plant part basis depending on the feeding habits of the insect involved. Counts should be taken from a representative cross section of the field, the number depending on the size. At least 25-50 plants should be checked and the number of insects reported as the number per 100 heads, leaves, whorls, or plants.

Insects in sorghum are most commonly found in the whorl early in the season and in the head later in the year. These

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should be checked carefully. The head can be bent over and looked through. Then, check the ground below to see if anything fell out without being noticed. Sorghum webworm, corn earworm, fall armyworm, and sorghum midge larvae are commonly found in the heads.

Southwestern corn borer counts can be made in the fall or winter by pulling up the dead plants and cutting open the root, but normally they will not be common enough in sorghum to take the time to check for them.

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, often in the growing terminals, and on the heads.

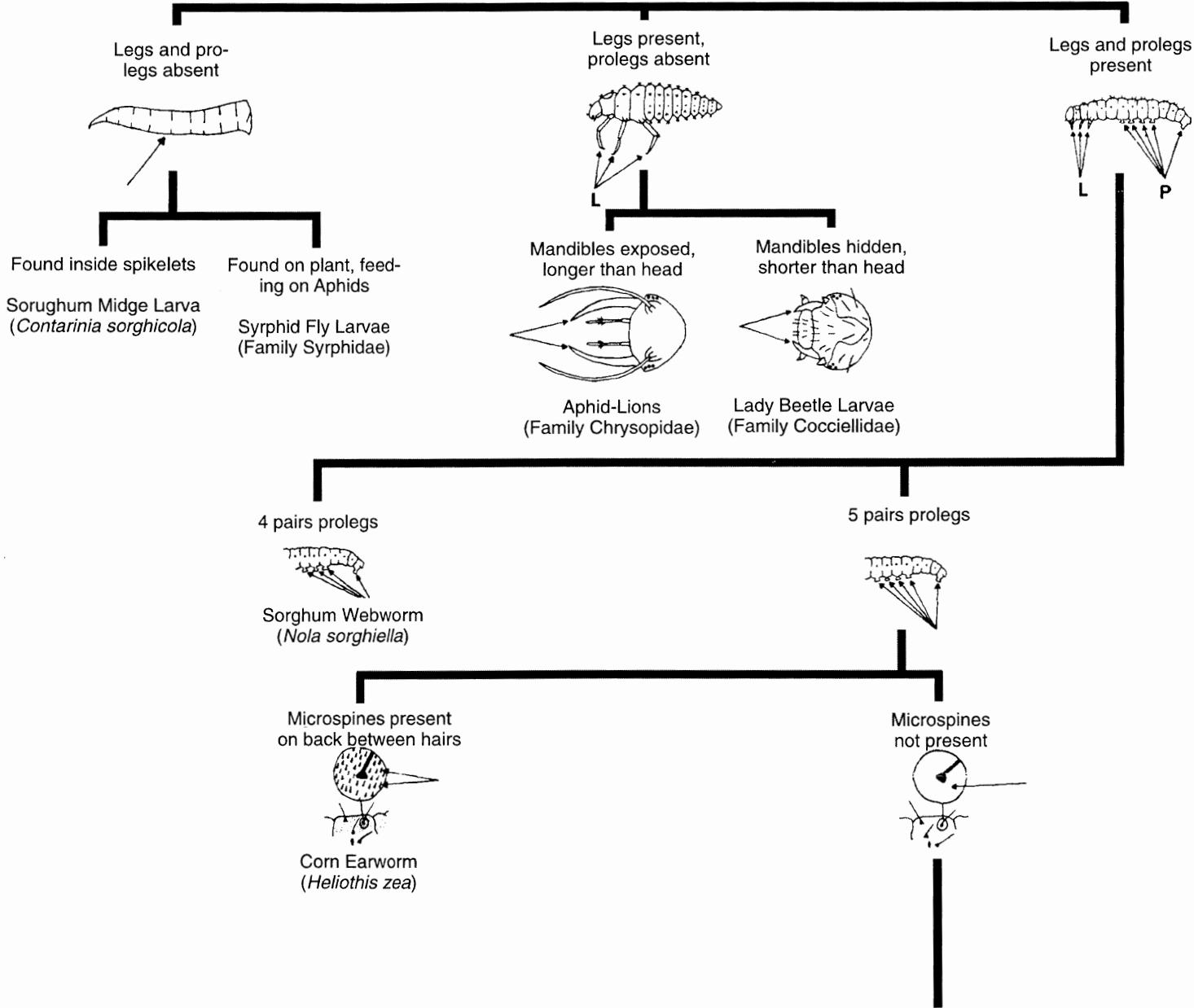
Fall Armyworm (*Spodoptera frugipedra*)

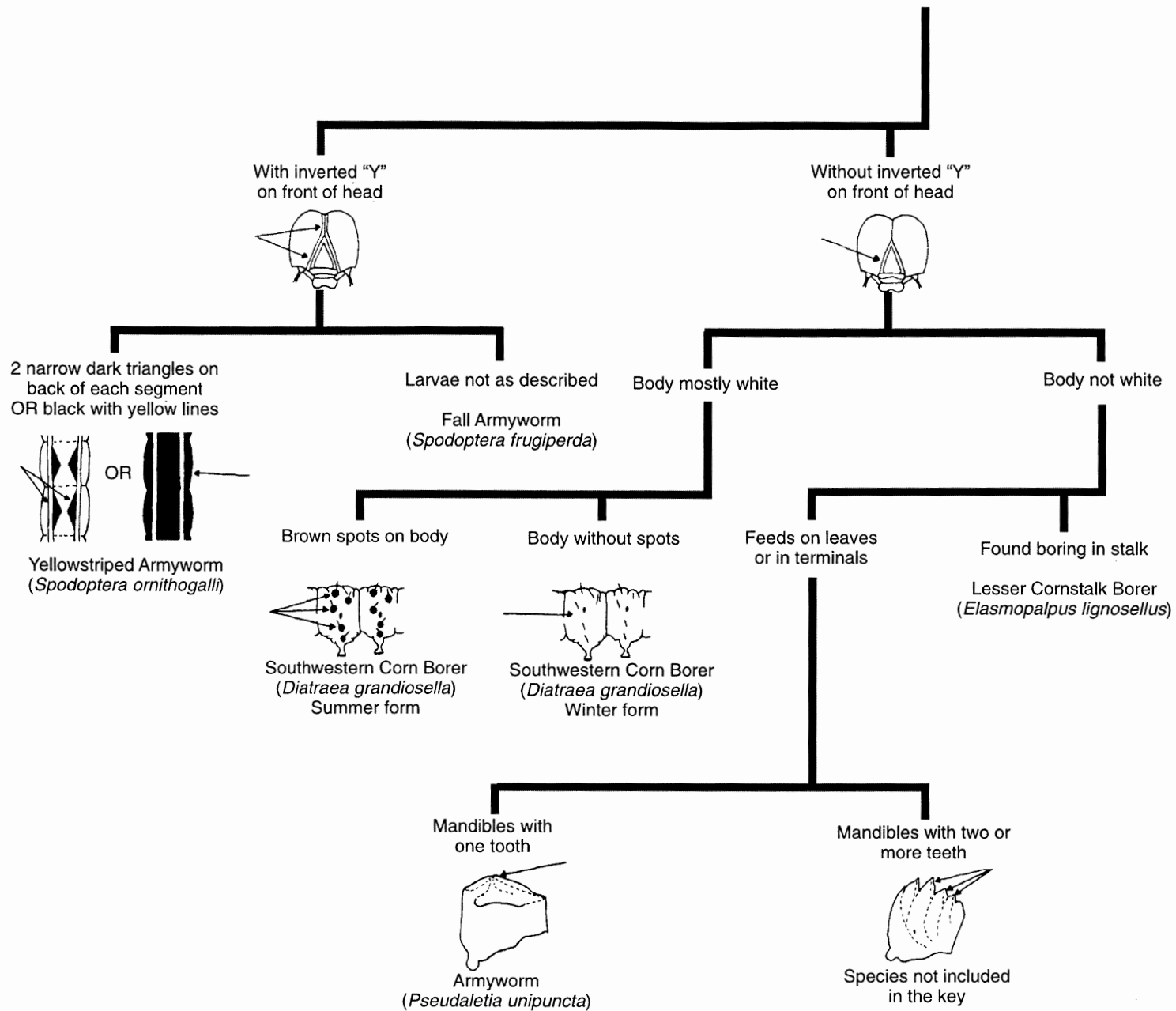
These larvae usually have a distinct, broad, white inverted "Y" present on the front of the head (not to be confused with a narrow inverted "V" found on a few other species). The body varies from light tan to green to dark brown or nearly black in color with three widely separated narrow yellowish-white 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, but will feed on the heads.

Lesser Cornstalk Borer (*Elasmopalpus lignosellus*)

These larvae are bluish-green in color with brownish lines and mottlings. There is a narrow white line down the back and a dark brown shield on the first segment. They become very excited when touched. They damage sorghum plants mainly by boring into the roots or stalks of young plants. They are not serious pests except in some dry years.

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





Armyworm (*Pseudaletia unipuncta*)

These larvae have one tooth on each mandible and these teeth are rather broad and flat. The body varies from greenish-brown to black with a narrow light stripe down the middle of the back and four longitudinal stripes on each side. The first three stripes are side by side. The first stripe is mottled brown, darker at the edges. The second stripe is an orange or brown band edged with white. The third stripe is dark and edged with white. The fourth stripe is lower on the side and pale orange edged with white in color. The skin is noticeably granulated. They measure up to 1 1/3 inches. This pest generally occurs during spring and early summer.

Sorghum Webworm (*Nola sorghiella*)

These larvae are small, sluggish caterpillars with somewhat flattened bodies, which are thickly clothed with spines and hairs. They are greenish in color and marked with four red to brown longitudinal stripes above. They have only four pairs of prolegs. They feed upon the ripening grain and do not attack other parts of the plant. The contents of the individual kernels may be partially or completely consumed, leaving only the outside hull intact.

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.

Southwestern Corn Borer (*Diatraea grandiosella*)

These larvae are mostly white in color. The summer form has twelve to fourteen brown spots on each segment while the winter (or hibernating) form is without these spots. The summer form may be found boring into any part of the sorghum plant, while the winter form is sometimes found inside the lower portion of the stalk or the root. These larvae measure up to 1 inch in length when fully grown.

Sorghum Midge Larvae (*Contarinia sorghicola*)

These small, grayish, maggot-like larvae establish themselves in and feed on the developing grain after hatching. When feeding begins, the larvae turn pinkish in color, which deepens with growth until they are a distinct red. They are found only in the spikelets soon after blooming. An infestation of one larvae per spikelet is sufficient to cause a complete loss of the grain, but as many as 8 or 10 larvae may develop on the same seed. They are about 1/8 inch in length when fully mature.

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.

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. 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 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 different from them by having piercing-sucking mouthparts.)

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