



Cutworms in Cotton

The primary cutworm species that infest Louisiana cotton are the black cutworm, the granulate cutworm and the variegated cutworm. Of these, the black cutworm is the most prevalent although the variegated cutworm can be quite damaging in epidemic years. The granulate cutworm occurs sporadically, generally with the other species.

Cutworms are early-season pests that damage cotton by reducing plant stand densities below optimum levels. Damage generally occurs in poorly drained areas where winter vegetation is still present.

Cutworms in Relation to Conservation Tillage

Cutworms have always been minor and occasional pests of cotton. In the past, significant damage to cotton stands was rare, probably because conventional land preparation practices in the spring kept fields free of vegetation long before cotton was planted. In recent years, however, the recent increase in reduced tillage programs has increased cutworm problems. Cutworms are now a more consistent threat because cover crops or natural vegetation are allowed to grow on fields until shortly before seed is planted. This spring vegetation attracts cutworm moths to lay eggs, and the resulting caterpillars are still present when cotton emerges.

One common production strategy in Louisiana is absence of spring tillage, which is often referred to as the stale seedbed practice. Beds are prepared in the fall, and they are not disturbed again until planting time. Spring vegetation is controlled with herbicides shortly before planting. A reduced tillage program is not the only situation in which cutworms can damage cotton stands, but it increases the probability of such a problem.

Another cutworm situation, closely related to the stale seedbed problem, sometimes occurs in conventional tillage. Under the conventional system, a cutworm problem may result from weather delays that allow vegetation to develop on newly prepared beds before the crop can be planted.

Two main strategies used to terminate cover crops and natural vegetation covers during the spring are tillage and

herbicides. Cutworms can be a problem in cotton behind either practice, but the bigger problem follows herbicide use. Both methods reduce cutworm densities by removing the cutworm's host plant material. Tillage can also control cutworms as the implements till the soil. In fact, research indicates that tillage alone can reduce cutworm damage, but it may not eliminate the problem. A key factor to managing cutworms in a reduced tillage system is the length of time between the destruction of the vegetation and the emergence of cotton. The longer that period, the less likely it is that cutworms will damage the emerging cotton. Research indicates that the interval between these two events should be at least three weeks to avoid damage. Most cutworms will pupate or starve during this fallow period.

Research and experience indicate that all winter cover crops are not equally attractive to cutworms. The most attractive are legumes such as crimson clover, hairy vetch and winter peas; however, grass cover crops such as wheat, oats and rye are not as attractive and are not as likely to result in cutworm damage to the following cotton crop. This assumes that the grass cover crop is relatively free of weeds that might otherwise attract cutworms. Native vegetation can act as a reservoir for cutworms, depending on the weed species present. Many winter and early spring weed species are good hosts for cutworms.

Description and Field Identification

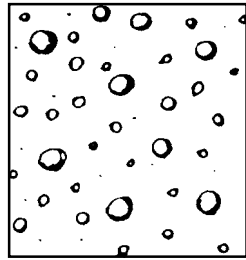
All cutworms share certain larval characteristics. They have three pairs of legs (one pair per body segment) behind the head and five pairs of blunt, fleshy prolegs on the abdominal segments. Four pairs of prolegs are on the middle abdominal segments, and the fifth pair is on the last abdominal segment. All have this same configuration of legs, but not all caterpillars with this configuration are cutworms.

The cutworm species commonly found damaging cotton in Louisiana are generally greasy or dirty-looking caterpillars. They are dull or bland, ranging from gray to

brown, with few or no bright contrasting color patterns. During the day, cutworms usually hide just underneath the soil surface, in contrast to other caterpillar pests that remain on the plant at all times. Also, some cutworms will curl up in a "C" shape and remain motionless when disturbed.

Black Cutworm

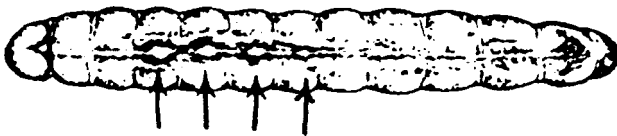
Black cutworm caterpillars are gray to brown and generally look greasy. The head is brown with heavy dark markings. The black cutworm differs from other cutworms in that the skin has numerous convex, coarse, rounded granules with smaller granules between them. This characteristic may require magnification to be seen.



Skin of the black cutworm (under magnification).

Variegated Cutworm

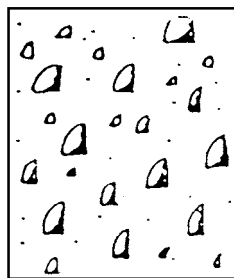
Variegated cutworm caterpillars have a smooth skin that is ash or light brown and mottled with darker brown spots or blotches. Their main characteristic is the series of yellow spots down the center of the back. These spots are normally more noticeable behind the head on segments four through seven.



Back of the variegated showing yellow spots.

Granulate Cutworm

The general color of the granulate cutworm caterpillar is gray, and they look dull and dusty. The body of the worm is flecked with white on the top and irregular dark brown areas on the underside. The head capsule is light brown with heavy dark brown markings. The skin of this cutworm has blunt, cone-shaped granules that project toward the rear of the worm.



Skin of the granulate cutworm (under magnification).

Biology and Field Habits

Black Cutworm

The female black cutworm moth lays her eggs singly or in small clusters of 10 to 30. Eggs are deposited on the leaves and stems of low-growing vegetation or surface debris. The moths are especially attracted to low elevation land or low areas of a field where water has stood. They prefer moist, firm land. Each moth will lay about 1,000 eggs that will hatch in three to 10 days. The caterpillar stage lasts about four or five weeks, during which the black cutworms go through six or seven growth stages referred to as instars. The full-grown caterpillar will be about 2 inches long. The pupal or resting stage requires about 12-15 days before it emerges as an adult moth. There are five to six generations per year in Louisiana, and the insect normally overwinters as a pupa in the soil.

The black cutworm has a wide host range that includes cotton, corn and a variety of truck crops. It has worldwide distribution.

The black cutworm feeds mainly at night. It is inactive during daylight, usually hiding beneath the soil surface or under dead vegetation. If the soil is wet and firm, this cutworm may burrow 3 to 4 inches beneath the surface. In some crops, black cutworms have been known to drag cut plants or plant parts into the burrow. In cotton, black cutworms can often be found in the seed furrow if the soil is relatively dry.

Black cutworms are destructive out of proportion to the food they consume because their cutting behavior destroys many plants not entirely consumed. In cotton, the black cutworm is mainly a pest of seedling plants soon after emergence when the stalks are soft and tender. This cutworm will often work its way down the seed furrow, cutting several plants in a row. The black cutworm damages cotton by reducing the plant population or stand below an optimum density. If the stand loss is excessive, then the field may require replanting, resulting in a late crop.

Variegated Cutworm

The adult variegated cutworm moth lays her eggs in clusters of 60 or more on stems and leaves of low plants. Each female moth may lay as many as 2,000 eggs. Eggs hatch in four to nine days; the larval stage, which has seven instars, lasts from four to six weeks. The fully grown caterpillar is about 1 1/2 inches long. Afterward, the larvae pupate for 12 to 23 days before adult moths emerge. There are usually four or five generations per year in Louisiana. The highest populations occur in April and May. In colder climates, the variegated cutworm overwinters as a pupa in the soil, but in Louisiana moths may be present year round.

The variegated cutworm has a wide host range that includes most field and vegetable crops. In Louisiana, high populations usually build up in winter legumes such as clovers and vetch, and then they move to cotton when the legumes are no longer attractive.

The variegated cutworm is much less subterranean than the black cutworm. In crops, such as corn and alfalfa, it is referred to as a climbing cutworm because it moves up the plant to feed on the foliage. It feeds mostly at night, but it may be active during the day, too, especially on cloudy days. Variegated cutworms usually hide or rest during the day, but they are not necessarily beneath the soil surface. They may also hide beneath surface trash or under objects. In some crops, they are found resting on the host plant or exposed at the base of the plant. In general, the early caterpillar stages tend to rest on plants, and the larger caterpillars have a tendency to hide during the day. Also, this cutworm can assume the armyworm marching behavior if heavy populations develop.

The variegated cutworm is primarily a threat to seedling stage cotton. It damages the crop by reducing stands below the optimum plant population. This cutworm can cut seedling cotton plants in the same manner as the black cutworm, but it will sometimes cut them higher up on the stem, below the cotyledons. Also, the variegated cutworm may actually climb small cotton plants and feed on the foliage. In cotyledon stage cotton, these cutworms may cut the cotyledons and leave a bare stem. Black cutworms will occasionally follow this same feeding behavior, but it is not as common as the variegated cutworm.

Granulate Cutworm

The female granulate cutworm moth will lay about 1,000 eggs, either singly or a few together. Eggs are normally deposited on the upper surfaces of host plants. The eggs hatch in about five days, and the caterpillar stage, which includes seven instars, lasts about four or five weeks, depending on temperatures. Afterward, the caterpillars pupate for about 21 days before emerging as adult moths. In Louisiana, there are four to six generations per year. The granulate cutworm will overwinter in colder climates as a pupa in the soil, but in Louisiana adult moths can be collected year round and caterpillars can sometimes be found feeding in winter.

The granulate cutworm has a wide range of host plants, although it is especially fond of legumes and vegetables. This cutworm damages crops in two ways. First, larvae can cut off small, seedling plants near the surface of the ground. Also, they can climb larger plants and feed on the foliage.

The granulate cutworm generally feeds only at night and hides during the day beneath the soil surface or surface trash. The caterpillars will sometimes expose themselves during the day if the weather is cloudy or overcast. Also, the

first few days of the caterpillar period are spent on the host plant before this cutworm adopts the nocturnal behavior typical of cutworms.

The granulate cutworm normally damages cotton by cutting small seedlings near the soil surface, thus causing stand loss. This cutworm can survive on dry plant material for at least a month. This ability increases its chances of survival during the time between the destruction of winter vegetation and the emergence of seedling cotton.

Field Scouting and Damage Evaluation

Cutworms are usually easy to control in cotton, and economic damage is avoided if a significant stand loss does not occur before the infestation is detected. Timely field scouting is the key to management. Cotton should be scouted at least weekly immediately after the crop emerges. This is especially important in reduced tillage fields where the probability of cutworm damage is higher.

When scouting for cutworms, you must inspect all areas of a field because this pest may not be evenly distributed. Damaging populations of cutworms often occur in “hot spots” such as the low, poorly drained areas. It is usually more practical to scout for cutworm damage, because the cutworms themselves normally hide during the day. After the damage has been detected, then it becomes more practical to find the cutworms. Although some foliage feeding may occur, the primary method in which cutworms damage cotton is by cutting plants at or near the soil surface. After plants are cut, they will lean over and begin to wilt. Wilting will progress until the damaged plant dies. Many times cutworms will work down the seed row, cutting several plants in succession. This results in a row of adjacent plants that show progressive stages of wilt between healthy, undamaged plants and dead, dried plants. Although cutworms are often hidden during the day, they can usually be found in the vicinity of their damage, assuming that the damage is fresh.

Look for them close to the plant with earliest wilt symptoms or the first healthy plant adjacent to a damaged plant. Cutworms will seldom be found close to dead plants, because these represent old feeding activity. Once fresh cutworm damage has been located, the cutworm can usually be found either beneath the soil surface, perhaps in the seed furrow, or under dead plant debris. The variegated cutworm is an exception, because it is sometimes found on the plant or in other exposed areas.



Crop damage from these pests is not necessarily determined by the number of plants that have been cut, because cotton can compensate for losses in plant population. If the cotton stand retains at least one plant per foot (not an average of one per foot), there may not be a yield reduction. The effect of cutworms on yield is determined more by the intra-row skip or distance between undamaged plants and the number of intra-row skips in the field. In some situations, it may be necessary to replant only in spots or areas of a damaged field.

Control

There are several ways in which a field can be treated with insecticide for cutworm control. The first is preventive. The standard practice is to apply an insecticide in a band behind the planter. In some situations it may be possible to include a cutworm insecticide as a tank mix when spraying a fungicide in-furrow or when spraying a pre-emergence herbicide on a band. Also, you could choose an in-furrow product for thrips control that has good cutworm activity. These products are applied at planting with the assumption that cutworms are present and will be a problem. Cutworm insecticides can also be applied post emergence, either broadcast or in a band, as a corrective treatment; however, the infestation must be detected before a significant stand loss occurs. One final option is to apply an insecticide treatment tank mixed with the burn down herbicide application. Refer to Extension Publication 1083 for the current insecticides recommended to control cutworms.



Cutworm.

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