

Cutworms in Seedlings

We have had reports of cutworm damage in direct-seeded and transplanted corn and brassicas. These can also cause damage in peppers, tomatoes, and eggplants.

Monitoring. Scout weed borders before plantings go in. Check newly transplanted crops to look for damage: clipped stems or leaf feeding (some cutworms climb up into foliage). If you find clipped transplants, you can usually find the larva in the soil near the plant. Estimate % stand loss to determine need for a spray.

In sweet corn, Rutgers suggests inspecting 20 plants at 5 sites (total 100 plants). Threshold is 3% (3 or more plants damaged). Damage may be more concentrated around field edges.

Life cycle and identification. There are many species of cutworms that attack vegetables including black cutworm, variegated cutworm, dingy, spotted, dark-sided, or glassy cutworm. Spotted and variegated cutworms climb and feed above-ground, and black cutworms climb when they are young (less than half an inch long). Cutworms can be difficult to identify. Variegated cutworm has some pale yellow markings on its back, while black cutworm is nearly uniform gray to black with a greasy, rough appearance.

Adults of all cutworms are moths with dark gray forewings, often with various lighter or darker markings, and lighter hindwings. They are in the same group of moths (noctuids) as the corn earworm, fall armyworm, and cabbage looper, but with very different life cycles and habits. They are capable of migrating long distances but it is very likely our own resident populations which are causing problems. Black, spotted and variegated cutworm have at least two generations per year in this region.

Black and variegated cutworms spend the winter in the larval or the pupal stage as deep as 5 inches (12 cm) down in the soil. Spotted and dingy cutworms overwinter only as larvae. It is these larvae that are present in the soil at planting time, ready to feed on early spring transplants and seedlings. They may be of varying sizes. Young black cutworm larvae are more likely to feed on plant foliage. Older larvae feed on stems near the soil line during the night and descend into the soil during the day. They clip stems of young seedlings and are reported to feed on the wilted plant material. Larval development takes about a month (28-34 days).

Adults emerge from overwintered pupae in May or June, and from pupae of spring-feeding larvae later in the season. At one site in Easthampton, a

pheromone trap has been catching 10-20 black cutworm moths per week for the past two weeks. Females lay eggs on grass leaves, weeds, or the soil surface. Attractive habitats include weedy or grassy areas, and alfalfa; corn and soybeans are among the least attractive hosts. Black cutworm moths are reported to select low spots in the field, that has been waterlogged or flooded for egg laying. Egg are also concentrated on low-lying vegetable such as chickweed, curly dock, shepherd's purse, peppergrass, mustards such as yellow rocket, or plant residue from the previous year's crop. Note that the above list includes lots of winter annual weeds that grow in the fall - weeds that we often overlook.

Cultural Management. Weedy land harbors the most cutworms, as the adult moths seem to prefer dense plant cover for egg laying. Crop residues may also attract higher populations. Therefore, crops that follow weedy crops, alfalfa, or no-till crops are more likely to be damaged by cutworms. Plant early transplants into fields that had low weed pressure the previous year, especially in the fall, or where crop residue was tilled under in the fall. There seems to be little information about specific relationships between what cover crops are planting in the fall, and cutworm infestations in the following year.

Plow fields in spring and keep weed free for at least two weeks before planting to starve young larvae and reduce egg-laying. Avoid planting susceptible crops close to sod, alfalfa or fallow areas. Summer plowing disturbs eggs and larvae and raises them to the soil surface where they are more vulnerable to predation and dessication. Fall plowing will do the same. Plan rotations to avoid planting vulnerable crops after a grassy sod, and plow sod fields in later summer or early fall.

Cultivate frequently to injure and expose hiding cutworms to predators. Daily search and destroy missions -- by hand -- are a time-honored "biological" management for small plantings!

Chemical Management. Postplanting treatments for corn include Asana, Baythroid, Lorsban, Ambush/Pounce or Warrior. For cole crops, Ammo, Asana, Lannate, Lorsban and Warrior are labeled on certain crops. A new material, Confirm, is labeled for cutworms on cole crops. Check labels for restrictions. For best results apply in the evening just prior to active feeding. Consult the *New England Vegetable Management Guide* for more details.

Biological management. Several predators and parasites have been identified, however none have been commercialized for release against these pests. At Iowa State University, a new baculovirus has been isolated from black cutworm, which is highly active and has potential as an alternative to chemical control. Soil applications of nematodes (*Steinernema carpocapsae*) can reduce cutworms and

last for anywhere from 8 days to several weeks, according to various research trials. Good soil moisture favors survival. Repeat applications may be needed.

Other organic options. This is a tough pest for organic growers as no effective insecticides when outbreaks occur. Strategies such as cardboard or tinfoil collars are impractical on a commercial scale. Eric Sideman, technical advisor for Maine Organic Farming and Gardening Association (MOFGA) reports that insecticidal baits have been effective. He recommends a recipe using a very concentrated solution of Bt, mixed with bran and a bit of molasses. It can be sprinkled on the ground near the crops or made into patties that are placed along the rows. Bt sprays (ie, *Bt aizawi* or *kurstaki* directed at plant stems and foliage) are reported to work sometimes, but not consistently, possibly because large cutworms do not ingest a big enough dose of BT to stop feeding and die before they have caused damage.

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