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INSECT DIAGNOSTIC LABORATORY
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Cabbage Maggot

Delia radicum (Linnaeus); Family: Anthomyiidae

Cabbage maggots infesting the roots.

Injury

The cabbage maggot can seriously injure cabbage, cauliflower, turnip, radish, and related crucifer crops. Early planted crucifers, or seedbeds of late ones, are more likely to be attacked.

The young maggot begins feeding on the tender rootlets and then rasps out a channel in the main root of the plant. An early indication of attack to the cabbage plant is the symptom of the plant wilting badly during the heat of the day. The plants may take on a bluish cast. The plant either dies in a few days or persists in a sickly condition for some time. In cases where the plant dies quickly, there usually are a large number of maggots that riddle the root, making way for decay organisms to get in and take over quickly.

If such a plant is dug up, one should be able to see the whitish maggots, which may at first resemble a grain of rice, in the soil around the roots of the injured plants. Brown tunnels in stems or roots of older plants are also evident

Description

Cabbage maggots are true flies (Diptera), closely related to the seed corn maggot. The adults are gray, long-legged flies a little smaller than the common house fly. Home gardeners seldom see them. The larvae (maggots) are white, legless, tapered toward the head, and have hook-shaped black mouthparts that curve downward, for rasping plant tissue. The root maggot grows to 1/4 to 1/3 inch in length. The mature larvae develop into pupae, reddish or tan capsules resembling grains of wheat, in the soil near the plant. From these, the adult flies later emerge.

Life History

The adult flies emerge from the soil where they overwintered as pupae, at about the time the first crucifer plants are set in the garden. The females either tuck the eggs down between the plant stem and the soil of transplants, or lay eggs in a recently planted field so that the young plant is attacked at emergence. Soils with high organic matter content are preferred by the flies.

Eggs hatch in 4 to 10 days, and in about 3 weeks maggots are full-grown. The pupal stage lasts 12-18 days before adults emerge.

In New York State, there may be four broods of cabbage maggot each year. Plant phenological indicators as well as approximate calendar dates are indicators of brood occurrence. The first brood occurs in late April through May when Yellow Rocket is flowering, depending on location in the state. The second brood appears in late June to mid-July when Daylily is blooming; the third in mid-August when Canada Thistle and Goldenrod are in flower, and the fourth, in the fall when New England Aster flowers. Generally the first brood is the most destructive in upstate New York; however, on Long Island the trouble occurs for a longer period.

Management

Crop rotation will help to reduce cabbage root maggot populations. Crucifer crop debris should be destroyed right after harvest. The early broods are the most important ones, because plants (transplants and direct seeded) are small, and very susceptible to attack. Older plants are more tolerant of injury. Radishes in home gardens can be grown in successive plantings, seeding at weekly intervals -- in this way some will avoid damage. Infested radishes act as a trap crop and should be pulled and destroyed (not composted) as soon as noticed.

The best control is to prevent the flies from laying eggs in the first place. Barriers such as lightweight row cover fabric can be used. Row covers work well, but be sure to bury the edges, otherwise flies may emerge under the cover and damage the crop. Allow the cover to be loose enough so plants have room to grow. They can be effective as long as 1) there are no gaps or tears in the material; 2) the material is placed over the crop before or immediately upon crop emergence or transplanting; and 3) crops are rotated, so no hosts of the pests were grown on that site the previous year.

Ground shields constructed of tarpaper or old carpeting may also be used. The shield will serve as an egg-laying barrier to adult flies. The shields are cut into 6-inch squares or 10-inch circles with a small hole in the center and a slit is cut to the center. These are placed around the base of the transplant. Press them against the soil so adult flies cannot crawl underneath.

No pesticides are recommended for home garden use. Entomophagous nematodes (of the type used against soil grubs) may be used according to package directions, but are not widely available. Often by the time the injury is noticed, the plants will not recover, and discarding plants may be the best option.

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