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vegetable crops

Cooperative Extension New York State Cornell University

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colorado potato beetle

Leptinotarsa decemlineata (Say)

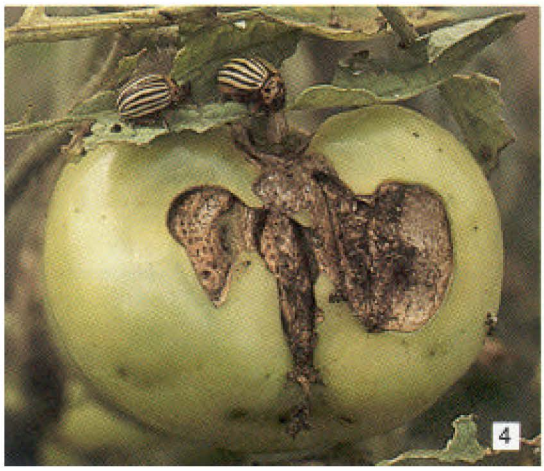
Introduction

The Colorado potato beetle, a native American insect, has spread around the world since its discovery in 1824 on the eastern slopes of the Rocky Mountains in the Colorado-Nebraska area where it fed on a weed in the potato family. As pioneers moved westward, taking the cultivated potato with them, the insect shifted its feeding to potatoes. The insect has one, two, and occasionally three generations a year in the Northeast and overwinters in the adult or beetle stage. Both larva and adult of Colorado potato beetle are a major pest of potato and feed, also, on tomato, eggplant, tobacco, pepper, and many weed species.

Adults

The "potato bug" is one of the best known beetles in America. The adult beetles have alternate black and yellow

Egg Larvae Pupa Adult



stripes that run lengthwise on the wing covers—five of each color on each wing cover (fig. 1). The beetles are about 3/8-inch (9 mm) long by 1/4-inch (6 mm) wide and strongly convex above. Adults overwinter by burrowing under leaves in hedgerows and adjacent woodlands bordering potato fields or by digging directly into the soil in potato fields. Beetles emerge in late April and early May to seek food and start egg laying. A female may lay 500 or more eggs during her 4-5 week life span after spring emergence.

Eggs

The orange-yellow eggs are deposited in small clusters on the underside of the leaves of the host plant (fig. 2) and are attached by the end of each egg. Egg masses may contain 20-40 or more individual eggs. Eggs hatch about one week after they are laid; the length of the incubation period is affected by prevailing temperatures.

Larvae

The eggs hatch into small, humpbacked, reddish larvae with chewing mouthparts (fig. 3). They grow very fast, passing through four instars or stages, similar except in size, until full grown at slightly more than 1/2 inch (13 mm) in length in 2 1/2-3 1/2 weeks. Each larva has two rows of black spots down each side of its body. The markings are very prominent during the final larval stages. Larvae usually feed in groups and can rapidly and completely devour the leaves of the host plants. At the end of the fourth stage the mature larvae leave their host plant and tunnel into the ground adjacent to the plants on which they are feeding.

Pupae

The full-grown larva burrows into the soil to a depth determined by factors such as soil type, temperature, and moisture. There it makes a spherical cell and transforms to a yellowish, motionless, pupal stage. During this stage, which lasts from 5-10 days, it is transformed from larva to adult. When the adult beetle emerges it feeds for several days, mates, and lays eggs for the next generation.

Damage

Under heavy infestations, severe defoliation results from the feeding of both the larvae and adults. Both stages also feed on the leaves as well as the small developing tomatoes (fig. 4) and eggplants which render the mature fruit unsaleable. Extensive defoliation serously reduces potato yields (fig. 5). In areas where homes are adjacent to potato fields, beetles seeking hibernation sites in the fall may become a nuisance on the walls and at doorways and windows where they congregate.

Control

Numerous natural control organisms exist in the field. Both parasites and predators are useful. A fungus *Beauveria bassiana* has shown promise in other parts of the world and is now under intensive study for its possible managed use in the Northeast. Under intensive monoculture these natural controls do not suppress adequately the Colorado potato beetle populations to allow for maximum potato production.

In many areas of the Northeast the Colorado potato beetle has become resistant to most pesticides. Control is further complicated by the ability of the species to produce thousands of new eggs per acre.

Consult your local extension recommendations to determine which pest management practices are most effective in your area.

Evaluating Populations

Because this insect occurs in large numbers during the growing season, it is important to assess populations as they emerge from overwintering sites and migrate to their spring host plants. Early planted potatoes may be used as a trap crop to determine the time and magnitude of spring emergence in the field. An adequate monitoring system has not yet been devised to satisfactorily forecast potential plant damage and subsequent yield loss based on population levels in a particular planting. A thorough assessment of egg mass and larval and adult numbers per unit area or row length will be of value in determining proper use and timing of spray applications.

Quantity Discount Available

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