Corn Earworm, Tomato Fruitworm, Bollworm

Order: Lepidoptera, Family: Noctuidae, Species: Helicoverpa zea

Description:

Immature stages: Eggs are pale green when laid, turning yellow and darkening with age. Eggs are flattened sphere shaped with ridges radiating from top-center. Larvae range in size (1.5 mm – 25 mm). Larval head tends to be orange or light brown with white net-like markings. Body color may be brown, green, pink or sometimes yellow or near black. Larva usually has broad dark lateral line above the spiracles and light line below spiracles. The key characteristic is presence of black microscopic spines on the cuticle which separates it from most other larvae except the tobacco budworm. *Adult stages*: Medium sized moths with wingspans of 32-45 mm. Variable in color, but front wings are usually yellowish-brown and bear small dark spot near the center. Forewings usually have darker band near the end of the wings, but the margin is not darkened. Hind wings are creamy white with a broad dark band near the margins, but the margin of the hind wing is creamy white.



Early instar larva

Biology:

Life Cycle: Eggs are deposited individually on leaf tissue in most vegetable crops or corn silks and hatch in 3-4 days. Eggs are laid on leaves, squares and blooms in cotton. Females can lay about 35 eggs per day with 500 - 3,000 over their lifetime. Larvae can feed and develop on foliage but prefer fruiting structures. Older larvae are cannibalistic; thus, individual fruit usually produce a single larva. Larvae develop through 5-6 instars in 14-21 days, then fall to the ground to pupate in the soil. The pupal stage lasts about 13 days in summer and will overwinter in the soil beginning in late fall. Distribution: This pest has a very wide host range in the southeast of both vegetable and row crops. It can attack crops throughout most of the spring through fall production season, but early planted spring crops avoid heavy pest pressure as they are completed before populations increase, whereas, late fall crops frequently experience low pest pressure as populations decline with cooling temperatures. Late spring, summer and fall crops of favored hosts (sweet corn, tomato) can experience 100% fruit damage if not controlled.

Damage:

Damage is caused by the larvae, which have chewing mouthparts that remove plant tissue. Although larvae can feed and develop on leaf tissue, the preferred feeding sites in most crops are reproductive structures, such as corn ears, tomato and pepper fruit, and cotton squares and bolls. Early instar larvae will attack fruit without any leaf feeding. In corn, the larvae enter through the silk channel and generally are restricted to the tip of the ear. The cannibalistic nature generally results in a single larva developing on a single ear of corn. In fruiting vegetables and cotton, a single larva frequently damages more than one fruit.



Late instar larva



Adult moth

Management:

Adults can be monitored with pheromone or blacklight traps to estimate when moths are active. This can provide a measure of relative densities or peak activity but generally just cues scouts to search more thoroughly for the larvae.

Corn: In sweet corn, this pest is generally controlled with scheduled applications of insecticides (frequently daily) during the silking period. Eggs are frequently deposited on the silks and hatching larvae will immediately feed on silks. Once larvae enter the silk channel, they are protected from insecticides. While applications every two days can provide protection equal to daily applications when pest pressure is low (Spring), under heavy pest pressure any disruption of this schedule can result in significant damage and growers may spray twice daily at times.

Fruiting Vegetables: In fruiting vegetables, larvae generally remain partially exposed providing better control with insecticides. Thus, scouting for eggs, larvae, and damage, and treating with insecticides as needed is generally practiced, although thresholds used are usually the presence or absence of this pest.

Cotton: In cotton, larvae feed in terminals and fruiting structures. Scout for eggs and larvae and treat with recommended insecticides when thresholds are exceeded. Transgenic cottons containing 2 or 3 Bt genes are effective management tools for bollworm. Three gene Bt cottons provide increased control of bollworm compared with 2 gene Bt cottons. However, no Bt cotton is immune to bollworm and scouting will be needed.

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