VEGETABLE CROPS

Cooperative Extension New York State Cornell University

Page: 793:00
Date: 6-1983

stalk borer

Papaipema nebris (Guenee)

Introduction

The stalk borer is a native American insect which was mentioned as a pest in Massachusetts and Pennsylvania prior to 1852 when it was first described as a species. The stalk borer belongs to the large group of noctuid or night flying moths, the larvae of which bore into the stems and roots of annual and perennial plants.

It is widely distributed in the United States from the Atlantic Coast west to the Rocky Mountains and from southern Canada and the New England states south to the Gulf of Mexico. Although this native insect normally feeds on wild grasses and weeds, it readily attacks plants in 44 families, including many cultivated plants such as asparagus, buckwheat, corn, eggplant, potato, tomato, and wheat. This insect overwinters in the egg stage and there is a single generation a year.

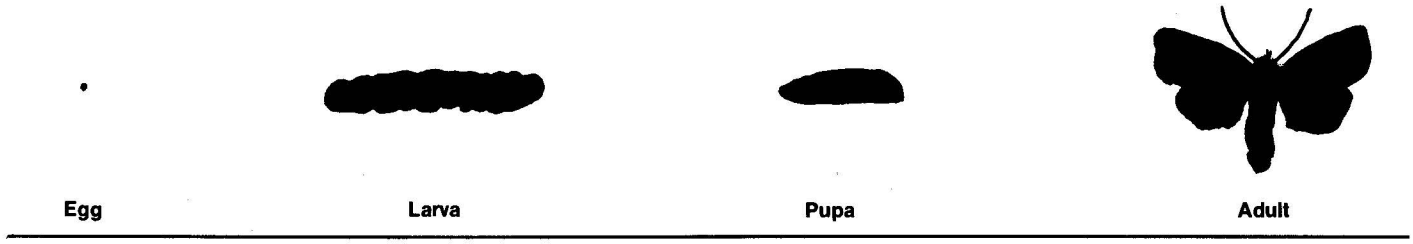
Adults

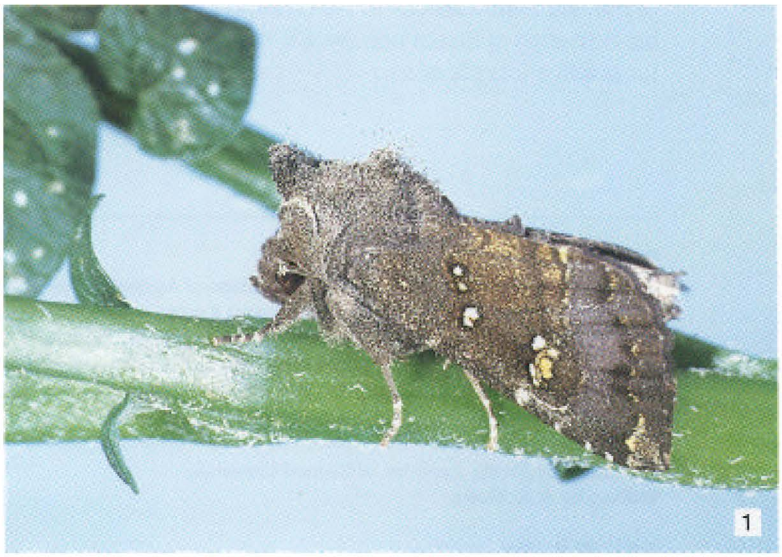
The adult stalk borer (fig. 1) has a reddish-brown background color with scales tipped with gray or white to produce a mouse or fawn-gray color. The forewings are colored with varying shades of brown with sprinkles of gray. There are two color variations of this insect, both a light and a dark form. Hind wings are a pale grayish brown to smokey above, fawn gray below. Wing span of the moth is 1-1½ inches (25-38 mm).

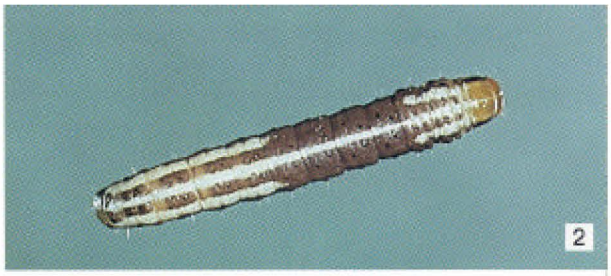
Egg laying takes place in late August and during September. The female moth deposits her eggs singly or in masses (of from 2-100) on the leaves and stems of dead grasses and weeds. The eggs are most frequently placed between the leaf sheath and the stem, but may also be placed in rolled or folded leaves.

Eggs

The egg stage, as the overwintering stage, varies from 7.5-8.5 months in duration. Hatching occurs from late April until late May. The eggs, circular in cross section and some-







what flattened, are pearly white when first laid. In 24-48 hours they change to a brownish gray or amber and remain nearly unchanged until 2-10 days before hatching. At that time they become very dark, nearly black in color.

Larvae

Newly hatched larvae appear during late April and begin to feed on young grasses and weeds. Larval hatching may occur as late as mid-June due to an extended hatching period. The number of larval instars required to complete development varies from 7-16 with an average of 8 depending upon the kind and quality of food upon which the larvae feed. The newly hatched larvae have a dark brown to black head, which becomes yellowish in the third and subsequent molts. The body is moderately slender, tapering toward both ends. A characteristic color pattern is evident in all but the last instar. Ground color is a dirty white; a brownish purple band (fig. 2) crosses the body behind the head with dark stripes running both forward and back from the dark band. The dark band and line are absent when the larva is full grown (fig. 3) at 1-1¼ inches (26-32 mm) in length. The larval stage lasts from 9-18 weeks.

Pupae

When the larvae become full grown they desert their host plant and form a small oval cell just below the soil surface. In a few instances, when the borer is feeding on corn, burdock, or other large stemmed weeds, pupation occurs in the larval feeding burrow. The pupae are light to dark brown depending on age and are from ⅝-⅞ inch (16-22 mm) in length. The pupal period varies from 16-40 days depending on temperature. Moths emerge during late August and early September.

Damage

The larva is the damaging stage of the stalk borer. After hatching, the larvae feed on grasses and eventually move to thicker stemmed plants where they continue to feed throughout the summer. In early spring, newly hatched larvae may appear as miners in the cotyledons or leaves of plants, whereas in grasses they usually work directly into the main stem. When the initial host dies, the larva migrates to another plant where it burrows into the main stem. As the larvae increase in size they find grass stems unsuitable for their needs so transfer their activity to larger stemmed plants such as corn, potatoes, tomatoes, or large stemmed weeds such as dock.

The larvae and damage of this insect may be confused with the European corn borer, smartweed borer, or the potato stem borer.

Control

There are numerous naturally occurring control organisms which help to reduce stalk borer populations. Among the predaceous insects the ladybugs (Coccinellidae) and the ground beetles (Caralidae) are of greatest importance. Several parasites in the orders Diptera and Hymenoptera attack the larvae of the stalk borer. Some disease organisms also destroy various stages, especially the larvae and pupae.

The largest borer populations occur in cultivated crops either in weedy fields or adjacent to weedy hedgerows. To reduce the stalk borer threat to adjacent cultivated crops, eliminate ragweed and other large stemmed weeds where the insect overwinters in the egg stage.

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

Evaluating Populations

Predicting stalk borer populations is nearly impossible. It is best to eliminate the weed hosts in and around fields which have a history of stalk borer problems. In corn fields, plants may be checked when 2-6 inches tall to determine the insect population. "Flagging" symptoms such as the wilting of the two center leaves in the growing point of the plant are an indication of insect activity. Slit the stem to find the borer for positive identification.

Quantity Discount Available

Cooperative Extension, New York State College of Agriculture and Life Sciences, New York State College of Human Ecology, and New York State College of Veterinary Medicine at Cornell University, and the U.S. Department of Agriculture cooperating. In furtherance of acts of Congress May 8 and June 30, 1914, and providing equal opportunities in employment and programs. Lucinda A. Noble, Director.

Produced by Media Services at Cornell University
Written by A.A. Muka

7/83 FLP 5M 8220