



STALK BORER

Papaipema nebris (Guenee)

The stalk borer is native to North America and is present east of the Rocky Mountains in the United States and Canada. The insect belongs to the Noctuidae family of moths, which includes the cutworms and armyworms. As its name indicates, the larvae of the stalk borer have the habit of boring into stalks and stems and feeding within the plants.

The stalk borer has been recognized as a problem in Pennsylvania agriculture for approximately 150 years. In 1840 it was recorded as causing considerable damage to wheat in Chester and Delaware Counties. Other reports described its injury to corn, potatoes, and garden plants. From 1902 through 1908 it was reported in the yearbook of the U.S. Department of Agriculture as a major pest to both field and garden crops. In 1927 it was listed among the ten most destructive insects in the United States.

After more than thirty years of relatively minor importance and concern, this insect regained its destructive pest status in the mid-1970s. It has caused severe losses among young corn plants in reduced-tillage plantings. Its damage to no-till and minimum-till plantings has increased rather dramatically over the past few years. Damage to conventionally tilled corn has not increased yet, but it is not uncommon to see stalk borer damage in the first four to six rows in a field adjacent to fence rows or weedy, grassy fields. This damage results from larval migration into the cultivated fields from the infested areas nearby.



Figure 1. Dennis Calvin collection. Penn State University



Figure 2. © Marlin Rice. Iowa State University

DESCRIPTION

The young larvae are cylindrical and fairly slender, with markings distinguishing them from similar borers. The body is light brown with a narrow white stripe running from head to tail down the back. A similar white stripe on each side of the body is interrupted by a purplish-brown band that circles the front third of the body. When disturbed, the larvae are very active, moving in a looping manner to escape.

The moths are reddish-brown and resemble cutworm moths. The eggs resemble those of other members of this family, being globular, sculpted, and pinkish-brown.

Stalk borer larvae are known to feed on more than 200 species of wild and cultivated plants, ranging from grasses to trees. Small grains, corn, forages, and vegetables are all subject to their attack.



Figure 1. © William Bode Penn State University

LIFE HISTORY

There is one generation per year. Moths are present from late August to mid-October. Most of the eggs are deposited from mid-September to early October. Eggs are laid singly or in groups in folded, dead leaves of grasses and weeds. Eggs may also be deposited on corn plants. Recent observations indicate orchard grass and rye are highly attractive to the moths for egg deposition. The winter is passed in the egg stage. The eggs hatch over a relatively long period of four to five weeks, from mid-May to mid-June. The larval stage lasts approximately nine to twelve weeks. Starting in late July, larvae complete development and form pupal cells in the soil. The pupal stage averages about twenty days; the moths start emerging in late August.

DAMAGE

During May, the newly hatched larvae enter the nearest suitable host plant. Since grasses usually dominate at this time of year, they are most likely to be first attacked. When stalk borers enter the stems of small plants, the plants are either killed or the larvae soon become too large to stay. The larvae then search for larger hosts. Corn, generally a secondary host, is normally attacked when between two and thirty inches high. The first damaged plants are usually noticed in late May. In reduced-tillage plantings, where much grass is killed early, corn plants become primary hosts.

Stalk borers attack young corn plants in two distinct ways, both typical of this insect. The first is more common.

1. The larvae burrow into the stalks near ground level and eat their way upward through the center. The first noticeable symptom is wilted leaves. Some plants buckle near the ground. Small plants seldom survive infestation.
2. The larvae crawl to near the tops of the plants and eat their way through the rolled leaves down into the stalks, leaving a few ragged holes in the leaves and small amounts of sawdust-like frass on the leaves. Leaf wilting in the top half of the plant is an early symptom.

The larvae are ferocious and aggressive, and will fight any other insects or larvae they encounter. One seldom finds more than one larva per plant.

CONTROL

Plowing under the egg-harboring grass, weeds, and trash appears to provide satisfactory control. Controlled burning of ground cover between November and planting time for corn will also destroy most of the eggs. Currently, insecticides registered for use against pest insects on corn have not proven highly effective against the stalk borer.

Check the Penn State Agronomy Guide or consult with your pesticide supplier or county agent for details of pesticide use.

WARNING

Pesticides are poisonous. Read and follow directions and safety precautions on labels. Handle carefully and store in original labeled containers out of the reach of children, pets, and livestock. Dispose of empty containers right away, in a safe manner and place. Do not contaminate forage, streams, or ponds.

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