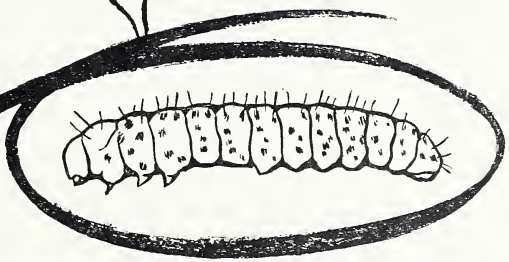
the SOUTHERN Cornstalk Borer



Leaflet No. 363

U. S. DEPARTMENT OF AGRICULTURE

THE SOUTHERN CORNSTALK BORER

Prepared by the Section of Cereal and Forage Insect Investigations, Entomology Research Branch, Agricultural Research Service

IN THE SOUTH, after a heavy wind late in the season, you may find many of the stalks in your cornfields broken off near the surface of the ground. These broken stalks were probably weakened by the burrowing of the southern cornstalk borer.[1] Because this borer works for the most part within the plant, you had not noticed that it was present.

The southern cornstalk borer is found from Alabama and northern Florida to Maryland. It is similar to the sugarcane borer, which occurs in Louisiana, Florida, and Texas. In addition to corn, it feeds on sorghum, Johnsongrass, guinea corn, and grama grass, but never injures these plants severely.

Nature of Damage

The insect causes serious damage to corn in Georgia, South Carolina, North Carolina, and Virginia, and occasionally it is an important pest in southern and eastern Maryland. Unfortunately, farmers pay little attention to it until their fields are nearly destroyed.

The "ragworm" or "budworm" damage to corn plants that you may observe early in the season is usually due to feeding by the young borers within the wrapped leaves or plant whorl, although similar damage is sometimes caused by other insects. This damage shows up as rows of irregular holes across the leaves (fig. 1) as they unfold, as ragged holes in the leaves, and as tunneling of the midribs. If the larvae injure the tender growing tip within the protecting leaves, the plant may not produce normal ears.

However, it is the tunneling of the cornstalks later in the season, which you may not even notice, that causes the greater damage. The plants are weakened by this tunneling, do not produce a normal yield of sound grain, and break over easily in the wind. Entrance and emergence holes in the stalks are evidences of this type of injury.

The Insect and How It Lives

Early in the winter you will find the southern cornstalk borer as a robust creamy-white or yellowish larva in the corn root (fig. 2, *b*). It has bored its way there during the cool fall days and made a small cavity in which it will remain inactive throughout the winter, well protected from birds, predatory insects, and the weather.

About the time the ground is being prepared for corn, from March 15 to April 30 depending on the locality, the larva changes into a pupa. When first formed the pupa is honey yellow in color, but it soon changes to a rich mahogany brown. It is about 7/8 inch long.

After 10 or more days in the pupal stage the moth emerges. The female is almost white to smoky yellow. The wings have a spread of about 1¼ inches and are faintly marked. The male is slightly smaller than the female and has

[1] *Diatraea crambidoides.*

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Figure 1.—Damage to corn leaves by first-generation larvae of the southern cornstalk borer.

darker wings. When at rest the moths hold their wings close to the body. They soon mate, and the females lay their eggs at night or in the dusk of evening, starting the first generation.

The eggs are flat, almost circular in outline, and placed in rows or irregularly, overlapping one another like shingles (fig. 3). From 2 to 25 eggs are laid in one place on the underside of the lower leaves or occasionally on the upper side or on the stalks. They are creamy white

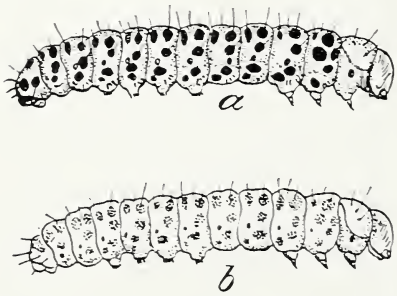

Figure 2.—Larvae of the southern cornstalk borer: *a*, First generation; *b*, second generation.

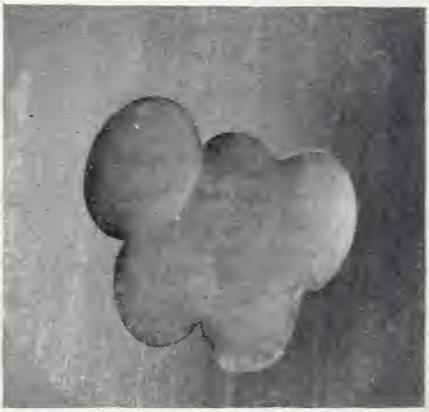

Figure 3.—Eggs of the southern cornstalk borer. Enlarged.

when first laid, but change gradually to reddish brown. The eggs hatch in 7 to 10 days.

Immediately on leaving the egg, the young larva goes down into the whorl of the plant, spinning a silken thread behind it, and begins to feed on the folded leaves. At this time it has a dark, hairy appearance. Soon the growing larva leaves the leafy portion of the plant and enters the stalk, burrowing through the pith (fig. 4). When full grown it is a dirty-white worm, 1 inch long, and covered with many dark spots, each bearing a short, dark bristle (fig. 2, *a*). The head and neck shield are brownish yellow. It cuts a hole in the wall of the cornstalk and spins a few threads across the opening. Then it retreats a short distance, usually to the second or third joint of the stalk, and plugs the burrow with digested pith to form a small chamber, in which it changes to a pupa (fig. 5).

Figure 4.—First-generation larva of the southern cornstalk borer at work in a cornstalk. Enlarged.

Figure 5.—Pupa of the southern cornstalk borer in injured stalk of corn. About natural size.

After 7 to 10 days the moth emerges, mates, and lays eggs to start the second generation. The larvae hatching from these eggs feed for a short time on the leaves and then enter the lower part of the stalk (fig. 6), where they complete

Figure 6.—Work of second-generation larvae of the southern cornstalk borer in old stalks. About natural size.

their growth as did the larvae of the first generation. However, these larvae gradually lose their dark markings and, instead of pupating, they bore their way to the corn root, where they overwinter.

The period from egg to full-grown larva is from 20 to 30 days, depending on the weather. There is no evidence of more than two generations a year.

As many as 15 larvae may be found in one corn plant, but seldom do more than 2 or 3 of them reach the pupal stage. In the winter there is usually only a single larva in a root, although occasionally there are 2, each in a cavity of its own.

How to Prevent Damage

Destroy the overwintering larvae in the old corn stubble or stalks left in the field after harvest before the moths can emerge the following spring. Get your neighbors to cooperate with you in this effort. In the northern range of the insect, in fields that are not subject to erosion, plow out stubble or stalks in the fall and then disk or harrow the soil to remove the dirt from the stalks so that the larvae will be exposed to low winter temperatures that they cannot survive. Farther south, where winters are milder, plow deeply enough in the fall or before March to cover the stubble or roots with at least 2 inches of soil and thus prevent the moths from emerging.

Rotate other crops with corn. Where corn follows corn in the same field for 2 or more years, the loss from the borer is usually much greater than where some other crops intervene, especially if the corn stubble or stalks are left undisturbed over winter.

Plant the best corn hybrids recommended for your locality and follow good crop practices generally. Strong, vigorous corn plants, even if infested by the borer, can withstand injury by the insect better than weak plants. Little is known regarding the resistance of different strains of corn to this borer.

Consult your county agent or State agricultural experiment station regarding planting dates for corn in your locality. If you live in an area where heavy infestations are common, planting somewhat later may be a practical way to reduce damage by the borer. Also ask about the latest use of insecticides to control this borer.

Natural Enemies

The southern cornstalk borer has few natural enemies. A small wasplike parasite known as *Trichogramma minutum* sometimes destroys an appreciable number of the eggs, and ground beetles feed on the larvae and pupae. Ants also attack the larvae and pupae, and a fungus disease occasionally kills the overwintering borers.

This leaflet is a revision of and supersedes Farmers' Bulletin 1025, The Larger Corn Stalk-Borer, by George G. Ainslie and W. J. Phillips.

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PREVENT FARM FIRES

Fires kill more than 3,000 farm people each year, and cause painful injury to many thousands more.

In farm homes fire is the main cause of death and injury among younger people.

Each year fires destroy $133,000,000 worth of farm property.

Much of this loss and suffering can be avoided by taking precautions to prevent fires or by being prepared to control those that do get started. In making a fire-safety check on your own farm, keep in mind that the primary causes of farm fires are—

- Lightning
- Sparks on the roof
- Defective chimneys or heating systems
- Faulty electric wiring or appliances
- Careless smokers
- Careless use or storage of gasoline, kerosene, oily rags, and such
- Children playing with matches

Don't start any fire unless you know you can stop it.

Keep a fire extinguisher handy and make sure every member of the family knows how to use it.

For details, see U. S. Department of Agriculture Farmers' Bulletin No. 1643, Fire Safeguards for the Farm.

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