

Banana weevil borer

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N. Treverrow
Centre for Tropical Horticulture Alstonville

DISTRIBUTION

Banana weevil borer, *Cosmopolites sordidus*, a native of Malaysia and Indonesia, occurs in banana growing areas of Central Africa, Central America, Brazil, the West Indies, Eastern Australia and on many Indian and Pacific Ocean islands.

The insect was first established in Queensland before 1900 and was recorded in the Tweed River district of New South Wales about 1916. It then spread through plantations in the Brunswick, Richmond and Clarence Rivers districts. In the early 1960s it was recorded for the first time in the Coffs Harbour and Nambucca districts and has since been found as far south as Port Macquarie.

HOSTS

Banana weevil borer infests plants of the genus *Musa*, including banana, plantain and manilla hemp.

DAMAGE

The larva, or grub, of the weevil feeds and tunnels in the corm of the banana plant. The tunnel is roughly circular and increases to about 8 mm diameter as the larva grows. In severe infestations, the corm can be riddled with tunnels, and fungal decay then reduces it to a blackened mass of rotten tissue. Occasionally the tunnels extend 30 cm or more up the stem.

Grossly infested plants suffer injury to the corm that can interfere with root initiation and sap flow in the plant, and the leaves wither and die prematurely. These plants may have small bunches of undersize fruit.

Topped plants and spent stems lying on the ground are favoured breeding sites for the weevil. Good hygiene (cutting up this material so that it dries out quickly) is the key to avoiding major problems from this pest.

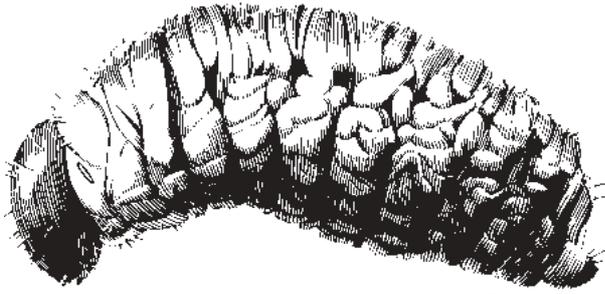
DESCRIPTION

The adult is about 12 mm long, hard shelled and has a pronounced snout. The newly emerged adult is red brown but turns black two or three days later.

The egg is elongate oval, about 2 mm long and pure

**Banana weevil borer. Length about 12 mm.
Photo: A. Searle.**





Banana weevil borer larva. Length about 12 mm when fully developed.—Illustration: E. H. Zeck.

white. The fully grown larva is 12 mm long. It is creamy white, stout, fleshy, legless and distinctly curved and swollen in the middle. It has a brown head with strong jaws. The pupa is white and about 12 mm long. As it develops, the shape of the adult within becomes visible.

LIFE HISTORY

All four stages of banana weevil borer are associated with the banana plant and are present throughout the year.

The activity of adults reaches a peak from September to November once conditions are wet, and again in late summer, but some active at any time of the year. Adults are nocturnal and during the day generally shelter in or around the corms or between the leaf sheaths at or just above ground level. They are sluggish and feign death if disturbed. Adults may live for many months, with egg laying continuing throughout the year, but at a reduced rate during winter.

The female deposits eggs singly in cavities that she makes in the plant with her mouthparts. The cavity provides protection and easy entry for the young larvae into the corm. On standing plants the most favoured laying site is between the leaf sheath scars on the crown of the corm, just above the ground.

On toppled plants there is often massive laying at the point where the corm and stem meet, on the side of the plant in contact with the soil.

During summer, eggs hatch in 8 days and the young larvae immediately tunnel into the corm. At first, the tunnels are difficult to see, but they gradually enlarge as the larva develops. The larva becomes fully fed in 20 to 30 days in summer or over 100 days during winter. The fully fed larva works towards the surface of the corm and pupates in an oval chamber. In warm weather the pupal stage lasts about 8 days, then the adult weevil emerges.

The average life cycle from egg to adult is 47 days, ranging from 29 days in summer to 180 days in winter.

SPREAD

Infested planting material spreads banana weevil borer from plantation to plantation and from district to district. This is the chief method of dispersal in New South Wales. Although young spear point suckers are almost immune while still attached to the parent corm, they are subject to attack when used for planting.

The weevils spread within the plantation and into adjoining plantations by crawling. They fly extremely rarely, and this is an insignificant means of dispersal.

DETECTION

Examining plants

Examine residual corms from harvested plants. Pare them with a knife at or just above ground level, searching for larvae or larval tunnels.

Estimating adult population

Freshly cut discs of banana stem are effective baits for the adults. Cut the discs about 10 cm thick from spent stems—usually about 10 discs per stem. Put out about 50 discs per hectare of plantation, placing each on the soil at the base of a banana stool. Five days later, count the weevils attracted to the discs. An average of four weevils per disc indicates the need for insecticide treatment of the plantation.

This surveying for adult weevils is best done in October–November, after rain, or in mid summer..

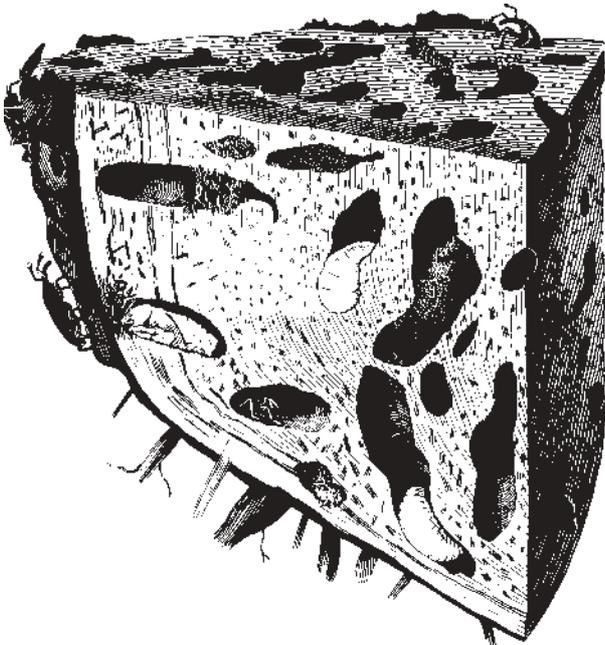
CONTROL

New plantations

It is most important to use vigorous uninfested planting material under good planting conditions. The best choice is tissue-cultured plants. Otherwise obtain planting material from plantations free of weevil and, as an added precaution, examine it carefully. Then plant it as soon as possible.

To examine planting material take one or two slices from it. If larvae, pupae or tunnels are present, the material must be destroyed.

Do not replant previously infested areas while old corms remain in the ground. Various methods are used for destruction of the corms and it could take up to two years to remove all of them. Maintain a cover crop on the land during this period, to minimise soil erosion and improve soil health. After removing all corms allow at least 3 months for the infestation to die out, before replanting. Best results for replanting come from areas spelled for 2 years



**Banana corm infested by banana weevil borer.—
Illustration: E. H. Zeck.**

Banana producing districts of New South Wales are quarantine areas under the Plant Diseases Act. No person may move any plant or any part of a plant, except the fruit, of the genus *Musa* into, out of, or within a quarantine area, unless a permit has first been issued by an inspector.

Crop hygiene in established plantations

Weevil numbers may be kept low by cutting up toppled plants and spent stems so that they dry out rapidly, preventing a cycle of weevil breeding in them. Desucker and remove water suckers regularly.

As soon as the bunch is harvested, cut down the spent stem and cut it into lengths up to 60 cm. then split each length. These cut lengths, left on the ground between the rows, act as egg-laying traps to which weevils are attracted for shelter and feed, and to lay eggs. When the eggs hatch, the life cycle cannot continue as the cut pieces dry out and the larvae die from desiccation.

Chemical control

Insecticides to combat the adult insect are applied as injections in old corms, baits in corms of newly harvested plants, or to the bases of the plants and the surrounding soil surface.

For further details of treatment options refer to NSW Banana Growers Guide to Sustainable Production of Cavendish Bananas.

**Editorial assistance: A. T. Munroe
Division of Agricultural Services
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DISCLAIMER

The information contained in this publication is based on knowledge and understanding at the time of review (March 2003.) However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Agriculture or the user's independent adviser.