

# BANANA WEEVIL BORER ON NORFOLK ISLAND IDENTIFICATION, BIOLOGY AND MANAGEMENT

## Background

Banana weevil borer (*Cosmopolites sordidus*, Coleoptera: Curculionidae) (BWB) is a serious pest of bananas (and other *Musa* species). It is found in all banana-growing regions of the world. BWB was first officially reported on Norfolk Island in 2018, although anecdotal evidence suggests it has been present for many years. Its distribution on Norfolk Island is patchy but, if left unmanaged, the pest could eventually spread and cause significant loss in banana productivity on Norfolk Island.

## Identification



Figure 1. Adult and late instar larva of Banana Weevil Borer. Credit: Francesco Martoni.

Adult BWB are about 12 millimetres long, hard-shelled and have a distinctive elongated snout (Figure 1). The newly emerged adult is red-brown but turns black within a day or two.

Eggs are white, oval and about 2 millimetres long. Fully grown larvae are about 12 millimetres long, creamy white and legless. They are curved into a 'C' shape with a hard, brown head and strong jaws. The pupa is white, about 12 millimetres long and the adult shape becomes apparent as it develops.

## Biology and lifecycle

Mated females lay eggs in a shallow excavation at the base of the pseudostem (trunk). The eggs are usually covered by plant sap that oozes into the wound, making them difficult to find. When the eggs hatch, the larvae burrows into the

banana corm where it feeds, undergoes several instars (moult) and then pupates. Adult BWB emerge from pupation, mate and begin laying eggs into banana corms. There are two peaks in adult emergence, one in spring (September/October) and another in autumn (March/April).

Adult BWB are nocturnal and, although they are long-lived, they have low fecundity and population growth is slow as they are sluggish and reluctant flyers.

## Damage and symptoms

Healthy fast-growing bananas can withstand moderate levels of damage from BWB. Plants in regions like Norfolk Island where bananas grow more slowly, may suffer loss of vigour from relatively low levels of infestation.

Most damage is done by the tunnelling of larvae through the corm of the banana plant below ground. Inspection of the corm will show brown to black tunnels running through it, filled with frass (faeces) (Figure 2).

Above-ground symptoms of BWB infestation include reduced vigour, choking, yellowing, ill thrift in suckers, and a tendency to 'fall out' in windy conditions.



Figure 2. Damaged banana corm from tunnelling of BWB larvae.

## Monitoring and management

**Reduce movement** The primary method of BWB spread is by movement of planting material (suckers) infested with eggs or larvae. Banana growers on Norfolk should be sure they don't have BWB before moving planting material to other areas.

**Monitoring** Adult BWB are attracted to cut banana pseudostem and to aggregation pheromones produced by males. These can be used to bait and detect the presence of BWB, monitor infestation levels and, in small plantations, manage them to below damaging levels.

To attract adults, fresh banana pseudostem can be cut onto 100 millimetre-thick rings or 300 millimetre halves (Figure 3). The stem should be placed in direct contact with the ground, covered with leaves to keep it moist and left for a day or two. After this time, the stem can be turned over and weevils collected from the stems and the ground beneath.



Figure 3. Cut banana pseudostem placed around the base of a banana plant to attract banana weevil borer. Credit Derek Greenwood.

Alternatively, plastic traps (Figure 4) are available commercially. They can be used in conjunction with male aggregation pheromones to bait BWB.

To maximise the benefit of baiting, it should be timed to coincide when adults are most active (in warm weather and after rain) and during peak adult emergence from pupation (spring and late summer), before they have mated and started to lay eggs.



Figure 4. Plastic banana weevil borer trap used with male aggregation pheromone to attract adult borers. Credit Bugs for Bugs

**Removal** Consistent removal of BWB adults from an established population could have significant long-term benefits on banana productivity in the small holdings on Norfolk Island. If you find weevils under the trap:

- ensure you don't use planting material from your bananas to plant elsewhere on Norfolk Island
- set fresh traps every week and check every 2-3 days until no more BWBs are found. Repeat every spring and autumn in warm weather after rain
- kill BWBs. This can be done humanely by freezing and/or feeding to chickens
- ensure an area is banana-free for at least one year before replanting. BWB can survive on remnant banana material below ground. Removal of banana plants is difficult and requires that they are dug out.

**Improve plant health** A vigorously growing banana plant can better cope with BWB infestation. Ensure regular moderate applications of an organic fertiliser, mulch well, water as required and keep lawns away from the base of the plant.

**Maintenance** Make your banana garden less attractive to BWB by removing fallen stems, cutting old stems at ground level and removing trash.



Australian Government

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