



## Pacific Pests, Pathogens & Weeds - Fact Sheets

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### Sugarcane pink borer (278)



Photo 1. Damage to sugarcane by the pink sugarcane borer, *Sesamia grisescens*, boring into the stem.



Photo 2. Adult pink sugarcane borer, *Sesamia grisescens*.

#### Common Name

Pink sugarcane borer, Ramu shoot borer, sugarcane borer

#### Scientific Name

*Sesamia grisescens*

#### Distribution

Narrow. Indonesia (West Papua and Maluku) and Papua New Guinea, from sea level to 1600 m on the mainland and islands.

#### Hosts

Sugarcane and relatives (including *Saccharum edule*, lowland pitpit, and *Saccharum spontaneum*, wild sugarcane), and grasses, Guinea grass (*Megathyrsus maximus*) and elephant grass (*Centrus purpureus*).

#### Symptoms & Life Cycle

The sugarcane borer is the most serious insect pest in the commercial sugarcane plantation of Ramu Agri-Industries Limited, Papua New Guinea. Severely infested crops have many dead shoots, and tunnels in the upper parts of the stems filled with chewed cane and faeces (frass), and low sugar content. Bored stems break in strong winds (Photo 1).

Eggs are laid in clusters of 20-250 under the green leaf sheaths of young cane, 2-6-months old. They hatch in about 8 days, and then the larvae mine the inner surface of the leaves for 2-3 days before boring into the top of the stalk together to feed at the base of the meristem, killing the youngest, still folded, leaves, and causing a symptom known as "dead heart". After about 2 weeks, and if crowded, some larvae migrate to other stems on the same plant or to plants nearby and bore into the upper internodes of the stems. When mature, the light-pink larvae are 3-5 cm long. Before pupating, the larvae tunnel downwards, and cut exit holes at a node, and plug it with frass. Adults have light-brown forewings, and are 3-4 cm wide (Photo 2).

The life cycle is 60-70 days. The adults live for 7-10 days. In Papua New Guinea, egg laying, and all the other stages occur at about the same time, with little overlap. The first generation is in January, and the others occurs at intervals of about 2 months until the dry season beginning in July when populations decline.

Spread occurs over relatively short distances up to 1000 m as the adult moths fly in search of hosts to infest. The eggs and larvae are moved over longer distances in cane used for planting.

Damaged cane attracts the weevil borer, *Rhabdoscelus obscurus* (see Fact Sheet no. 241).

## Impact

Estimates in Papua New Guinea suggest that crop loss due to *Sesamia grisea* can be up to 30 tonnes of cane per hectare. Greatest losses occur in crops at 5-9 months (September to November) after planting, or during the ratoon crop, as there is little time for plants to recover before harvest.

In commercial plantations, the cost of insecticides to control the moth is considerable, but necessary to prevent the direct damage done by the larvae, and indirect damage brought about by the weevil borer, *Rhabdoscelus obscurus*. Apart from these costs, there is also a social cost: past outbreaks in Papua New Guinea have reduced employment by the company, and lowered farmer' incomes.

## Detection & inspection

Look for dead hearts on the stems, and signs of boring within the stems by slicing them horizontally. Previously, stems were sampled at 3-4 week intervals on 2-7-month-old cane, and a threshold of 16 larvae per 200 stems was used before crops were sprayed. Presently, a threshold of two moths in pheromone traps is used, to ensure that insecticide is present on the leaf sheaths before the eggs hatch and the larvae bore into the stems.

## Management

### NATURAL ENEMIES

The braconid wasp, *Cotesia flavipes*, is the most important natural enemy in plantations at Ramu Agri-Industries, Papua New Guinea. It is reported to parasitise 30-80% of the larvae. The range depends on whether the parasitism is due to natural wasp populations or controlled releases. By contrast, a eulophid wasp pupal parasitoid, *Pediobius furvus*, introduced from Kenya, is much less effective. Although it established, it probably has difficulty in maintaining populations because the life stages of *Sesamia grisea* are synchronized. Breeding the parasitoid and releasing it at times when pupae are present is a better strategy.

### CULTURAL CONTROL

Before planting:

- Plant the majority of the crop in March to May so that it is mature by the following February to March when populations of *Sesamia grisea* start to increase.
- Plant smaller amounts of cane in September to November; it will be more susceptible to attack by borer, than that planted in March to May.
- Use borer-free planting material (see under Chemical Control).

During growth:

- Do not add excessive amounts of nitrogen as it increases the percentage of stems bored by larvae.
- Rogue (remove) plants showing "dead hearts" 1-2 weeks after the time of egg-laying in cane which is less than 3-months-old. However, this is labour intensive and gaps in the stand allow the growth of weeds..
- Monitor pest populations where outbreaks of the moth are likely, for instance, where dry seasons are unusually wet, or longer than usual, and planting is delayed. Monitoring is needed to decide if control measures are needed.
- Do not burn infested cane before harvest to destroy the sugarcane borer; it will also kill predatory earwigs, other predators and parasitoids.
- Adopt green-cane, trash-blanketing, i.e., the leaves and tops of the cane are left on the ground after harvest. This helps to conserve natural enemies.

### RESISTANT VARIETIES

Varieties have been bred for resistance in Papua New Guinea, and those bred in Australia have been tested at Ramu Agri-Industries. Resistance is due to higher fibre content, higher silica content, and a tough constriction in the node that prevents the spread of roots that would otherwise be attractive places for the weevil borer (*Rhabdoscelus obscurus*) to enter. Resistant varieties are used especially in high risk areas in the commercial plantation.

### CHEMICAL CONTROL

Use synthetic pyrethroid insecticides in larvae-infested sugarcane based on monitoring of adults attracted to a pheromone; do not spray on

a calendar basis. Treat infested planting material by dipping in a synthetic pyrethroid before planting.

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Information from Dossiers on *Sesamia* species as pests of sugarcane, Sugarcane Research Australia, ([http://www.sugarresearch.com.au/icms\\_docs/163514\\_Sesamia\\_spp\\_Dossier.pdf](http://www.sugarresearch.com.au/icms_docs/163514_Sesamia_spp_Dossier.pdf)); and from Young GR, Kuniata LS (1992) A major pest of sugarcane endemic to Papua New Guinea: A constant threat to the Australian sugar industry. (<http://sesamiagriscens.weebly.com/morphology.html>); and CABI (2012) *Sesamia griseocens* (Pink sugarcane borer). Crop Protection Compendium. ([www.cabi.org/cpc](http://www.cabi.org/cpc)). Photo 1 Korowi KT, Samson PR (2013) Screening for borer resistance among sugarcane clones in Papua New Guinea, 2010-2012. Proc Aust Soc Sugar Cane Technol vol 35, pp 9. Photo 2 Walker K (2011) Ramu shoot borer (*Sesamia griseocens*). PaDIL - (<http://www.padil.gov.au>).

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