

*Sesamia griseascens* adult moth.

## SESAMIA GRISESCENS WARREN (RAMU SHOOT BORER, PINK STALK BORER)

**26** *SESAMIA GRISESCENS* IS A MAJOR PEST OF SUGARCANE IN PAPUA NEW GUINEA AND WEST PAPUA (INDONESIA) (LLOYD AND KUNIATA 2000); IT IS THEREFORE THE CLOSEST MOTH BORER TO OUR SHORES. BSES ENTOMOLOGIST NADER SALLAM BASED AT GORDONVALE EXPLAINS.

### biosecurity feature

In addition to sugarcane, *Sesamia griseascens* attacks a number of other host plants such as *Oryza sativa* (rice), *Panicum maximum* (Guinea grass) and *Pennisetum purpureum* (elephant grass). It also attacks other *Saccharum* species such as *Saccharum edule* (pit pit), *Saccharum robustum* (wild pit pit) and *S. spontaneum* (Young and Kuniata 1992).

#### ECONOMIC IMPACT

Damage by *S. griseascens* reduces cane yield and affects the quality of cane juice. At Ramu Sugar (PNG), up to 31 tonnes of cane per hectare can be lost due to damage by this pest species. Subsequent damage by sugarcane weevil borer and rots will further lower cane and sugar yields and in extreme situations will cause poor ratooning (Kuniata 1998, Kuniata *et al.* 2001).

#### LIFE CYCLE

Eggs are laid in clusters under green leaf sheaths. Newly hatched larvae bore through the leaf sheath where they feed gregariously for about 2 days before tunnelling into the top part of the stalk. Young larvae are about 2.5 mm long. They go through seven larval stages and reach 48 mm in length before turning to the pupal stage (Young and Kuniata 1992).

Up to 300 larvae can feed inside the upper three internodes of a single stalk, and this ultimately causes dead heart. Secondary damage occurs when larvae start tunnelling into other healthy stalks. Late-stage larvae tunnel downwards and create an exit hole through the stalk, turn into the pupal stage and emerge as

adult moths. Young and Kuniata (1992) describe the adult moth as 'stout bodied, up to 20 mm in length with a wingspan up to 39 mm for males and 47 mm for females. In both sexes the forewing is light grey to dark brown in colour, with a darker longitudinal streak and a small orbicular spot. The hind wings are greyish white without colour patterns'.

The entire lifecycle takes about 60–70 days. Populations are highly discrete with larval and pupal peaks every 6–8 weeks; there are 5½ generations annually. Highest numbers of larvae occur in April–May, inflicting the most damage to the crop (Young and Kuniata 1992, 1995; Lloyd and Kuniata 2000).

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## DETECTION METHODS

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The presence of dead hearts on primary infected stalks and boring within stalks are the main signs of infestation. Holes made for emergence of pupae suggest previous infestation.

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## NATURAL ENEMIES

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A number of natural enemies attack larval and pupal stages of *Sesamia griseascens*. These are:

- ***Cotesia flavipes* (Cameron) (Hymenoptera: Braconidae).** This is the main parasitoid species at Ramu. It attacks the larval stage. Recent results recorded parasitism levels of up to 80% (Kuniata and Korowi 2005).
- ***Enicosphilus terebrus* Gauld (Hymenoptera: Ichneumonidae).** This species parasitises fully grown larvae and up to 19% of larvae have been parasitised at Ramu (Kuniata and Sweet 1994; Kuniata and Korowi 2005).
- ***Pediobius furvus* Gahan (Hymenoptera: Eulophidae).** This species is indigenous to Africa and it was introduced to Ramu in 1991 (Lloyd and Kuniata 2000). Recent results recorded up to 50% field parasitism (Kuniata and Korowi 2005).

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## MANAGEMENT

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### Cultural controls

- Early planted cane (March–May) is usually exposed to declining populations of the borer, hence does not usually sustain heavy yield losses, while late-planted cane (September–November) is exposed to high borer populations. Hence resistant cultivars are used if late planting is unavoidable.
- Pre-harvest burning of cane kills more than 98% of larvae, but also kills predatory earwigs and probably other parasitoids and predators.
- Use of borer-free planting material reduces spread of the pest (Lloyd and Kuniata 2000).



ABOVE | *Sesamia griseascens* larvae inside cane stalk - PNG.

### Host-plant resistance

There is wide variation in susceptibility to *S. griseascens* damage between cultivars, with cultivar H56-752 being the most resistant. Resistant cultivars show lower damage and also yield fewer pupae. Younger cane, however, regardless of cultivar, usually sustains heavy damage.

### Chemical control

Chemicals such as Acephate (Orthene®) and monocrotophos (Azodrin®, Nuvacron®) have been used successfully; the former is used because of its residual quality and translaminar activity (penetrating leaf tissues and forming a reservoir of active ingredient within the leaf), and is an alternative to pyrethroids in an insecticide-resistance-management program (Kuniata 2000).

In addition, Lamda-cyhalothrin (Karate®) was trialled as a boom application from high-clearance tractors. Application at 25 g of active ingredient/ha of the 2.5 EC formulation reduced numbers of bored stalks and increased yield.



ABOVE | Damage to stalks by *Sesamia griseascens*.

**Pheromonal control**

Two pheromone attractants have been identified – (Z)-11-hexadecenyl acetate and (Z)-11-hexadecenol (Whittle *et al.* 1995) – and trapping trials indicated that a blend of 3:2 was the most effective bait.

**Integrated pest management**

Management of *S. griseescens* at Ramu Sugar uses a combination of cultural, biological, insecticidal and plant-resistance approaches; decisions on use are based on population monitoring while risk assessment is based on site features. It was observed that high-risk sites are those usually located close to the river and/or blocks of wild cane.

**MEANS OF MOVEMENT INTO AUSTRALIA**

The most likely means of entry of *S. griseescens* into Australia would be through introduction of infested planting material. Being the closest moth borer to Australia, this species has a high potential for introduction. BSES works closely with quarantine organisations to minimise any chances of this or any other cane pest or disease infesting crops in Australia.

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ABOVE | *Sesamia griseescens* larva and damage caused.