

## Exotic borers

### Introduction

Moth borers are significant pests of grass crops worldwide. Fortunately, Australia does not harbour major pest species, but several borer species are widely distributed in neighbouring countries. The invasion by any of these into Australia may result in severe consequences for the Australian sugar industry.

### Symptoms

There are several types of moth borers, and they are generally grouped according to the plant part they reside in. There are stalk borers, top borers, shoot borers and even root borers. As their name suggests, 'borers' tunnel into the plant. Hence they are difficult to control, and natural enemies find it difficult to access them.

In Australia, we only have one minor species; the large moth borer (*Bathytricha truncata*). This pest species (a shoot borer) is found in all cane-growing areas of Australia, but is more common in central and southern Queensland, especially in 'weedy' fields. Fortunately, it causes no significant damage.

However, feeding symptoms by this species resemble those caused by exotic shoot borers, where the growing point is damaged leading to the formation of 'dead heart' in young plants. On the other hand, symptoms caused by exotic stalk borers, where mature stalks are tunnelled, resemble those caused by the sugarcane weevil borer (*Rhabdoscelus obscurus*). The sugarcane weevil borer was accidentally introduced from Papua New Guinea in the early 1900s and is now found in almost all cane-growing areas of Queensland.

### Hosts

Many of the borer species that are not found in Australia are prevalent throughout Asia, Africa and the Americas. While some species mainly attack sugarcane, others attack related grass crops in addition to sugarcane. Several species can also survive on a range of wild grasses.

### Distribution

So far, the Australian sugar industry has been free of major moth borers, but several borer species occur in neighbouring countries. It is therefore in Australia's interest to collaborate with research organisations in these countries and maintain comprehensive pest monitoring and surveillance programs. The severity and distribution of borers vary depending on the species. Some have caused total destruction of crops in parts of South East Asia, while others cause less severe damage. If you suspect borers in your crop, contact SRA on the pest hotline 1800 084 881. Early reporting increases the chance of effective control and eradication.

### Yield loss

Yield losses by moth borers vary considerably according to the species and region. However, infestations by moth borers such as the top borer (*Scirpophaga excerptalis*), Ramu shoot borer (*Sesamia grisescens*) and the stalk borer (*Chilo sacchariphagus*) can result in significant yield losses and may cause complete crop destruction. Generally, a 20%-30% yield loss is expected due to the infestation by one or more of these species. However, higher yield losses will be incurred if the pest is neglected.

### Control

Pesticides are available to control moth borers in overseas countries. However, several other means of control also have a role in an overall IPM program; such as the use of resistant varieties, biological control and pheromone trapping of adult moths. The following borers are some of the main species widely distributed in Asia and Africa.

#### *Chilo auricilius* (stalk borer)



This pest causes dead heart in young cane and damages internodes in advanced crops.

The larval stage is distinguishable by the five dark longitudinal lines along the body, while damage symptoms can be distinguished by the transparent feeding marks early instar larvae cause on young leaves before they unfold. Feeding by mature larvae causes a thin, straight feeding tunnel inside the internode, while the moth's exit hole is neatly round.

***Chilo sacchariphagus* (stalk borer)**



Similar to *C. auricilius*, this pest causes dead heart in young cane and damages internodes in advanced crops.

The larval stage can be distinguished by the four longitudinal stripes formed by the spots on the dorsal side. Unlike *C. auricilius*, feeding by young larvae leaves a line of holes on young leaves, while mature larvae cause irregular tunnels inside the internodes. The moth's exit hole is oval in shape.

***Scirpophaga excerptalis* (top borer)**



Feeding by young *S. excerptalis* larvae leaves parallel horizontal rows of 'shot holes' that become apparent when young leaves unfold.

Unlike species of *Chilo*, larvae of *S. excerptalis* do not tunnel in cane stalks and so do not damage the internodes, but instead move down the plant towards the growing point, mainly causing dead heart and a bunched-top appearance of shoots.

***Sesamia inferens* (shoot borer)**



This species is mainly a pest of rice and is rarely found infesting sugarcane in South East Asia.

*Sesamia inferens* is a shoot borer and causes dead heart in young cane plants. Larvae are distinguished by their purple or pink dorsal colour and white ventral colour.

***Tetramoera schistaceana* (shoot borer)**



This species is found in South East Asia. *Tetramoera schistaceana* is an early-shoot borer which mainly causes dead heart in young plants.

In mature plants, larvae feed externally on the internodes and around the buds, but usually cause minor damage.

***Eldana saccharina***



This pest is indigenous to Africa. It mainly infests mature cane and maize plants but also survives on a wide range of wild grasses. Infestation causes plant lodging due to extensive tunnelling.

***Chilo infuscatellus***



This pest is widely distributed in Asia. It attacks sugarcane, maize, millet, sorghum, rice, barley, oats and several wild grasses.

This species damages the crop during the shoot stage as young larvae feed on the outer leaves then tunnel into the stem, causing considerable losses during the early growth period.

***Sesamia grisescens***



This species is known as the pink sugarcane borer or Ramu shoot borer. Host plants include sugarcane, rice, guinea grass, elephant grass and pit-pit.

*Sesamia grisescens* is a major cane pest in Papua New Guinea and is one of the moth borer species that occurs close to Australia.

***Chilo terrenellus***



This species is restricted to Papua New Guinea. However, it was recorded in the Torres Strait Islands of Saibai and Dauan (Australia) where it appears intermittently.

This pest attacks sugarcane and pit-pit. Stalks are tunnelled and can be easily broken by wind.

***Chilo tumidicostalis***



This species feeds exclusively on sugarcane in India and South East Asia. Recent surveys suggest an escalation in its pest status in parts of Asia.