



Information Sheet

8.1 Stalk borers

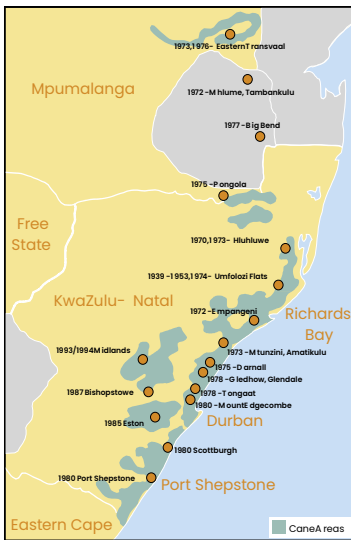
Eldana borer (*Eldana saccharina*)

Identification

Eldana saccharina is an insect that is indigenous to Africa (Figure 1). Eldana borer is the caterpillar stage of the moth. It is a very active, tough, brown, rather leathery borer that wriggles vigorously when disturbed, and may elude capture by descending from its host plant on the silken thread which it readily spins. It may be distinguished from the less serious borer, *Sesamia calamistis*, partly by its darker brown colour, and by its greater activity. The presence of eldana can usually be detected by the 'frass' which it pushes to the exterior of the cane stalk through the holes it has bored. Eldana is a voracious feeder and in severe infestations, the entire crop can be damaged, leading to serious crop loss.



Figure 1: *Eldana saccharina* (a) larvae and (b) adult. ▶



History

In South Africa, the first outbreaks occurred in the late 1930s and were restricted to the Umfolozi River Flats. Since 1970, further outbreaks have occurred as far apart as Malelane and Port Shepstone.

The final area of the industry to have been invaded is the Midlands North (Figure 2), where damage was particularly severe during the drought of 1993-94. Despite cold winters the level of infestation has slowly increased over the years as eldana adapts to lower temperatures.

◀ Figure 2. Outbreak history of *Eldana saccharina* in South Africa and eSwatini.

Biology

The moth lives for approximately one week. It does not feed, but it mates, flies, and lays eggs in concealed positions on stalks. Most eggs are laid within three days of mating. After about a week the eggs hatch and the minute, first-stage larvae emerge (Figure 3). A tiny larva will feed initially as a scavenger on the outside of the stalk, and will then bore into the stalk, where it will spend the remainder of its larval period feeding on the soft internal tissues of the sugarcane stalk.

On maturing, the larva spins a cocoon and pupates, either in the hollow stalk or on the outside, frequently behind a leaf sheath. From the pupa, the adult moth emerges (Figure 3). Breeding is continuous, but there are two peaks in moth numbers around April and November.

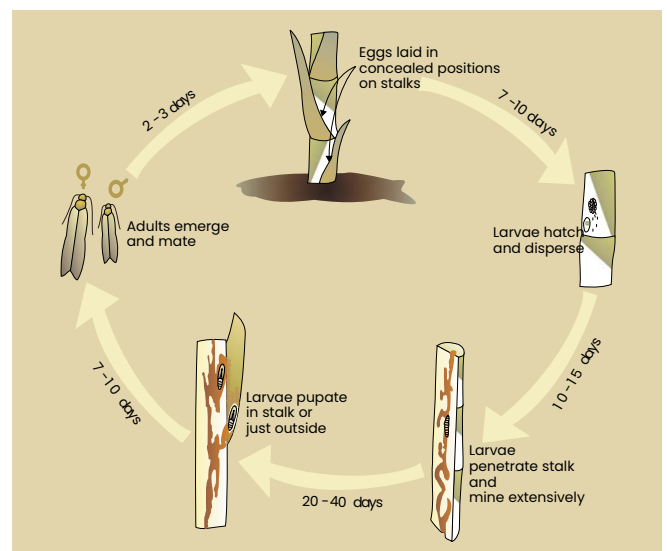


Figure 3. The life cycle of *Eldana saccharina*. ▲

Several plants have been identified as wild hosts for eldana. Of these, the large sedges such as *Cyperus papyrus* and *Cyperus dives*, usually located in wetland areas and along rivers and streams, are particularly favoured host plants (Figure 4).

Damage

Eldana larvae feed extensively inside the cane stalks (Figure 5). This, in addition to infestation of the borings by the fungus *Fusarium* which is beneficial to eldana, causes severe loss in cane quality. Losses are particularly severe with this borer because damage is mainly in the lower half of the stalk, where the most sugar is stored.



Figure 4. *Eldana* larvae in a damaged stalk. ►

Control

Recommended control measures are based mainly on management practices. Some natural control affected by predators such as ants is of great importance, but is insufficient to prevent outbreaks, and there are no effective parasitoids in our industry.

More detailed advice on recommended control measures are given in Information Sheet 8.6.



Figure 5. *Cyperus papyrus* and *Cyperus dives* are favoured host plants for eldana. ▲

Sesamia borer – ‘top grub’ (*Sesamia calamistis*)

Identification

This borer is the larval stage of an inconspicuous moth (Figure 6). It is widespread in the sugar industry, including the high-altitude areas. Although much the same size as eldana, this borer is pinkish, is far less lively, does not move backwards and is not an active silk spinner. It occurs in most cane fields, but is seldom of importance.



Figure 6. The moth and larva of *Sesamia calamistis* (not to scale). ►

Biology

The biology is much the same as that of eldana, but sesamia does not spin a cocoon. It is attacked by parasites, which is probably why populations seldom increase with cane age. It has several wild host plants and also infests maize.

Damage

The damage caused by sesamia borer is similar to that caused by eldana, but younger tissue is attacked (often young plant or ratoon cane) and damage is less severe. It is probably most noticeable in very young cane where, as ‘top grub’, it causes ‘dead hearts’. This results in the death of early tillers, which are usually satisfactorily replaced by new growth. Sesamia damage is often associated with a strong, offensive odour when shoots are sliced open. Copious frass such as that produced by eldana is not characteristic of sesamia, which feeds far less voraciously. A secondary reddening of the stalk tissue may occur following sesamia damage.

During the 1992 drought, on the North Coast and in Zululand, levels of sesamia were higher than previously recorded. Such outbreaks may lead, indirectly, to a subsequent high level of eldana activity, and early harvest of this cane should be carried out.

Control

Natural control by parasites prevents serious outbreaks of sesamia, and applied control measures have rarely been necessary. The use of insecticides is not recommended.

Chilo borer (*Chilo sacchariphagus*)

Chilo sacchariphagus is a serious pest of sugarcane in the Far East, Mauritius and Madagascar. Most recently it has been recovered from sugarcane in Mozambique but has yet to be recovered from cane in South Africa and eSwatini.



Identification

Like most moth borers of sugarcane, the moth is a drab khaki colour. The larvae are pale in colour, with distinctive brown patches along the upper surface of the body. This borer shares these features with another common borer, *Chilo partellus*, which is a serious pest of maize and can be found in sugarcane. They are difficult to tell apart by casual visual inspection. Any suspicious borers should therefore be forwarded to SASRI via local Extension or Biosecurity. A Biosecurity poster has been produced (Figure 6). These are obtainable in English/Portuguese and Afrikaans/Zulu.

◀ Figure 7. Larva and moth of the sugarcane borer *Chilo sacchariphagus* (not to scale).

Biology

Eggs are laid on the green leaves of sugarcane and hatch within days. Larvae move to the whorl of the plant and bore into the young leaves. This results in the young growing leaves showing the characteristic 'shot hole' effect as they expand and grow. Larvae bore into the stalks and feed mainly on the upper internodes of stalks. Pupation takes place in the stalk. The entire life cycle, egg-to-egg, is between 60 and 70 days.

Control

Where *Chilo* is a pest, biological control is generally effective. Other practices such as varietal resistance have also been shown to be of value.



Figure 8. Identification chart of Chilo borer. ▶

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