

Mango Seed Weevil

(*Sternochetus mangiferae*)

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BACKGROUND

The mango seed weevil, *Sternochetus mangiferae* is a pest in most mango growing countries. This species breeds only in mango seeds and cannot survive in other fruit. Although probably native to the Indo-Burma region, it is now found in southern and eastern Africa, most Asian countries, parts of the South Pacific and in Hawaii. It has been in coastal Queensland and New South Wales for many years but was detected for the first time in the Northern Territory (NT) in 1984.

A few importing countries (notably the USA and some Arabian Gulf countries) impose quarantine restrictions on imported mangoes from infested areas, which affect all Australian exports. Except for Western Australia, southern Australian markets will accept fruit produced in weevil-infested areas. Within the NT, some areas, particularly those south of Adelaide River, are free of mango seed weevil and have an advantage in exporting to Western Australia, which restricts entry due to this pest. However, stringent quarantine controls are still required to access Perth markets.

Since it attacks the seed, and not the flesh of the fruit, the mango seed weevil is not a true pest of production, but its activities may downgrade the fruit and severely reduce seed germination. There are, however, two other closely related weevils native to South East Asia which do cause flesh damage. The larvae (grubs) of those species feed directly in the flesh and may cause complete crop destruction. For this reason, the importation of mangoes into Australia is strictly regulated. Currently, the mango seed weevil causes few problems in the NT, but populations are increasing and this situation may change over the next few years. It is, however, very advantageous for unaffected areas to maintain their free status.

APPEARANCE

The adult mango seed weevil is an oval-shaped, dark brown beetle 9-10 mm long with mottled markings on the wing covers and a long snout (see Figure 1). It is very well camouflaged and almost impossible to detect on the fissured bark of mature mango trees where it spends a considerable part of its time.

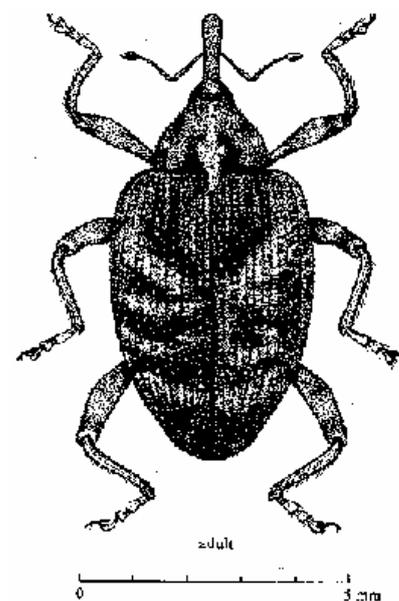


Figure 1. Adult mango seed weevil, *Sternochetus mangiferae* Reproduced from: Hill D. Agricultural Pests of the Tropics and Their Control, Cambridge University Press, 1975, 1983, p493.

LIFE CYCLE

Female weevils oviposit (lay eggs) on small to medium sized fruit, but when populations are high, full sized fruit can also be utilised. The female makes a shallow depression in the skin where it lays the egg. It then covers the egg with exudate and cuts a crescent-shaped slit in the skin just above the egg which causes a flow of sap to cover the immediate area. After some time, the sap dries to form a hard, amber-coloured, protective resin over the oviposition site. (Figure 2) *S. mangiferae* may lay up to 15 eggs per day and can deposit almost 300 over a three-month period.

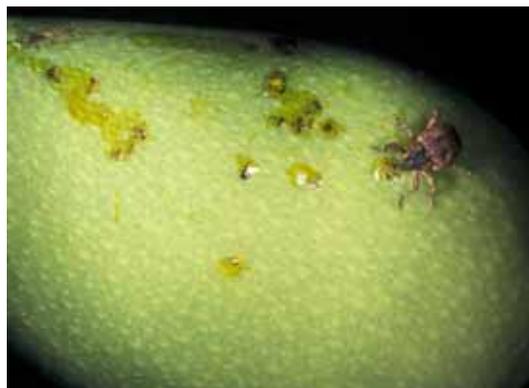


Figure 2. Adult mango seed weevil and egg laying sites on fruit

After five to seven days, the first instar larvae hatch from the egg and burrow through the mango flesh to the soft developing seed. The fruit flesh is not damaged by the initial tunnelling of the newly hatched larvae and the tunnel cannot be detected when the fruit is mature. The remainder of the immature stages are spent as an off-white grub and a creamy coloured pupa within the seed. The seed is often completely destroyed by the feeding activity of two or more larvae (Figure 3). After the fruit matures and falls to the ground (or is harvested), the adult weevils chew a hole through the seed covering to emerge. This can occur between 22 and 76 days after fruit drop, but averages 45 days. On poorly maintained or feral mango trees, up to 80 % of the seeds can be infested by the weevils. The main method of spreading infestation is by movement of infested seeds by humans.

Although the adult weevils are capable of flight, they rarely do fly. Once they emerge from the mango seed, they usually stay in close proximity to their host tree. After emergence, the adults crawl to the nearest tree and shelter within crevices in the bark where they are very difficult to detect. During the early fruit-set stage, adult weevils move to the flower panicles or, if available, soft flush leaf tissue, to feed and may be seen at night or in the early morning. As the humidity decreases during the morning, the weevils retire to more sheltered areas inside the tree where they remain immobile and well camouflaged on the bark. They have been known to survive more than four and a half months without food and water, and 21 months when food and water were supplied.



Figure 3. Seed weevil adult, pupa and larva inside damaged mango seed

ECONOMIC DAMAGE

When populations are high, oviposition sites on the developing fruits are very obvious. At harvest, the spot of hardened sap on the skin surface is difficult to remove on the packing line and the fruit may be downgraded. The oviposition site occasionally provides entry for saprophytic or pathogenic fungi which can damage or abort developing fruit, or cause rejection at harvest. In addition, fruit which have been infested with seed weevils are more likely to be aborted than undamaged fruit during the natural shedding process of developing fruit.

Infestation by mango seed weevils will reduce the viability of seeds, which affects nurseries wishing to grow seedlings for future grafting.

PEST MANAGEMENT

In areas where mango seed weevil does not occur, vigilance is required to maintain an area free status. In particular, any fruit or seeds selected for planting material should be thoroughly checked for infestation, especially if they originate from a weevil-infested property.

Where the insect is already established, growers should attempt to maintain populations as low as possible to prevent physical damage to fruit and reduce the spread to other areas. For best results growers should combine several methods.

1. Restrict unnecessary movement of fruit and planting material.
As mentioned above, movement of potentially infested material should be restricted as far as possible between and within properties.
2. Hygiene.
Since the adult beetles emerge from fruit which has been picked or rotted after falling to the ground, growers should attempt to collect fallen fruit and seeds after harvest (preferably within three weeks). This fruit should be burnt or buried at least 1 m deep. Before burial, the infested fruit should be thoroughly sprayed with fenthion (75 mL of 550 g ai. /L product per 100 L water) or dimethoate (100 mL of 400 g ai. /L per 100L water).

Small volumes of fruit or the cleaned seed husks can be placed in the deep freeze for three days to kill weevils within the seed before disposal in a compost heap or the garbage.

3. Chemical control.
Sprays that are registered for mango seed weevil are carbaryl and fenthion. Carbaryl should be applied pre-flowering at the rate of 125 g of 500 g ai. product per 100 L water to reduce the number of adult weevils. Then, two sprays of fenthion (75 mL of 550 g ai. /L per 100 L water) should be applied, the first at golf-ball stage and repeated about three weeks later. These sprays are targeted at both the free living adults and the larvae inside the fruit.

For further information on this Agnote contact Entomology at insectinfo.dpifm@nt.gov.au. Agnotes and fact sheets on other pests are available from www.entomology.nt.gov.au or www.primaryindustry.nt.gov.au

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Department of Primary Industry, Fisheries and Mines
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ISSN 0157-8243
Serial No. 692
Agdex No. 234/622

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