



# The Nursery Papers

ESSENTIAL INFORMATION FOR AUSTRALIAN PROFESSIONAL NURSERY OPERATORS

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## Getting control of weevil borers and leaf beetles in palms



The **sugar cane weevil borer**, the **palm weevil borer** and the **palm leaf beetle** are all serious pests of palms, making nursery stock unsaleable, killing mature urban specimens and causing a loss of public confidence in palms in public and private landscaping. They are proving a serious problem to palm growers in Queensland and possibly in NSW, WA and NT. Control measures in nurseries include strict quarantine, frequent stock checks, good hygiene and regular spraying.

What are these insects and why are they a pest ?

### a. Sugarcane weevil borer *Rhabdoscelus obscurus* (Boisduval)

**A**dult females bore into the outer layer of maturing palm tree stems and leaf bases and lay their eggs in a small cavity. In young palms, the larvae eat their way through the central portion of the stem, destroying the plants. They have been observed killing seedling plants in 140 mm pots.

In older palms they mine the thicker leaf bases as well as extending for a short distance into the trunk. Older palms are disfigured by the emergence holes made by the weevils, and also by trunk splitting, making them unsaleable. Heavy infestations may weaken the trunk sufficiently for the tree to collapse and die, with damage occurring mostly up to 1 metre above ground.

Left: Larvae of sugar cane weevil borer

Right: Adult sugar cane weevil borer



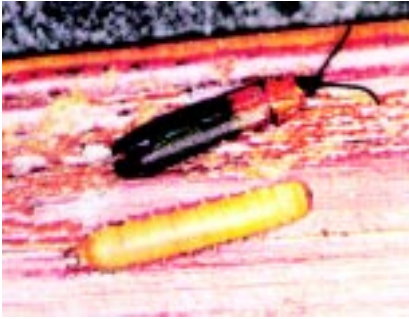
### b. Palm weevil borer *Diocalandra frumentii* (Fabricius)

The larvae feed on all parts of the palm, especially roots, leaves and fruit stalks, causing premature fruit fall. Leaf bases are bored from the trunk out to the leaflets and the trunk may also be bored. Severe damage may cause the death of the tree. Damage to palm crowns by both sugar cane weevil borer and palm weevil borer have been recorded.

### c. Palm leaf beetle *Brontispa longissima* (Gestro)

First evidence of this pest occurred in Darwin in 1979; it has since moved eastwards to Cairns and Cooktown and has now been found as far south as Innisfail. At the moment its' progress is checked by quarantine restrictions in far north Queensland. The beetle is specific to palms; adults and larvae live in the palm spear and feed on young leaflets. Larvae chew off large areas of the inner surface of unopened leaflets causing the underlying cells to die.





Left: Palm leaf beetle larva and adult  
Right: Adult palm leaf beetle  
on palm leaflet



### How can you identify the problem ?

**Sugar cane weevil borer** infestation can be recognised by a jelly-like substance oozing from holes in leaf bases and splitting of the trunk at or near the base. Staining of the trunk also occurs, especially if a large larval population is present. Adults are approximately 10mm long and 3.5 mm wide and vary in colour from tan to almost black, with about 6 distinct patterns of light and dark markings on the wing covers.

**Palm weevil borer** infestation can be recognised by the emergence holes on new and old fronds and leaf bases as well as yellowing of fronds as larvae eat away leaf tissue. Adults are small weevils, about 6 - 8 mm long, blackish and shiny, with four large reddish spots on the forewings.

**Palm leaf beetle infestation** causes leaves to develop a scorched appearance as they turn brown, shrivel and curl. Narrow, linear chew marks are characteristic of adult feeding. Best time to observe damage is in the northern dry season when palms are growing slowly.

The adult beetle is about 10 mm long and 2.5mm across with a flattened appearance. The rear of the wing cover is black and the front is orange. It can be easily confused with the native palm beetle *Plesispa spp* which don't have orange on the wing covers. Unlike most 'grubs' the larvae don't curl up, and have a pair of hook-like extensions at one end.

### How widespread are they ?

Sugar cane weevil borer and palm weevil borer have both been reported as far south as the Queensland-NSW border. Both palm weevil borer and palm leaf beetle are found in the Northern Territory and palm leaf beetle is also found in the north of Western Australia.

Nursery infestation by any of these three pests is most likely to be caused by infested plants brought in

from outside, or possibly from adjacent infested palm plantings in the landscape. Palm nurseries in sugar cane growing areas are particularly vulnerable to infestation by sugar cane weevil borer.

### What palms are affected ?

Most of the palm species commonly grown in Australian nurseries are recorded hosts of **sugar cane weevil borer**. They include:

- Archontophoenix alexandrae* and *A. cunninghamiana*
- Caryota urens*
- Cocos nucifera*
- Pritchardia martii*
- Ptychosperma elegans*
- Roystonea regia*
- Sabal palmetto*
- Ravenala madagascariensis*
- Phoenix canariensis*
- Hyophorbe lagenicaulis*
- Dypsis lutescens* (syn. *Chrysalidocarpus lutescens*)
- Neodypsis decaryi*
- Carpentaria acuminata*
- Normanbya normanbyi*
- Wodyetia bifurcata*
- Dictyosperma album*
- Syagrus romanzoffiana*
- Licuala spp.*

Infestations of **palm weevil borer** have been recorded on:

- Phoenix canariensis* (causing the death of mature specimens)
- Phoenix roebelenii*
- Archontophoenix alexandrae*
- Cocos nucifera*
- Dypsis lutescens*
- Dypsis lucebensis*
- Howea belmoreana*.

Coconut palm is the usual host of **palm leaf beetle** but it has also been recorded on 27 native and exotic palm species in Australia, including *A. alexandrae* and *W. birfurcata*.

### Control measures

The Queensland DPI recommends the following control measures to growers. Chemical registrations vary between states.

**Warning: Always read the label before using any insecticide.**

Keith Halfpapp of QDPI, Mareeba, inspects young palms for sugar cane weevil borer infestation



### Cultural Controls

- Do not sell infested plants and destroy any which are heavily infested. All plants leaving and entering a nursery should be checked for obvious signs of infestation. If evidence of palm leaf beetle is found, growers should notify the Qld DPI or your local department of agriculture.
- Do not use bagasse in a potting medium or as mulch around the base of potted or inground trees, as female cane borer weevils are attracted to this material.

- Remove and destroy old and dead fronds because adult beetles hide behind the leaf bases during the day.
- Protect cut surfaces by painting with an acrylic paint. This reduces their attractiveness to weevils.
- Do not neglect your mature showcase specimens on the nursery. These need to be checked regularly and treated if required.

### Chemical Control

**Sugar cane weevil borer;** use a chlopyrifos insecticide with 500g per L of active ingredient. 5 ml of insecticide per L for seedlings and small plants. 10 ml of insecticide per L for larger plants (Brough et al, 1994). Spray to the point of run-off and ensure that the insecticide coverage is thorough enough to find its way behind leaf bases. Also spray the ground around the base of the palm. Spray twice, one month apart, during the period March-April, July-August and December-January when weevils are most active.

**Palm weevil borer;** As yet no registered chemical.

**Palm leaf beetle;** use carbaryl at 1.25g of 80% wettable powder per L of water. Add an agricultural wetting agent (such as Agral) at the recommended rate to the diluted spray to improve coverage and penetration (Brough et al, 1994). Two applications are needed, one week apart.

Spray on to leaves which have not completely opened, covering both leaf spaces and penetrating the spaces between leaflets. If necessary slightly open tightly folded leaves to allow spray penetration, grasping the spear leaf approximately 600 mm above its base, gently twisting and bending so that the leaflets separate. Do not apply during flowering as carbaryl is toxic to bees.

### Biological control

A Qld DPI/QNIA program has been initiated to find a biological control for palm leaf beetle using the parasitoid *Tetrastichus brontispae*, which has proved successful in decreasing palm leaf beetle numbers in New Caledonia, Tahiti, the Solomon Islands and Darwin (Fenner, 1984).

Results to date show that the parasite had been established at Cooktown and several locations in Cairns. The next step in this project is to establish the extent of parasite distribution, how far south the beetle has spread, and how far south it is likely to be able to survive.

### The bottom line

Growers in far north Queensland who maintain regular spraying programs are able to minimise stock damage or loss. Those who follow sound nursery hygiene practices are also able to minimise re-infestation. Growers and retailers south of the current infestation areas should check stock regularly and isolate any palms brought in from the north until they have inspected them.

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Painting cut surface with acrylic paint to prevent attack by palm weevil borer



Damage caused to the trunk of Cuban Royal Palm (*Roystonea regia*) by sugar cane weevil borer

### Further reading

*Managing Insects and Mites in Horticultural Crops*, 1994, Brough, Elaine J., Elder, Rod, Beavis, Colin S., on sale by the Queensland Department of Primary Industries.

*Palm Leaf Beetle*, 1984, Fenner, T.L., an Agnote available from Northern Territory Department of Primary Production, Darwin.

*Ornamental Plants - Pests, Diseases and Disorders*, 1996. A 155 page book on sale by the Queensland Department of Primary Industries.



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