EXOTIC PEST - FOR SUSPECT DETECTIONS CALL THE HOTLINE ON 1800 084 881

Papaya Mealybug (*Paracoccus marginatus*)

EXOTIC PEST DETECTION & SAMPLING GUIDE

This resource has been developed as part of the collaborative program 'Boosting diagnostic capacity for plant industries'. Funding for this project is from the Rural R&D for Profit Program, Federal Department of Agriculture and Water, and the Grains Research and Development Corporation, with funds from other RDC's – Sugar RDC, Wine Australia, Cotton RDC, Forestry RDC, and Hort Innovation.

Cesar Australia

EXOTIC PEST - FOR SUSPECT DETECTIONS CALL THE HOTLINE ON 1800 084 881

Background

Papaya mealybug is a small, sap sucking insect that feeds on over 55 host plants, including papaya, avocado, citrus, cotton, and coffee. It is thought to be native to the Americas. This species is also found throughout Asia and the Pacific Islands, with recent detections in Africa. It is not found in Australia.

How would I identify Papaya mealybug?

Identification by morphology

Adults are small at 1-2 mm in size. Females are pale yellow in colour and are covered in a white, waxy, filamentous substance. The body shape is oval and there are short waxy caudal filaments, less than one quarter the length of the body, found around the margin of the body. Males are smaller, at approximately 1 mm long, and are pale pink in colour (or yellow as juvenile nymphs), are elongate in shape, and have well developed wings. Eggs are green-yellow in appearance and are laid in an egg sac, which can be several times the length of adult females. Accurate identification of different Paracoccus mealybugs requires assessment of microscopic features, such as pores on the hind limbs. Therefore, for an accurate identification a trained entomologist should be consulted.

Identification by damage

Like other insects from the Order Hemiptera, the Papaya mealybug is a sucking insect that feeds on plant sap. Feeding can occur on leaf, fruit or stem tissue. The act of feeding, particularly when the mealybug is in large numbers, deprives plants of nutrients and water. This often results in general symptoms of ill health, including in chlorosis of plant tissue, stunted growth, early leaf and fruit drop, and leaf distortion.

Feeding is most common on young fruit in the lower canopy, primarily in proximity to young leaves. As the adults feed they secrete honeydew, a sugary substance that promotes sooty mould growth, a fungal disease that covers fruits and leaves in a black substance, which can inhibit photosynthesis. When infestations are heavy, build-up of wax can result in downgraded or unmarketable fruit. Infestations are typically characterised by a cluster formation of cotton-like masses on plants, caused by congregating adults.

How do I scout for Papaya mealybug?

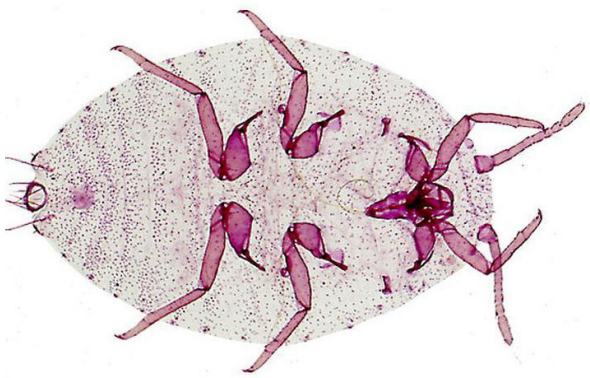
In the early stage of an infestation the Papaya mealybug invades the leaf shoots. It then spreads to other leaves and the fruit. During orchard inspection, pay particular attention to young plants and leaves. As a visible indicator of infestation, look for evidence of ants, which are attracted to honeydew and sooty mould. Where ants, honeydew or sooty mould are found, check the underside of leaves. Survey efforts should look for white, cotton-like masses on leaves, particularly midribs, veins, axils, and the stem base. Chlorosis and distorted leaves may be an indicator of sap feeding.

Could it be confused with an endemic species?

Papaya mealybugs may be confused with other mealybug species, particularly the Pink hibiscus mealybug (*Maconellicoccus marginatus*), which is found in Australia. They differ by having nine antennal segments in comparison to Papaya mealybug (which has eight segments). In addition, the Pink hibiscus mealybug has a different gut contents colour when crushed, with the Pink hibiscus mealybug producing pink gut contents and the Papaya mealybug producing yellow gut contents.

If crushing is not an option and whole specimens are required, Papaya mealybug may be further distinguished based on its colour when submerged in preservative – Papaya mealybug turns bluish-black within 48 hours of being submerged in ethanol in comparison to Pink hibiscus mealybug, which turns brown.

Figure 1. Papaya mealbug (*Paracoccus marginatus*) under a microscope



Cover image: Peggy Greb, USDA Agricultural Research Service, Bugwood.org
Image 1: Alessandra Rung, California Department of Food & Agriculture, Bugwood.org

Cesar Australia

EXOTIC PEST - FOR SUSPECT DETECTIONS CALL THE HOTLINE ON 1800 084 881

What should I do if I suspect Papaya mealybug?

Papaya mealybug is a priority plant pest that is exotic to Australia. If mealybugs are found in combination with unusual disease symptoms call the **Exotic Plant Pest hotline on 1800 084 881**. The hotline will divert you to the appropriate state biosecurity agency, which will investigate the suspect detection further. To support an investigation you should take note of:

- The detection location (take a GPS coordinate using your phone);
- The host plant on which the suspect detection has been made;
- Damage symptoms (e.g. wax on fruit and stunted plants); and
- A photo of all life stages observed (taking close-up photos of the same specimen from multiple angles is most useful for identification).

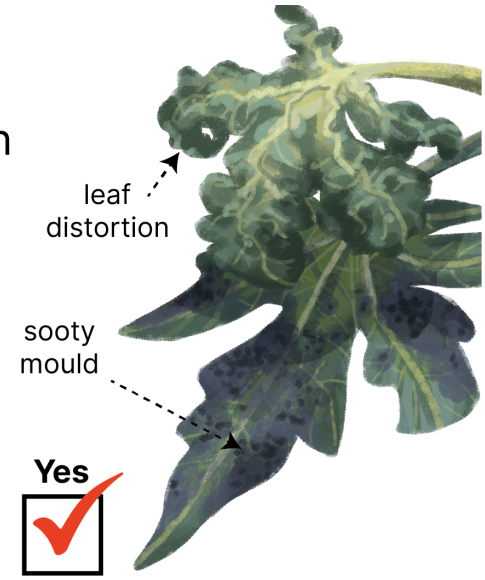
Taking a sample

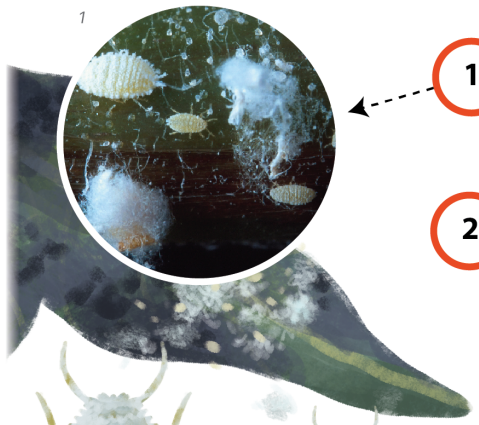
Taking a sample will also assist in a biosecurity investigation. Collect damaged plant parts along with an adult sample and place in a ziplock bag – double bagging of specimens is ideal. Label the bag with the date and collection location and keep in the fridge in case the sample is needed by the biosecurity agency.

Figure 2. Reporting decision making for Papaya mealybug (*Paracoccus marginatus*)

You have detected unusual damage, including sooty mould, high ant activity and/or leaf distortion or discoloration, in your papaya, avocado, citrus, cotton or coffee crops. **Should you report it?**

If you answer yes to the following question, it could be the **exotic Papaya mealybug** (*Paracoccus marginatus*). Report it!





1 Do you find clusters of cotton like masses on leaves?

Yes ☑

2 When you look closer around the cotton like clusters, do you find small waxy rice shaped bugs, 1 to 2 mm long, which contain yellow juices when crushed?

Yes ☑

But if the juices are pink, it may be the already established hibiscus mealybug. But if you are not sure, always take a sample and report!

- *Adults can be coloured anywhere from pale yellow to pale pink.*
- *Nymphs are smaller but similarly coloured.*

Additional possible signs

- You may notice egg sacs 3 to 4 times larger than the adult bugs.

[1] *Natasha Wright, Braman Termite & Pest Elimination, Bugwood.org, CC BY 3.0*

Figure design and all other illustrated components: Elia Pirtle, eliapirtle.com

More information

PaDIL, Papaya Mealybug Identification