

Biological Control: Four parasitoid wasps, *Anagyrus loecki*, *Apoanagyrus californicus*, *Pseudaphycus* sp and *Acerophagus* sp. have been successfully used to control this pest



throughout the Caribbean. The United States Department of Agriculture (USDA) has a rearing facility for these parasitoids in Puerto Rico where they can be sourced for release and rearing.

Chemical Control

Chemical control is costly, not sustainable and is not recommended for the residential areas. Application of insecticides is only recommended in enclosed nurseries and for short term crop production. Insecticides must be used only in rotation to prevent and/or delay development of pesticide resistance. To minimize negative impact on the non-target natural enemies, preference should be given to the use of bio-rational insecticides.

A number of insecticides have been reported to give some control of mealy bugs. These include carbaryl (Sevin), diazinon, dimethoate, malathion, thiamethoxam (Actara), abamectin (Newmectin® 1.8 EC and/or Cure 1.8 EC), imidacloprid (Confidor® 70WG).

**Remember all pesticides are toxic.
Carefully read label prior to use**

ATTENTION!

- ✓ Plant nurseries and garden stores should carry out regular inspection of plants to ensure sale of pest free plants.
- ✓ Be vigilant when buying plants from nurseries and garden stores or collecting cuttings even from apparently uninfested plants.
- ✓ **To avoid spreading this pest, the general public is reminded not to move cuttings and/or infested plants from infested areas into other districts.**

ALL SIGHTINGS OF THIS PEST MUST BE REPORTED!!

If you discover an infested plant or for further information, please contact:-

- Your nearest RADA Office or Ministry of Agriculture & Fisheries:
- Plant Quarantine and Inspection Unit (876)- 977-0637/977-6992
- Research and Development Division (Bodles), Plant Protection Unit, (876)- 983 -2267/983-2281

A NEW PEST FOR JAMAICA: PARACOCCLUS MARGINATUS, THE PAPAYA MEALYBUG¹



Introduction

Paracoccus marginatus has its origin in Mexico where it was reported as early as 1955. The first incidence of Papaya Mealybug in the Caribbean was reported in 1993. Since then, the pest has spread to many islands in the region including St. Martin, St. Barthelemy, US Virgin Islands (St. Thomas, St. Croix), British Virgin Islands, Dominican Republic, Haiti, St. Kitts, Nevis and Antigua, Cayman and Cuba. Other countries affected include the United States



Ministry of Agriculture and Fisheries,
Research and Development Division;
RADA Training Unit

(Florida and Hawaii), Guam and Indonesia. In September 2010, the pest was detected in Jamaica on a sample of teak (*Tectona grandis*) collected in the Constant Spring Area, St. Andrew.

Description and Biology

The females are small in size (2.2 mm long, 1.4 mm wide), greenish yellow in colour and possess short waxy caudal filaments around its margin. Each female produces a considerable number of yellow eggs in an egg-sac on the front of her abdomen. The life cycle is completed in 30-45 days. Females have three stages and the males have four before becoming adults. The first stage (crawlers) is the dispersal stage. These crawlers can survive for one or two days without feeding.



Adult female (Left) and egg-sacs (Right)

Damage Symptoms

Leaves

- Curling, crinkling, twisting, leaf distortion. Reduction in leaf size and surface area
- Premature aging, chlorosis and leaf drop.

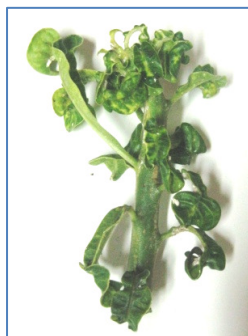


Signs and symptoms of papaya mealy bug on teak leaf

- Sooty mould may cover the entire plant and reduce photosynthesis

Shoots and Stems

- Shoots and young stems may be distorted and malformed.
- Shoot tips may also be twisted and flowering suppressed e.g. Eggplant, Jathropha, and Frangipani.
- Shoot and stem dieback may eventually occur if the infestation persists.



Symptoms of papaya mealybug damage on frangipani plant

Flowers

- Flowers may be distorted and fail to open.
- Where they open, petals may be twisted and/or malformed or show various types of blemishes.
- Premature flower drop and poor fruit set may occur.

Fruits

- Fruit blemish and sooty mould may reduce the marketability and market value of fruits, such as, Papaya, Guava, and Sour Sop.
- Fruits may fail to develop normally and may be unusually small. Such fruits eventually shrivel and drop.

SOME HOSTS OF THE THE PAPAYA MEALYBUG			
Crop Plants	Fruit Trees	Ornamental	Other
Cassava	Sour sop	Frangipani	Cat's tail
Eggplant	Sugar apple	Allamanda	Copper
Sweet pepper	B'dos Cherry	Oleander	Glyricidia
Sweet potato	Papaya	Hibiscus	Pallida
Ochro	Mango	Madeira fig	Acacia
Sorrel	Plum	Ixora	Mimosa
Broad Bean	Hog Plum	Ginger Lily	Sida
Avocado	W.I. Cherry	Claradendron	
Pigeon pea	Guava	Acalypha	
Hot Pepper	Suri. Cherry		
Tomato	Wax apple		

Management and Control

The crawler stage of the papaya mealy bug can be easily blown about by the wind and all stages can be washed off by rain or transported by birds and animals. Ants attracted to the honeydew can carry mealy bugs from plant to plant. However, humans are the main means by which this pest is spread by moving infested planted material. Hence, do not move any infested plant material as this will spread the pest from one area to another. Management strategies should include combination of biological, mechanical and chemical control measures.

Affected plants should be pruned to improve appearance. Ensure that pest infested parts are properly disposed of by placing cuttings into a garbage bag and 'baking' in the sun for several days prior to disposal.