

## Papaya Mealybug (*Paracoccusmarginatus*): A Serious Threat To the Sericulture

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### Abstract:

The papaya mealybug, *Paracoccusmarginatus* (Hemiptera: Pseudococcidae) is a polyphagous sucking insect that attacks several plants, including tropical fruits, vegetables and ornamentals. Infestation of the mealybug appears as clusters of cotton-like masses on the above-ground portion of plants with long waxy filaments. Papaya mealybug has caused havoc in agricultural and horticultural crops ever since its first report from Coimbatore in 2007. Damaging symptoms of this pest include crickling, curling and withering of leaves. Papaya mealy is considered as a serious threat to sericulture due to its damage of mulberry plants.

### Introduction:

Mealybug of papaya *Paracoccusmarginatus* (Hemiptera: Pseudococcidae) was originally observed in 1992 and is a native of Mexico and Central America (Williams and Granara de Willink (1992) and later re-described by Miller and Miller (2002). In 2008 this pest was reported in Indonesia, India, and Sri Lanka (Muniappan et al., 2008). This pest was initially identified on papaya in the Coimbatore region of Tamil Nadu in 2006. The sericulture business in Tamil Nadu has suffered severe losses as a result of this pest, which has since expanded to the surrounding districts of Karnataka, Chamarajanagar and Mysore. Because of sever attack of this pest, many farmers uprooted their sericulture gardens (Shekhar and Qadri, 2009, Mahalingam et.al., 2010).

### Differentiate of Papaya Mealy bug from Tukra Mealy bug

Pressing mealy bugs between two sheets of white paper results in A pinkish stain is produced by tukra mealy bug, whereas a greenish yellow stain is produced by papaya mealy bug. Additionally, after a half-hour in alcohol, papaya mealy bugs' body colour changes to

black. Papaya mealy bug adult females have short waxy filaments around the border and are around 3 mm in length. Body fluid is yellow in colour, and specimens in alcohol become bluish black.

#### **Life Cycle:**

Depending on the temperature, each adult female of mealy bug lays 400–500 eggs, with an incubation period of 3–4 days. There are three phases of development for females (egg, nymph, and adult), and five stages for males (ie., egg, nymph, pre-pupa, pupa & adult). The first instar nymphs (crawlers) are extremely active, tiny, and they live in the tender stalk or leaf portions and feed by sucking the sap. Later, they fix themselves in one location and keep sucking the sap. Males do not consume and have relatively short lifespan, but adult females have a 30 to 60-day lifespan. They have a pair of translucent wings. Mostly female reproduce Partheno genetically. Females generally are yellow coloured and covered by white coloured waxy secretion and short waxy filaments around the body and short caudal filaments.

#### **Host Range:**

It has a large host range of over 60 plant species, including those that are economically significant like *Annona squamosa* (Custard apple) and *Carica papaya* (Papaya). *Ipomoea spp.* (*Gossypium hirsutum*), *Cajanus cajan* (pigeon pea), *Hibiscus rosa-sinensis* (Shoe flower), and *Psidium guajava* (Guava). *Jatropha curcus* (Jatropha). Tomato *Lycopersicon esculentum* with weeds like *Parthenium hysterophorus* (parthenium). *Carica papaya*, *Annona squamosa*, and *Melongena* (Meyerdirk and Kauffman, 2001). Many weeds, including the hedge plants in the *Euphorbiaceae* family *Parthenium*, are being infested by it. Many weeds, including the hedge plants in the *Euphorbiaceae* family and *Parthenium* are being infested by it.

#### **Damage Symptoms in Mulberry:**

A severe infestation of papaya mealy bugs is seen on the underside of leaves, frequently along the veins and midribs in older leaves, and on all sections of tender leaves. Affected elder leaves become yellow and dry up. Crisps form on tender leaves. Branching and distortion occur in terminal shoots. Large amounts of honeydew are produced by dense populations of mealy bugs, which aid in the growth of the black sooty mould that covers the affected area. As it consumes leaves, the mealy bug injects a poison that causes early leaf fall,

stunting, deformation, and chlorosis (yellowing). Mulberry leaves that have developed sooty mould are unsuitable for feeding of silkworms. In contrast to the papaya mealy bug invades every portion of the mulberry plant. Apical region is infested only by *Maconellicoccushirsutus*.

### **Management of Papaya Mealybug**

To fulfil the urgent requirement of the business modified IPM practices was formulated on the basis of IPM of pink mealy bug. In Tamil Nadu (Erode and Coimbatore districts) same kinds of IPM practices were tested with heavily infested mulberry fields, here approximately 1500 to 2000 acres of mulberry fields were infested. The farmers are able to significantly reduce the infestation by using the modified IPM package developed and advised by CSR&TI, Mysore, and Tamil Nadu Agriculture University, Coimbatore. A decrease in pest infestation of 70–80% has been achieved by using modified IPM practices.

The region's officials should create a significant strategy with war footing measures to stop the pest infestation. very Small and look like fine powder to the naked eye, easily carried by the wind to new locations. This pest cannot be eliminated only through simply chemical methods. We should simultaneously use physical and biological techniques to lessen the prevalence of this terrible pest.

### **IPM Package for Papaya Mealy Bug, *Paracoccusmarginatus***

- To prevent migration, prune the entire mulberry garden in one batch.
- Collect the pruned branches and the infected areas in plastic bag, and burn it.
- Spray 0.2% DDVP immediately after pruning.
- (25ml in 10 lit water) over the pruned stumps and surrounding soil.
- Burn all the dry branches, shoots which present in mulberry field by taking it out of the plot.
- 2nd spray of 0.1% Roger 10-15 days after pruning (30ml in 10 lit)
- 3rd spray of 0.2% DDVP 10 days after 2nd spray.
- 5 days after 3rd spray, release predatory lady bird beetles (*Cryptolaemus montrouzieri*) @ 250/500 beetles / 1 acre.
- All the farmers have to practice the above control measures simultaneously.
- • Additionally, nearby agricultural and horticultural crops should get the same treatment of chemical pesticide spray.

**Conclusion:**

Due to Spraying of insecticides, is often experienced that the resurgence of this pest occurred because it resists many of the chemicals. Concurrently, the complex of natural enemy is destructed completely as they are highly sensitive to these chemicals. Therefore, it is needed to keep environment free from toxics for better proliferation of the introduced exotic parasitoids as well as other native natural enemies. Emphasis should also be given to effective eco-friendly methods viz., biological control, water jetting, botanicals etc. to avoid spray of chemical insecticides for management of other pests infesting mulberry.

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