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Popular Article

## Mealybug: A threat to Mulberry Ecosystem under Southwestern region of Andhra Pradesh

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Mulberry leaf is a major economic component in sericulture as the quality and quantity of leaf produced per unit area have a direct bearing on cocoon harvest. Mulberry leaf is the only food for mulberry silkworm (*Bombyx mori*) due to the presence of morin,  $\beta$  sitosterol and swallowing factors but many insect pests are attacking on mulberry plant and they adversely affect on plant which result in deteriorations of quality and productions of leaves. The present study was conducted during Jan, 2023 to Dec, 2023 at P2 Basic Seed Farm, Horsley Hills, Annamaiah Dist. of Andhra Pradesh. During the study it was observed that mealybug infestation is seriously affecting the mulberry growth and development and extremely high during March to September and moderately during Jan - Feb and low during Oct -Dec.

**Key words:** Mulberry, Leaf webber, Basic Seed Farm, Andhra Pradesh

**Introduction:** Mulberry (*Morus* spp.) is a fast growing deciduous woody perennial plant, normally cultivated as dwarf tree or high bush by repeated pruning. During its cultivation, mulberry is vulnerable to the attack of several pests and diseases. This causes considerable damage to plant and reduce mulberry yield production in high level. Moreover, it lowers the quality of the leaf, making it unfit for feeding silkworms. Due to perennial nature of mulberry plants in combination with monoculture practices enhance the chances of infestation of several pests and disease all around the year. So far, almost 300 pest species, both insect and non-insect are attack mulberries (Rajadurai *et al.*, 2003). The major insect pests of mulberry are mealy bugs, leaf Webbers, thrips, cutworms and

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hairy caterpillars. Among various pests, pink mealy bug is a major pest which causes tukra disease in mulberry and estimated to 34.24% and 4500 kg/ha/year loss in mulberry. There are over 200 species of insects that are known to live in the mulberry ecosystem in India, and only a few of them have serious pest status (Muthulakshmi *et al.*, 2003). Approximately half of these are documented to appear throughout the year. These pests can be divided into two groups, sap suckers and leaf eaters/defoliators. Among the sap sucking pests, mealybugs major number than the other species in terms of loss caused to mulberry. There are four species of mealybugs which cause damage to mulberry, such as Papaya mealybug, *Paracoccus marginatus* Williams & Granara de Willink; Pink mealybug, *Maconellicoccus hirsutus* (Green); Long tailed mealybug, *Pseudococcus longispinus* (Tarigioni – Tozzetti) and Root mealybug, *Paraputo* sp.

**Seasonal Occurrence:** Its occurrence is noticed throughout the year, but, maximum during summer followed by rainy and winter months i.e. extremely high during March to September and moderately during Jan - Feb and low during Oct -Dec.

**Type of damage symptoms:** The nymphs feed by sucking the sap from tender leaves and stem portion. Hence, the affected apical shoots show bunched top appearance due to curling of leaves, shortening of internodes and thickening of stem. This symptom is popularly known as 'Tukra' in India.



**Plate 1. Infestation of Mealybug infestation and symptoms irrespective of the species at P2 Basic Seed Farm, Horsley Hills, Andhra Pradesh**



The symptoms appear on the leaves as chlorosis (yellowing), deformation (curling), pre mature drop, stunted growth followed by death of plants. Growth of dense black sooty mould on leaves over the honeydew excreted by the pest reduces the photosynthetic efficiency of the plants.

**Biology of Mealybug:**

- Each female lays 350-400 eggs in an ovisac covered with cotton like mealy substance.
- The eggs hatch in 6-9 days
- Nymphal period lasts for 23-27 days
- Females have three nymphal stages while males have four nymphal stages
- Males are winged and live for only 3-4 days; while females are wingless and live for 10-12 days.
- There will be 10-12 generations in a year.

**Host Range:** Mealybug infests more than 300 plant species. The most important ones being hibiscus, beans, chrysanthemum, citrus, coconut, coffee, cotton, corn, croton, cucumber, grape, guava, hibiscus, peanuts, pumpkin, rose and mulberry (succulent varieties).

**Pathways for Movement of Mealy bug:**

- *M. hirsutus* can spread locally by wind dispersal (crawlers).
- Different species of ants feed on the ‘honey-dew’ and they protect the mealybugs from natural enemies.
- Ants carry the mealybugs from one branch to another or even from plant to plant.

**Management Mulberry Mealy bug:**

- Removal of alternate hosts in and around the vicinity of mulberry garden.
- Pruning the pest affected apical shoots and burning.
- In case of annual pruning, the cuttings should not be dumped in the vicinity of mulberry garden.
- Growing tolerant varieties of mulberry.
- Spray Dinetofuran 20% SG (0.25g/litre) (Dominant) and Dimethoate 30% EC (2ml/litre) (Rogor) and follow the safety period of about 20 days.
- Spray 10000 PPM of Econeem (3 ml/litre) and Crude neem oil (5 ml+1 ml of shampoo/litre) and follow the safety period of about 10 days.
- Release the predatory coccinellid beetle, *Cryptolaemus montrouzieri/Scymnus coccivora* @ 250 or 500 adult beetles per acre at weekly intervals during infestation.
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