

Biological Control of Mulberry Pests

- Biological control is utilization of one living organism to control another. This pest management method is safe, eco-friendly, cost-effective & long-lasting and avoids usage of insecticides.
- Pink Mealybugs (*Maconellicoccus hirsutus*) cause 'Tukra' in mulberry. Thrips (*Pesudodendrothrips*) cause leaf damage. 20-40% leaf yield loss occurs due to pest infestations. Predators or Bio-control agents to kill and suppress mealybugs and thrips infesting mulberry are available for eco-friendly management.

Management of Thrips

Thrips occur between February-June; peak infestation in April and May

Thrips Symptoms

- Scraped streaks and blotch appearance on yellowish leaves, turn into boat shaped
- Leaves with brown edges and curl upwards
- Brittle leaves, crinkle and fall-off

Bio-Control Agent

Chrysoperla, Green Lacewing

- *feeds on eggs and all stages of thrips*
- *pupates for 7days, adult emerge & feeds on pollen and nectar and lays eggs on leaves*
- *young predators upon hatching, feeds on different stages of thrips for 8-10 days*

Recommendation

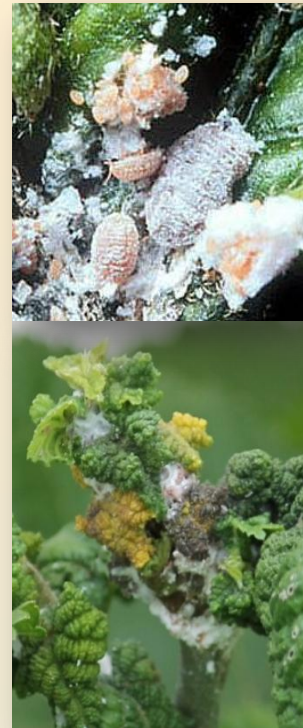
1000 eggs/acre
(2 times at weekly intervals)

Mode of BCA Release

Staple *Chrysoperla* egg cards on to ventral side of terminal leaves (2/3 leaf)



Management of Mealybugs



Mealy bugs occur between March & August; peak infestation in May-June

Tukra Symptoms

- Curling and crinkling of mulberry leaves at growing tips
- Thickening and twisting of apical shoots
- Shortening of inter-nodal distance with bushy appearance
- Leaves become dark green, later turn into pale yellow and fall-off prematurely

Bio-Control Agent

Lady bird beetle, *Scymnus pallidicollis*

- *voraciously feeds on all stages of mealybugs*
- *lays eggs in the midst of pest egg colony*
- *young predators upon hatching, eat various stages of mealybugs for 20 days*

Recommendation

1000 beetles/acre/year in two split doses

Mode of BCA Release

Release adult beetles near tukra-infested mulberry plants



Advantages of Biological Control

- ✓ Bio-control agents (BCA) search and kill target pests
- ✓ Biological control is safer to the environment
- ✓ Integration with other methods of pest control
- ✓ Problem of insecticide resistance is not there
- ✓ Not harmful to humans, livestock *etc.*

Precautions

- BCA Release should be made in the early hours only
- Insecticide spray should not be undertaken after the release Bio-Control Agents

Bio-Control Agents Available at

- CSRTI-Berhampore, West Bengal; Ph:03482-251046
- National Bureau of Agricultural Insect Resources (NBAIR), Bangalore;Ph:080-23511982

Cost for Predators or Bio-Control Agents

- Beetles (*Scymnus pallidicollis*): Rs.200/100 beetles
- *Chrysoperla*: Rs.150/1000 eggs

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Biological Control Agents : Mulberry Pest Management (Mealybugs & Thrips)



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