

UNIT 6

MULBERRY PEST MANAGEMENT

The existence and prosperity of sericulture industry depends upon the production of quality silk. It is no need to say that quality cocoon ensures the production of quality silk. For the successful silkworm rearing, contribution of leaf is the highest. The production of qualitative leaves is reduced due to several factors-disease 24%, pest-18%, weeds-7% and other 51%. The incidence of pest in the mulberry field not only reduced the production of leaves, it also affects the quality of leaves.

Pest is a living organism, which causes damage to the human beings and /or his belongings in term of economic loss. Insects, Rat etc.

Major pest- Available throughout the year and cause maximum damage. Example- Mealy bug, Bihar Hairy caterpillar.

Minor pest- Available throughout the year and cause less damage.

Example- Termites, Mites

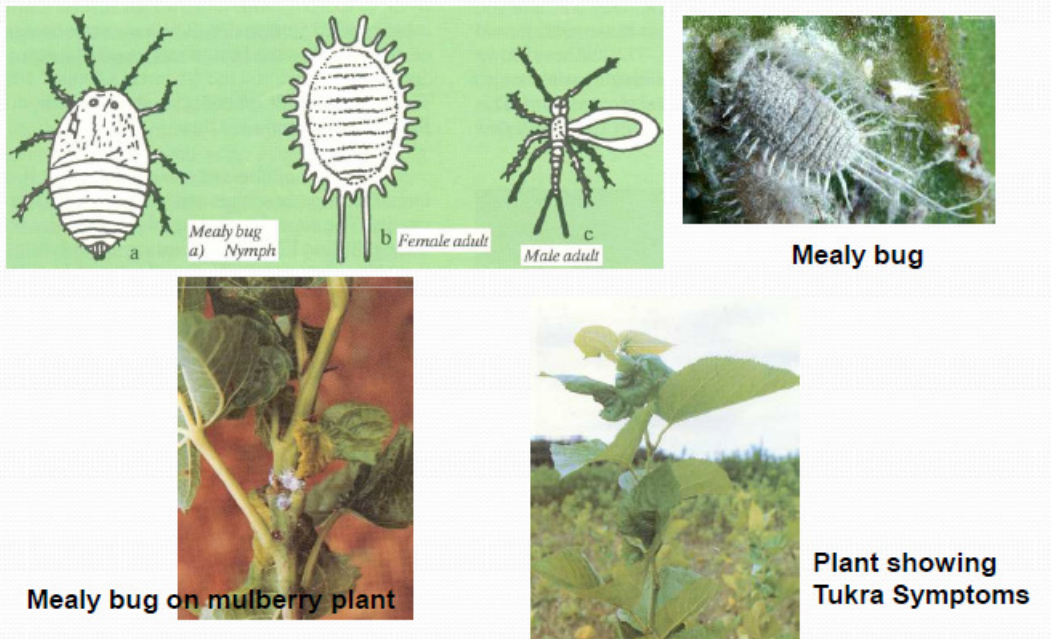
MEALY BUG

- Mealy Bug Plant-eating homopterous insect coated with a powdery waxy secretion
- Popularly known as Hard to Kill pest Commonly called as pink mealy bug
- Reported from Bangladesh, India & Indonesia
- *Meconellicoccus* spp. / *hirsutus*
- Occurrence in summer months
- Quality & quantity (4500kg/h/y) reduced.
- Affected apical shoot show retarded growth. Leaves are thick, wrinkled & dark green, heavily infested plants have shortened internodes leading to resulting into resetting or a bunched top appearance. The symptom is generally called 'tukra'.
- Adults lay 300-350 eggs laid in a week of time in a loose cottony terminal ovisac.
- Elongated, orange & hatches in 5-10 days
- Nymphs are orange covered with white mealy substance.
- Female moults thrice, males four times in thrice, males four times in 25-26 days
- Adults reproduce parthenogenetically & adults do not feed.

Control/management

- Mechanical –clipping and destruction of infested portion.
 - Spray of 0.25% DDVP (76%ec) for 2 to 3 times (10 days interval).
 - Biological predator *Cryptolaemus montrouzieri*. (250 adults/acre in two split dosages) *Scymnus coccivora*-500 adult/acre.
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Life Cycle of MEALY BUG



BIHAR HAIRY CATERPILLAR

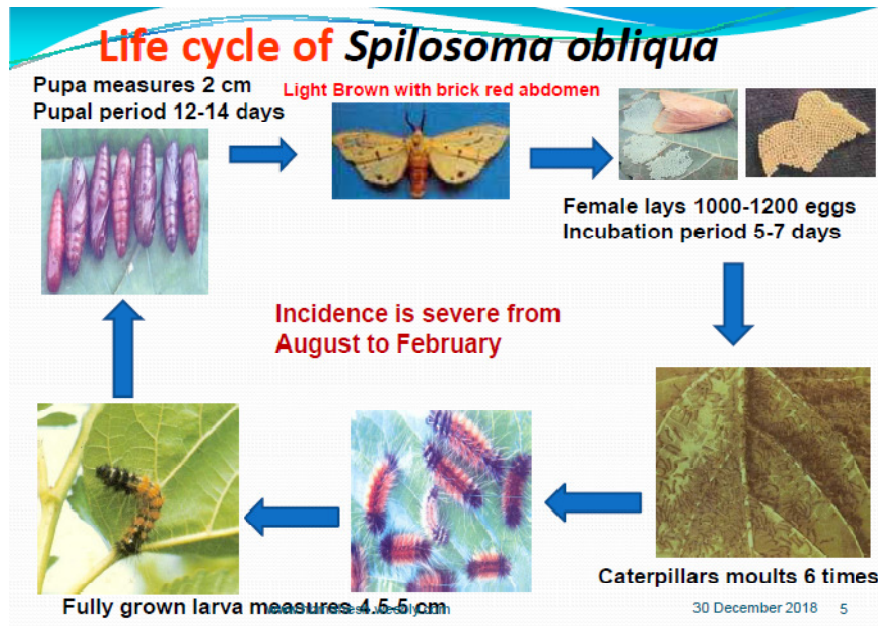
Spilarctia oblique Walker (Lepidoptera: Arctidae), Sporadic pest.

TYPE OF DAMAGE AND SYMPTOMS

These hairy caterpillars scarp the under surface of the leaf when they are in neonate (early) stage. Later the scrapped patches of the leaves can be easily detected. Full grown larvae devour the entire foliage, flowers and growing points.

Management and control:

- Installation of light traps
- Digging the trenches to prevent the movement of larvae
- Deep ploughing and flood irrigation.
- Collection and destruction of egg masses
- Poison bait
- Spraying of 0.2 % Dimethoate – safe period 13 days or DDVP – safe period 17 days
- Bihar hairy caterpillar, *Spilosoma obliqua* Walker (= *Diacrisia obliqua*)
- *Trichogramma chilonis* is an egg parasitoid of many lepidopteran pests. It is widely used as biocontrol agent of several crop plants.
- Release twice *T. chilonis* at the rate of 5 tricho-cards (20,000 parasitoid eggs in each tricho - card) per acre, at an interval of 3 days. Parasitoid releases have to be undertaken 20 days after pruning or harvesting.



Lifecycle of leaf roller

Diaphania pulverulentalis,

Order: *Lepidoptera*,

Family: *Pyralidae*

The female lays 50-80 eggs @ 1-2 eggs/epical shoot plant and they hatch after 2-3 days.

The larvae have 5 instars in 8-12 days. pupation in the soil/ in dry leaves and lasts for 7-9 days.

The total lifecycle completes from 17-24 days.



Larva of leaf roller

Type of damage and symptoms:

The larvae defoliate on the apical shoot after binding the tender leaves together and inhibit the growth of plants.

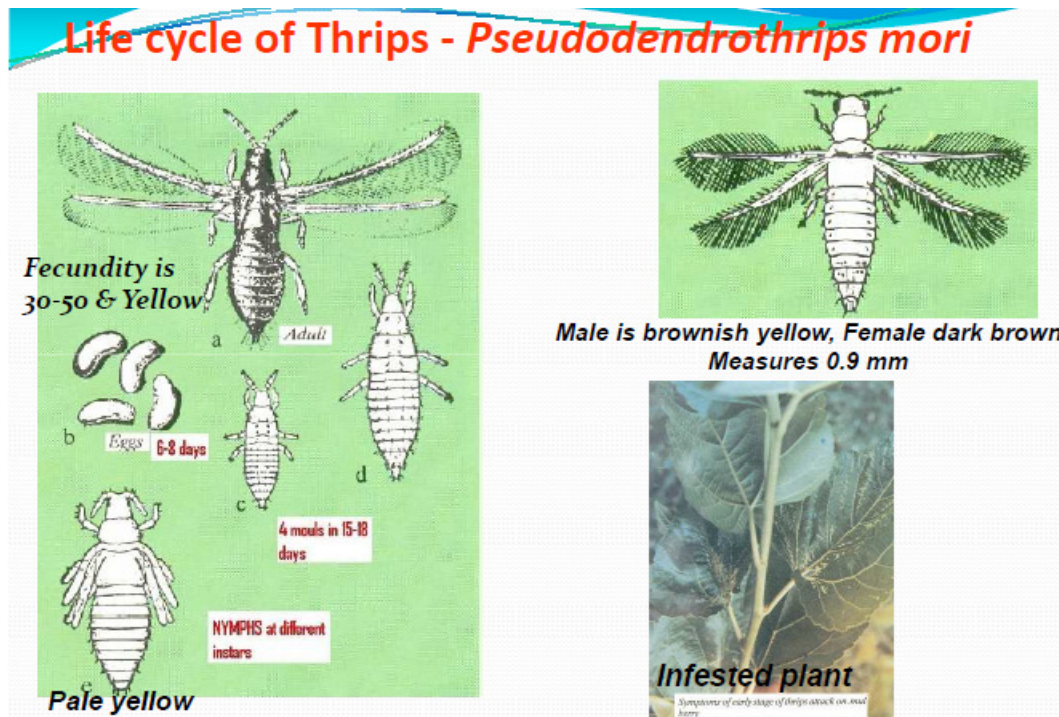
Period of occurrence: Infestation starts with onset of monsoon, remains up to February, but maximum infestation is observed from September to November.

Management:

- (i) Pruning of the infested branches followed by the destruction of the caterpillars by burning or dipping in 0.5% soap solution.
- (ii) Spraying of mulberry with 0.76% per cent DDVP (2, 2 dichlorovinyl dimethylphospate) (Dichlorvas) with a safe period - 17 days.
- (iii) Release of *Trichogramma chilonis* at the rate of 1 Trocho card / acre for 4 weeks.

THRIPS:

- Thysonopterans – THRIPS
- *Pseudodendrothrips* spp. from Bangladesh
- *Pseudodendrothrips mori* from INDIA, Japan, Srilanka, Viet Nam.
- Occurrence-Throughout the year, high in summer.
- Type of Damage: Sap sucker, depletes moisture, crude protein, total sugar.
- Affected leaves show streaks, blotches, yellowish brown.

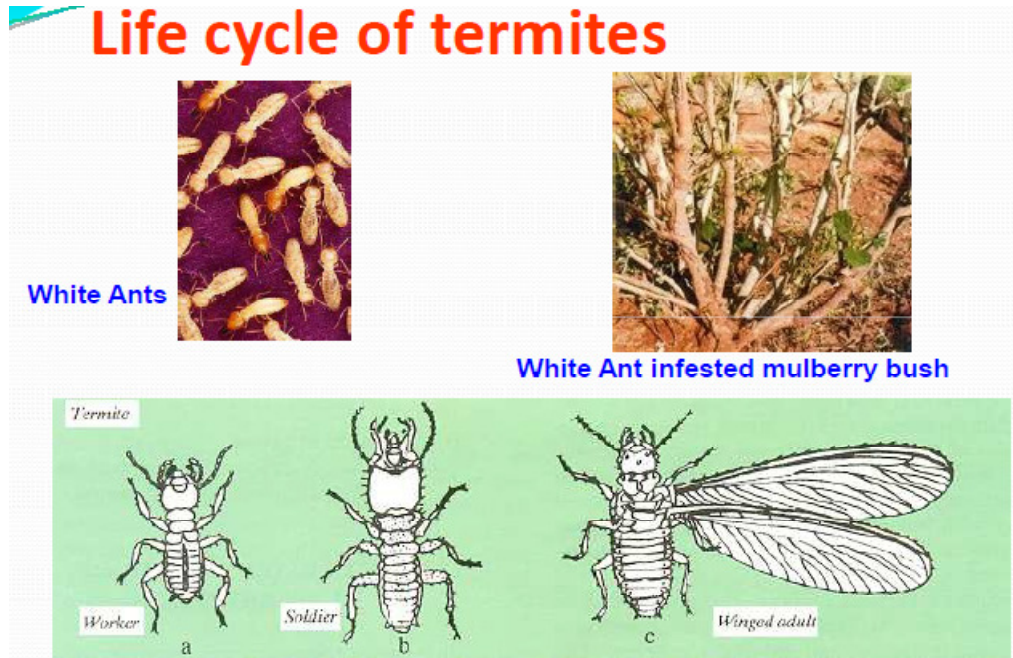


Control:

- Sprinkler Irrigation
- 0.02 % DDVP twice with one week interval – safe period 7 days.
- This pest can be biologically controlled by Ladybird beetles, *Menochilus sexmaculatus* and *Scymnus coccivora* were observed to feed on thrips in the field and laboratory.

TERMITES:

- Isoptera – “White Ants”
- Occurrence – From October onwards till the onset of monsoon
- Type of Damage: Feeds on roots & Bark, results in mortality.



Control:

- Location & destruction of colony by removing Queen.
- Treatment of Mounds with PHOTARE 50 gm/ 50 ml Chlordane
- Swabbing/drenching of established plants 1% Chlordane- safe 25 days

MITES:

Tetranychus spp.

Period of occurrence: Throughout the year, maximum in summer months.

Type of damage and symptoms: Mites suck plant sap. In severe case of infestation, the leaves lose their green healthy colour, appears rusty in colour, gradually dry and fall - off resulting in the reduction in leaf yield.



Life cycle:

- Adult female lays @ 75 spherical eggs.

- The incubation period is 4-5 days.
- The newly emerged larva is spherical, creamy with 2 prominent red spots.
- The larval period two days & moult into protonymph, deutonymph and finally to adults. The total time for a life cycle is about 10 days.

Control:

- (i) Sprinkler irrigation.
- (ii) Spraying of Zolone 0.05 per cent and Thiodon 0.05 per cent is useful. Safe period - 9 days.