REARING OF SILKWORM

With special emphasis on Muga Silkworm of Assam

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Rearing of Muga Silkworm

- Rearing of Silkwoms are mainly done for the sole purpose of obtaining cocoons which forms the raw material for producing raw silk.
- The Muga silkworm (*Antheraea assama*) is mainly confined and endemic to the State of Assam and some parts of Northeast India. The word 'Muga' itself is an Assamese word.
- The Muga silkworm is multivoltine and passes through four moults and five instar stages.

Life Cycle of Muga Silkworm

Male moth

Female moth

Eggs

Cocoon

Pupa

Yarn

Febric

5th instar

1st instar

4th instar

3rd instar

2nd instar

- Muga silkworm mainly feeds on the leaves of Machilus bombycine(Vern.som) and Litsaea polyantha (Vern. soalu) are the two principal host food plants.
- The life cycle of Muga Silkworm undergoes complete metamorphosis like other Lepidopterans. In winter (December-February), they complete their life cycle within 79-85 days, and post-monsoon (SeptemberOctober) duration of the life cycle is 53-63 days. Rearing of Muga Silkworm starts with collection of seed cocoons and laid in single layer bamboo trays to facilitate the emergence of moths.

Adult female Muga silk moth

- Generally the emergence of moth starts from dusk and contineous till morning.
- The adult male and female moth pairs are then tied with a piece of cotton string into a Kharika made of straw and left for copulation overnight.
- The female lays about 150-250 eggs on Kharikas. The eggs hatches in about 8-10 days during summer.
- The kharikas with the hatched larva are hanged on the host plants where the larva immediately starts feeding.

First stage

Second stage

Third stage

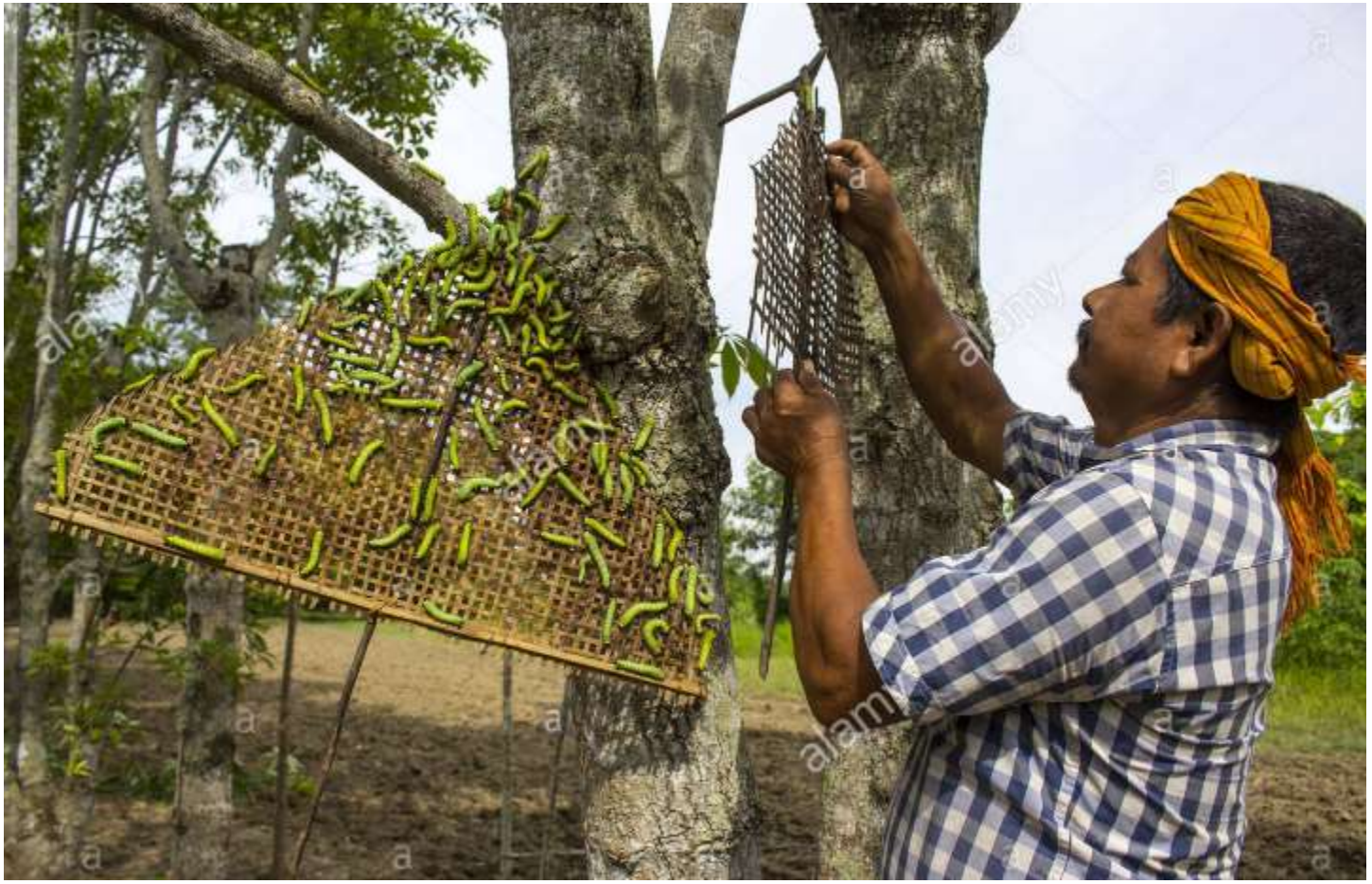
Fourth stage

Fifth stage

- The host tree trunk is tied with a band of straws mixed with sand and ash just 1- 1.2 mtrs above the ground to prevent the worm from crawling down the ground.
- The larva continuously feeds on the leaves thereby passing all the four moulting stages and reaches the mature stage.
- The final adult larvae becomes greenish blue in colour with prominent tubercles.

- The larval period lasts for 30-35 days. The adult larva comes down the host tree searching for suitable place for spinning cocoon.
- The matured larva are then collected by rearers and put them in the buskets containing mango twigs and leaves made into bunches of stacks (jalis) where the matured larva starts spinning cocoons around the twigs and leaves.
- The jalis are then hung and left undisturbed in a separate rooms till the cocoons are formed. Spinning of cocoons takes around 2-3 days in summer and 5-7 days during winter.

Rearer transferring and placing muga silkworm larva into the host plant



- Post Cocoon Processing :
- The Muga cocoon is golden or light brown in colour with compact and leathery structure. It is 4-6 cm long and 2-3 cm broad.
- The length of the silk is continuous filaments measuring around 350-450 meters with 4 to 5 breaks.
- Stifling:
- Soon after collection of the cocoons, they are spread on bamboo mats and put outside the hot sun to partially kill the chrysalis and the cocoons are stifled.

- **Degumming:**
- The cocoons are boiled in mild alkaline solutions for about 15-20 minutes for softening the gummy substances and reeling of the filaments.
- Reeling: The reeling is done with the primitive machine called Bhir. The reeling requires two persons where one releases the filaments from the cocoons while the other twists the filaments into one thread and wind it on Bhir machine. Only 40-45 % silk filaments is reeled and the rest is rejected as waste.

- **References:**
- **1. A Textbook of Applied Zoology- Pradip V. Jabde.**
- **2. TNAU online portal**
- **3. Central Silk Board, India.**

THANK YOU

- **END OF CLASS**