

## CONCISE ACCOUNT OF MUGA SILK- 6<sup>th</sup> sem , Notes by-Sivani Mili

Muga Silkworm is a **polyphagus, semi-domesticated and multivoltine** in nature have 5-4 generation in a year. In accordance with the Assamese calendar, the different generations in a year are name as follows:

<b>Assamese name</b>	<b>Season</b>	<b>Month</b>	<b>Type</b>
Jorua	Winter	Dec- Feb	Seed crop
Chotera	Early Spring	March - May	Seed crop
Jethua	Spring	May - June	Minor commercial crop
Aherua	Early spring	May-june	Seed crop
Bhodia	Late summer	Aug- sept	Seed crop
Kotia	Autumn	oct-Nov	Major commercial crop.

### Types of food plants/host plants of *Antheraea. assama*

The following types of primary food plants and secondary food plants are used for rearing Muga silkworm.

#### 1. Primary host plants

a) *Machilus bombycina*

Common name- **Som**

Distribution-Natural distribution, also cultivated by farmers in hills and later in plains.

It is the principal host plant in **upper Assam**.

b) *Litsaea polyantha*

Common name- **Sualo**

Distribution common in plains and in hills.

It is the principal host plant in **lower Assam**.

#### 2. Secondary host plants.

a) *Litsaea cubeba*

Common name- Mejankari, Adakuri

Distribution- present in hills as well as in plains.

Only vigorous worms thrive.

c) *Litsaea salicifolia*

Common name- Digoloti

Distribution- wild in plains.

d) *Michelia Champaca*

Common name- Champa

e) *Actinodaphne obovata*

Common name- Patihonda.

#### 3. Tertiary host plants

a) *Ziziphus jujuba*

Common name- Bogori

b) *Celastus monosperma*

Common name- Bholoti

c) *Xanthoxylum rhesta*

Common name- Bojramoni

d) *Gamelina arborea*

Common name- Gamari

### Characteristics of Muga Silk:

1. It has natural golden shade
2. With every wash the golden colour and shine increases.
3. It is glossy with lustrous texture
4. It is durable
5. It can be hand-woven
6. It absorbs more moisture than any other silk.
7. It has the highest tensile strength among all other natural fibres.
8. It can absorb UV rays up to 85.08%
9. It can retain moisture up to 30%.

### Life cycle of Muga Silkworm

It has 4 stages- Egg (Koni), Larva or caterpillar (Polu), Pupa or Chrysalid (Lata) covered by cocoons (Khola), Moth (Chakari). The cycle lasts about 50 days in summer and 150 days in winter. The days in stages can be taken as follows:

Stage	summer (min days)	winter (Max days)
Egg	7	15
Larva	24	70
Spinning stage	3	7
Pupa	14	55
Moth	2	3
Total days	50	150

The complete life cycle is termed as one **brood (banh)**. The Muga worm is normally multivoltine and has 4 or 5 generations in a year. The broods are mentioned above- Karia, Jorua, jethua, Aherua, Bhodia.

The following characteristics are observed under following stages:

**Egg:** Muga egg is oval shaped and it has a hard chitinous shell. The shell is composed of small rounded cells. The egg is covered by brown glue which helps the egg to be strongly attached to the surface. The yolk inside is green which is the food for a developing embryo. **Moth lays about 250 eggs and the deposition continues for about 3 to 4 days. In normal temperature eggs hatch within 9 or 10 days. The formation of the embryo is complete on the 6<sup>th</sup> day.**

**Larva-** The larva hatches at dawn by boring the shell of the egg with a secretion from the head. After a pause the young larva starts to chew the egg shell. The tiny larva has a tendency to disperse in search of food. Hatching of all egg completes after an hour or two. Vigorous larva crawling soon after hatching starts feeding on shoots. The larva takes 1 to 3 months to mature depending upon the temperature of the season. Changes its skin 4 times

and there are 5 stages in the larva life to reach maturity. The cast of skin or exuvium after a moult is eaten by the larva. After passing the last moult the larva grows at a faster rate when the larva attains complete maturity it becomes an aimless wanderer for some time. Then a period comes for rest known as "jumua". The last semi liquid faecal matter known as "Jelem" is discharged and the larva prepared to spin a cocoon the larva is known as "Paka Muga". The ripe larva are collected in a basket known as "khora" and larva are transferred to a leafy dry cocoonage known as "jali". The spinning starts after sometime on the leafy cocoonage.

### **Pupa or Chrysalid**

The mature muga worm descends to the base of the som tree at sunset and remains motionless over a ring of straw, which is tied round the base of the tree. The ripe worm ceases feeding and remains motionless for some time. In the absence of a straw ring, the worm may disperse in any direction in search of a suitable place to form a cocoon. The larva is now inside the network of silk, which is the product of their own secretion of saliva like substances. The spinning of the cocoon commences after a larva settles in a convenient position. The cocoon is completed in 3 to 4 days and the larva disappears in the cocoon.

After the completion of the cocoon, the larva transforms into a pupa through an intermediary stage called pre-pupal stage. During this transformation stage, the pre-pupa slowly changes colour from green to brown. The pupal stage is a preparatory one to transform itself into a moth. The essential organs of a moth are formed in the pupa in a slow manner. The duration of the pupal stage may be 2 weeks during summer and 2 months in winter, depending upon temperature condition. At the time of emergence the pupa moves inside the cocoon which can be felt by the sound.

### **Moth**

The chrysalid emerges as a moth during dusk after about 2-4 weeks of formation of cocoon depending upon the temperature. The emergence is known as "Muga Fukua". The moth emerges by softening the cocoon shell. The head emits an alkaline solution which dissolves the sericin layer of cocoon. The male moth possesses a pair of large antennae. The abdomen is full of tufted hair; the genital parts are prominent in the posterior end of the abdomen. The colour of the wing is deep brown in male moth. The female has a lighter colour; the male moth is an active flier. The female moth rests passively. The male moth finds the female moth and pairs easily. The pairing is known as "Arjoa". The female moth is usually laid on a bundle of straw called "Khorika" with a string of thread and the couple is left undisturbed till next day and the coupling moths are separated after a day. The fecund female lays eggs in clusters on the surface of the "Khorika". The time of the egg deposition continues for 3-4 days. The moth lays half of her eggs in the first 2 days. The moth lays about 250 eggs on an average.

