

## Life cycle of muga silkworm

The life cycle of the mugaworm has four stages; such as- pupa or chrysalid (Leta) covered by a cocoon (Khola), moth or adult (Chakari), egg (Kani) and larva or caterpillar (Polu). The cycle lasts about 54 days in summer and 130 days in winter. The days in stages can be taken as follows:

Stages	(Summer) Minimum days	(Winter) Maximum days
Egg stage	7	15
Larval stage	24	70
Spinning stage	3	7
Pupal stage	14	55
Moth stage	2	3
Total	50	150

The complete life cycle is termed as one brood (Banh). The mugaworm is normally multivoltine and has four or five generations in a year. But some chrysalids in winter are found in a hibernating stage. The broods are known locally as Katiya, Jarua, Jethua, Aherua and Bhadiya. The different broods are as follows:

Sl. No	Month	Seasons	Assamese name	Utility
1	Dec-Feb	Winter	Jarua	Seed crop
2	Mar-Apr	Early spring	Chotua	Seed crop
3	May-Jun	Spring	Jethua	Second commercial crop
4	Jun-Jul	Early summer	Aherua	Seed crop
5	Aug-Sep	Late summer	Bhodia	Seed crop
6	Oct-Nov	Autumn	Katiya	Main commercial crop

The different life aspects of mugaworm are highly sensitive to the effect of photoperiodism. The effect is evident in every phase of the worm's activity as indicated below:

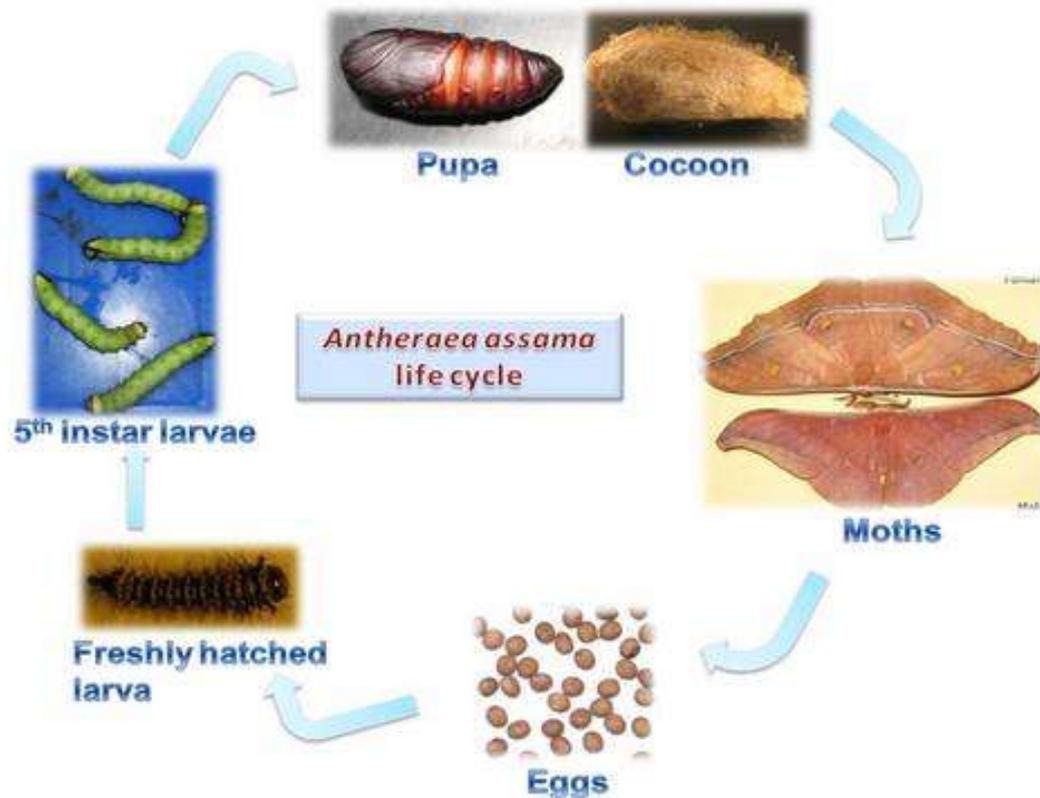
Activity	Period
Emergence of moth	Dusk to dawn
Pairing of moths	Dusk to dawn
Deposition of eggs	Evening to dawn
Hatching of worms	Morning
Moulting of larva	Any time of the day
Maturation of the worm	Dusk

### I. Moth

The pupa emerges as moth during dusk after about two to four weeks of formation of cocoon. The emergence is known as Muga Fukua. The moth emerges by softening the cocoon shell and leaving the pupal cuticle inside the cocoon. The head emits an alkaline solution which

dissolves the sericin layer of cocoon. The emergence moth looks like a sac and is delicate in appearance having vestigial brown wings. The wings and body are hardened very soon. The male moth becomes active and searches for the female moth for mating.

The male moth possesses a pair of large antennae. The colour of the wing is deep brown in the 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.



## II. Eggs

Muga egg is oval shaped. The egg 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 stick strongly on a surface. The yolk inside is green, which is food for the developing embryo. A moth lays about 250 eggs and deposition continues for about three or four days. Eggs laid in the first two days are collected for rearing and late ones are discarded.

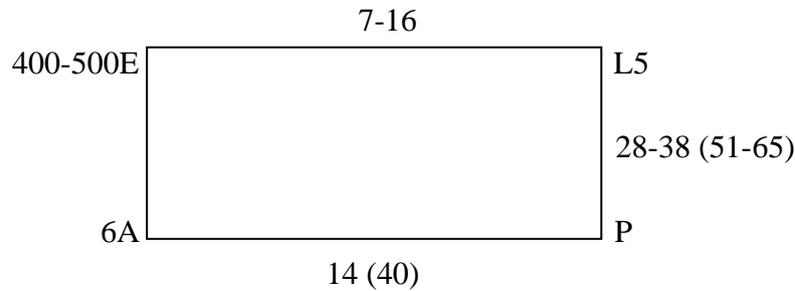
In normal temperature, the eggs hatch within 9 or 10 days. Unfertilized eggs dry up slowly. The fertilized ones remain turgid and the yolk mass shows a progressive change.

## III. Larva

The larva hatches at dawn by boring the egg shell with a secretion from its head. After a pause, the young larva starts chewing the egg shell. The tiny larva has a tendency to disperse in search of food soon after. Before they disperse, the Kharika's are laced on tender leaves of a dwarf host plant (Som or Soalu). The hatching of all the eggs is complete after an hour or

two. The larva takes one to three months to mature depending on the temperature of the season.

The larva changes its skin four times and there are five stages in the larval life to reach maturity. The cast off skin after a moult is eaten by the larva. This is the sign of a healthy larva. During the moulting period, the larva does not feed for a day or two. The larva does not feed during night hours in winter due to cold.



The newly hatched larva has a black and yellow body alternatively lined. After passing of the last moult, the larva grows at a faster rate and it becomes a glutton. When the larva attains complete maturity, it becomes an aimless wanderer for sometimes. Then a period comes for rest (Jumua). The last semi liquid faecal matter Joloug or Jelem is discharged and the larva prepares to spin a cocoon. The larva is now known as Paka muga.

#### IV. Pupa

After the completion of cocoon, the larva transforms in to a pupa through an intermediary stage known as pre pupal stage. The pre pupa slowly changes colour from green to brown. The shape and size also change. The pupal stage is a preparatory one for the larva to transform itself in to a moth. The essential organs of a moth are formed in the pupa in a slow manner. The duration of pupal stage may be two weeks in summer and two months in winter depending on temperature condition.