

### **Life cycle of silkworm consists of four stages:**

That is egg, larva, Pupa and adult. duration of life cycle is 6 to 8 weeks depending upon racial characteristics and climatic conditions. multivoltine dresses found in tropical areas for the shortest life cycle with the egg, larval, pupil and adult stages lasting for 9 to 12 days, 20 to 24 days, 10 to 12 days and 3 to 6 days respectively. 7 to 8 generations are produced in multivoltine races .

In univoltine races, A period of activated egg may last for 11 to 14 days, The larval period is 24 to 28 days. The pupal period is 12 to 15 days in the adult stage is 6 to 10 days. In nature univoltine races produce only one generation during the spring. In the case of bivoltine the second generation eggs do not hibernate and hatch within 11 to 12 days and produce second generation normally during summer.

### **MULBERRY SILKWORM**

Insect producing mulberry silk is a fully domesticated variety of silkworm, which has been exploited for about 4000 years. All the strains share it belong to the species *Bombyx mori* that is believed to be derived from **mandarina silkworm *Bombyx mandarina***. China is the native place of the silkworm now it has been introduced in old Silk producing country Japan, Italy, France, India, Korea and Russia.

#### **The food plants of Mulberry silkworm**

Mulberry silkworm feeds on mulberry plants. There are over 20 species of Mulberry of which four are common. *Morus alba*, *M. indica*, *M. serrata* and *M. latifolia*. Cultivation of mulberry plants is called moriculture.

#### **Characteristics of Mulberry silk**

1. It is the highest and finest quality of silk available in the world.
2. It is pure white in colour and made up of long individual fibres.
3. It is the most durable and most luxurious silk goods.
4. It is 100% odorless, natural and hypoallergenic.

**Egg:** Egg is round and white, the weight of newly laid 2000 eggs is about 1 gram. It measures 1 to 1.3 mm in length and 0.9 to 1.2 width. The egg becomes darker and darker, and maybe of **diapause or non-diapause type**. The diapause type of egg is laid by silkworm inhabiting the temperate region whereas silkworm belonging to subtropical regions like India lays non diapause type of egg. During diapause all vital activities of the egg ceases

**Larva:** After 10 days of incubation egg hatches into a larva called caterpillar. After hatching caterpillars need continuous supply of food because they are voracious feeders; newly hatched caterpillars are about 0.3 cm in length and pale yellowish white. The larval body is densely covered with bristles. As the larva grows it becomes smoother and lighter in colour due to rapid stretching of the cuticular skin during different instars of the larval stage. The

larval body is composed of the head, thorax and abdomen. It carries the appendages, antenna, mandibles, maxillae and labium.

The thorax has three segments, prothorax, mesothorax and metathorax. abdominal segments carry the sexual marking on the ventral side which are developed distinctly during 4th and 5th instars in the 8th and 9th segment. The larval growth is marked by 4 moulting and 5 instar stages. The full growth caterpillar develops a pair of silk glands or **sericteries**. The Silk glands are modified labial glands. These glands secrete silk which consists of an inner tough protein enclosed by a water soluble gelatinous protein called sericin. The Silk is moulded to a thread as it passes through the silk press or spinneret.

### **Pupa**

Pupa is the inactive resting stage of silkworm. It is a transitional period during which definite changes take place. During this period, biological activity of the larval body and its internal organs undergo a complete change and assume a new form as adult moth soon after pupation, the pupa is white and soft but gradually turns brown to dark brown and the pupa skin becomes harder. In pupa a pair of compound eyes, a pair of antenna, fore and hind limbs and legs are visible. The Pupa is covered within a thick oval white or yellow case called cocoon. The Pupal period may last for 8 to 14 days after which the adult moth emerges.

### **Adult**

The adult ***Bombyx mori*** is about 2.5 cm in length and pale creamy white. It does not feed during its short adult life. The moth is unisexual and shows sexual dimorphism.

1. In male 8 abdominal segments are visible while in female 7.
2. The female has comparatively small antennae.
3. Its body and abdomen are stouter and larger and it is generally less active than male. The female starts laying eggs just after copulation which is completed after 24 hrs. A female lays 400-500 eggs. The eggs are laid in clusters and are covered with gelatinous secretion of the female moth.