EduTap

Types of Silkworms

Agriculture

Contents

1. What is Sericulture?

- Sericulture is the rearing of silkworms for the production of raw silk.
- The major activities of sericulture comprises of food-plant cultivation to feed the silkworms which spin silk cocoons and reeling the cocoons for unwinding the silk filament for value added benefits such as processing and weaving.
- Although there are several commercial species of silkworms, Bombyx mori is the most widely used.
- Silk-fiber is a protein produced from the silk-glands of silkworms.

1.1 Sericulture in India

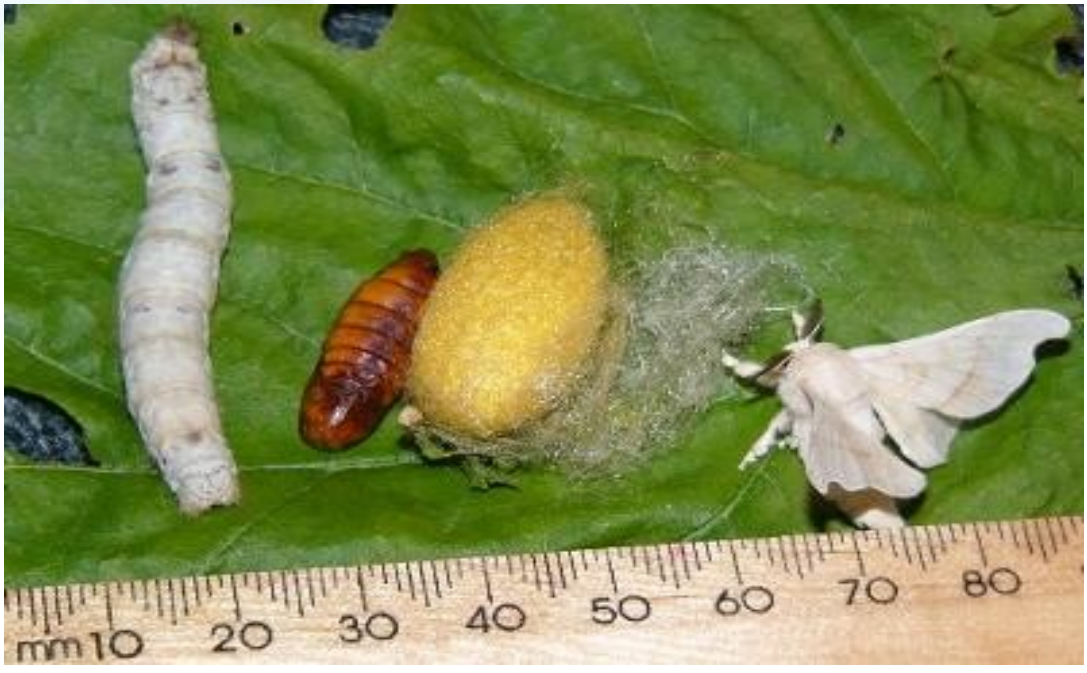
- Sericulture is ideal programme for weaker sections of the society. It ensures monthly income to Sericulturists as one crop of silkworms can be reared and cocoons are produced within 25 to 27 days and the farmers can directly sell them at the Government Cocoon markets and get the money directly on the same day without any delay.
- It is estimated that Sericulture can generate employment of about 11 man days (in on-farm and offfarm activities) per kg of raw silk production throughout the year.
- India is the second largest silk producer of raw silk and also has the distinction of being the world's largest consumer of pure silk.
- The country is known the world over for the exquisite brocade fabrics of Banaras, silks of Karnataka, tie-and- dye and patola of Gujarat and Rajasthan, ikats from Orissa, fine bandhej and temple silks of Kancheepuram and Tanjore are only a few of the myriad range of silk weaves, textures and patterns available in India.
- India is the only country in the world to produce all the four known varieties of silk including Mulberry, Eri, Tasar and Muga.
- Mulberry is the largest practiced Sericulture industry accounting for almost 76 percent of the entire silk production.

2. Types of Silkworm based on the type of plants they feed

- Moths belonging to families Satumidae and Bombycidae of order lepidoptera and class Insecta produce silk of commerce. There are many species of silk-moth which can produce the silk of commerce, but only few have been exploited by man for the purpose.
- There are five major types of silk of commercial importance, obtained from different species of silkworms which in turn feed on a number of food plants.
- Except mulberry, other varieties of silks are generally termed as non-mulberry silks.

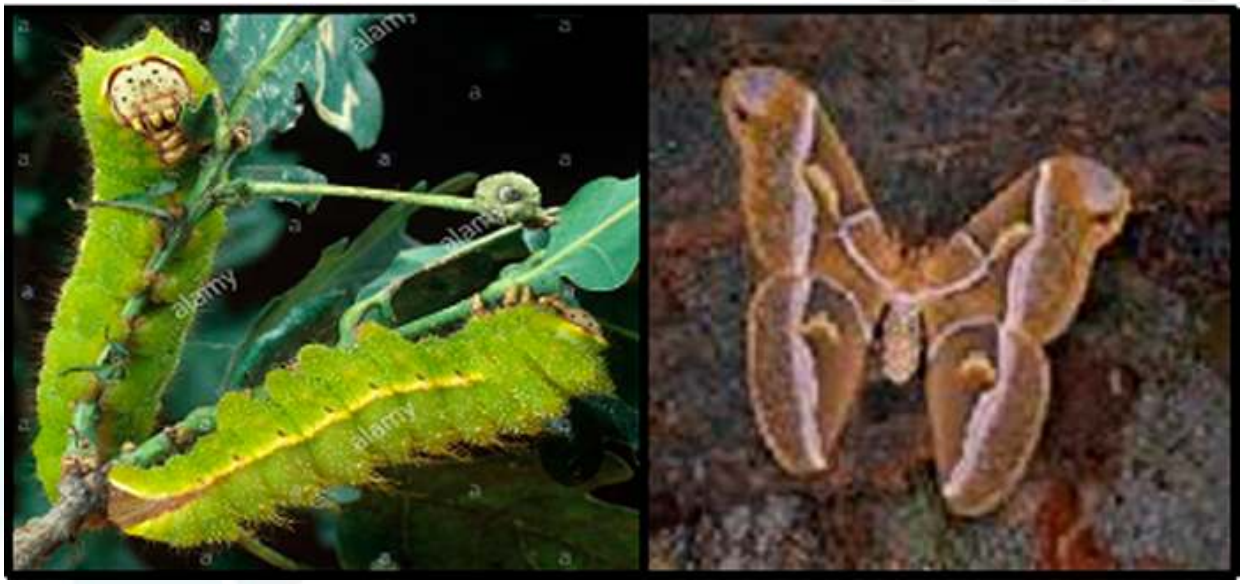
2.1 Mulberry Silkworm

- The bulk of the commercial silk produced in the world comes from this variety and often silk generally refers to mulberry silk.
- Mulberry silk comes from the silkworm, Bombyx mori L. which solely feeds on the leaves of mulberry plant.
- These silkworms are completely domesticated and reared indoors.
- In India, the major mulberry silk producing states are Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu & Kashmir which together accounts for 92 % of country's total mulberry raw silk production.



2.2 Tasar Silkworm

- Tasar (Tussah) is copperish colour, coarse silk mainly used for furnishings and interiors
- It is less lustrous than mulberry silk, but has its own feel and appeal.
- Tasar silk is generated by the silkworm, Antheraea mylitta which mainly thrive on the food plants Asan and Arjun.
- The rearings are conducted in nature on the trees in the open.
- In India, tasar silk is mainly produced in the states of Jharkhand, Chattisgarh and Orissa, besides Maharashtra, West Bengal and Andhra Pradesh.
- Tasar culture is the main stay for many a tribal community in India.



2.3 Oak Tasar Silkworm

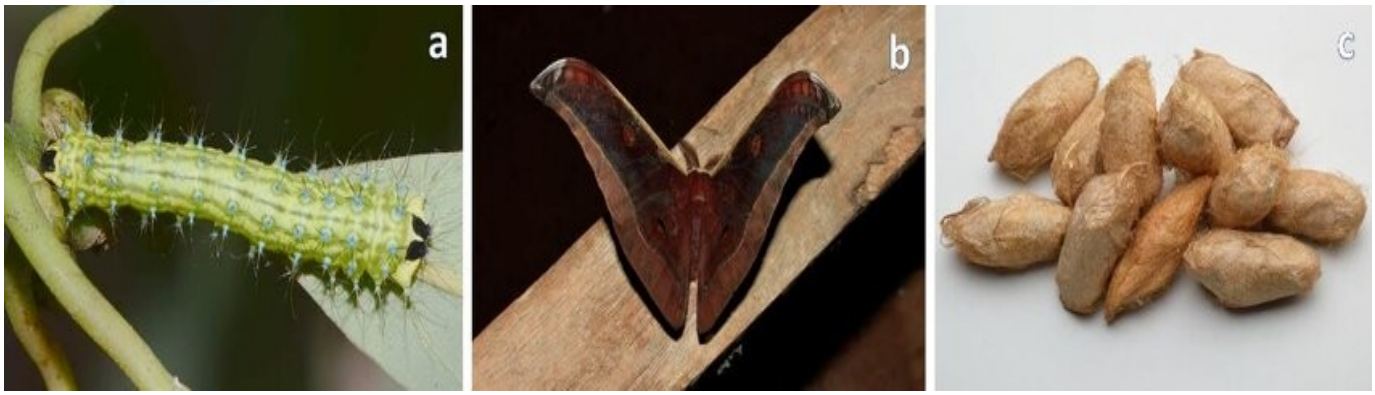
- It is a finer variety of tasar generated by the silkworm, Antheraea proyeli J. in India which feed on natural food plants of oak, found in abundance in the sub-Himalayan belt of India covering the states of Manipur, Himachal Pradesh, Uttar Pradesh, Assam, Meghalaya and Jammu & Kashmir.
- China is the major producer of oak tasar in the world and this comes from another silkworm which is known as Antheraea pernyi.

2.4 Eri Silkworm

- Also known as Endi or Errandi, Eri is a multivoltine silk spun from open-ended cocoons, unlike other varieties of silk.
- Eri silk is the product of the domesticated silkworm, Philosamia ricini that feeds mainly on castor leaves.
- Ericulture is a household activity practiced mainly for protein rich pupae, a delicacy for the tribal. Resultantly, the eri cocoons are open-mouthed and are spun.
- The silk is used indigenously for preparation of chaddars (wraps) for own use by these tribals.
- In India, this culture is practiced mainly in the north-eastern states and Assam. It is also found in Bihar, West Bengal and Orissa.

2.5 Muga Silkworm

- This golden yellow colour silk is prerogative of India and the pride of Assam state. It is obtained from semi-domesticated multivoltine silkworm, Antheraea assamensis.
- These silkworms feed on the aromatic leaves of Som and Soalu plants and are reared on trees similar to that of tasar.
- Muga culture is specific to the state of Assam and an integral part of the tradition and culture of that state.
- The muga silk, a high value product is used in products like sarees, mekhalas, chaddars, etc.



3. Types of Silkworms based on Voltinism

- Voltinism refers to the number of breeds raised per year.
- Voltinism is a genetically determined heritable character under hormonal control.
- Based on voltinism B.mori is divided into three type of races: univoltines, bivoltines, and poly or multi-voltines.

3.1 Univoltine race

- Univoltine races produce only one generation per year.
- The eggs laid remain in a diapausing (quiet) condition till the next spring.
- Larvae of univoltines are very sensitive to temperature and other environmental conditions.
- They are unsuitable for summer and autumn rearing by artificial breaking of egg diapause.
- The larval period is very long.
- All European races are Univoltines.
- The cocoons produced are commercially very superior.

3.2 Bivoltine race

- Bivoltine races have two generations per year, the first generation adults developing from eggs hatched in spring lay non dipausing eggs.
- The second generation adults developing from these eggs lay eggs which remain in the dormant state till next spring.
- The larval duration is as long as univoltines.
- Larvae are robust and tolerate environmental fluctuations.
- They can be used for 'Summer and autumn rearing and three crops can be raised per year.
- The cocoons are commercially superior.
- Japanese and Chinese races have both uni and bivoltine varieties.

3.3 Multi or polyvoltine race

- Multi or Polyvoltine races have more than three generations per year.
- The larval duration is short, and larvae are resistant to high temperature and high humidity.
- Larvae and cocoons are small in size.
- Commercially cocoons are of poor quality.
- The adults lay non diapausing eggs.
- Eri silkworm and Muga silkworm are generally Multivoltine.