

SHRI GURU RAM RAI UNIVERSITY

DEPARTMENT OF ENTOMOLOGY ,
SCHOOL OF AGRICULTURAL SCIENCES

Subject: MANAGEMENT OF BENEFICIAL INSECTS (BSAC-605)
Instructor : Dr. Hitendra Kumar, Associate Professor & Head (Entomology)

Q.1 : Describe important features of different species of silkworm.

Ans. : 1. Introduction

Silkworms are the larvae of moths belonging to the order **Lepidoptera**, primarily reared for silk production. They convert plant proteins into silk fibers, making them economically important insects in sericulture.

2. Classification

- **Phylum:** Arthropoda
- **Class:** Insecta
- **Order:** Lepidoptera
- **Family:** Bombycidae (major silk producers)

3. Major Species of Silkworm

Silkworms are broadly classified into **mulberry** and **non-mulberry (wild)** silkworms.

A. Mulberry Silkworm

1. *Bombyx mori*

Common Name: Mulberry silkworm

Host Plant: Mulberry (*Morus spp.*)

Origin & Distribution

- Native to China
- Domesticated species
- Widely reared in India, China, Japan, Korea

Characteristics

- Fully domesticated, cannot survive in wild
- White or creamy larvae
- High silk yield and quality
- Produces **continuous filament silk**

Races (Based on Voltinism)

- **Univoltine:** One generation/year (temperate regions)
- **Bivoltine:** Two generations/year

- **Multivoltine:** Multiple generations/year (tropical regions like India)



Economic Importance

- Accounts for **~90% of global silk production**
- Produces high-quality commercial silk

B. Non-Mulberry (Wild) Silkworms

These produce **coarse, coloured silk** and are reared mostly in forest or semi-domesticated conditions.

1. *Antheraea mylitta*

Common Name: Tasar silkworm

Host Plants: Arjun (*Terminalia arjuna*), Asan (*Terminalia tomentosa*)

Distribution

- India (Jharkhand, Chhattisgarh, Odisha, Madhya Pradesh)

Characteristics

- Wild silkworm
- Produces **Tasar silk (copper-brown colour)**
- Large larvae and cocoons



Types

- Tropical Tasar
- Temperate Tasar

2. *Antheraea assamensis*

Common Name: Muga silkworm

Host Plants

- Som (*Persea bombycina*)
- Soalu (*Litsea polyantha*)



Distribution

- Assam (India)

Characteristics

- Produces **golden-yellow silk (Muga silk)**
- Silk is highly durable and glossy
- Unique to India (Geographical Indication product)

3. *Samia ricini*

Common Name: Eri silkworm

Host Plants

- Castor (*Ricinus communis*)
- Tapioca, Kesseru

Distribution

- North-East India, Bihar, Odisha



Characteristics

- Domesticated (semi-domesticated)
- Produces **Eri silk (cream/white, wool-like)**
- Open-ended cocoon (non-reelable)
- Silk is spun, not reeled

4. *Antheraea proylei*

Common Name: Oak Tasar silkworm

Origin

- Hybrid of *Antheraea roylei* × *Antheraea pernyi*

Host Plants

- Oak (*Quercus spp.*)

Distribution

- Himalayan regions (Uttarakhand, Himachal Pradesh)



Characteristics

- Produces **Oak Tasar silk**
- Adapted to temperate climate

5. *Antheraea roylei*

Common Name: Himalayan wild silkworm

Characteristics

- Wild ancestor of oak tasar
- Found in Himalayan forests

4. Comparison of Major Silkworm Species

Species	Silk Type	Host Plant	Nature	Region
<i>Bombyx mori</i>	Mulberry silk	Mulberry	Domesticated	Throughout India
<i>Antheraea mylitta</i>	Tasar	Arjun, Asan	Wild	Central India
<i>Antheraea assamensis</i>	Muga	Som, Soalu	Semi-domesticated	Assam
<i>Samia ricini</i>	Eri	Castor	Domesticated	NE India
<i>Antheraea proylei</i>	Oak Tasar	Oak	Semi-domesticated	Himalayas

5. Key Differences: Mulberry vs Non-Mulberry Silkworms

Feature	Mulberry (<i>Bombyx mori</i>)	Non-mulberry
Food	Mulberry leaves	Various plants
Silk quality	Fine, smooth	Coarse, textured
Color	White	Colored (golden, brown)
Nature	Fully domesticated	Wild/semi-domesticated
Cocoon	Reelable	Sometimes non-reelable