



## Beyond Commerce: Exploring the World of Non-Commercial Insect Silks

(\*Kishore S. M.)

Ph.D. Scholar, Keladi Shivappa Nayaka University of Agricultural and Horticultural Sciences- Shivamogga

\*Corresponding Author's email: [kp464751@gmail.com](mailto:kp464751@gmail.com)

Silk production has long been associated with the domesticated silkworm, *Bombyx mori*, however other insects and creatures can generate valuable silk. Among these, the Anaphe silk worm *Anaphe venta*, a member of the Notodontidae family, is noteworthy for its distinctive silk, which is known for its elasticity and strength. This silk, which is native to tropical parts of southern and central Africa, was prominently used in the production of parachutes during World War II. Another silk-producing species is the Gonometa silk worm, whose cocoons, which are primarily found on Acacia bushes, produce glossy silk with a high sericin content that cannot be reeled easily. The Fagara silkworm, also known as *Attacus atlas*, is the world's largest moth, generating light brown silk that is reeled and utilised in the silk industry. Similarly, the Coan silkworm *Pachypasa* sp., which was previously widely bred in Europe, now produces less silk but is still utilised in speciality items such as crimson-dyed clothing.

Spiders, in addition to insects, create silk that is extremely strong and elastic, and is utilised in specialised applications such as optical instruments. Mussels, such as *Pinna squamosa*, contribute to the silk industry through their byssus threads, which are known as fish wool in Italy. This varied assortment of silk sources demonstrates the breadth and diversity of silk manufacturing beyond typical silkworms.

### Anaphe Silk Worm

*Anaphe venta* F: Notodontidae, O: Lepidoptera

- It produces Anaphe silk.
- Widely distributed in the tropical regions of southern and central Africa.
- These are polyphagous.
- Production of this silk reached a peak during a world war II and used in the manufacture of Parachute.
- Univoltine, Larva are polypod and have 7 instars and form collective cocoons.
- More elastic and stronger than the mulberry and used in the velvet and plush making.

### Gonometa Silk Worm

- Various species of the *Gonometa* are widely distributed throughout the African savanna.
- Moths of these insects are called EGGER moth.
- Larva are polyphagous, but maximum cocoons are found in the host *Acacia* sp.
- Cocoons are elongate, Ellipsoidal in shape, each of them weighing about 3.5 gms
- The cocoons are simple, unreelable and the silk is obtained by spinning
- The Sericin content is very high (45- 50 %).
- The degummed cocoons are spun to produce this lustrous silk.

## Fagara Silk Worm

*Attacus atlas* (Largest moth in the world)

- Distributed in Indo-Australian borders, China and Sudan.
- The main Genus of this is *Attacus*
- The cocoons are light brown in colour measures about 6 cms in length.
- Silk produced from this sp.
- Also, can be reeled and exploited in the silk industry

## Coan Silk Worm

*Pachypasa sp*

- Also called as Syrian silkworm belong to the genus *pachypasa*
- It was extensively cultivated in Europe until the introduction of Chinese silkworm *B.mori*
- Cocoons are white in colour measures about 8.9X 7.6 cms.
- Yield very little silk and is being used in the manufacture of Crimson dyed apparel etc.

## Spiders

- The webs of spider are made of silk and commercial silk obtained from them is called Spider silk.
- It is a non-insect variety of silk.
- The silk is not only soft and fine but also strong and elastic.
- The sp. *Nephila madagascarensis*, *Miranda aurentia* and *Epeiva* produces the silk which can be exploited in silk Industry.
- Silk is used in making cross bars in optical instrument.

## Mussel Silk

The byssus thread of the mussel pinna squamosa are spun into a silk called Fish wool in Italy.

## Other non-commercial Sericigenous insects

1. Moon moth: *Actias selene*
2. Cashew caterpillar: *Cricula trifenestrata*
3. Gregarious mango caterpillar: *Cricula sp*
4. Cercopia moth: *Philosamia cercopi*

## Conclusion

Silk manufacturing goes much beyond the well-known mulberry silkworm and includes a wide variety of insects and critters. The Anaphe silk worm, Gonometa silk worm, and Fagara silk worm all bring distinct characteristics to the silk business, providing alternatives to typical silks. Spiders and mussels also give silk its unique features, such as remarkable strength and elasticity. This variety emphasises the diversity of silk manufacturing, as well as the possibility for new applications in a wide range of sectors. The discovery of these different silk sources not only benefits the textile industry, but also paves the way for new technological developments and environmentally friendly methods.