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Non-Mulberry Sericulture: Weaving Nature's Wild Silk

*G. Savitha[1], R. Moulidharshan[2] and R. Nandha Kumar[2]
[1]Ph.D. Research Scholar, Department of Sericulture, University of Agricultural Sciences, GKVK, Bangalore-560065, India
[2]Department of Sericulture, Forest College and Research Institute, Tamil Nadu Agricultural University, Mettupalayam – 641 301, India
*Corresponding Author's email: savithasaran2001@gmail.com

Non-mulberry sericulture, also known as *Vanya silk* production, involves rearing wild or semi-domesticated silkworm species such as Tasar, Eri, and Muga, which feed on diverse forest and horticultural plants rather than mulberry leaves. These silks are culturally significant, environmentally sustainable, and provide livelihoods to rural and tribal communities across India and other regions. Compared to mulberry silk, non-mulberry silks offer unique textures, natural hues, and ethical production methods, particularly in the case of Eri silk. Despite challenges such as seasonal dependency, limited research, and market constraints, innovations in processing, ethical fashion demand, and conservation-linked practices are expanding their scope. This article explores the biology, rearing practices, environmental importance, and socio-economic impact of non-mulberry sericulture, highlighting its potential as a sustainable and culturally rich component of global silk production.

Keywords: Non-mulberry silk, Vanya silk, Tasar, Eri, Muga, sustainable sericulture, wild silkworms, biodiversity, ethical textiles.

Introduction

Sericulture the cultivation of silkworms for silk has long captured human imagination with its blend of biology, tradition, and artistry. While mulberry silk remains the most widely known and commercially dominant variety globally and in countries like India, there is a rich and vibrant world beyond it: non-mulberry sericulture. Often referred to as "Vanya silk" (from the Sanskrit *vanya* meaning *forest*), these wild silks are produced by silkworms that thrive outside the controlled environments typical of mulberry sericulture and feed on a wide range of host plants.

Non-Mulberry Sericulture

Unlike mulberry silk which comes from the domesticated *Bombyx mori* silkworm and accounts for the bulk of world silk production non-mulberry silks are derived from wild or semi-domesticated silkworm species that live in or near natural forests and feed on foliage such as oak, arjun, castor, and other trees. These silks include Tasar, Eri, and Muga, each with unique traits appreciated in regional and global markets. Collectively, these silks fall under the category of *vanya* or *wild* silks, and although they make up a smaller portion of overall silk output, they contribute to cultural identity, rural livelihoods, and biodiversity conservation.

Major Types of Non-Mulberry Silks

1. Tasar Silk

Tasar silk, sometimes spelled *Tussar*, is perhaps the most widely recognized non-mulberry silk. It is produced by silkworms of the genus *Antheraea* that live in deciduous forest regions

and feed on trees such as Terminalia (Asan and Arjun) species. These silkworms are adapted to natural ecosystems and are raised seasonally, usually aligned with leaf flushes in forests. Tasar silk fibers are typically coarser and stronger than mulberry silk, with a beautiful natural golden to coppery hue. They are used for a variety of fabrics that emphasize texture, strength, and earthy elegance not unlike handspun yarn in quality textiles.

2. Eri Silk

Often called "Ahimsa silk" or *peace silk*, Eri silk comes from the silkworm *Samia ricini* (or related species), which feeds mainly on castor plant leaves. Its most distinctive feature is that the cocoons are not boiled with the pupa inside—instead, the moth emerges naturally, making it a *cruelty-free* silk. Eri silk yarn is spun—much like wool or cotton—because its fibers are shorter and not suited to traditional reeling. The resulting fabric is soft, warm, and has excellent moisture-absorbing properties, making it suitable for shawls, scarves, and winter textiles.

3. Muga Silk

Muga silk is unique to the northeastern Indian state of Assam and is prized for its natural golden yellow sheen that often deepens with age. It is produced by the silkworm *Antheraea assamensis*, which thrives on aromatic host plants such as *Som* and *Soalu*. Known for durability, rarity, and lustre, Muga silk holds cultural significance and is often used to make traditional Assamese garments like the *Mekhela Chador*. Its production is primarily forest-based, and the silkworms are reared in controlled forest environments that mimic natural settings.

Importance of Non-mulberry Sericulture

1. Cultural and Economic Importance

In many tribal and rural landscapes especially in India's central, eastern, and northeastern regions non-mulberry sericulture is not just a farming activity but a way of life. These practices are deeply woven into cultural traditions, seasonal rhythms, and community identities. Economically, non-mulberry silks offer alternative livelihoods for small-scale producers. They support rural employment, particularly for women and indigenous groups, and help diversify income sources beyond conventional agriculture.

2. Environmental and Biodiversity Benefits

Non-mulberry silkworms depend on forest ecosystems and diverse host plants, making their cultivation intricately linked with biodiversity conservation. Maintaining healthy tree populations for food plants such as oak, arjun, and castor not only benefits silk production but also supports broader environmental stability. Because wild silkworms are adapted to seasonal climates and forest conditions, they contribute to ecological resilience while enabling communities to use local natural resources sustainably.

3. Growing Interest and Innovations

Although non-mulberry silk production has historically been localized and artisanal, recent research and technological developments are bringing new attention to these fibers. For instance, a comprehensive review on wild silk processing highlights recent advancements such as microwave-assisted and ultrasonic degumming, ionic liquid use, and novel silk formats like films and nanofibers suggesting potential uses beyond traditional textiles. These innovations could expand applications in biomaterials, biomedical engineering, and eco-friendly products.

Moreover, studies highlighting the biodiversity and habitat requirements of non-mulberry silkworms help researchers and policymakers design sustainable conservation and production strategies that balance ecological needs with economic benefits.

Challenges and the Road Ahead

Despite their cultural and environmental significance, non-mulberry sericulture faces challenges:

- Limited research investment: Compared with mulberry silk, non-mulberry silk research (especially for new species or novel applications) remains relatively underfunded.

- Seasonal constraints: Many wild silkworms are univoltine (one generation per year), which limits production cycles.
- Market hurdles: Wild silks often lack the global marketing strength and price stability that mulberry silk enjoys.

However, growing consumer interest in sustainable textiles and ethical fashion especially cruelty-free fibers like Eri silk opens new avenues for market expansion. As research broadens into biomaterial applications and forest-based production systems, non-mulberry silks could carve out a larger niche in both traditional and high-tech sectors.

Conclusion

Non-mulberry sericulture represents a rich tapestry of tradition, biodiversity, and innovation. From the rugged forests that nurture tasar silkworms, to the golden looms of Assam producing Muga silk, and the ethical ethos of Eri silk, these wild fibers celebrate nature's diversity and human ingenuity. As research and sustainable practices continue to evolve, non-mulberry silk stands poised to offer not just beautiful textiles, but pathways toward ecological stewardship and inclusive rural development.

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