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Beyond Mulberry: Exploring the World of Wild and Vanya Silks

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While mulberry silk from *Bombyx mori* dominates global production with its fine, lustrous filaments, non-mulberry or "vanya" silks offer a diverse, eco-friendly alternative rooted in forest ecosystems and tribal traditions. Primarily produced in India-the only country cultivating all major silk varieties-vanya silks include tropical tasar (*Antheraea mylitta*), temperate/oak tasar (*Antheraea proylei*), eri (*Samia ricini*) and muga (*Antheraea assamensis*). These wild or semi-domesticated silks are characterized by coarser textures, natural colors, superior durability and often non-violent (ahimsa) harvesting methods. This review explores their production processes, unique properties, ecological benefits, socio-economic contributions to rural and tribal communities and sustainability challenges. Drawing from recent literature (2020-2025), vanya silks promote biodiversity conservation, require minimal inputs and align with ethical consumer demands. Despite obstacles like habitat loss and climate variability, innovations in host plant management and rearing technologies promise enhanced viability. Vanya silks represent a harmonious blend of cultural heritage, environmental stewardship and economic empowerment, positioning them as premium sustainable textiles for the future.

Keywords: vanya silk, wild silk, non-mulberry sericulture, tasar silk, eri silk, muga silk, ahimsa silk, biodiversity conservation, sustainable sericulture, tribal livelihoods,

Introduction

Silk production has captivated civilizations for millennia, with mulberry silk (*Bombyx mori*) accounting for over 90% of global output due to its smooth, continuous filaments and high yield. However, in India- the world's second-largest silk producer-non-mulberry silks, collectively termed "vanya" (meaning "forest" in Sanskrit), contribute significantly to diversity and sustainability (Devi *et al*., 2025). These wild or semi-wild silks, derived from silk moths feeding on diverse forest plants, embody ecological harmony and cultural significance, particularly among tribal communities in central, eastern and northeastern states. Vanya silks differ fundamentally from mulberry: they feature staple fibers (spun rather than reeled), natural hues, enhanced strength and often ethical production avoiding silkworm killing. India uniquely produces four commercial vanya varieties-tasar, eri, muga and temperate tasar-supporting livelihoods for millions while conserving forests (Naan *et al*., 2025). Amid growing demand for sustainable and cruelty-free textiles, vanya silks offer biodegradable, low-impact alternatives to synthetics. This article delves into their world, highlighting production, properties, benefits and prospects.

Wild silk

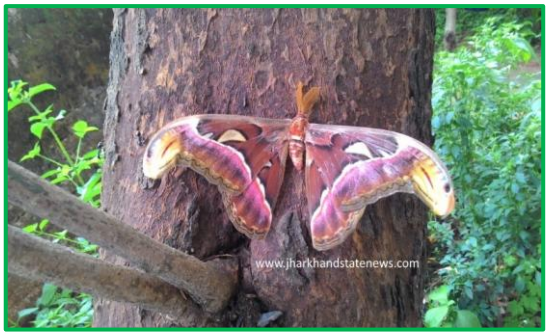
Methodology

This narrative review synthesizes peer-reviewed articles, reports and scholarly sources published primarily between 2020 and 2025. Sources were selected from academic databases and open-access journals focusing on vanya sericulture, sustainability and production technologies. Key themes include silk types, host plants, rearing practices, ecological impacts and socio-economic aspects. Approximately 20 sources were analysed, with emphasis on empirical reviews and case studies from India. In-text citations follow APA style, prioritizing recent advancements for an informative overview accessible to researchers, policymakers and enthusiasts.

Overview of Vanya Silks

Vanya silks encompass non-mulberry varieties reared on forest or cultivated trees, contrasting with intensive mulberry farming. They are polyphagous, adapting to multiple hosts and often outdoor-reared, integrating with natural ecosystems (Devi *et al*., 2025). Production is seasonal or multivoltine, yielding coarser, textured fabrics prized for durability and breathability. India's vanya output, though smaller than mulberry, is culturally vital and environmentally benign, relying on tribal knowledge for rearing and harvesting. Cocoons are typically collected post-moth emergence, enabling ahimsa practices in some varieties.

Tasar Silk: The Forest Jewel



Tasar Silk Moth

Tropical tasar, from *Antheraea mylitta*, dominates vanya production, reared on primary hosts like *Terminalia arjuna*, *Terminalia tomentosa* and *Shorea robusta* in central Indian forests (Jharkhand, Chhattisgarh, Odisha). Temperate/oak tasar (*Antheraea proylei*) uses oak species in sub-Himalayan regions. Rearing is outdoor and semi-domesticated: eggs hatch into larvae fed on forest foliage, spinning pedunculate cocoons with mineral reinforcements for strength. Harvest occurs after moth emergence or selectively. Tasar silk is golden-brown, highly durable (tougher than mulberry) and biodegradable, ideal for upholstery and blends (Komal *et al*., 2025). Sustainability stems from forest integration: tasar promotes agroforestry, conserves biodiversity and provides tribal income with low inputs. Research trends highlight genetic improvements and disease resistance amid climate challenges (Komal *et al*., 2025).

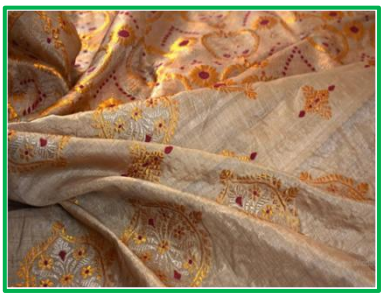
Eri Silk: The Fabric of Peace

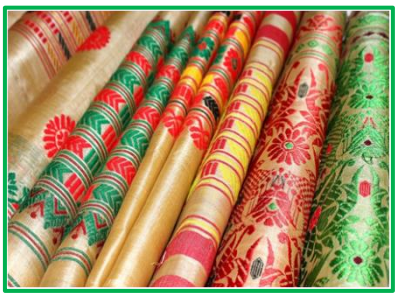
Eri silk, produced by *Samia ricini* (also known as *Philosamia ricini*), is the epitome of ahimsa sericulture. Fed primarily on castor (*Ricinus communis*) or kesseru leaves, eri silkworms spin open-ended cocoons, allowing moths to emerge naturally before harvesting. This inherent non-violence aligns with ethical principles, earning it the moniker "peace silk." Predominant in north-eastern states (Assam, Meghalaya) and expanding elsewhere, eri yields soft, woolly, thermal-regulating fabric-warm in winter, cool in summer-with natural white to reddish hues. It blends excellently with cotton or wool and is fully domesticated yet eco-friendly. Production supports women-led cottage industries; pupae are often consumed as

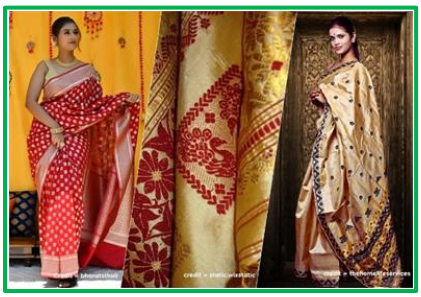
protein-rich food. Eri's spun yarn creates textured, matte finishes, appealing to vegan and sustainable fashion markets.

Muga Silk: The Golden Treasure

Exclusive to Assam, muga silk from *Antheraea assamensis* boasts a natural golden sheen that intensifies with washing-unlike fading dyes. Fed on aromatic *Persea bombycina* (som) and *Litsea polyantha* (Soalu), muga is multivoltine (5-6 crops/year), yielding lustrous, durable fabric historically reserved for royalty. Semi-domesticated rearing involves outdoor cycles sensitive to climate; cocoons are reeled for fine filaments. Muga's tensile strength and gloss make it premium, with sarees lasting generations. Production preserves Brahmaputra valley ecosystems but faces seed quality and environmental fluctuation challenges (Devi *et al*., 2025).



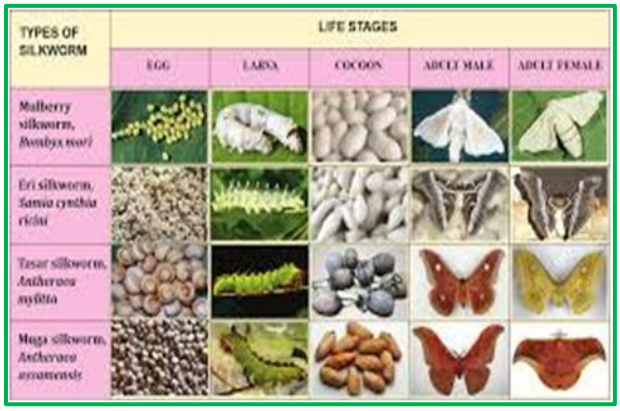




Ecological and Socio-Economic Significance

Vanya sericulture conserves forests by incentivizing host plant protection, enhances biodiversity through polyphagous feeding and sequesters carbon via agroforestry (Naan *et al*., 2025). Low chemical use and natural rearing minimize pollution. Socio-economically, it empowers tribal women, generates rural employment and fetches premium prices for natural,

ethical attributes. Diversification into northern India via adapted technologies expands opportunities (Naan *et al*., 2025).



Challenges and Future Prospects

Obstacles include habitat degradation, climate variability affecting foliage, disease/pest losses, poor seed systems, labor intensity and market competition (Devi *et al*., 2025). Scattered rearing hinders monitoring. Prospects involve indoor rearing, mechanization (e.g., solar-powered spinning), genetic breeding and policy support like Silk Samagra-2. Eco-certification and branding can boost global appeal.

Conclusion

Beyond mulberry's uniformity lies the vibrant world of vanya silks-Taser's rustic strength, eri's compassionate warmth, muga's golden elegance. These forest-derived treasures sustain ecosystems, honors traditions and meet modern ethical demands (Devi *et al*., 2025; Komal *et al*., 2025). By addressing challenges through innovation and conservation, vanya silks can flourish, weaving sustainability into luxury textiles and empowering communities for generations.

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