

Muga Culture: A Notable Approach for Sustainable Development

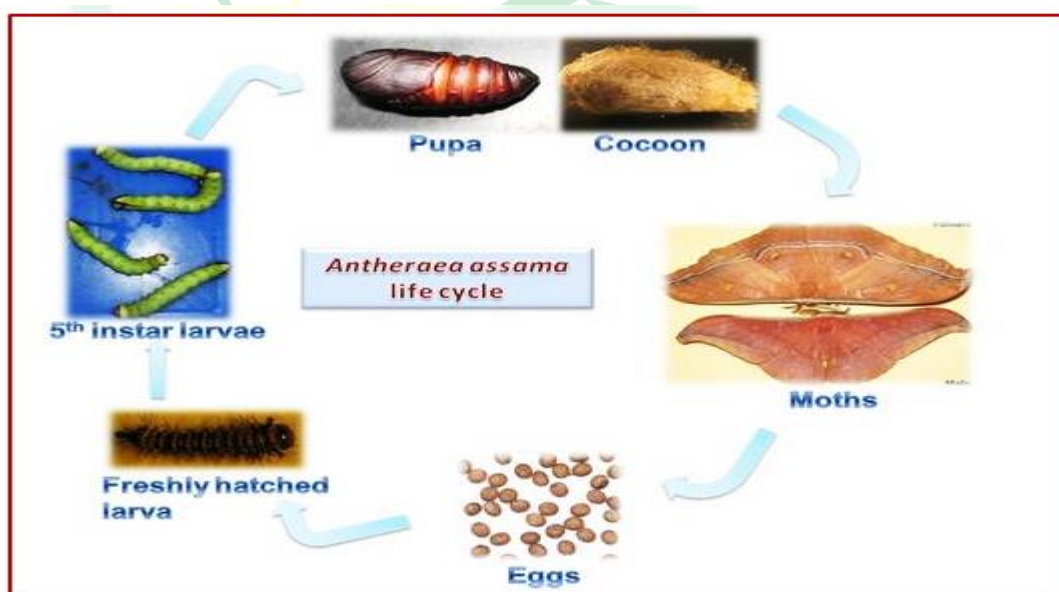
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Introduction

The practice of producing silk through the raising of silkworms and post-cocoon activities that result in the manufacturing of silk yarn is known as sericulture. India is among the nations with the greatest biological and cultural diversity in the world. One of the "mega diversity" countries of the world, India is home to four hotspot regions: the Eastern Himalayas, the Western Ghats, Sri Lanka, Indo-Burma, and Sundaland. Assam, a state in northeast India, stands out as a thriving global biodiversity hotspot (Myers *et al.*, 2000). Assam is the only place in the globe where all four natural silk varieties - Eri, Muga, Mulberry, and Tasar-can be produced due to its unique environmental conditions (Goswami and Devi, 2017). Muga culture refers to a centuries-old cultural tradition deeply intertwined with the northeastern region of India, particularly Assam. At its core, Muga culture revolves around the cultivation of Muga silk, a rare and exquisite variety of silk produced by the silkworm, *Antheraea assamensis*. This culture encompasses the entire process of Muga silk production, from silkworm rearing to weaving, and the rituals, craftsmanship, and heritage associated with it.



The historical roots of Muga culture trace back over a millennium. It finds its origins in the rich heritage of the Assamese people, who have cherished and perfected the art of Muga silk production through generations. References to Muga silk can be found in ancient texts and inscriptions, dating as far back as the 4th century AD, indicating its enduring presence in the region's culture. The history of muga silk is deeply entwined with the Assamese nobility, for whom it represented wealth and status. This silk was used to embellish kings' and queens' garments, a testament to its extraordinary quality and significance. Muga culture has developed over the ages into an essential aspect of Assamese identity, beyond its economic significance to become a fundamental part of the social and cultural fabric of the area.

Sustainable Development

Sustainable development is a holistic approach that seeks to address the interrelated challenges of environmental protection, social equity, and economic prosperity to ensure a better quality of life for present and future generations. Sustainable agriculture principles emphasize responsible resource management, economic viability, and social equity. They promote practices that conserve the environment, protect biodiversity, and maintain soil health while ensuring fair income for farmers and the well-being of communities. Key aspects include reducing chemical use, crop diversity, water and energy efficiency, and adaptation to climate change. Sustainable agriculture is a dynamic approach that fosters continuous learning and improvement to create a resilient and environmentally friendly food production system.



Muga Culture and Sustainable Development

- 1. Environmental Sustainability:** Muga silk production relies on the cultivation of host trees and the careful rearing of silkworms, promoting sustainable forestry and biodiversity conservation. Natural dyes are frequently utilized to dye muga silk, which minimizes the environmental effect of synthetic dyes. Traditional Muga silk production minimizes chemical inputs, contributing to reduced pollution and ecological harm.
- 2. Social Equity:** Muga culture often involves entire communities in the sericulture and weaving processes, creating a sense of ownership and social cohesion. Muga silk production empowers women and marginalized groups, offering economic independence and improving social equity.
- 3. Economic Viability:** Muga silk provides income opportunities to numerous communities in the region, fostering economic stability and reducing dependence on single-crop agriculture. Muga silk production provides a livelihood for thousands of families in Assam, particularly in rural areas where employment opportunities are limited.
- 4. Value Addition:** The craftsmanship involved in Muga silk weaving adds significant value to the product, supporting economic sustainability for artisans and weavers.
- 5. Innovation and Sustainability:** Muga culture presents an example of how innovation can integrate with tradition, maintaining the integrity of the practice while embracing new ideas. Disposable fashion is discouraged by muga silk's long-lasting attractiveness and sustainable consumption practices.
- 6. Women's Empowerment:** Women are empowered by Muga culture to actively engage in weaving and sericulture. The ancient knowledge of Muga culture is frequently preserved by women, and their participation fosters economic independence and gender parity.
- 7. Environmental Stewardship:** Sustainable forestry methods are supported by the cultivation of Muga host trees and the silkworm *Antheraea assamensis*. Communities that practice sericulture frequently preserve the habitats of silkworms and other tree species, so preserving the local biodiversity.
- 8. Community Cohesion:** The making of Muga silk is a community-wide cooperative endeavor. This encourages community members to feel united and cooperative. Social ties are reinforced by the Muga culture's common history and customs.



9. **Promotion of Sustainable Consumption:** Muga silk's durability and timeless appeal discourage fast fashion and promote sustainable consumption. Consumers are more likely to cherish and care for Muga silk products, extending their lifespan and reducing waste.
10. The above examples show how Muga culture not only protects a distinctive cultural legacy but also advances the overall health and long-term growth of the local populations. The Muga culture exemplifies how to balance tradition with advancement through social solidarity, environmental stewardship, economic empowerment, and cultural preservation.

Importance of Preserving and Promoting Muga Culture

Preserving and promoting Muga culture is not just a matter of tradition; it is a powerful catalyst for sustainable development. Here's why it deserves our attention and concerted efforts:

1. **Environmental Stewardship:** Muga culture embodies sustainable sericulture practices that promote biodiversity conservation and responsible land use. By preserving Muga culture, we contribute to the protection of unique ecosystems and the species dependent on them.
2. **Economic Empowerment:** Muga silk production offers livelihoods to countless individuals and communities, especially in rural areas where economic opportunities are scarce. Supporting Muga culture means reducing poverty and fostering economic stability.
3. **Social Equity:** Muga culture empowers women and marginalized groups by providing opportunities for economic independence and participation in decisionmaking processes. It contributes to social cohesion and reduces disparities.
4. **Global Recognition:** Muga silk, with its unique qualities, has the potential to become a global symbol of sustainable luxury and responsible consumption. It can position itself as a sought-after product in conscious consumer markets worldwide.
5. **Innovation and Adaptation:** Muga culture's ability to adapt to modern challenges while preserving tradition showcases the resilience of indigenous knowledge and practices. It exemplifies how ancient wisdom can guide us in the face of contemporary issues.

Case studies

The case studies that follow show how Muga culture has been successfully incorporated into sustainable development programs, showing how this age-old custom can promote community cultural preservation, economic growth, and environmental preservation.

1. Sualkuchi, Assam, India : Sualkuchi, also called the "Silk Village of Assam," is a little hamlet in the Indian state of Assam that is well-known for its extensive history of weaving silk, especially Muga silk. It serves as a center for the manufacturing of Muga silk and has effectively incorporated its cultural legacy into efforts for sustainable development. Sualkuchi has experienced economic growth due to increased demand for Muga silk products, both domestically and internationally. Sustainable practices have helped protect the local environment and biodiversity.
2. Ri-Bhoi District, Meghalaya, India: The Ri-Bhoi district in Meghalaya, India, is known for its sericulture initiatives, focusing on Muga silk production. Muga silk production has become a significant source of income for the communities in Ri-Bhoi, reducing dependence on traditional agriculture. The initiative has preserved traditional knowledge and cultural practices related to Muga silk production.

Importance of sericigenous insects

Apart from silk, there are several others by products from these insects which can be utilized as commercial input in many fields. Silkworm pupae were used as fertilizer, animal feed, food material, and medicine in some countries, such as China, Japan, Korea, India, and Thailand (Mishra *et al.*, 2003). In China and India, by many tribal communities, silkworm pupae are consumed as human food (Nagaraju, 2008).

The silkworm pupae contain 55-60% protein, 25-30% lipid, 4.96% fibre (Yang *et al.*, 2002). Silkworm pupae (*Bombyx mori*) contains high level of essential amino acids such as valine, methionine and phenylalanine and 28.8% saturated fatty acids, 2.7% monounsaturated fatty acid and 43.6% polyunsaturated fatty acid; predominantly linolenic acid. Sericin powder, which is yielded through process of the degumming of silk fiber, is used in a variety of industries as a raw material in production of food, cosmetic, medicine, and so forth. The stunning appearance and captivating wing patterns of sericigenous insects entice individuals to utilize them as models for various textile designs and decorative pieces, among other things. Additionally, they serve as a form of entertainment in many butterfly and moth parks.

Conclusion

Maintaining and advancing Muga culture is an international chance for sustainable development, not just a local project. It serves as a reminder that tradition and innovation working together can create a world that is more harmonious and balanced and prioritizes protecting the environment and cultural legacy. Together, let's set out on a mission to preserve Muga culture so that it can enrich the lives of those it touches and serve as an inspiration for sustainable development across the globe. Thus, the Indian subcontinent's favored enterprise and the socioeconomic conditions of its rural residents could both benefit from the seridiversity and its exploitation. India's business has a lot of room to grow because of the country's abundance of biological resources. However, the pressing necessity of the hour is to improve and fortify India's systems for conserving its biodiversity.

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