

Silk of Assam

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ABSTRACT

Muga silk, a distinctive golden silk indigenous to Assam, India, is produced by the *Antheraea assamensis* silkworms and is celebrated for its unparalleled durability, natural sheen, and cultural significance. This study explores the unique characteristics, production processes, export potential, and socio-economic impact of Muga silk. Its cultivation relies on traditional methods, where silkworms are reared on Som and Soalu plants. The silk is known for its natural golden hue, remarkable longevity, and luxurious texture, making it highly sought after in global markets. Challenges in export include maintaining quality, navigating trade regulations, and competing with other silks like mulberry and tasar. Muga silk contributes significantly to the local economy, providing livelihoods, promoting cultural heritage, and supporting environmentally sustainable practices. An analysis of the economic benefit-cost ratio (BCR) highlights its long-term socio-economic and environmental benefits, demonstrating its profitability and sustainability. Strategies for improving BCR, such as technological innovations, government support, and value addition, are discussed. This research underscores Muga silk's potential to thrive as a luxury textile, balancing cultural preservation with modern market demands.

INTRODUCTION

The silk of Assam (Muga) was introduced to the world in 1662 by a prominent European traveler named Jean Joseph Tavenier. Since the Assamese kings encouraged the growth of sericulture, it was free from paying land revenue. The development of the muga business was hindered by the major earthquake that struck Upper Assam in about 1950, which destroyed numerous muga plants. The pride of Assam State and the prerogative of India is this golden yellow silk. *Antheraea assamensis*, a wild multivoltine silkworm, is the source of it. These silkworms are raised outdoors on trees resembling tasars, where they consume the fragrant leaves of som and soalu plants. This fabric, which is woven on foot-powered, hand-operated looms to produce a delicate unevenness, is one of the world's treasures of excellent silk fabrics. The innate shimmering golden color of this unique, wild silk amplifies its stunning beauty without the need for coloring. This product has a great value and is utilized in items such as chaddars, mekhalas, and sarees. Assamese heritage and culture are deeply rooted in the Muga culture, which is unique to that state. However, because som and soalu plants are readily available, the muga culture is spreading to neighbouring States, including West Bengal, Meghalaya, and Nagaland. Currently, muga is used to embellish clothing and other items' surfaces instead of zari in sarees. Assam, in India, is the primary producer of muga silk, a unique and highly prized material. This silk is highly prized in the international market for its exquisite texture, remarkable longevity, and inherent golden color. This is a detailed examination of Muga silk, with an emphasis on its traits, manufacturing methods, export possibilities, and overall influence (Sharma, K. & Hazarika, R. 2021).

1. Characteristics of Muga Silk

Origin: A type of silkworm indigenous to Assam called *Antheraea assamensis* produces muga silk. The fact that Muga is exclusive to this area as opposed to other forms of silk adds to its attraction and exclusivity. The native Som and Soalu tree leaves are used to raise the silkworms in the manner that has been done for generations.

Color: Muga silk's inherent golden hue is one of its distinguishing qualities. The silk naturally has this color; dying does not produce it. Muga silk's color develops richer and deeper over time, adding to its aesthetic appeal and elevating its status as a high-end product. Because of its brilliance and natural coloring, Muga silk is highly prized in a traditional and upscale fashion.

Durability: Muga silk is well known for its durability and strength. Muga silk is incredibly durable and can survive for generations, in contrast to other varieties of silk that may deteriorate over time. The silk's inherent fiber structure, which is denser and more robust than that of other silks, accounts for its durability. Because of its quality, Muga silk is perfect for clothing and other fabrics that are meant to be treasured and handed down through the years.

Texture: Muga silk's high value is also due to its texture. It sets itself apart from other silks with a distinct sheen, smoothness, and slightly gritty texture. This texture contributes to Muga silk's opulent reputation and improves the physical sensation of wearing it. Because of its inherent sheen, silk is a popular choice for both traditional clothing and high fashion in the modern era.

2. Production and Processing

Cultivation: In Assam, the manufacture of Muga silk is a long-standing custom that requires meticulous and expert silkworm rearing. Mature silkworms are harvested for their eggs, which are subsequently nurtured under carefully regulated circumstances. The Som and Soalu trees' leaves, which supply the nutrients needed for the creation of fine silk, are what the larvae feed.

Harvesting: Muga silk harvesting demands exacting attention to detail. To prevent damage, the cocoons are gathered by hand. Every cocoon is examined closely to make sure it satisfies the standards of quality expected of fine fabrics. Harvesting the cocoons at the right time is essential since harvesting the cocoons too early or too late will compromise the quality of the silk.

Processing: The cocoons go through a number of processing stages in order to remove the silk fibers after harvesting. Reeling the silk from the cocoon is a step in this process that must be done carefully to prevent destroying the fragile fibers. After that, the silk is woven into fabric and, if required, colored. One of the main reasons Muga silk is so appealing is that, in contrast to other silks, it is frequently left in its original golden color. The traditional handlooms used for the weaving process enhance the final product's handcrafted quality.

3. Export Potential and Market

Demand: Muga silk's distinct qualities and scarcity have created a specialized but increasing demand for it in global markets. It is frequently utilized in expensive clothing, traditional garb, and luxury fashion. Muga silk's natural golden hue, exclusivity, and durability make it a sought-after material for customers looking for premium and distinctive textiles.

Export Markets: Muga silk's unique characteristics and scarcity have resulted in a specialized but growing demand in worldwide markets. It is widely used in high-end apparel, traditional attire, and luxury fashion. Due to its inherent golden color, rarity, and strength, muga silk is highly sought after by consumers seeking luxurious and unique fabrics.

Challenges: The export of Muga silk is fraught with difficulties. Throughout the supply chain, it is essential to maintain the silk's excellent quality because any deterioration could lower its worth. Since that different nations have different needs for textile imports, navigating trade procedures and tariffs can also be challenging. Furthermore, other varieties of silk that are prized in the global market, such mulberry and tasar, compete with Muga silk.

4. Value Addition

Products: Muga silk is utilized in the production of numerous goods. Popular traditional products that highlight the distinctive texture and color of silk are shawls, scarves, and sarees. Apart from customary attire, Muga silk is progressively being utilized in upscale fashion and interior design. Designers and producers are looking into new uses for Muga silk, such as opulent accessories and components for interior design.

Branding: Improving the attractiveness of Muga silk in international markets requires strong branding. To set Muga silk apart from other silks and draw in discerning customers, it can be marketed as a high-end, environmentally friendly, and culturally relevant product. In the cutthroat textile industry, highlighting its handmade production techniques, environmentally friendly qualities, and distinctive heritage might help it stand out.

5. Trade and Export Regulations

Certification: Muga silk exporters have to adhere to a number of international certifications and criteria in order to guarantee the product's authenticity and quality. Export transactions can go more smoothly and with greater confidence when fair trade, sustainability, and quality assurance certifications are obtained.

Documentation: Proper documentation is required for a successful export procedure. This contains paperwork proving conformity with trade laws and standards, as well as certificates of origin attesting to the silk's precise place of origin. A smooth export process can be achieved by making sure all required documentation is in order.

6. Economic Impact

Local Economy: Assamese local economies are significantly impacted by the Muga silk industry. For numerous craftspeople, farmers, and laborers engaged in different phases of production, it offers a means of subsistence. The industry promotes traditional crafts and aids in the preservation of cultural heritage, which benefits the socioeconomic growth of the area.

Growth Opportunities: The Muga silk business has a great deal of room for expansion. Growth can be accelerated by supporting sustainable practices, breaking into new markets, and investing in technology to increase production efficiency. The industry may reach new markets and expand globally by improving the quality and attractiveness of Muga silk.

7. Sustainability and Conservation

Eco-Friendly: Production of Muga silk is typically regarded as environmentally benign. Compared to synthetic textiles, the procedure uses natural resources and conventional methods, which have less of an impact on the

environment. The silk's sustainability is further enhanced by the use of natural dyes and little to no chemical processing.

Conservation Efforts: The Muga silk business depends on efforts to maintain sustainable practices and preserve traditional processes to remain viable over the long run. Protecting this distinctive sector and its cultural legacy can be accomplished through supporting efforts that support ethical labor standards, sustainable agriculture, and silkworm species conservation (Das, R., & Medhi, P. S. 2019).

Economic Benefit-Cost Ratio (BCR)

Muga silk production evaluates the overall economic returns relative to the costs incurred during production, and it often considers broader factors beyond financial profit, including employment generation, environmental impacts, and socio-economic benefits to the community. The economic BCR is more comprehensive, factoring in long-term benefits to society and the economy as a whole (Gogoi, B. J., & Deka, S. 2017).

Key Components in the Economic BCR of Muga Silk Production:

1. Economic Benefits:

- **Income Generation for Farmers:** Muga silk cultivation provides a livelihood for farmers and silk producers, especially in rural areas of Assam, where Muga silk is primarily produced.
- **Employment Opportunities:** The production process (rearing, spinning, weaving, and marketing) creates jobs for both skilled and unskilled labor, boosting local economies.
- **Exports and Foreign Exchange:** Muga silk are a premium product, often exported to global markets, contributing to foreign exchange earnings.

- **Cultural Heritage:** As Muga silk is part of the cultural identity of Assam, its production helps preserve traditional practices and crafts, adding intangible cultural value.
 - **Environmental Benefits:** Muga silk farming is eco-friendly. The silkworms are reared on trees like Som and Soalu, promoting agroforestry and biodiversity without the use of synthetic chemicals or pesticides.
2. **Economic Costs:**
- **Initial Setup Costs:** Costs include establishing plantations of host plants (Som and Soalu), setting up rearing houses, and acquiring equipment for spinning and weaving.
 - **Labor Costs:** Since Muga silk production is labor-intensive, there are significant recurring costs associated with manual labor.
 - **Time & Maintenance:** Muga silk production has a longer lifecycle, and maintaining host trees and rearing silkworms can be time-consuming.
 - **Raw Material Costs:** Continuous feeding of silkworms and ensuring the health of host trees require ongoing investment.

Broader Socio-Economic Impact:

- **Rural Development:** Muga silk production supports rural economies by promoting decentralized production systems, where individual households or cooperatives participate.
- **Sustainability:** The environmentally sustainable practices in Muga silk cultivation help maintain biodiversity and natural ecosystems, which has long-term positive impacts on agriculture and ecology.

Example Calculation of Economic BCR:

Assume the total benefits (both direct income and broader societal benefits such as job creation and cultural preservation) amount to Rs. 50,000, while the total costs (investment in labor, resources, infrastructure, and land) are Rs. 30,000.

$$\text{Economic BCR} = 50,000 / 30,000 = 1.67$$

A **BCR** of 1.67 suggests that the economic benefits (financial and social) far outweigh the costs, indicating that Muga silk production is not only profitable but also beneficial to the community and environment.

Ways to Improve the Economic BCR:

- **Government Support:** Enhanced subsidies, infrastructure, and market linkage support.
- **Technological Innovations:** Mechanization of certain processes can increase efficiency and reduce costs.
- **Sustainable Practices:** Promoting organic and sustainable practices in silk production can open up new markets and add value.

CONCLUSION

Muga silk has a distinct identity, cultural significance, and opulent appeal, making it stand out worldwide. Exporters can make use of these qualities while tackling issues with market rivalry, regulatory compliance, and quality control. The Muga silk business may expand its worldwide reach and sustain its growth in the global market by emphasizing value addition, efficient branding, and sustainability.

REFERENCES

- Gogoi, B. J., & Deka, S. (2017). "Traditional Practices in Muga Silk Production and Its Socio-Economic Impact in Assam."

Journal of Sericulture and Entomology Research, 45(3), 120-128.

Das, R., & Medhi, P. S. (2019). "Sustainability and Conservation Practices in Muga Silk Cultivation." *Environmental and Agricultural Studies*, 54(2), 98-106.

Sharma, K. & Hazarika, R. (2021). "Economic Analysis of Muga Silk Production: Challenges and Opportunities." *Textile Economics and Global Market Studies*, 39(1), 56-74.