AGRI MAGAZINE
(International E-Magazine for Agricultural Articles)
Volume: 03, Issue: 03 (March, 2026)
Available online at http://www.agrimagazine.in
©Agri Magazine, ISSN: 3048-8656

Value Addition Approaches for Enhancing Profitability in Sericulture

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Sericulture is an important agro-based industry that integrates agriculture, forestry, and textile sectors while generating large-scale rural employment. It provides livelihood opportunities to small and marginal farmers, landless labourers, and women through mulberry cultivation, silkworm rearing, reeling, and weaving activities. Despite its socio-economic importance, the profitability of primary producers in the sericulture sector often remains limited due to fluctuations in cocoon prices, rising input costs, and inadequate access to advanced processing technologies. Most farmers traditionally sell raw cocoons without engaging in further processing, thereby missing opportunities for higher income generation.

Value addition in sericulture refers to the process of enhancing the economic worth of silk and its by-products through improved processing, product diversification, quality enhancement, branding, and efficient marketing strategies. It includes activities such as production of high-quality silk yarn, development of silk blends, innovative textile designs, handicraft preparation, sericin extraction for cosmetic and pharmaceutical uses, and utilization of silkworm pupae for feed and oil extraction. These interventions not only increase profit margins but also reduce wastage and improve resource efficiency within the value chain. With increasing domestic and international demand for diversified and eco-friendly silk products, there is significant scope to strengthen the sericulture value chain through technological innovations and entrepreneurial initiatives. Modern reeling machines, improved dyeing and finishing methods, digital marketing platforms, and cluster-based production models have opened new avenues for rural enterprises.

Value Added Products from Mulberry

Mulberry leaf powder: Used asa nutritional supplement. It's rich in protein, iron, calcium, antioxidants, and anti-diabetic compounds. It also used in cosmetics and herbal medicines. It contains bioactive compoundsuch as DNJ (1-Deoxynojirimycin).

Mulberry Herbal Tea: Made from dried, young leaves. It contains 1-Deoxynojirimycin (DNJ), which helps control blood sugar levels. It is known for its anti-obesity and cholesterol-lowering properties.

Mulberry Jam and Jelly: In Chinese markets, mulberry is often sold in the form of a paste called "sangshengao". This paste is mixed with hot water to make a tea that is believed to improve liver and kidney function, enhance hearing, and improve eyesight.

Mulberry Wine: The high concentration of mulberries gives this beverage a unique sweetness and flavor, which is used in the beverage industry to generate high income. It also provides good health benefits. It is used for blood purification and is believed to help eliminate faecal residues from the intestines. Like many other berries, mulberries are rich in antioxidants, which can help boost the immune system the intestines.

Mulberry Squash and RTS (Ready-to-Serve) Drinks: These are processed fruit beverages with a long shelf life. They are high in Vitamin C, which helps strengthen the immune system. They also provide essential minerals like iron and potassium, which are important for blood health and maintaining blood pressure.which helps strengthen the immune system.

Mulberry Paper: The bark of the mulberry tree is used to make high quality, handmade paper known for its durability and unique texture quality.

Chlorophyll Extraction: Mulberry leaves are a primary source for extracting chlorophyll, which is used as a natural food colorant and in various medicinal applications.

Skin Whitening Agents: Extracts from mulberry root bark and leaves are used in high-end cosmetics to inhibit melanin production and lighten skin tone.

Value Added Products from Silkworm

Sericin-Based Products: Sericin is a protein obtained during the silk processing stage.

Cosmetics: Includes soaps, creams, shampoos, and face masks. These products are known for their moisturizing and anti-aging properties.

Biomedical Uses: Includes tissue engineering materials, biodegradable films, and coatings.

Silkworm Pupa-Based Products

Pupal Oil: The oil extracted from silkworm pupae is used in poultry and fish feed.

Vermicompost: Made from silkworm litter and waste, it produces organic manure that is used in agriculture.

Biogas Production: Silkworm waste is used to generate renewable energy.

Value Added Products from Silkworm Cocoon

This sector focuses on utilizing defective or "waste" cocoons, such as those that are pierced, stained, or double, which cannot be reeled.

Eco-Jewellery: These cocoons are dyed with natural pigments and stiffened to create lightweight and durable jewellery like earrings, necklaces, and brooches.

Floral Art: Cut cocoons are shaped into intricate artificial flowers, bouquets, and decorative home items.

Greeting Cards: Flattened and dyed silk waste is used to create unique textures for handmade cards and wall hangings.

Value added products from Silk

Surgical Scaffolds & Meshes: Used in plastic and reconstructive surgery (e.g., breast reconstruction or body contouring) because it supports tissue growth while being naturally absorbed by the body.

Advanced Wound Care: Silk-based hydrogels, films, and sponges accelerate healing for chronic wounds, burns, and ulcers by maintaining moisture and promoting collagen production.

Surgical Sutures: A traditional use, but still a major value-added product due to its superior knot strength and low immune reaction.

Drug Delivery Systems: Silk nanoparticles are being developed to "encapsulate" drugs, allowing for controlled and targeted release in the body.

Skincare: Sericin and hydrolysed silk peptides are added to premium anti-aging creams, serums, and lotions. They form a breathable protective film that retains moisture and improves skin elasticity.

Haircare: Silk protein (fibroin) binds to the keratin in hair, repairing damage, increasing shine, and adding strength to hair strands in shampoos and conditioners.

Sun Protection: Silk proteins have natural UV-shielding properties and are used in sunscreens to boost SPF efficiency while soothing the skin.

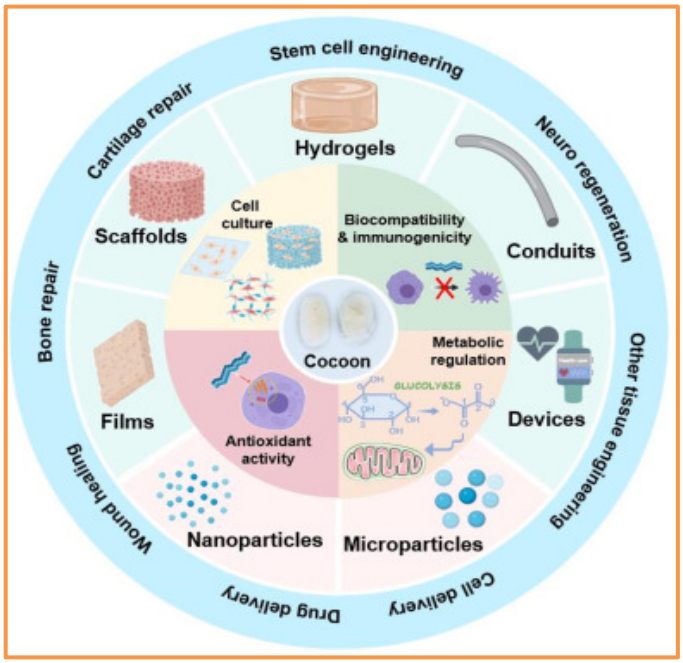
Edible Silk Peptides: Consumable silk powder is used as a health supplement to support immune function, improve sleep quality (due to high glycine content), and even help regulate blood sugar.

Functional Additives: Sericin can be used as a natural ingredient in jellies, salad dressings, or beverages to enhance nutritional value without altering flavor.

Technical Textiles: Silk waste is repurposed into non-woven materials for thermal insulation in high-end winter gear and outdoor equipment.

Eco-friendly Greases: Research (particularly relevant to the sericulture waste stream) has shown that **Silkworm Pupae Oil** can be converted into industrial-grade greases and biofuels.

Reinforced Composites: Silk fibers are used in the manufacturing of high-performance items like specialized bicycle tires and sound-free precision gears.



Conclusion

Value addition in sericulture plays a crucial role in enhancing the profitability, sustainability, and resilience of the silk industry. By diversifying products derived from mulberry and silkworm resources such as silk yarn, silk fabrics, sericin-based cosmetics, mulberry-based food products, and handicrafts farmers and entrepreneurs can significantly increase income beyond traditional cocoon sales. The integration of scientific processing techniques, improved marketing strategies, branding, and small-scale enterprise development strengthens rural livelihoods and promotes employment generation, particularly for women and smallholder farmers. Moreover, value-added products contribute to waste minimization by utilizing by-products such as pupae, sericin, and mulberry residues, thereby supporting eco-friendly and circular production systems.

References

1. Rafiqu, A. R., et al. (2025). "Sericulture Waste to Wealth: Value-added Products and Sustainable Utilization." *Journal of Advances in Biology & Biotechnology*,
2. Bashir, M., & Qadri, S. F. I. (2025). "Influence of Phytofortified Mulberry Leaves on Economic Traits of Silkworm (*Bombyx mori* L.)." *Journal of Basic and Applied Research International*, 31(6): 222-231.
3. Menaka, S., et al. (2025). "Sustainable Value Addition of Sericulture By-products: Economic and Cultural Significance of Silk Cocoon Handicrafts." *Archives of Current Research International*, 25(9): 110-117.
4. Sujatha, B., & Prasad, M. V. (Dec 2024). "Value-Added Opportunities in Sericulture through Mulberry Fruit Utilization." *International Journal of Emerging Technologies and Innovative Research*, 11(12).
5. Buhroo et al. (2018) — "Trends in Development and Utilization of Sericulture Resources for Diversification and Value Addition." *International Journal of Entomological Research.*
   Reviews utilization of sericulture by-products and possibilities to diversify farm income.

6. Singha et al. (2024) — "Innovative Utilization of Sericulture Resources to Value Added Products -A Review." *Journal of Advances in Biology & Biotechnology*. Highlights various by-products and their conversion into marketable products.
7. Agro Cottage Industry Sericulture by C.J. Hiware — contains sections relevant to post-harvest processing and value addition.
8. Fundamentals of Sericulture by Rubia Bukhari & Rayees Ahmad Bhat — foundational textbook covering sericulture basics including waste utilization.