THE CURRENT STATE AND PROSPECTS OF SILKWORM BREEDING AND SILK PROCESSING

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Abstract. *This article presents an in-depth analysis of the current state, prospects, and development trends in silkworm breeding, raw silk production, and processing both globally and within Uzbekistan.*

Keywords*: silk, silkworm breeding, breed, hybrid, rearing technologies.*

Silk stands out among all natural and synthetic fibers due to its unique natural properties. Its natural luster and shine, high absorbency, lightness, yet steel-like strength, low thermal conductivity, warmth in winter and coolness in summer, low static electricity generation, and durability make it highly distinctive. Sewing, knitting, embroidery, perfumery, and medicine are among the key sectors where silk and cocoons are widely used.

The global silk production industry was valued at approximately 20–21 billion USD in 2024 and is projected to reach 36–41 billion USD by 2034, with an annual average growth rate of 6.7% to 7.7% China, the leading producer, accounts for around 70% of global silk production, having produced 50,000 tons in 2022.India ranks second, producing approximately 18%, with 36,582 tons of silk manufactured in 2021–2022. Uzbekistan holds third place, producing about 2,037 tons annually [1].

The silk industry continues to grow due to increasing demand for eco-friendly and sustainable materials. Technological innovations, natural and innovative production methods, as well as new technologies for high-value markets, contribute significantly to the industry's development.

By 2024, the number of seed production enterprises in Uzbekistan reached 13, and the localization level hit 59.8%. This indicates that raw cocoons are now being fully processed and directed toward export. In 2020, 94% of raw cocoons were processed by domestic enterprises, and by 2024 this figure increased to 100%.

The export geography also expanded: in 2020, silk was exported to 14 countries, while by the first 10 months of 2024, the number reached 16 countries.

To improve the quality of silk and raw cocoons globally, the application of scientific approaches, modern technologies, and innovations in silkworm rearing is crucial. Each country develops specific methods and techniques considering its natural climate. By accounting for climate, soil type, and pesticides, countries aim to maintain silkworm health, increase productivity, and produce the highest quality raw silk.

In Uzbekistan, nearly 90% of silkworms are reared individually at household level. The significant differences in geographic location and climate between silk-producing regions necessitate the development of modern rearing technologies.

For 2024–2026, an official list of investment projects in the silkworm and silk industry was approved, and commercial banks opened a $30 million credit line for this purpose [2].

In 2023, the number of sericulture clusters reached 74, 124 million mulberry seedlings were planted, and about 26,000 tons of cocoons were harvested [3].

For the spring season of 2025, it was planned to rear 500,081 boxes of silkworms by household breeders across the country, with a target of producing 30,006 tons of raw cocoons.

Training courses on silkworm breeding and processing are being organized, with measures aimed at educating and improving the skills of the unemployed and economically inactive population, especially women and youth, in this field [4].

According to the National Statistics Committee, in the first half of 2025, a total of 30.1 thousand tons of raw cocoons were harvested nationwide. This shows a 0.4% increase compared to 2024.

Silkworm cocoon production by regions (2025):

Republic of Karakalpakstan – 1,000 tons;
Andijan – 3,900 tons;
Bukhara – 3,200 tons;
Jizzakh – 900 tons;
Kashkadarya – 2,900 tons;
Navoi – 1,300 tons;
Namangan – 2,500 tons;
Samarkand – 3,900 tons;
Surkhandarya – 2,300 tons;
Syrdarya – 700 tons;
Tashkent – 2,100 tons;
Fergana – 2,900 tons;
Khorezm – 2,500 tons

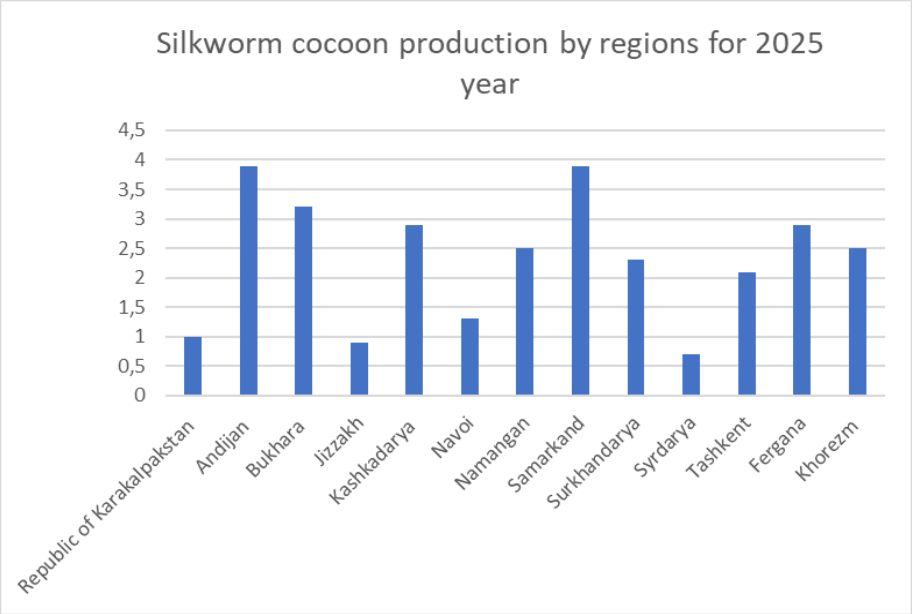


Figure 1. Cocoon production in 2025 by regions.

According to the Decree of the President of the Republic of Uzbekistan, specific tasks have been outlined to increase the production volume and quality of local breeds and hybrid silkworm seeds and cocoons, bringing them in line with international standards.

This includes:

- Advancing genetic-selection work for highly productive breeds and hybrids;
- Implementing these breeds in production;
- Gradually increasing production volume;
- Reducing imports by fully meeting domestic demand.

It is known that the price difference between one kilogram of raw silk and the final garment produced from that silk can be 10–12 times. Exporting final products instead of raw materials not only significantly increases income but also helps address employment issues. Of course, the reforms and measures being implemented in Uzbekistan deserve praise. However, enterprises must constantly improve the quality, appearance, and design of their products to meet the ever-changing consumer demand. This, in turn, requires innovative approaches in production processes [5-6].

Conclusion. To develop fair market relations and competition in silkworm and silk production, Uzbekistan is creating all necessary conditions and introducing a system of equal opportunities and benefits for all participants in the production chain. In general, significant growth and development are observed in Uzbekistan's sericulture and silk production sector, contributing to the diversification of the national economy and expanding export potential.

References

1. Decree PF-72 of the President of the Republic of Uzbekistan dated May 3, 2024, "On Additional Measures to Accelerate the Introduction of Market Mechanisms in the Silkworm Breeding and Silk Industry".
2. Agriculture Annual Report 2023, pp. 22–23.
3. https://inserco.org/en/statistics
4. https://www.norma.uz/oz/Courses on Silkworm Breeding and Processing Are Being Opened | NORMA.UZ
5. Umarkhodjayeva M.G., Aliyeva N.A. "The Necessity of Innovative Management in Sericulture Enterprises", *Economy and Innovative Technologies*, Scientific E-Journal, No. 2, March–April 2021, p. 136.
6. Nasrullaev B.U., Jumayeva D. **Prospects for the Breeding of Mulberry Silkworms Based on Cocoon Size. //** *Zooveterinary*. – Tashkent, 2015. – No. 2. – pp. 40–41.

