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Constraints Faced by Sericulture Farmers in Mulberry and Cocoon Production: A Study in Karnataka

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Abstract
Sericulture is an important agro-based and labour-intensive enterprise that provides livelihood security to rural households in Karnataka. Despite its economic potential, sericulture farmers face several constraints that limit productivity and income. The present study was undertaken to identify and rank the major constraints faced by sericulture farmers in mulberry cultivation and cocoon production. The study was conducted during 2024-25 in Mysuru district of Karnataka. A total of 60 sericulture farmers were selected randomly from 10 villages across three taluks, namely T. Narasipur, Nanjangud and H.D. Kote. Data were collected using a well-structured and pre-tested interview schedule. The findings revealed that occurrence of diseases and pests, labour availability, and high cost of machinery were the major constraints in mulberry production, while labour scarcity, adverse climatic conditions, and difficulties in bed disinfection were the major constraints in cocoon production. The study highlights the need for strengthening extension support, promoting affordable technologies, and ensuring timely availability of inputs and skilled labour to enhance sericulture productivity.

Keywords: Sericulture, Mulberry cultivation, Cocoon production, Constraints, Karnataka

Introduction
Sericulture, also known as silk farming, is the art and science of rearing silkworms (*Bombyx mori* L.) for the production of silk. It involves the cultivation of mulberry (*Morus* spp.), the primary food plant of silkworms, followed by silkworm rearing and processing of cocoons to extract silk fibres. The sericulture production system comprises several interrelated stages, namely mulberry cultivation, silkworm rearing, cocoon harvesting, and silk reeling (Krishnaswami, 1978; Dandin *et al*., 2003) [7, 5]. Sericulture is an agro-based, labour-intensive, and income-generating rural industry that plays a significant role in the socio-economic development of many developing countries, particularly India. It provides gainful employment to millions of people in rural and semi-urban areas and is especially important for women, smallholders, and marginal farmers (Rangaswamy *et al*., 1976; Central Silk Board, 2021). India is the second-largest producer of silk in the world after China, contributing significantly to global silk production. Among Indian states, Karnataka is popularly known as the "Silk State of India" and contributes nearly one-third of the country's total mulberry silk production. Districts such as Mysuru, Chamarajanagar, Ramanagara, Kolar, and Tumakuru are major sericulture belts owing to favourable agro-climatic conditions, availability of skilled labour, and strong institutional and government support (Central Silk Board, 2022). Despite its high potential as a profitable and sustainable agro-based enterprise, sericulture faces several production and socio-economic constraints that limit its productivity. Sericulture farmers encounter problems such as climatic variability, pest and disease incidence, poor quality of mulberry leaves, inadequate technical knowledge, and limited access to improved technologies. In addition, high labour requirements, shortage of skilled workers, fluctuating cocoon prices, and insufficient institutional credit further aggravate the challenges faced by farmers (Govindan & Devaiah, 1995; Dandin *et al*., 2003) [6, 5]. Socio-economic factors such as small landholdings, low literacy levels, and inadequate infrastructure also restrict the effective adoption of scientific sericulture practices (Sharma & Kapoor, 2019) [10].

These constraints collectively result in reduced cocoon yield and inferior silk quality, thereby lowering farm income and discouraging farmers from sustaining sericulture as a livelihood option. Therefore, a systematic understanding of the problems and constraints faced by sericulture farmers is essential for designing appropriate policy interventions, strengthening extension services, and improving the overall productivity, profitability, and sustainability of the sericulture sector (Central Silk Board, 2021) [21].

Materials and Methods

The present investigation was carried out during the year 2024-25 in Mysuru district of Karnataka state. Three taluks, namely Tirumakudalu Narasipura (T. Narasipur), Nanjangud, and Heggadadevanakote (H.D. Kote), were purposively selected due to the predominance of sericulture farming. From these taluks, a total of 10 villages were selected.

A sample of 60 sericulture farmers was selected randomly from the selected villages. Data were collected using a well-structured and pre-tested interview schedule through personal interviews. The constraints faced by farmers in mulberry production and cocoon production were identified based on review of literature and consultation with experts.

The respondents were asked to indicate the constraints experienced by them. Frequency and percentage were calculated, and the constraints were ranked based on the magnitude of responses.

Results and Discussion

Table 1: Constraints faced by sericulture farmers in mulberry production

S. No.	Types of Constraints	Frequency (n=60)	Percentage (%)	Rank
1.	Occurance of disease and pest	56	93.3	I
2.	Labour availability	51	85	II
3.	expenses on Machinery	43	71.6	III
4.	Cost of pesticides and fertilizers	41	68.3	IV
5.	Adoption of new technology	38	63.3	V
6.	Knowledge on mulberry cultivation	37	61.6	VI
7.	Quality of leaf	32	53.3	VII
8.	Support from CSB/DOS/NGO's	25	41.6	VIII
9.	Water availability	21	35	IX
10.	Health factor	20	33.3	X
11.	Climatic factor	19	31.6	XI
12.	Availability of new variety	15	25	XII

Table 2: Constraints faced by sericulture farmers in cocoon production

Sl. No.	Types of Constraints	Frequency (n=60)	Percentage (%)	Rank
1.	Labour availability	54	90	I
2.	Envirnomental condition/climatic factor	50	83.3	II
3.	Application of bed disinfection	49	81.6	III
4.	Diseases and pests	42	70	IV
5.	Fluctuation of cocoon price	37	61.6	V
6.	Availability of cocoon market	36	60	VI
7.	Availabily of rearing house	35	58.3	VII
8.	Health factor	32	53.3	VIII
9.	Disinfection process	29	48.3	IX
10.	Support from CSB/DOS/NGO's	27	45	X
11.	Expenses on rearing house and equipments	21	35	XI
12.	Availability of rearing equipments	16	26.6	XII
13.	Knowledge on silkworm rearing	11	18.3	XIII

Constraints in Mulberry Production

The results revealed that the occurrence of diseases and pests was the most severe constraint in mulberry production, as reported by 93.3 per cent of the respondents and ranked first. This finding highlights the high susceptibility of mulberry to pest and disease incidence, which adversely affects both leaf yield and leaf quality, ultimately influencing silkworm growth and cocoon productivity (Govindan & Devaiah, 1995; Dandin *et al*., 2003) [6, 5]. Similar observations were reported by Sharma and Kapoor (2019) [10], who identified pest and disease pressure as a major bottleneck in mulberry cultivation.

Labour availability was ranked as the second most important constraint (85.0%), reflecting the labour-intensive nature of mulberry cultivation and increasing scarcity of agricultural labour in rural areas. This finding is in conformity with earlier studies that reported labour shortage as a major constraint affecting timely execution of intercultural operations in sericulture (Chandra & Singh, 2014) [4].

The high cost of machinery (71.6%) emerged as the third major constraint, indicating the financial limitations faced by farmers in adopting mechanized practices. This was followed by the high cost of pesticides and fertilizers (68.3%), which increases the overall cost of mulberry cultivation and reduces net returns (Reddy & Reddy, 2012) [9]. Constraints related to adoption of new technology (63.3%) and knowledge on mulberry cultivation (61.6%) suggest gaps in extension contact, training, and capacity building among sericulture farmers. Similar constraints were reported by Sharma and Kapoor (2019) [10], who emphasized the need for strengthening extension services for effective technology transfer. More than half of the respondents (53.3%) reported poor quality of mulberry leaves, which directly affects silkworm feeding efficiency and cocoon

quality (Krishnaswami, 1978) [7]. Constraints such as limited institutional support from CSB/DOS/NGOs, water scarcity, health problems, climatic factors, and availability of improved mulberry varieties were perceived as relatively less severe but still contributed to production inefficiencies.

Constraints in Cocoon Production

In cocoon production, labour availability was identified as the most critical constraint, reported by 90.0 per cent of respondents. Timely availability of skilled labour is essential during various stages of silkworm rearing such as brushing, feeding, bed cleaning, and harvesting, and labour scarcity often leads to improper management practices (Dandin *et al*., 2003) [5].

Environmental and climatic factors were ranked second (83.3%), emphasizing the high sensitivity of silkworms to fluctuations in temperature and relative humidity. Unfavourable climatic conditions have been reported to adversely affect larval survival, cocoon weight, and shell ratio (Krishnaswami, 1978; Central Silk Board, 2021) [7, 1].

Difficulty in bed disinfection (81.6%) and incidence of diseases and pests (70.0%) were ranked third and fourth, respectively, indicating challenges in maintaining hygienic rearing conditions. Disease outbreaks due to improper disinfection practices significantly reduce cocoon yield and quality (Govindan & Devaiah, 1995) [6].

Fluctuation in cocoon prices (61.6%) was another major constraint, causing income instability and discouraging farmers from sustaining sericulture as a reliable livelihood. Price instability has been widely reported as a serious economic constraint affecting sericulture farmers (Chandra & Singh, 2014) [4].

Infrastructure-related constraints such as availability of cocoon markets, rearing houses, and rearing equipment were also reported. Limited support from CSB/DOS/NGOs and high expenses on rearing houses and equipment further affected cocoon production. The least perceived constraint was knowledge on silkworm rearing (18.3%), indicating that most farmers possessed basic technical knowledge but faced operational, infrastructural, and economic challenges rather than technical inadequacies.

Conclusion

The study reveals that sericulture farmers face significant constraints in both mulberry cultivation and cocoon production. Pest and disease incidence, labour scarcity, and high input costs were the major constraints in mulberry production, whereas labour availability, climatic variability, and disease management emerged as key challenges in cocoon production. These findings are consistent with earlier reports highlighting similar production and socio-economic bottlenecks in sericulture (Dandin *et al*., 2003; Sharma & Kapoor, 2019) [5, 10]. Strengthening extension services, promoting cost-effective technologies, enhancing capacity-building programmes, and improving institutional support are essential to enhance productivity, profitability, and sustainability of sericulture farming.

Recommendations

- Strengthening pest and disease management practices through regular training and demonstrations.
- Promoting labour-saving and affordable mechanization suitable for small farmers.
- Ensuring timely supply of quality inputs at subsidized rates.
- Enhancing extension support and capacity building through CSB and DOS.
- Stabilizing cocoon prices and improving market access for sericulture farmers

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