Understanding Sericulture through a Socio-economic Lens: Evidence from Northern Karnataka, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The present study was undertaken to analyze the socio-economic profile of sericulture farmers in Northern Karnataka, India. Sericulture is a vital agro-based, labor-intensive enterprise that supports the livelihoods of rural populations, particularly small and marginal farmers, by offering sustainable

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and regular income throughout the year. It integrates various stages from mulberry cultivation to silk fabric production, thereby generating employment across a wide value chain. Karnataka stands as India's leading silk-producing state, with Southern Karnataka historically dominating the sector due to better access to technology and support services. However, Northern Karnataka, despite having favorable conditions, lags behind in terms of awareness, adoption of scientific practices, and institutional support. This study was undertaken to analyze the socio-economic profile of sericulture farmers in Northern Karnataka to identify gaps and potential areas of intervention. Data were collected from 120 randomly selected sericulture farmers using a structured interview schedule and analyzed using descriptive statistics and inferential tests. The findings revealed that most farmers were middle-aged, had medium-sized families, and cultivated between 5 to 25 acres of land. While economic motivation among them was fairly high, their participation in training, extension contact, and use of modern sericulture technologies remained low. A significant proportion fell under the medium category in terms of experience and mass media utilization. These gaps point to the urgent need for targeted policies focusing on farmer training, extension services, credit access, market linkage, and gender-inclusive approaches. Strengthening institutional support and promoting the dissemination of innovations from research institutes can bridge the knowledge gap and enhance productivity. Therefore, with appropriate policy and capacity-building interventions, sericulture holds significant promise as a driver of rural development and socio-economic upliftment in Northern Karnataka.

1. INTRODUCTION

Sericulture is one of the most promising agro-based enterprises in India, playing a crucial role in supporting agricultural households by supplementing their income. It is particularly suitable for small and marginal farmers due to its labor-intensive nature and relatively low initial investment. As an industry, sericulture encompasses a long value chain from mulberry cultivation and silkworm rearing to cocoon production, reeling, weaving, and ultimately fabric making. This broad involvement makes it a year-round economic activity, capable of generating continuous income and employment, especially in rural areas.

India is the second-largest producer of silk globally, contributing about 24 per cent of global silk output, with Karnataka accounting for more than 32 per cent of the country's total silk production (Anonymous, 2023). Within Karnataka, the southern regions have historically benefited more from sericulture due to better awareness, institutional support and adoption of improved practices. However, sericulture is increasingly being recognized as a boon for farmers in other parts of the state, including Northern Karnataka, where it offers a viable alternative to food and commercial crops. It serves as a tool for rural development, particularly for the weaker sections of society, by ensuring periodic returns in a short time frame and providing family-based employment throughout the year.

In recent years, various sericulture research institutions have developed advanced technologies aimed at enhancing productivity and sustainability. These include high-yielding mulberry varieties, improved silkworm breeds, pest and disease management practices, and post-cocoon technologies. However, the success of these innovations largely depends on their dissemination and adoption at the grassroots level. Extension services play a vital role in bridging the gap between research and practice by creating awareness and building farmers' capacities. Despite these efforts, many farmers in regions like Northern Karnataka still lag behind in actively adopting improved sericultural practices due to limited knowledge, low extension contact and socio-economic barriers.

Given the importance of sericulture in improving the socio-economic conditions of rural communities, particularly in underdeveloped regions, it is essential to assess the background of the farmers involved. Since knowledge and adoption of recommended practices are strongly influenced by socio-economic factors, the present study was undertaken to analyze the socio-economic profile of sericulture farmers in Northern Karnataka with the objective of identifying gaps and opportunities for

development tostudy the socio economic profile of the sericulture farmers.

2. METHODOLOGY

The study was conducted in Vijayapur and Bagalkote districts of Karnataka in the year 2019-2020. The ex-post facto research design was followed and districts were purposively selected since very few research works done on sericulture in the study area. Vijapapur and Basavana bagewadi taluks were selected from Vijayapur. Bagalakote and Hunagund taluks were selected from Bagalakote districts, respectively based on number of sericulture farmers, area under sericulture and also cocoon market.

Three villages from one taluk were selected based on the highest area under mulberry. Thus 12 villages from study area selected for investigation study. By following purposive random sampling technique, ten sericulture farmers from each village contributing to 60 sericulture farmers randomly from two districts were selected for the study and thus 120 sample size was used for the study.

A well-structured and pre-tested interview schedule was used to collect the responses through personal interview method. The data collected were tabulated and analyzed by using suitable statistical measures. A total 10 variables selected to access the socio-economic profile of the sericulture farmers; here Age is operationalised as the chronological age of the respondent in completed years at the time of investigation. Education is the extent of formal education undergone by the farmers. Family size is taken as a group of people living in a single household with a common kitchen. Land holding was operationalised as the extent of land holding possessed by the family of the respondent farmer in acres. Annual income is operationalised as the total income derived from agriculture and allied sources during previous year as reported by the respondents at the time of investigation.

Farming experience is a period from which farmer is actually cultivating land with his own experience. The experience of the farmers in completed years at the time of investigation was considered. Mass media utilization was operationalized by considering the exposure of an individual to different mass media channels such as newspaper, farm magazine, radio,

television and his degree of exposure to them. Extension contact has been operationally defined as the frequency of contacts of respondent with the different extension personnel and extension agencies for seeking information about cultivation practices. Extension participation is list of extension activities was prepared and the farmers were asked to indicate their extent of participation in each activity. Economic motivation refers to the occupational success in terms of profit maximization and the relative values on individual place an economic ends.

The respondents were classified as low, medium and high categories based on mean, range and standard deviation. The suitable statistical tools used for analysis of the results were indicated in frequency and percentages.

3. RESULTS AND DISCUSSION

The socio-economic profile of sericulture farmers in Table 1 reveals notable patterns across various demographic and economic variables.

Age: Nearly two-third of the respondents (64.17 %) were in the middle-age category (31–50 years), followed by one fourth (25.00 %) were in the old age group (>50 years) and about 10.83 per cent in the young category (up to 30 years). This indicates that sericulture is predominantly practiced by individuals in their active working age, which aligns with the physical and managerial demands of the enterprise. These results are in line with the findings of Asha (2018).

Education: Educational status varied widely among the farmers. A significant proportion (27.50 %) had completed high school, followed by 16.67 per cent with primary school education, 15.00 per cent with PUC, and 14.16 per cent being graduates. Meanwhile, 13.33 per cent of respondents had completed middle school, 11.67 per cent were illiterate, and only 1.67 per cent had attained postgraduate or higher education. This moderate educational background suggests potential for adopting improved sericultural practices, although literacy and training gaps remain for a minority. Similar trend of results was found in findings of Madhu (2018) and Harishkumar *et al.,* (2022).

Family Size: More than half (51.67 %) of the respondents had medium-sized families (5–8 members), 29.17 per cent had small families (<5 members), and 19.16 per cent had large families

(>8 members). Medium family sizes could be beneficial for labor-intensive activities like sericulture, while large families may indicate dependency burdens. These findings are in line with the findings of Srinivasareddy *et al.*, (2019).

Landholding: The analysis of land ownership showed that nearly one-third (32.50 %) of them had medium landholdings (10.01–25 acres), 27.50 per cent were had semi-medium holdings (5.01–10 acres), 20.00 per cent had small holdings (2.51–5.00 acres), 13.33 per cent were marginal farmers (<2.50 acres), and only 6.67 per cent had large holdings (>25 acres). The data suggests a concentration of farmers in the medium and semi-medium categories, which is favorable for sustainable sericulture operations. These results are inline with the findings of Madhu (2018).

Annual Income: Nearly two fifth (39.16 %) of the respondents fell under the low-income group (<₹4,90,607), 36.67 per cent were belonged to the medium-income group (₹4,90,608–₹10,76,974), and 24.17 per cent were in the high-income group (>₹10,76,975). The average annual income was ₹7,83,791 with a high standard deviation (₹6,89,845), indicating income variability among farmers and possible inequities in sericulture profitability.

Sericulture Farming Experience: Regarding experience in sericulture, nearly two fifth (39.17 %) had medium experience followed by 83 per cent had low and 25.00 per cent of them had high experience. This reflects a growing interest in sericulture, with a substantial number of farmers still gaining expertise. Hadimani *et al.,* (2017) and Manohar *et al.,* (2020).

Mass Media Exposure: Mass media exposure among the farmers was fairly balanced: 34.17 per cent had medium exposure followed by 33.33 per cent were had high exposure, and 32.50 per cent had low exposure. These figures suggest moderate access to information sources, which can influence awareness and adoption of sericultural innovations.

Extension Contact: In terms of extension contact, nearly two fifth (39.17 %) fell in the medium category followed by low (36.66 %) and 24.17 per cent had high contact. Although a majority had at least medium-level interactions, a considerable portion with low contact highlights a need for stronger extension outreach. These results are inconfirmatory with findings of

Yashwanth (2017) and Srinivasareddy *et al.,* (2019).

Extension Participation: Extension participation was moderately distributed: 35.83 per cent had medium participation, 32.50 per cent had high participation and 31.67 per cent had low participation. This suggests varying levels of engagement with training and developmental programs, potentially affecting knowledge dissemination.

Economic Motivation: Economic motivation among farmers was encouraging, with 36.67 per cent falling under the medium category, one third (33.33 %) having high motivation and 30.00 per cent in the low category. This indicates that a significant portion of farmers are economically driven and likely to adopt income-enhancing technologies in sericulture. These findings are in line with the findings of Srinivasareddy *et al.,* (2019) and Manohar *et al.,* (2020.

Strengthen Training and Extension Services: With a considerable percentage of farmers showing low participation in training and moderate mass media exposure, there is a need to enhance on-ground extension efforts. Organizing regular, localized training on improved sericulture practices and leveraging mobile-based advisories can bridge the knowledge gap and improve adoption of technologies.

Improve Market Access and Price Assurance: To address income variability and reduce dependency on middlemen, policies should focus on establishing direct cocoon procurement centers, cooperative marketing systems, and implementing minimum support prices to ensure fair returns for farmers.

Enhance Credit and Input Support for Small Farmers: Given that many farmers fall under small to semi-medium landholding categories and medium income levels, targeted subsidies, low-interest loans, and access to quality inputs like mulberry saplings and silkworm seeds should be prioritized to improve productivity.

Promote Inclusive and Sustainable Sericulture Development: With sericulture offering family-based employment and higher adoption seen in southern Karnataka, focused interventions in Northern Karnataka—especially for women and marginal farmers—through SHG involvement, awareness drives, and technology demonstrations will help in expanding sustainable sericulture practices.

Table 1. Distribution of sericulture farmers according to socio-economic profile

(n=120)

Sl. No.	Category	f	%	Mean and SD
1	**Age**			
	Young (up to 30 years)	13	10.83	
	Middle (31 – 50 years)	77	64.17	-
	Old (> 50 years)	30	25.00	
2	**Education**			
	Illiterate	14	11.67	
	Primary school (1st- 4th std)	20	16.67	
	Middle school (5th- 7th std)	16	13.33	
	High school (8th-10th std)	33	27.50	
	PUC	18	15.00	-
	Graduate	17	14.16	
	PG and above	2	1.67	
3	**Family size**			
	Small (< 5 members)	35	29.17	
	Medium (5 – 8 members)	62	51.67	-
	Large (> 8 members)	23	19.16	
4	**Land holding**			
	Marginal (< 2.50 acre)	16	13.33	
	Small (2.51 – 5.00 acre)	24	20.00	
	Semi medium (5.01 – 10.00 acre)	33	27.50	-
	Medium (10.01 – 25.00 acre)	39	32.50	
	Big (> 25.00 acre)	8	6.67	
5	**Annual income**			
	Low (<₹ 4,90,607)	47	39.16	**Mean =783791**
	Medium (₹ 4,90,608–10,76,974)	44	36.67	**SD =689845**
	High (>₹ 10,76,975)	29	24.17	
6	**Sericulture farming experience**			
	Low (<4.74)	43	35.83	**Mean = 7.35**
	Medium (4.74 -9.95)	47	39.17	**SD = 6.13**
	High (>9.95)	30	25.00	
7	**Mass media exposure**			
	Low (< 7.41)	39	32.50	**Mean = 9.25 SD**
	Medium (7.41 – 11.08)	41	34.17	**=4.32**
	High (>11.08)	40	33.33	
8	**Extension contact**			
	Low (< 3.22)	44	36.66	**Mean = 4.23 SD**
	Medium (3.22 – 5.24)	47	39.17	**= 2.38**
	High (> 5.24)	29	24.17	
9	**Extension participation**			
	Low (< 3.54)	38	31.67	**Mean = 4.45 SD**
	Medium (3.54 – 5.35)	43	35.83	**= 2.11**
	High (> 5.35)	39	32.50	
10	**Economic motivation**			
	Low (< 4.96)	36	30.00	**Mean = 6.01 SD**
	Medium (4.97 – 7.07)	44	36.67	**=2.48**
	High (>7.07)	40	33.33	

4. CONCLUSION

This study revealed that sericulture in Northern Karnataka is primarily driven by middle-aged farmers with moderate educational backgrounds and a strong economic motivation. Despite favorable medium family and landholdings, significant challenges remain, including income variability and limited extension contact and participation. To unlock sericulture's full potential for rural development, targeted efforts are essential to strengthen training, improve market

access, and provide tailored support to farmers in the region.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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