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Knowledge level of recommended sericulture cultivation practices among farmers in Northern Karnataka

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Abstract
This study investigated the knowledge level of recommended sericulture cultivation practices among farmers in Vijayapura and Bagalkote districts of Northern Karnataka, India. Employing an ex-post facto research design, a sample of 120 sericulture farmers was selected from 12 villages across the two districts. The data was collected through personal interviews using a pre-tested schedule and analyzed using frequency, percentages and statistical measures like mean and standard deviation. The findings revealed a varied knowledge level among farmers. In Vijayapura, 35.00 percent of farmers exhibited low knowledge followed by 36.67 percent medium knowledge, and 28.33 percent of them had high knowledge. In Bagalkote, one third of the farmers had low knowledge, followed by 25.00 percent medium knowledge, and 41.67 percent had high knowledge. Overall, more than one third (34.17%) of farmers demonstrated low knowledge, 30.83 percent medium knowledge and 35.00 percent of them had high knowledge regarding recommended sericulture practices. The farmers in Bagalkote generally showed higher knowledge levels compared to those in Vijayapura, particularly in areas like pest control and basic rearing. However, significant knowledge gaps were observed in technical aspects such as soil pH, Chawki rearing and fertilizer dosage across both districts. The study underscores the need for targeted extension programmes, improved information dissemination and enhanced extension contact to bridge these knowledge gaps and promote the adoption of modern sericulture practices.

Keywords: Sericulture, knowledge level, recommended cultivation practices

Introduction
Sericulture, with its roots in India dating back to at least the 2nd century B.C., continues to be a vital agro-based industry, significantly contributing to rural economy by employing 8.7 million people in rural and semi-urban areas. While China remains the global leader in silk production, accounting for a substantial portion of the world's output, India holds a strong second position, particularly in mulberry silk production with 27,654 metric tons, representing 75.59 percent of the total raw silk production. Other silk varieties also contribute, with Tasar silk at 1,318 metric tons (3.60%), Eri silk at 7,349 metric tons (20.08%) and Muga silk at 261 metric tons (0.71%). The total raw silk production for that year was 36,582 metric tons (Anonymous, 2022-23) [1]. Recent data indicates a robust sericulture sector in India, employing millions and playing a crucial role in income generation, especially among economically weaker sections. The industry encompasses five key stages: mulberry cultivation, silkworm seed production, silkworm rearing, raw silk reeling and weaving. Despite challenges like fluctuating market demands and regional disparities in adoption of advanced techniques, sericulture maintains its importance due to its ability to provide consistent year-round income and its low capital requirements compared to other agricultural enterprises.

Karnataka, historically synonymous with Mysore Silk, remains a pivotal hub for sericulture in India. The state benefits from favorable climatic conditions and established infrastructure, supporting a significant portion of the country's raw silk production. However, like other regions, Karnataka faces challenges related to technological gaps, particularly in the adoption of modern sericulture practices especially in northern parts of Karnataka. Efforts by the Central Silk Board and state governments are focused on bridging this gap through research, technology transfer and farmer training programs. Additionally, addressing issues like labor scarcity and the impact of urbanization on traditional sericulture areas is crucial for sustaining the industry's growth and ensuring its continued contribution to the rural economy of Karnataka.

Objective of the study
To assess the knowledge level of recommended sericulture cultivation practices among farmers in Northern Karnataka

Materials and Methods
The study was conducted in Vijayapura and Bagalkote districts of Karnataka. The ex-post facto research design was followed and two districts were purposively selected since it was non-traditional area of sericulture and very few

research works were done on sericulture in the study area. Vijapapura and Basavana bagewadi taluks were selected from Vijayapur. Bagalakote and Hunagund taluks were selected from Bagalakote districts, respectively based on the 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. The villages selected were Hadagali, Shivanagi and Kannur from Vijayapur taluk, Basavana bagewadi, Managuli and Masabinala from Basavana bagewadi taluk. Chabbi, Bennur and Shiruru from Bagalakote taluk, Kamatagi, Gudur and Sulebhavi from Hunagund taluk were selected from Vijayapur and Baglakote districts, respectively. 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. 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.

Results and Discussion
The data presented in the table 1 indicated that, cent percent of the farmers in Vijayapura district had correct knowledge regarding the recommended sericulture cultivation practices like cuttings used as planting material, season for planting of mulberry, chemical disinfection of rearing house and control measures of uji fly. Majority of the respondents had correct knowledge about practices like ridges and furrow (96.67%), spacing (95.00%), number of leaf feedings to worms (91.67%) and materials used for maintaining humidity in rearing house (91.67%). Exactly 90.00 percent

of the farmers had correct knowledge about the practices like life cycle of worms, silkworm disease and their control measure, materials used for the maintaining temperature in rearing house and recommended variety (88.33%). Whereas, More than three fourth of the respondents had correct knowledge regarding mulberry diseases (78.33%) and their control measure (76.66%). Further, more than half of the respondents aware about length of cutting (55.00%), saplings (56.67%), fertilizer dosage (58.33%), soil type (65.00%), rearing house temperature (65.00%), races of Chawki worm (66.67%). Only a few farmers know about the pit system (3.33%), soil pH (6.67%), Chawki rearing (15.00%), inter cropping with pulse crops (21.67%) and cutting treatment (28.33%).
Regarding Bagalkote district, Cent percent of the farmers had correct knowledge about the recommended sericulture cultivation practices like soil type, ridges and furrow planting method, cuttings used as planting material, life cycle of worms, chemicals used for disinfection of rearing house and control measures of uji fly. Majority of the respondents had correct knowledge about practices like number of leaf feedings to worms (98.33%), silkworm disease and their control measure (96.67%), materials used for the maintaining temperature in rearing house (90.00%), disease control measures of mulberry (90.00%) and diseases of mulberry (88.33%), materials used for maintaining humidity in rearing house (88.33%), races of Chawki worm (83.33%) and rearing house temperature (81.67%). About three fourth of the respondents aware about season of planting (75.00%) and spacing (76.67%). Further, more than half of the respondents aware about saplings (63.33%) and fertilizer dosage (51.67%). Whereas, more than two fifth of the respondents aware about length of cutting (45.00%), cutting treatment (46.67%), inter cropping with pulse crops (46.67%) and rearing house relative humidity (48.33%). Only a few farmers know about the pit system (0.00%), soil pH (20.00%) and Chawki rearing (20.00%).

Table 1: Practice wise knowledge level of farmers about recommended sericulture cultivation practices, (n=120)

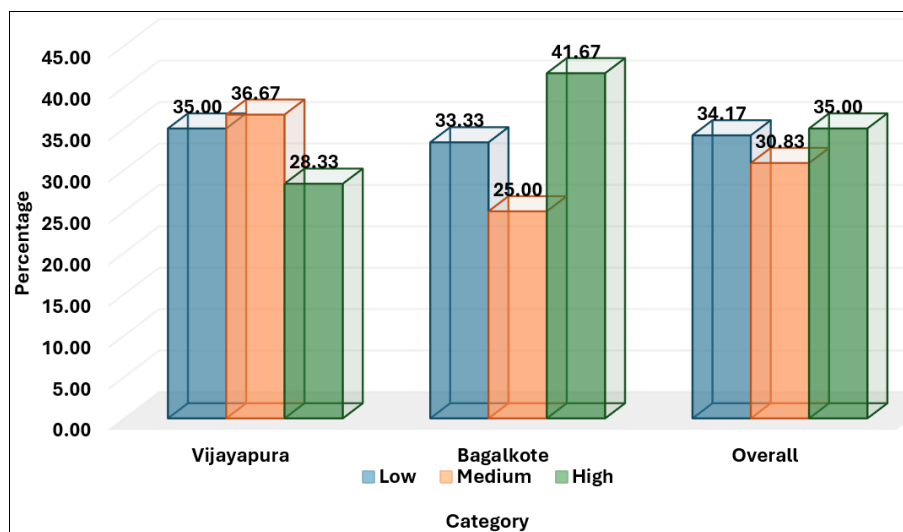| Sl. No.	Recommended Cultivation Practices	Knowledge level					
		Vijayapura (n₁=60)		Bagalkote (n₂=60)		Overall (n=120)	
		Correct Knowledge		Correct Knowledge		Correct Knowledge	
		f	%	f	%	f	%
1	**Suitable soil type**						
	(Slightly acidic: Red/ Black/Laterite soil)	39	65.00	60	100.00	99	82.50
2	**Planting method**						
	a. Pit system	02	03.33	00	00.00	02	1.67
	b. Ridges and furrow	58	96.67	60	100.00	118	98.33
3	Recommended mulberry variety (Kanva-2 / V-1)	53	88.33	60	100.00	113	94.17
4	**Type of planting material**						
	a. Saplings (Nursery)	34	56.67	38	63.33	72	60.00
	b. Cuttings	60	100.00	60	100.00	120	100.00
	Length of cuttings (1cm thickness with 15-20cm length)	33	55.00	27	45.00	60	50.00
	Cutting treatment (0.2% DM-45 or Carbendazim)	17	28.33	28	46.67	45	37.50
5	Season for planting (June-July)	60	100.00	45	75.00	105	87.50
6	Spacing (60x60 cm for ridges and furrow, 90x90 cm for pit system)	57	95.00	46	76.67	103	85.83
7	Soil pH (6.3-7.2)	04	06.67	12	20.00	16	13.33
8	Fertilizer dosage (N:P:K-Kg/ha) (Irrigated - 300:120:120 Kg/ha and Rainfed - 100:50:50 Kg/ha)	35	58.33	31	51.67	66	55.00
9	Intercropping with pulse crops	13	21.67	28	46.67	41	34.17
10	Diseases (Leafspot/ Powdery mildew/Rust)	47	78.33	53	88.33	100	83.33
11	Disease control measures (0.2% carbendazim and 2g M-45)	46	76.66	54	90.00	100	83.33

12	Races of Chawki worms	40	66.67	50	83.33	90	75.00
13	Life cycle of worms (23-24 days)	54	90.00	60	100.00	114	95.00
14	Rearing house temperature (24^0C to 26^0C)	39	65.00	49	81.67	88	73.33
15	Rearing house relative humidity (70-80%)	20	33.33	29	48.33	49	40.83
16	Chemicals used for disinfection of rearing house (Formalin/Calcium/ Bleaching powder)	60	100.00	60	100.00	120	100.00
17	Diseases of silk worm (Muscardine/ Flacheri/ Graseri)	54	90.00	58	96.67	112	93.33
18	Silkworm diseases control measures (Disinfection /Bed disinfection /Removing infected worms)	54	90.00	58	96.67	112	93.33
19	Number of leaf feedings to worms (3-4 depends on instars)	55	91.67	59	98.33	114	95.00
20	Chawki silkworm rearing	09	15.00	12	20.00	21	17.50
21	Materials used for maintaining temperature in rearing house (Rubber foam/Humidifier /Wet gunny bag)	54	90.00	54	90.00	108	90.00
22	Materials used for maintaining humidity in rearing house (Foam rubber and paraffin paper /Wet gunny bag on floor)	55	91.67	53	88.33	108	90.00
23	Control measures of uji fly (Fix the meshes to windows and doors /Use uji tablets/ Use of ujicide)	60	100.00	60	100.00	120	100.00

Whereas in overall, all most all farmers had correct knowledge regarding cuttings, disinfection chemicals and uji fly control. Majority of the farmers know about understood ridges and furrow planting (98.33%), silk worm's life cycle (95.00%), number of leaf feedings (95.00%), recommended varieties (94.17%), and 93.33 percent were understood silkworm diseases and their control. 90.00 percent of them knew temperature and humidity maintenance. More than four-fifth of them knew about the planting season (87.50%), spacing (85.83%). mulberry diseases and their control (83.33%) and suitable soil type (82.50%). While, 75.00 percent were understood Chawki worm races, 73.33 percent were knew rearing house temperature. 60.00 percent knew saplings, and 55.00 percent of them understood about fertilizer dosage. Whereas, length of Cuttings (50.00%), cutting treatment (37.50%), intercropping (34.17%) and rearing house humidity (40.83%) had moderate awareness. Pit system (1.67%), soil pH (13.33%) and Chawki rearing (17.5%) had very low knowledge. These results are inline with the findings of Srinivasreddy et al. (2019) [8], Manohar et al. (2020) [5] and Harishkumar et al. (2022) [4].

The results from table 2 and Fig.1 indicates that in Vijayapura, more than one third of the farmers fell into the low (35.00%) knowledge, followed by medium (28.33%) and high (36.67%) knowledge levels. In Bagalkote, one third (33.33%) of the farmers had low knowledge, followed by medium (25.00%) and high (41.67%) levels of knowledge. Overall, considering both districts together, 34.17 percent of farmers had low knowledge, 30.83 percent were had medium knowledge, and 35.00 percent of them had high knowledge levels regarding recommended sericulture cultivation practices.

Table 2: Overall Knowledge level of farmers about recommended sericulture cultivation practices, (n=120)

Sl. No.	Category	Vijayapura (n_1=60)		Bagalkote (n_2=60)		Overall (n=120)	
		f	%	f	%	f	%
1	Low (<17.83)	21	35.00	20	33.33	41	34.17
2	Medium (17.83-20.78)	22	36.67	15	25.00	37	30.83
3	High (>20.78)	17	28.33	25	41.67	42	35.00
Total	Mean= 19.31, SD= 2.95	60	100.00	60	100.00	120	100.00

Fig 1: Overall Knowledge level of farmers about recommended sericulture cultivation practices

The farmers of Bagalkote district were had high knowledge when compared to the Vijayapura district farmers. This might be due to active participation in sericulture farming

practices and some are simple traditional practices followed in study area over the years. While rearing silkworms in rearing house proper measures to be taken for cocoon yield

so the knowledge level was comparatively high among these operations. On the other hand considerable number of farmers also belonged to the low knowledge category. This might be due to the complex practices and they require additional efforts to understand and adopt them, similarly other factors like low farming experience, mass media utilization, low level of extension contact and extension participation leads to the low level knowledge. These findings are in confirmatory with findings of Hadimani *et al*. (2017) [3], Yashwanth (2017) [10], Asha (2018) [2] and Madhu (2018) [7].

Conclusion
This study reveals a varied level of knowledge among sericulture farmers in Vijayapura and Bagalkote districts regarding recommended cultivation practices. While a significant portion of farmers demonstrate high and medium levels of knowledge, particularly in areas like pest control and basic rearing practices, a considerable segment exhibits low knowledge, especially concerning more technical aspects such as soil pH, Chawki rearing, and specific planting techniques. Notably, Bagalkote farmers generally displayed higher knowledge levels compared to their Vijayapura counterparts, potentially attributed to their longer engagement in sericulture and familiarity with traditional practices. However, the presence of a substantial number of farmers with low knowledge indicates persistent gaps in technology transfer and information dissemination.

The study's findings carry significant implications for the sericulture sector in Vijayapura and Bagalkote districts. Primarily, there's a clear need for targeted extension programs that address the identified knowledge gaps, particularly concerning technical aspects like soil pH management and Chawki rearing. Strengthening information dissemination through diverse channels and tailoring strategies to address regional disparities are essential. Given the prevalence of low knowledge among a considerable segment of farmers, enhancing extension contact and promoting active farmer participation are crucial for effective technology transfer. Future research should focus on understanding the underlying factors contributing to these gaps and evaluating the effectiveness of various extension approaches to improve farmer knowledge and adoption of recommended sericulture practices.

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