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Intergenerational Perspectives on Sericulture in Assam: Challenges and Future Prospects

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Abstract : Sericulture plays a crucial role in the socio-economic fabric of Assam, supporting rural livelihoods and contributing to the region's silk industry. However, its sustainability is challenged by a generational decline in participation. This study examines intergenerational perspectives on sericulture by analysing the willingness of sericulture farmers and their children to continue the practice. Data were collected from 150 farmers across major silk-producing districts in Assam using a semi-structured interview schedule. Statistical analysis, including binomial and Chi-square tests, revealed a significant generational gap, with 79.33 percent of farmers wanting their children to continue sericulture, while only 40.00 percent of the younger generation expressed interest. The findings highlight economic constraints, labour intensity, and lack of policy support as major deterrents for youth participation in sericulture. Strengthening market linkages, financial incentives, and mechanization are essential to ensure sericulture's sustainability. This study provides policy recommendations to bridge the generational gap and revitalize Assam's sericulture sector.

Introduction:

Sericulture, the art and science of silk production, is a vital agro-based industry in India, significantly contributing to rural employment and economic development, particularly among marginalized communities (Geetha& Indira, 2011). India ranks as the second-largest producer of raw silk globally, with a production of 38,913 MT during 2023–24, supporting approximately 9.4 million people, including a substantial proportion of women (Central Silk Board, 2024)(Goswami, 2006). Recognizing its economic and social importance, various policy initiatives have been implemented to promote sericulture as a sustainable livelihood option (State Level Bankers' Committee, n.d.)(Jai Ho Kisan, 2022).

Within this national framework, Assam emerges as a key contributor, particularly in non-mulberry silk production, which holds economic and cultural significance. The state accounts for 75.48 percent of India's total non-mulberry silk output and ranks third in total raw silk production, contributing 5,745 MT in 2023–24. Sericulture sustains the livelihoods of 310,582 families across 8,726 villages in Assam, reinforcing its role in rural economic development (Saikia, 2020).

Recognizing Assam's sericulture potential, both central and state governments have implemented targeted policy interventions to enhance raw

silk production and industry growth. The Catalytic Development Programme (CDP), a centrally sponsored initiative implemented from the IX to XII Five-Year Plans, played a foundational role in supporting sericulture development (Borgohain, 2020). Subsequently, schemes such as the North East Region Textile Promotion Scheme (NERTPS), Silk Samagra-I, and Silk Samagra-II have been launched to further advance sericulture across the state (Central Silk Board, 2024). These initiatives focus on expanding host plant plantations, constructing silkworm rearing houses, supporting seed rearers, and providing comprehensive training programs to sericulture stakeholders (Saikia, 2023b) (Barmon, 2012).

Although substantial government initiatives have supported Assam's sericulture sector, several persistent challenges hinder its long-term sustainability. Studies indicate significant fluctuations in raw silk production, alongside instability in employment generation, impacting the sector's growth trajectory (Gogoi et al., 2024)(Saikia, 2023a). Key constraints include limited access to quality silkworm seeds, inadequate training on disease management, and insufficient market infrastructure, all of which hinder productivity and profitability (Altman & Farrell, 2022)(Ahmed, 2023)(Das, 2009). Addressing these challenges through policy-driven reforms and technological advancements is crucial to ensuring the industry's resilience and sustainability (Bharathi, 2016).

As a vital rural industry, sericulture contributes to multiple Sustainable Development Goals (SDGs),figure no. 1 reinforcing its role in socio-economic development and environmental sustainability (Department of Economic and Social Affairs, United Nations, n.d.). The sector directly aligns with SDG 1 (No Poverty), SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). Additionally, it indirectly supports SDG 2 (Zero Hunger) and SDG 9 (Industry, Innovation, and Infrastructure) through its role in agro-based rural employment and traditional textile industries. However, declining youth participation and economic constraints pose significant challenges to achieving these sustainability goals, necessitating targeted interventions to revitalize the sector (Sharma, 2024).

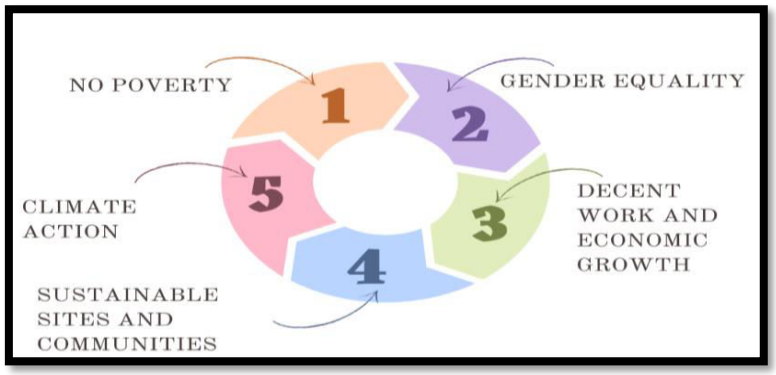

Fig 1: Sericulture contribution to SDGs

The alignment of sericulture with multiple SDGs underscores its potential as a sustainable livelihood option. However, the sector faces critical challenges, particularly in intergenerational knowledge transfer and workforce retention. The

willingness of younger generations to engage in sericulture is essential for its long-term viability, yet a noticeable decline in youth participation has been observed (Borah, 2023). Limited market opportunities, insufficient technical support, and a lack of structured financial incentives are key deterrents. Understanding the perspectives of current practitioners and the younger generation is crucial for identifying strategies to ensure the sustainability of Assam's sericulture industry.

This study examines intergenerational perspectives on sericulture in Assam, evaluating the willingness of parents and their children to sustain this traditional occupation and identifying key socio-economic and policy factors influencing their decisions. By analyzing these factors, the study aims to provide insights that can inform strategic interventions to revitalize the sericulture sector, ensuring its continued relevance and long-term sustainability.

Methodology

The study was conducted in the major silk-producing districts of Assam, as shown in figure 2. A total of 150 sericulture farmers with young children in their families were purposively selected as respondents. Primary data were collected using a semi-structured interview schedule, designed in consultation with subject matter specialists and experts from the central and state sericulture departments. The schedule focused on evaluating the perspectives of generations on involvement in sericulture as an occupation. Key areas of inquiry included whether sericulture provides sufficient capital to ensure a better livelihood, the perspectives of the current generation regarding the future of sericulture in Assam, the views of the younger generation on adopting sericulture as a profession, and the role of government assistance in sustaining sericulture practices. Personal interviews were conducted, enabling the collection of detailed data to understand the generational dynamics and factors influencing the sustainability of sericulture as an occupation.

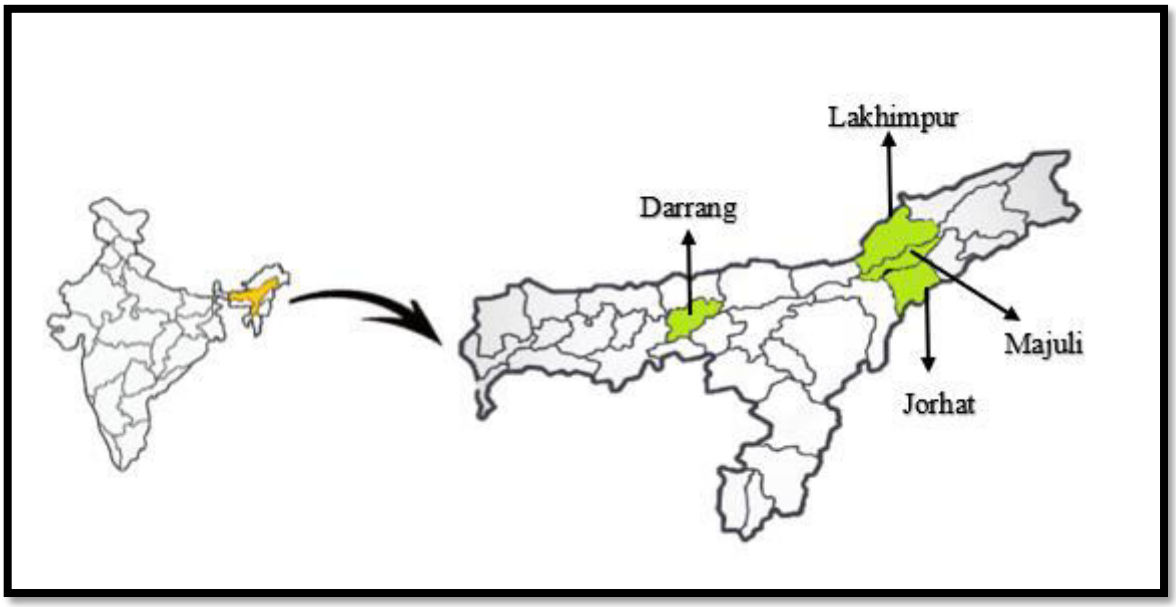

Fig 2: Map of the Study area (Assam State)

Analytical Technique

To assess the differences in responses ("Yes" or "No"), a Binomial Test was conducted, while Percentage Frequency was calculated to determine the proportion of responses. Additionally, the Chi-Square test was applied to evaluate the association of responses across different age classes. All statistical analyses were performed using R-Studio and PAST software. The formulas used are as follows:

Binomial Test:

Where n = $P(X = k) = \binom{n}{k} p^k (1-p)^{n-k}$, total trials, k = successes, p = probability of success.

Chi-Square Test:

Where *Oi*= observed $\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$, frequency, *Ei*= expected frequency.

These methods ensure a rigorous statistical evaluation of the collected data.

The responses were divided based on (Yes/No) the age of the responders into three age classes- Age class I (20-36 years), Age class II (37-53) years and Age class III (54-70 years). Then, the age class-wise frequency of the response was calculated. Then the binomial test was applied, as the response variables are dichotomous (Yes/No). Due to unavailability prior evidence suggests that either "Yes" or "No" should dominate, therefore the most neutral and unbiased assumption is a 50/50 probability (p = 0.5) as both outcomes (Yes and No) have an equal chance of occurring. The null hypothesis (Ho) states that the true proportion of "Yes" responses is equal to 0.5 (50.00%). In contrast, the alternative hypothesis (H1) states that the true proportion of "Yes" responses is not equal to 0.5 (50.00%).

Then the Chi-square test was performed. So, the null hypothesis (H_0) is that there is no association between age class and response type (Yes/No), and the alternative hypothesis (H1) is that, there is an association between age class and response type (Yes/No).

Results and Discussions

In Assam, sericulture farmers primarily cultivate three types of silk: eri, muga, and mulberry. Among the 150 farmers surveyed, a significant number were engaged in mixed sericulture, involving the rearing of two or more types of silkworms simultaneously (muga + eri + mulberry) in varying proportions. A detailed analysis revealed that (58.00 %) of respondents' rear mulberry and eri silkworms together, while 30.67 percent practice the cultivation of all three types; mulberry, muga, and eri. A smaller proportion of farmers rear only mulberry silkworms (6.67%) or specific combinations such as muga + eri or mulberry + eri (2.00%each). This distribution depicted in figure no. 3 clearly indicates a strong preference among farmers in Assam for mixed sericulture farming practices. It

might be due to that, mixed sericulture assists to diversify income sources, mitigate risks associated with market fluctuations, and ensure year-round employment. This practice leverages the region's favorable climatic conditions for cultivating eri, muga, and mulberry silks, aligning with traditional practices and cultural heritage(Saikia M, 2020).

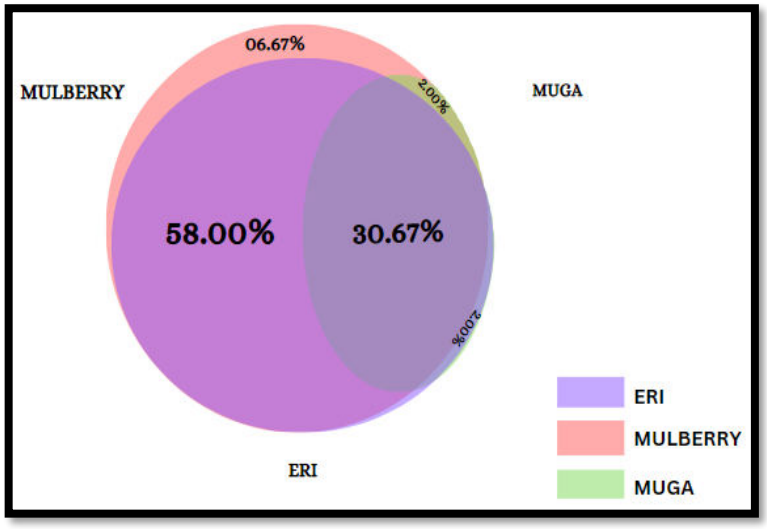

Fig 3: Current Sericulture Practices

Doessericulture provides sufficient capital to ensure a better livelihood?

To assess whether sericulture provides sufficient capital for a better livelihood, respondents were asked their perceived opinions. Among the participants, (52.00%) expressed that sericulture offers adequate capital for sustaining a better livelihood, while (48.00%) disagreed. This near-equal distribution indicates mixed perceptions about the economic viability of sericulture. The findings highlight the need for state and central sericulture departments to establish regulated markets and strengthen backward and forward linkages in the silk value chain within the study area. Respondents also emphasized that rising labour costs and the labour-intensive nature of sericulture necessitate research efforts focusing on mechanization and automation to make the industry more profitable(Marak & Singha, T. A 2024).

Statistical analysis supports these observations. The exact binomial test indicates no statistically significant deviation from an equal distribution of positive and negative responses ($p = 0.6832$, i.e., $p > 0.05$), with the confidence interval for positive responses ranging between 0.437 and 0.602. Furthermore, the Chi-Square Test of Independence reveals no significant association between age class and response type ($\chi^2 = 0.648$; $p = 0.723$, i.e., $p > 0.05$).

Age-class analysis shows varied responses: in Class I (20–36 years), (47.80%) of respondents provided a positive response, while (52.2%) responded negatively. In Class II (37–53 years), (62.5%) gave positive responses compared to (37.5%) negative responses. For Class III (54–70 years), (41.67%) responded positively, while (58.3%) provided negative responses. These results further underscore the generational differences in perceptions of sericulture as a sustainable livelihood option.

Perspectives of the current generation on future generation involvement in sericulture

When current generation of sericulture farmers asked about their aspirations for their future generation involvement in sericulture,as depicted in figure no. 4 asignificant majority (79.33%)expressed a strong wish for their children to take-up sericulture as one of the sources of income.Respondents attributed this preference to sericulture being a long-standing family tradition and a sustainable enterprise. (Dash, L. K., et al,2018)Many wished to see their future generation carry forward this legacy, even if only as a supplementary income source. (Bukhari et al., 2019)

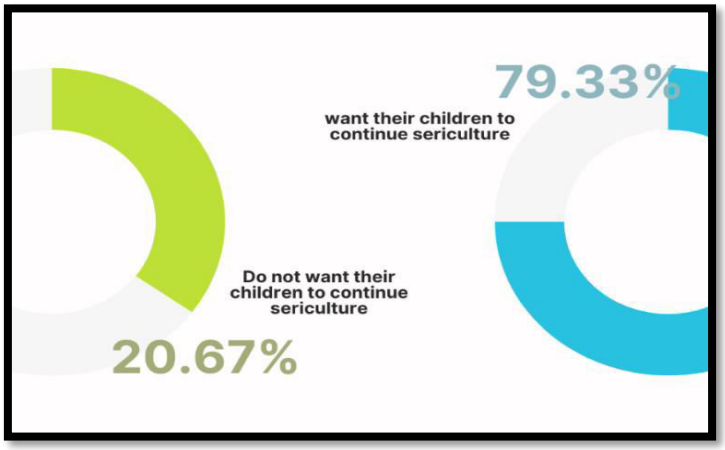

Fig 4: view of the current generation on sericulture

Conversely, (20.67%) of respondents did not wish for their children to pursue sericulture. These farmers preferred their children to pursue higher education, secure stable jobs, or explore new business opportunities outside the sericulture sector. They cited sericulture's labour-intensive nature and the limited financial returns as key reasons for their reluctance.(Abhilash et al., 2021). Instead, they hoped their children could seek occupations that offer greater economic security and less physical strain.

Views of the younger generation on adopting sericulture as a profession

The figure no. 5 specifies that, asubstantial portion of the younger generation respondents (40.00%) expressed a desire to adopt sericulture as an occupation. They viewed it as their family's traditional enterprise, passed down through generations, and emphasized its cultural and emotional importance. These respondents also perceived sericulture as a potential source of financial returns, contributing to their livelihoods while preserving their family heritage.(Buragohain & Saikia, 2020)

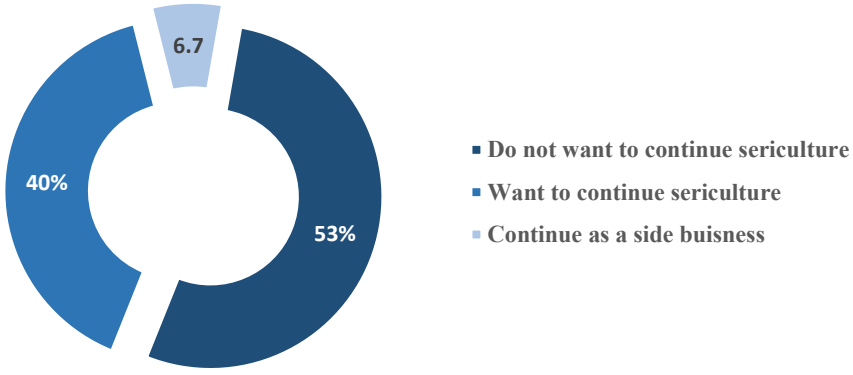

Fig 5: View of the younger generation on sericulture

An additional (6.67%) respondents, expressed interest in pursuing sericulture but only as a supplementary source of income. They acknowledged the benefits of retaining their family business while simultaneously exploring more stable and financially lucrative career opportunities.

In contrast, the majority (53.33%) of the younger generation indicated a lack of interest in continuing sericulture. They perceived it as a labour-intensive and time-consuming activity with limited profitability. Many preferred to secure stable jobs or pursue alternative livelihoods that promise better financial security and personal growth. A segment of respondents considered sericulture suitable mainly for housewives or older family members who are unable to engage in other economic activities.(Sharma, 2019)

Generational Gap in Perspectives on Continuing Sericulture

The findings reveals that (79.33%) of respondents expressed a desire for their future generation to continue sericulture, either as a primary livelihood or a supplementary income source. This preference stems from the perception of sericulture as a family occupation deeply embedded in their cultural heritage. Many parents view sericulture as an integral part of their identity and hope that their children will carry forward this legacy.(Buragohain & Saikia, 2020)

The figure no. 6 specifies that, only 40 percent of the younger generation shared their parents' inclination to continue sericulture. This disparity creates a significant gap of (39.33%), reflecting a divergence in perspectives between generations. Many younger respondents perceive sericulture as a labour-intensive, time-consuming, and sensitive enterprise. They prefer stable and profitable employment or business opportunities over sericulture. A critical issue discouraging the younger generation is the high initial investment required for sericulture and the lack of substantial subsidies or government programs to support farmers.

CURRENT GENERATION WANT THEIR CHILDREN TO PURSUE SERICULTURE	FUTURE GENERATION WANT TO PURSUE SERICULTURE	
	YES	NO
YES	40.00%	39.33%
NO	0.67%	20.00%

Fig 6: view of current generation V/S younger generation

Additionally, (20.00%) of respondents, encompassing both parents and children, expressed no interest in continuing sericulture. These families have chosen to move away from the practice due to financial constraints and the availability of better opportunities in other fields, including higher education and stable jobs. Interestingly, a very small proportion of respondents (0.67%) included cases where parents did not want their children to continue sericulture, but the children expressed a desire to do so. These individuals may felt emotionally connected to the practice, inspired by their parents' dedication, and wished to preserve the family tradition.

Government Assistance and Generational Willingness to Continue Sericulture

To assess the extent of government intervention in supporting the silk sector, respondents were asked whether they received assistance from the government or other sources. The findings indicate that (54.40 %) of respondents reported receiving government support in various forms, including input subsidies, procurement of produce at fixed prices, and the provision of essential materials such as free silkworm eggs/chawkis, fertilizers, and equipment like plastic trays. However, (45.60%) of respondents stated that they did not receive any form of assistance, highlighting disparities in access to government support across the study area(Borgohain, 2020)

Further analysis explored farmers' willingness to continue sericulture in the absence of government assistance. A significant proportion of respondents (83.00%) expressed their intent to sustain sericulture operations without government support, whereas (17.00 %) indicated that they would discontinue the practice if government aid ceased. Statistical analysis using the exact binomial test confirmed a significant deviation from an equal distribution of responses ($p < 0.05$), with the confidence interval for positive responses ranging between 0.756 and 0.884.

The Chi-Square Test of Association further supported the alternative hypothesis, indicating a significant association between age class and response type ($\chi^2 = 8.905$; $p < 0.05$). Age-specific analysis revealed that among respondents in Age Class I (20–36 years), 87.0percent of respondents expressed willingness to continue sericulture without government assistance, while 13.0

percent were unwilling to do so. In Age Class II (37–53 years), 75.0 percent of respondents indicated their willingness to continue, whereas 25.00 percent of them expressed reliance on government support. Notably, all respondents in Age Class III (54–70 years) affirmed their willingness to sustain sericulture operations without government assistance.

These findings suggest that while government support plays a role in facilitating sericulture, a substantial proportion of farmers demonstrate resilience and adaptability in sustaining their livelihoods independently across silk value chain. Strengthening policy frameworks to enhance targeted financial and technical assistance could further support farmers in maximizing productivity and profitability. (Shekar & Hardingham, 1995)

Conclusion:

The study highlights a significant generational gap in sericulture participation in Assam, with declining interest among the younger generation due to economic and labour-related challenges. While sericulture remains deeply embedded in cultural and family traditions, its sustainability is at risk without strategic interventions. Strengthening institutional support, improving market access, and integrating technological innovations can enhance its viability. Policymakers should prioritize targeted financial schemes and capacity building programs to make sericulture an attractive livelihood option. Addressing these issues is crucial for preserving Assam's sericulture heritage and ensuring its long-term economic contribution.

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