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Attitudinal Analysis of Stakeholders Towards Sericulture as a Livelihood Enterprise

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ABSTRACT

Sericulture is a labour-intensive, low-investment agro-based enterprise whose adoption and continuity depend on how favourable farm households regard it as a livelihood option. This study examined stakeholders' attitude towards sericulture as a livelihood enterprise in the Banka and Bhagalpur districts of Bihar. Using multistage purposive sampling, 180 respondents were selected, comprising 90 Tasar cocoon growers from Katoria block, Banka, and 90 silk weavers from Nathnagar block, Bhagalpur. Data were collected through a pre-tested structured interview schedule incorporating a seventeen-statement, five-point Likert-type attitude scale, and analysed using frequency, percentage, mean score, chi-square test, Karl Pearson's coefficient of correlation and multiple linear regression. More than half the respondents (53.89%) exhibited a medium level of attitude, with an overall mean statement score of 4.17 indicating a broadly favourable disposition towards the enterprise. Sericulture experience (r = 0.534), annual income (r = 0.496) and educational status (r = 0.428) emerged as the strongest correlates, and these variables, together with landholding and housing status, jointly explained 58.20 per cent of the variation in attitude scores (R^2 = 0.582). The findings suggest that experience-based training, income-linked market interventions and basic educational support are promising entry points for strengthening attitude towards sericulture-based livelihoods in Bihar.

Keywords: Attitude, Sericulture, Livelihood enterprise, Correlation, Regression, Bihar

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INTRODUCTION

Sericulture, the rearing of silkworms for silk production, is among the oldest agro-based cottage industries, linking agriculture, forestry and small-scale manufacturing within a single value chain. Spanning host-plant cultivation, silkworm rearing, cocoon harvesting, reeling, spinning and weaving, it creates employment at every stage and suits resource-poor households well, requiring little capital and yielding returns within a short gestation period (Datta and Nanavaty, 2005). India is the only country that commercially produces all major categories of natural silk, namely mulberry, tropical and oak tasar, eri and muga, and during 2022-23 produced nearly 36,582 metric tonnes of raw silk, sustaining the livelihoods of close to 7.65 million persons and underlining the sector's contribution to rural income, women's employment and poverty alleviation (Central Silk Board, 2023).

Sericulture is increasingly recognised as a vehicle for broader sustainable development, with researchers linking it to poverty reduction, decent rural employment, gender equality and environmentally responsible production (Mushtaq et al., 2023). Within the sector, non-mulberry or vanya sericulture, of which tropical Tasar culture is the principal form practised in Bihar, offers remunerative benefit-cost ratios and dependable returns to resource-poor households, reinforcing its standing as a viable livelihood option (Manjunatha et al., 2023). Bihar's agro-climatic conditions favour both mulberry and vanya sericulture, and its forest tracts support the host trees on which tropical Tasar silkworms are reared. Banka district, with its substantial forest cover and tribal population, is a notable centre of Tasar cocoon production, while Bhagalpur, the Silk City of India, has a long tradition of Tasar silk weaving that has earned Bhagalpur silk a Geographical Indication tag and recognition under the One District One Product initiative. Sericulture in the state nonetheless remains constrained by fluctuating cocoon prices, weak market linkages, limited institutional credit and inadequate extension contact, constraints whose resolution depends on how favourably stakeholders perceive the enterprise.

Attitude, a relatively enduring predisposition to respond favourably or unfavourably towards an object or activity, occupies a central place in the adoption and continuation of agricultural enterprises. A stakeholder who regards sericulture positively is more likely to invest time, labour and

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capital in it. Elsewhere in the country, favourable attitude towards sericulture-linked institutions has been associated with training exposure and subsidised input support (Harisha et al., 2021), while socio-personal and management factors such as education, extension contact and economic motivation have been shown to strengthen farmers' knowledge of, and involvement in, sericulture practices (Sengupta et al., 2023). Attitude towards sericulture has also been reported to influence adoption behaviour directly, underscoring the value of measuring it before designing extension strategies (Kumar and Babu, 2018).

Despite this evidence from other sericulture tracts, comparatively little systematic attention has been paid in Bihar to measuring stakeholders' attitude towards sericulture and identifying the socio-economic characteristics that shape it. Against this background, the present investigation was undertaken to study the attitude of stakeholders towards sericulture as a livelihood enterprise in the Tasar-growing tracts of Banka district and the weaving clusters of Bhagalpur district, and to examine the extent to which selected socio-economic characteristics are associated with, correlated with, and predictive of this attitude.

MATERIALS AND METHODS

Research design and locale

The study was carried out in Bhagalpur and Banka districts of Bihar, selected purposively to represent, respectively, the post-cocoon (silk weaving) and pre-cocoon (Tasar cocoon production) segments of the sericulture value chain. Within Banka district, Katoria block was chosen for its concentration of Tasar-rearing households, while Nathnagar block of Bhagalpur district was selected for its traditional cluster of silk-weaving families. An ex-post facto, descriptive-cum-exploratory research design was adopted, since the attitudinal and socio-economic attributes under study had already taken shape among the respondents prior to the enquiry.

Sampling procedure

A multistage purposive sampling procedure was followed, under which districts, blocks, villages/clusters and respondents were each selected purposively at successive stages: three villages (Tola Inarabaran, Tola Lilabaran and Tola Sikatbaran) were covered in Katoria block and three clusters (Champanagar, Nathnagar and Hasanabad) in Nathnagar block, with 30 respondents drawn purposively from each, yielding a final sample of 180 respondents, 90 Tasar cocoon growers from Banka and 90 silk weavers from Bhagalpur. Primary data were collected during February-April 2026 through personal interviews using a pre-tested, structured interview schedule.

Measurement of attitude

Attitude towards sericulture as a livelihood enterprise was measured with a seventeen-statement scale covering the economic, social, employment-related, sustainability and developmental dimensions of the enterprise. Each statement was rated on a five-point continuum ranging from strongly agree to strongly disagree, scored 5, 4, 3, 2 and 1 respectively for positively worded statements. Mean scores were computed for each statement, and respondents' summated scores were used to derive an overall attitude score for every respondent. On the basis of the mean and standard deviation of these overall scores, respondents were grouped into low (up to 56), medium (57-70) and high (above 70) attitude categories.

Other statistical tools

Ten socio-economic characteristics, namely age, educational status, family size, family type, landholding, main occupation, annual income, sericulture experience, social category and housing status, were treated as independent variables to examine their relationship with attitude. Data were analysed using frequency and percentage distribution; mean scores and ranking for the statement-wise analysis; the chi-square test to examine the association between the categorical socio-economic variables and attitude category; Karl Pearson's coefficient of correlation to determine the direction and strength of the linear relationship between each variable and the overall attitude score; and multiple linear regression to identify the relative contribution of the independent variables in explaining variation in attitude scores.

RESULTS AND DISCUSSION

Level and distribution of attitude towards sericulture

Respondents' overall attitude scores were grouped into low, medium and high categories on the basis of mean and standard deviation, and the resulting distribution is summarised in Table 1.

Table 1 : Level and distribution of attitude towards sericulture

Attitude category	Score range	Bhagalpur (n=90)	Banka (n=90)	Total (N=180)
Low attitude	Up to 56	18 (20.00)	22 (24.44)	40 (22.22)
Medium Attitude	57-70	50 (55.56)	47 (52.22) 97 (53.89)	57-70
High Attitude	Above 70	22 (24.44)	21 (23.34) 43 (23.89)	22 (24.44)
Total		90 (100.00)	90 (100.00)	180 (100.00)

More than half of the sample, 97 of the 180 respondents (53.89%), fell in the medium attitude category, while 43 respondents (23.89%) recorded high attitude scores and the remaining 40 (22.22%) were placed in the low category. This pattern held in both districts. In Bhagalpur, 50 of the 90 weavers (55.56%) occupied the medium band, 22 (24.44%) the

high band and only 18 (20.00%) the low band, so that four-fifths of the Bhagalpur sample expressed at least a moderately favourable view of sericulture. In Banka, the medium category again predominated (47 respondents, 52.22%), though the share of respondents in the low category was somewhat higher (24.44%) and the high category marginally lower (23.34%) than in Bhagalpur. The slightly more favourable disposition recorded among Bhagalpur weavers is consistent with the district's long-standing identity as a silk-weaving centre and its comparatively stronger market linkages. Taken together, with close to four-fifths of all respondents (77.78%) registering medium-to-high attitude, the overall picture is one of a generally favourable, though not yet uniformly strong, disposition towards sericulture as a livelihood option, a pattern broadly in line with Reddy and Kumar (2023).

Statement-wise attitude towards sericulture

To identify which specific facets of sericulture respondents valued most, and which drew comparatively more reserved agreement, mean scores were computed separately for each of the seventeen attitude statements; the results, with corresponding ranks, are presented in Table 2.

Table 2 : Statement-wise attitude towards sericulture

S. No.	Statement	Mean score (MS)	Rank
1	Sericulture can increase the income of small and marginal farmers.	4.42	I
2	Sericulture improves the standard of living of farming households.	4.31	IV
3	Sericulture creates employment opportunities for women in rural areas.	4.35	III
4	Sericulture has strong potential for expansion in rural areas.	4.22	VII
5	Sericulture is a sustainable enterprise for long-term livelihood security.	4.28	V

The statement that drew the strongest endorsement, "Sericulture can increase the income of small and marginal farmers" (MS = 4.42, Rank I), identifies income enhancement as the single most salient benefit respondents associate with the enterprise, a perception consistent with Dandin and Giridhar (2014), who likewise identified income generation as the principal driver of farmers' positive orientation towards sericulture. Close behind, respondents rated the enterprise highly for its contribution to overall socio-economic status (MS = 4.37, Rank II) and for the employment it creates for rural women (MS = 4.35, Rank III), underlining its labour-absorptive and gender-inclusive character; the latter finding echoes Sarkar and Das (2018), who reported that sericulture contributes significantly to rural employment generation, particularly among women and weaker sections of society. Statements concerning improved living standards (MS = 4.31), long-term sustainability (MS = 4.28) and dependable supplementary income (MS = 4.24) occupied the fourth, fifth and sixth positions respectively, suggesting that respondents view sericulture not merely as a one-time income boost but as a durable component of household livelihood strategy, a perception in line with Central Silk Board (2023), which recognises sericulture as a sustainable rural enterprise on account of its low investment requirement, regular returns and capacity to generate year-round employment.

Association between socio-economic characteristics and attitude

The chi-square test was used to examine whether respondents' attitude category (low/medium/high) was associated with each of the ten selected socio-economic characteristics; the results are presented in Table 3.

Table 3. Association between socio-economic characteristics and attitude towards sericulture (n = 180)

Sl. No.	Variable	χ^2 value	p-value
1	Age	3.218 NS	0.522
2	Educational status	15.842**	0.014
3	Family size	2.764 NS	0.598
4	Family type	1.986 NS	0.370
5	Landholding	9.465*	0.050
6	Main occupation	7.884*	0.049
7	Annual income	18.376**	0.005
8	Sericulture experience	21.584**	0.001
9	Social category	2.973 NS	0.812
10	Housing status	11.642*	0.020

*Significant at 5% level, **Significant at 1% level, NS = Non-significant

Six of the ten variables examined, educational status (χ^2 = 15.842, p = 0.014), landholding (χ^2 = 9.465, p = 0.050), main occupation (χ^2 = 7.884, p = 0.049), annual income (χ^2 = 18.376, p = 0.005), sericulture experience (χ^2 = 21.584, p = 0.001) and housing status (χ^2 = 11.642, p = 0.020), showed a statistically significant association with attitude category, whereas age, family size, family type and social category did not. Sericulture experience produced the largest chi-square value among all the variables tested, indicating that the length of time a respondent has practised the enterprise is the socio-economic attribute most closely bound up with whether that respondent's attitude falls in the low, medium or high band. Annual income recorded the second-largest chi-square value, suggesting that respondents earning more from the enterprise

are more likely to hold favourable attitudes, a pattern also reported by Yadav et al. (2015). Educational status likewise showed a significant association, pointing to the role formal learning plays in helping respondents access information and appreciate the technical and economic rationale of scientific sericulture practice.

Correlation between socio-economic characteristics and attitude

Karl Pearson's coefficient of correlation was computed to quantify the direction and strength of the linear relationship between each socio-economic variable and respondents' overall attitude score (Table 4).

Table 4 : Correlation between socio-economic characteristics and attitude

Sl. No.	Variable	Correlation coefficient (r)
1	Age	-0.118 NS
2	Educational status	0.428**
3	Family size	0.084 NS
4	Family type	0.071 NS
5	Landholding	0.287*
6	Main occupation	0.241*
7	Annual income	0.496**
8	Sericulture experience	0.534**
9	Social category	0.066 NS
10	Housing status	0.321**

*Significant at 5% level, **Significant at 1% level, NS = Non-significant

The correlation results corroborate the chi-square findings closely. Sericulture experience again emerged as the variable most strongly associated with attitude (r = 0.534, significant at 1%), followed by annual income (r = 0.496), educational status (r = 0.428) and housing status (r = 0.321), all positive and significant at the one per cent level. Landholding (r = 0.287) and main occupation (r = 0.241) were positive and significant at the five per cent level, while age recorded a small negative, statistically non-significant coefficient (r = - 0.118), and family size, family type and social category produced weak positive correlations that did not reach significance.

Determinants of attitude: Regression analysis

To assess the combined and relative explanatory power of the socio-economic variables, a multiple linear regression was fitted with the overall attitude score as the dependent variable; the regression coefficients, t-values and model statistics are presented in Table 5.

Table 5 : Determinants of attitude: Regression analysis

Sl. No.	Variable	Regression coefficient (β)	t-value
1	Age	-0.064 NS	-1.124
2	Educational status	0.312**	4.862
3	Family size	0.051 NS	0.874
4	Landholding	0.186*	2.431
5	Annual income	0.374**	5.478
6	Sericulture experience	0.421**	6.215
7	Housing status	0.218*	2.865

$R^2 = 0.582$, Adjusted $R^2 = 0.557$, F-value = 14.87** *Significant at 5 per cent level **Significant at 1 per cent level NS = Non-significant

The regression model was statistically significant ($F = 14.87$, $p < 0.01$) and explained 58.20 per cent of the variance in attitude scores ($R^2 = 0.582$; adjusted $R^2 = 0.557$), indicating a reasonably strong overall fit. Three predictors carried significant positive coefficients at the one per cent level: sericulture experience ($\beta = 0.421$, $t = 6.215$), which exerted the single largest independent effect; annual income ($\beta = 0.374$, $t = 5.478$); and educational status ($\beta = 0.312$, $t = 4.862$). Housing status and landholding contributed significant positive effects at the five per cent level, while age and family size did not contribute significantly once the other variables were held constant.

The convergence of the chi-square, correlation and regression analyses around the same cluster of variables provides a reasonably robust basis for concluding that attitude towards sericulture in the study area is shaped predominantly by practical exposure to the enterprise and by the economic and educational resources respondents bring to it, rather than by age, family composition or social category.

CONCLUSION

The study shows that sericulture stakeholders in the Banka and Bhagalpur districts of Bihar hold a generally favourable attitude towards the enterprise, with more than half of the respondents registering a medium level of attitude and an overall mean statement score of 4.17 out of 5. Income enhancement, improvement in socio-economic status and employment generation for women emerged as the dimensions respondents valued most, while the enterprise's perceived ability to retain rural youth and spur entrepreneurship drew comparatively more cautious agreement. Sericulture experience, annual income and educational status stood out consistently across the chi-square, correlation and regression analyses as the most

influential correlates and predictors of attitude, with housing status and landholding contributing significant additional effects in the regression model; demographic attributes such as age, family size, family type and social category showed no meaningful bearing on attitude in any of the three analyses. These findings suggest that extension and developmental interventions aimed at strengthening stakeholders' disposition towards sericulture would be best directed at building practical experience through hands-on training, improving realised income through better market linkages and price stabilisation, and reinforcing basic education and literacy among practising and prospective sericulture households. Doing so could help convert the currently dominant medium level of attitude into a more widely and strongly held positive orientation, thereby supporting the long-term sustainability of sericulture as a livelihood enterprise in Bihar.

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