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Aradhana Sharma
Sericulture Asstt. State
Government Sericulture
Development Department,
Jammu and Kashmir, India

RK Bali
Prof. Div. of Sericulture,
SKUAST-Jammu, Jammu and
Kashmir, India

PS Slathia
Assoc. Prof. Div. of Extension
Education, SKUAST-Jammu,
Jammu and Kashmir, India

Manish Sharma
Prof. Div. of Statistics,
SKUAST-Jammu, Jammu and
Kashmir, India

Kamlesh Bali
Assoc. Prof. Div. of Sericulture,
SKUAST-Jammu, Jammu and
Kashmir, India

Correspondence
Aradhana Sharma
Sericulture Asstt. State
Government Sericulture
Development Department,
Jammu and Kashmir, India

Constraints responsible for non-adoption of autumn rearing in Jammu province of J&K

Aradhana Sharma, RK Bali, PS Slathia, Manish Sharma and Kamlesh Bali

Abstract

The present study was carried out in Jammu division of Jammu and Kashmir state with 225 silkworm rearers from three potential cocoon producing districts namely Kathua, Udhampur and Rajouri. The results showed that 63 percent respondents were found to have adopted silkworm rearing during autumn season. The major constraints observed included unavailability of sufficient mulberry leaves ($\chi^2=29.13$, $p<0.01$), lack of season specific hybrids ($\chi^2=05.39$, $p<0.05$) and lack of awareness to manage harsh conditions ($\chi^2=08.17$, $p<0.01$) which has direct impact on cocoon productivity. Keeping in view the above constraints, some suggestions were made during the course of study such as to create mulberry leaf reserves in the govt. land, supply of thermo-tolerant hybrids, post chawki worms, need based trainings on latest sericulture technology on regular basis, enhancement of minimum support price of cocoons and crop insurance cover to compensate the crop failure.

Keywords: Silkworm, constraints, disease, adoption, thermo tolerant hybrids

1. Introduction

Sericulture is one of the most eco-friendly cottage-based industry which provides employment to a large number of farmers in its various sectors right from mulberry cultivation, rearing to post cocoon industry. As sericulture is a rural industry it supplements income and employment to large number of semi-literate and semi-skilled workers of the weaker section of the society. Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu & Kashmir are the traditional sericulture states of India. Southern states having multivoltine rearing contributes more than 50 percent of the total silk production in comparison to Jammu and Kashmir having bivoltine rearing and contributing about 15 percent only. The gap between the potential and actual yield obtained by the silkworm rearers of J&K state are not fully exploited. Thus, there is a need to have new direction in planning the transfer of technology by more innovative linkage bonds between technology providers, extension workers and silkworm rearers of the state in order to understand the problems and to modulate need based measures for strengthening the future prospective of sericulture industry in J&K state.

2. Methodology

The present study was conducted in Jammu division of Jammu and Kashmir state. Mulberry plantation and silkworm rearing were the criteria to identify the extent of adoption in three potential cocoon producing districts namely Kathua, Udhampur and Rajouri. From each district, three mulberry circles were selected purposively on the basis of maximum number of silkworm rearers. 25 silkworm rearers were randomly selected from each circle making a total sample of 225 sericulture farmers from three districts. To collect the responses, survey was conducted in consultation with the officials of the State Sericulture Development Department, Govt. of J&K. A specially designed schedule was used for data collection for the period, 2016-17 by personal interview with farmers. The data collected was tabulated and inferences were drawn on percentage and chi-square test basis.

The chi square test (χ^2) for independence used as measure for the independence of attributes and for assigning ranks to constraints. The constraints which have maximum value given rank I followed with rank II and so on.

$$\chi^2 = \frac{\sum (O-E)^2}{E}$$

Where, O = Observed frequencies E = Expected frequencies

3. Results

The findings of the study indicated that all the respondents were marginal farmers having 56.59 average number of trees. 41.33 percent respondents using dwelling houses for

silkworm rearing, 65.33 percent possessed rearing kits and only 4 percent acquired training on recommended sericulture practices (Table 1).

Table 1: Socio-economic profile of respondents

Parameter	Districts	Kathua	Udhampur	Rajouri	Overall
	Land holding (ha)	Average	0.69	0.50	0.50
S.D.		0.57	0.42	0.31	0.45
Std. Error(±)		0.07	0.05	0.04	0.03
Number of mulberry trees owned	Average	84.44	56.11	29.23	56.59
	S.D.	73.47	61.79	18.84	60.60
	Std. Error(±)	8.48	7.13	2.18	4.04
Rearing cum dwelling house (%)		44.00	34.67	41.33	45.33
Possession of rearing kit (%)		62.67	82.67	50.67	65.33
Trainings acquired (%)		2.67	9.33	0.00	4.00

3.1 Seasonal variation in adoption of silkworm rearing

The adoption of silkworm rearing was found cent percent during spring season in district Kathua followed by Udhampur (96.00 percent) and least in district Rajouri (89.33 percent) whereas during autumn season, the highest frequency

as well as percentage was recorded in district Kathua (72.00) followed by Rajouri (69.33) and minimum in Udhampur (48.00). The overall percentage of all three districts during spring rearing was 95.11 where as it was 63.11 during autumn season (Table 2).

Table 2: Seasonal difference in adoption of silkworm rearing

Season	District	Kathua (n=75)	Udhampur (n=75)	Rajouri (n=75)	Overall (n=225)
	Spring Season		100.00 (75)	96.00 (72)	89.33 (67)
Autumn Season		72.00 (54)	48.00 (36)	69.33 (52)	63.11 (142)

- Value in parentheses represents frequency of respondents

3.2 Constraints perceived with respect to mulberry production

The constraints found to pose significant impact on the adoption of autumn rearing and the main constraints recorded was insufficient mulberry leaves with maximum chi-square value (29.13**) followed by mulberry disease incidence

(19.75**) and lack of irrigation facilities (5.56*). The other constraints faced by the respondents included coarse leaf during autumn season followed by insufficient land for plantation, high cost of fertilizers and insufficient manure (Table 3).

Table 3: Constraints perceived by respondents with respect to mulberry production.

Constraints categories	Kathua (n=75)	Udhampur (n=75)	Rajouri (n=75)	χ^2 -value (p-value)	Rank
Insufficient mulberry leaf	36	55	66	29.13** ($<.01$)	I
Mulberry disease Incidence	15	3	1	19.75** ($<.01$)	II
Lack of irrigation facility	57	65	67	5.56* (.03)	III
Coarse leaf during autumn season	28	26	37	3.80 (.13)	IV
Insufficient land for plantation	35	45	45	3.60 (.10)	V
High cost of fertilizers	24	32	24	2.48 (1.00)	VI
Insufficient manure (FYM)	34	43	41	2.39 (.25)	VII

3.3 Constraints perceived with respect to silkworm rearing

The constraint with respect to silkworm rearing perceived by respondents included lack of season specific silkworm

hybrids (5.39*), improper disinfection, lack of rearing appliances, inadequate rearing place and pest attack during autumn season (Table 4).

Table 4: Constraints perceived by respondents with respect to silkworm rearing

Constraints categories	Kathua (n=75)	Udhampur (n=75)	Rajouri (n=75)	χ^2 -value (p-value)	Rank
Lack of season specific hybrids	36	47	49	05.39* (<0.05)	I
Improper disinfection in the dwelling cum rearing house	37	25	33	4.08 (.51)	II
Lack of rearing appliances	34	29	39	2.69 (.41)	III
Inadequate rearing place	33	25	34	2.68 (.87)	IV
Pest attack	37	33	41	1.71 (.51)	V

3.4 Constraints perceived with respect to marketing

Inconvenience of transportation for marketing was found significantly affecting the adoption of autumn rearing (χ^2 -

value =30.60**) whereas the fluctuation in cocoon price also found to pose great impact that hinders the adoption of autumn rearing (Table 5).

Table 5: Constraints perceived by respondents with respect to marketing.

Constraints categories	Kathua (n=75)	Udhampur (n=75)	Rajouri (n=75)	χ^2 -value (p-value)	Rank
Inconvenience during transportation	44	36	12	30.60** ($<.01$)	I
Fluctuations in cocoon price	31	38	36	1.39 (.41)	II

3.5 Technical and general constraints perceived by respondents

Some technical and general constraints viz. insufficient training programs (22.93**) followed by lack of knowledge to use the technological products (16.22**) and lack of

awareness to manage harsh environmental conditions (8.17**) were found significantly affecting the adoption of autumn rearing. In addition, clash between harvesting time of high investment crops like maize and bajra with rearing season was also reported by the respondents.

Table 6: Technical and general constraints.

Constraints categories	Kathua (n=75)	Udhampur (n=75)	Rajouri (n=75)	χ^2 -value (p-value)	Rank
Insufficient training programs at their door steps	37	29	10	22.93** (<0.01)	I
Lack of knowledge to use the technological products	07	20	28	16.22** (<0.01)	II
Lack of awareness to manage harsh environmental conditions	20	18	07	08.17** (<0.01)	III
Competition from other crops	29	30	40	4.00 (0.07)	IV

- Values in parentheses represents p-value

4. Discussion

In present investigation, major constraints were recorded like insufficient mulberry leaves, mulberry disease incidence and high outbreak of silkworm diseases during autumn season and similar reports were also made by Todmal *et al.* (2013) [5], Dhane and Dhane (2004) [2] and Susikaran and Sridhar (2013) [4]. Chouhan *et al.* (2016) [1] also reviewed status of sericulture in Jammu and Kashmir and made similar suggestions for improving the status of sericulture in J&K state. Fatima (2013) [3] examined the performance of Jammu and Kashmir silk industry and suggested remedial measures to overcome the constraints of disease resistant quality seed, rearing at community level, improvement in educational status of the rearers and to increase the silk reeling units in the state.

5. Conclusion

In present study, socio-economic profile of the respondents predicts that insufficient mulberry leaves, rearing space, rearing appliances, lack of season-specific hybrid and lack of knowledge to manage harsh climatic conditions in autumn season were the major constraints influencing high disease incidence resulting in non-adoption of autumn rearing in Jammu province. A few suggestions were also made such as to establish mulberry orchards in the potential rearing areas to

improve their rearing capacity, supply of thermo tolerant hybrids and post chawki worms in autumn, need based trainings on latest sericulture technology on regular basis and minimum support price of cocoons and the crop should be taken under crop insurance cover so that the constraints responsible for non-adoption of autumn rearing can be minimized.

6. References

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