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Impact of Tasar culture on the livelihood of farmers in Saraikela-Kharsawan District of Jharkhand

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Abstract

The present investigation examined how tasar rearing shapes the livelihood of cultivators in the Saraikela-Kharsawan district of Jharkhand, with fieldwork carried out across the Kuchai and Kharsawan blocks. A total of sixty tasar-rearing households were drawn through a multi-stage random sampling design, and first-hand information was gathered using structured interview schedules. The responses were summarised with simple descriptive measures, namely frequencies, percentages and average ranking. In the study area, tasar rearing operates as a forest-linked enterprise that remains commercially appealing to rural households. Tribal families have long pursued the activity both within natural forest tracts and around their homesteads. Most of the sampled cultivators belonged to Scheduled Tribe communities, fell within the younger and middle-aged brackets, and had schooling that generally did not exceed the middle-school stage. The full package of recommended tasar practices was not taken up uniformly; even so, selected interventions such as rearing on economic plantations, pruning, guarding against leaf gall and brushing by leaf-twig transfer were adopted either wholly or in part. Participation in tasar work was associated with visible gains in the skills, earnings and employment of the respondents. Yearly income attributable to the activity ranged between roughly Rs. 25,000 and Rs. 1,00,000, and the enterprise generated between 50 and 125 mandays of work. Every respondent reported improved food intake, while 98.00 per cent noted better housing, 75.00 per cent better education, 73.33 per cent better clothing and 23.33 per cent improved access to transport. The activity nevertheless remained exposed to erratic weather, pest and disease outbreaks, shortfalls in the supply of disease-free layings (DFLs) and thin technical support. Strengthening farmer awareness of recommended practices through ICT platforms and a range of extension approaches is therefore recommended.

Keywords: Tasar culture, marketed surplus, employment generation, tribal farmers, Jharkhand, sericulture

1. Introduction

India ranks as the world's second largest silk-producing nation. Of the four silk types recorded in 2015-16, mulberry contributed 71.80 per cent (20,434 MT), tasar 9.90 per cent (2,818 MT), eri 17.80 per cent (5,054 MT) and muga 0.60 per cent (166 MT) of the country's total raw-silk output of 28,472 MT. India also holds the singular position of being the only country that turns out all five commercially recognised silks — mulberry, tropical tasar, oak tasar, eri and muga.

As a farm-anchored occupation that is labour-intensive yet commercially rewarding, sericulture sits within the cottage and small-scale segment of the economy. It is especially well matched to village-based cultivators, small entrepreneurs and artisans, since the capital outlay is modest while the scope for comparatively higher returns remains substantial. The activity channels both income and work to the rural poor, particularly to smallholders and to socially disadvantaged groups.

Jharkhand possesses one of the country's strongest sericulture

foundations. It leads the nation in tasar (a non-mulberry silk), accounting for a 76.40 per cent share of total output. In 2015-16 the state supplied 40.00 per cent of India's tasar silk, producing 2,284 metric tonnes of raw silk, and it contributes about 7.0 per cent of the country's overall silk production. Tasar silk from the state is shipped mainly to the United States, the United Kingdom, Germany, France, Turkey, Japan, Australia, Sweden and Switzerland. The state agency JHARCRAFT oversees the promotion of handicrafts and silk within Jharkhand.

Being a forest- and agriculture-based industry, tasar production carries considerable promise for rural and tribal populations as a supplementary source of livelihood. The biological link between the host trees (the tasar food plants) and the feeder (the silkworm *Antheraea mylitta* Drury) forms a self-sustaining ecological unit that fits the economy and social fabric of rural communities, owing to its very low capital demand and high labour-absorbing capacity.

Traditionally, tribal households have reared tasar worms in

natural forests, chiefly once the monsoon recedes and the opportunity cost of family labour is at its lowest. On average a rearer devotes about 80 to 90 days a year to the work, and the whole family is drawn into the various operations — gathering seed cocoons, preparing layings, safeguarding the worms, and harvesting and marketing the cocoons. A combination of low investment, a short economic gestation period, favourable seasonal conditions and suitability for family labour keeps close to 60,000 households in the selected districts engaged in worm rearing.

Tasar rearing is, however, far from risk-free. The worms are at the mercy of weather fluctuations, are readily attacked by pests and predators, and are prone to diseases that cause heavy mortality. Customary rearers are further held back by limited know-how and technology. Low productivity remains the foremost difficulty, aggravated by poor access to remunerative markets. As a result, many rearers — the youth in particular — have either scaled down their involvement or exited the sector altogether.

Within Jharkhand, Saraikela-Kharsawan district returns the highest tasar cocoon output. Here tasar rearing has grown into a significant cottage industry and a mainstay of livelihood for the farming community. Against this background, the study was taken up with the following objectives:

- To examine the socio-economic profile of the farmers.
- To assess the improved tasar-culture practices adopted by the farmers.
- To measure the contribution of tasar culture to farmers' livelihood.
- To identify the constraints faced in running tasar culture as an enterprise.

2. Review of Literature

2.1 Socio-Economic Profile

Jagadisha (1999) ^[6] found that total land area, cosmopolitanism and extension participation bore a highly significant association with the knowledge of small farmers, whereas education and mass-media use were significantly linked to the knowledge level of large farmers.

Shankar *et al.* (2000) ^[21] inferred that educational standing, cropping pattern, input access, mass-media use and extension contact together shaped the adoption level among sericulturists in Karnataka.

Kher *et al.* (2004) ^[9] argued that farmers in the Jammu region ought to be sensitised, through mass media and other transfer channels, to employment-generating, sustainable and market-oriented technologies.

Mallikarjuna *et al.* (2004) ^[11] recorded that sericulture farmers averaged 42 years of age, were largely literate (87 per cent), had a mean household size of seven, and belonged to joint families in 60 per cent of cases.

Geetha and Geetha (2006) ^[4] observed that financial support from NGOs upgraded and modernised sericulture households while widening their contact with extension staff and their exposure to mass media.

Meenal and Rajan (2007) ^[12] reported that most socio-economic attributes significantly influenced adoption, the exceptions being age, education and family size, and that training exerted a positive and significant effect on cocoon output.

Jayaram and Indumati (2010) ^[8] detected a significant relationship between knowledge level and education, total

landholding, extension contact, social participation and cocoon yield.

Rahmathulla *et al.* (2010) ^[19] concluded that trained sericulturists fared better than untrained ones in socio-economic status, technology adoption, land-use patterns and income.

Jayaprakash *et al.* (2011) ^[7] showed that education, family size and net income were significantly and positively associated with the knowledge and adoption of grainage technology in the private tasar grainages of Andhra Pradesh.

2.2 Level of Adoption of Technologies

Singhvi *et al.* (1994) ^[23] noted that 98.30 per cent of farmers reared worms inside dwelling houses and that the uptake of fertiliser application, plant protection and disease-control measures was low.

Lakshmanan *et al.* (1998) ^[10] found that most respondents in Tamil Nadu neither applied essential inputs such as FYM and chemical fertiliser nor followed disease-control measures at the recommended levels.

Mohandas *et al.* (1999) ^[13] concluded that, despite a marked improvement in technology adoption, the gains were not fully mirrored in cocoon production, and that practices tied to young-age rearing chiefly distinguished high from low adopters.

Qadri (2004) ^[18] recorded that the uptake of the latest sericulture technologies in Kerala ranged from low to medium.

Jayaram and Indumati (2010) ^[8] reported that several extension-related variables effectively separated respondents into low and high categories of sericulture technology adoption.

2.3 Contribution of Tasar Culture

Ghoshi (1949) ^[5] held that sericulture cannot prosper without support from state governments, and that its progress in any country is directly proportional to the backing it receives from the state.

Patel (1976) ^[17] showed that sericulture can absorb farm labour at a very modest capital requirement, and that a hectare under mulberry can yield about four times the income obtainable from any alternative crop.

Odyeyar (1978) ^[16] outlined the wide scope for developing sericulture in tribal belts, pointing to its large potential for lifting the per-capita income of tribal people and for fostering small-scale industrial entrepreneurship.

Narain (1991) ^[15] reported that, through tasar culture, a household in Maharashtra could earn Rs. 2,000 to Rs. 4,000 over 40 to 50 days, thereby providing tribal families with productive work and supplementary income.

2.4 Problems Faced by Tasar Farmers

Reddy *et al.* (2010) ^[20] identified the leading constraints for sericulturists as the untimely availability of inputs (80 per cent), the high cost of fertilisers (68 per cent), inadequate finance (62 per cent), insufficient knowledge (60 per cent) and a shortage of labour (60 per cent).

Deepa and Sujathamma (2007) ^[2] attributed the non-adoption of improved practices to a scarcity of economic resources, costly inputs, weak extension activity and poor rapport between farmers and extension workers.

Munikrishnappa *et al.* (2002) ^[14] reported that swings in

cocoon prices were among the principal reasons for the low or non-adoption of various recommended sericulture technologies.

3. Materials and Methods

The enquiry was carried out in Jharkhand, India. Saraikela-Kharsawan district was chosen purposively because it carries the largest area under tasar farming. The district lies between longitudes 85°30'14" E and 86°15'24" E and latitudes 22°29'26" N and 23°09'34" N. It spans 2,724.55 sq. km, of which 58,572.39 ha is forest and 1,244.92 ha is reserve forest.

3.1 Sampling Procedure

Selection of district: Saraikela-Kharsawan district of Jharkhand was selected purposively on account of its largest area under tasar culture.

Selection of blocks: Of the district's nine blocks, two — Kuchai and Kharsawan — were picked at random.

Selection of villages: Three villages were drawn at random from each of the two blocks, giving six villages in all.

Selection of respondents: Ten tasar farmers were chosen randomly from every village, yielding a total sample of 60 cultivators.

3.2 Data Collection

A semi-structured interview schedule was designed to elicit primary information. Complementary participatory tools —

focused group discussions (FGD), time lines and seasonal calendars — were also used. Secondary material was compiled from reports, journals, books, newspapers and relevant websites.

Independent variables: age, education, caste, landholding, host plant, primary occupation, training, improved practices, organisational membership and extension contact.

Dependent variables: livelihood, expressed through income and employment.

3.3 Statistical Tools

The information obtained from respondents was processed and interpreted with descriptive statistical measures, namely percentage, frequency, average and ranking.

4. Results and Discussion

4.1 Socio-Economic Characteristics of Respondents

4.1.1 Age Group

More than half of the respondents (53 per cent) were in the 20–39 year band, followed by the 40–59 year band (45 per cent), while only 2 per cent were above 60 years. Thus 98 per cent of the sample fell within the young and middle-aged groups, pointing to a relatively enterprising and business-minded population.

Table 1: Distribution of respondents according to age

Sl. No.	Age Group (Years)	No. of Respondents (n=60)	Percentage
1	20–39 years	32.00	53%
2	40–59 years	27.00	45%
3	60 & above	1.00	2%

4.1.2 Gender

Male respondents outnumbered females — 83.00 per cent against 17.00 per cent — indicating that men take the more active part in tasar cultivation.

Table 2: Distribution of respondents according to gender

Sl. No.	Gender	No. of Respondents (n=60)	Percentage
1	Male	50.00	83%
2	Female	10.00	17%

4.1.3 Marital Status

An overwhelming majority (97 per cent) of respondents were married and only 3 per cent unmarried. Married individuals tend to be more driven to earn supplementary income for the welfare of their households.

Table 3: Distribution of respondents according to marital status

Sl. No.	Marital Status	No. of Respondents (n=60)	Percentage
1	Married	58.00	97%
2	Unmarried	2.00	3%

4.1.4 Caste Categorisation

Most respondents (88 per cent) belonged to Scheduled Tribes and the remaining 12 per cent to Scheduled Castes. No respondent came from the General or OBC categories, confirming that the study area is predominantly inhabited by Scheduled Tribe communities.

Table 4: Distribution of respondents according to caste

Sl. No.	Caste	No. of Respondents (n=60)	Percentage
1	Scheduled Castes	7.00	12%
2	Scheduled Tribes	53.00	88%

4.1.5 Education

A third of the respondents (33.00 per cent) had studied up to middle school, followed by high school (22.00 per cent) and primary school (13.00 per cent). A sizeable share (22.00 per cent) was illiterate and a further 10.00 per cent could only read and write. Poverty and limited awareness have restrained educational attainment across the district.

Table 5: Distribution of respondents according to education

Sl. No.	Education	No. of Respondents (n=60)	Percentage
1	Illiterate	13.00	22%
2	Can read and write	6.00	10%
3	Primary school	8.00	13%
4	Middle school	20.00	33%
5	High school	13.00	22%

4.1.6 Family Type

The majority (73.00 per cent) lived in nuclear families, signalling a steady breakdown of the joint-family system brought on by poverty and the difficulty of meeting collective needs. This mirrors the shifting character of social institutions in rural India.

Table 6: Distribution of respondents according to family type

Sl. No.	Family Type	No. of Respondents (n = 60)	Percentage
1	Nuclear	44.00	73%
2	Joint	16.00	27%

4.1.7 Family Size

Small households of up to five members dominated (72.00 per cent), trailed by medium households of six to ten members (25.00 per cent) and large households of more than ten members (3.00 per cent). The pattern reflects a growing awareness of family planning.

Table 7: Distribution of respondents according to family size

Sl. No.	Family Size	No. of Respondents (n=60)	Percentage
1	1 to 5	43.00	72%
2	6 to 10	15.00	25%
3	>10	2.00	3%

4.1.8 Landholding

Cultivators with small holdings formed the largest group (75.00 per cent), followed by marginal (18.00 per cent), semi-medium (5.00 per cent) and medium (2.00 per cent). No large farmer featured in the sample, confirming the dominance of small and marginal holdings in the study area.

Table 8: Distribution of respondents according to landholding

Sl. No.	Landholding	No. of Respondents (n=60)	Percentage
1	Marginal	11.00	18%
2	Small	45.00	75%
3	Semi-medium	3.00	5%
4	Medium	1.00	2%

4.1.9 Livestock Possession

Poultry was the most widely held livestock (96.66 per cent), followed by goat/sheep (90.00 per cent), ox (73.33 per cent), cow (50.00 per cent) and buffalo (6.66 per cent). Poultry and goatry brought respondents a steady stream of income; oxen served draught purposes, while cows and buffaloes were maintained for additional earnings and nutrition.

Table 11: Distribution of respondents according to cropping practices of tasar

Sl. No.	Crop	No. of Respondents (n=60)	Percentage
1	Only commercial crop	38.00	63%
2	Seed crop + commercial crop	22.00	37%

4.2.2 Source of Disease-Free Layings (DFLs)

DFLs were sourced chiefly from PRADAN (47.00 per cent) and the Pilot Project Centre (42.00 per cent). Not a single respondent relied solely on self-produced DFLs, as farmers generally shun them for fear of loss. PRADAN, a prominent NGO in Jharkhand, was found to enjoy strong trust among the cultivators.

Table 12: Distribution of respondents according to source of DFLs

Sl. No.	Source	No. of Respondents (n=60)	Percentage
1	Pilot Project Centre (PPC)	25.00	42%
2	PRADAN	28.00	47%
3	PPC + Self	5.00	8%
4	PRADAN + Self	2.00	3%

Table 9: Distribution of respondents according to livestock possession

Sl. No.	Livestock	No. of Respondents (n=60)	Percentage
1	Poultry	58.00	96.66%
2	Goat / Sheep	54.00	90.00%
3	Ox	44.00	73.33%
4	Cow	30.00	50.00%
5	Buffalo	4.00	6.66%

4.1.10 Source of Income

Tasar rearing supplied the single largest share of income (40.00 per cent), ahead of farming (31.00 per cent), NTFP collection (12.00 per cent), wage labour (11.00 per cent), business (4.00 per cent) and animal husbandry (2.00 per cent). The average annual income from tasar culture worked out to Rs. 23,771.66, the highest across all occupations.

Table 10: Distribution of respondents according to source of income

Sl. No.	Occupation	Respondents (n=60)	Total Income (Rs)	Av. Income (Rs)	% Share
1	Tasar practice	60.00	14,26,300	23,771.66	40%
2	Farming	60.00	11,27,500	18,791.66	31%
3	NTFP	58.00	4,32,500	7,456.89	12%
4	Labour	31.00	3,77,000	12,161.30	11%
5	Business	1.00	1,50,000	1,50,000	4%
6	Animal husbandry	22.00	74,500	3,386.36	2%
Total			35,87,800	2,15,567.87	100%

4.2 Sericultural Practices Adopted by Tasar Farmers

4.2.1 Cropping Practices

The proportion of farmers raising only the commercial crop (63.00 per cent) exceeded that of farmers raising both seed and commercial crops (37.00 per cent). Since the seed crop calls for a grainage house and greater technical competence, most cultivators leaned towards the commercial crop alone.

4.2.3 Area Under Tasar Culture

Just over half of the respondents (53.00 per cent) practised tasar cultivation on both their own land and forest tracts, while 32.00 per cent used forest land alone and 15.00 per cent worked exclusively on their own land. Because most cultivators are small and marginal with limited land, forest areas become indispensable, and the host plants (Arjun and Asan) were plentiful in the surrounding forests.

Table 13: Distribution of respondents according to area under tasar culture

Sl. No.	Area	No. of Respondents (n=60)	Percentage
1	Own land	9.00	15%
2	Forest	19.00	32%
3	Both (own land + forest)	32.00	53%

4.2.4 Number of Trees Under Tasar Cultivation

Half of the respondents (50 per cent) maintained 101–200 food plants, 42.00 per cent had 51–100 trees, 5.00 per cent had fewer than 50 and 3.00 per cent had more than 200. Reliance on forest food plants explains the concentration of tree counts in the 101–200 range.

Table 14: Distribution of respondents according to trees covered under tasar culture

Sl. No.	No. of Trees	No. of Respondents (n=60)	Percentage
1	Up to 50	3.00	5%
2	51 - 100	25.00	42%
3	101 - 200	30.00	50%
4	201 and above	2.00	3%

4.2.5 Source of Information about Improved Technology

Both state-government functionaries and NGOs emerged as important agents in disseminating technology and in supporting production and marketing, with the state department and PRADAN operating in the Kharsawan and Kuchai blocks respectively. The central government's Raw Material Bank (RMB) was more active in Saraikele-Kharsawan district, assisting farmers with price fixation and

cocoon marketing, though it played a smaller part in passing on information about new technologies.

Table 15: Distribution of respondents according to source of information about improved technology

Sl. No.	Source	No. of Respondents (N=60)
1	State Government	30.00
2	NGOs	30.00

4.2.6 Adoption of Improved Technology of Tasar Culture

Practices such as rearing on economic plantations, brushing through leaf-twig transfer, sodium hypochlorite spray, disposal of diseased worms and crop monitoring were adopted in full. Interventions like the application of organic manure (41.66 per cent), pruning (90.00 per cent), inter-cultural operations (90.00 per cent) and care during moulting (50.00 per cent) were only partially taken up. In contrast, improved nursery technique, chawki rearing under nylon net and brushing through leaf cup went unadopted altogether. The principal reason for the incomplete uptake was that farmers largely pursue tasar culture within the forest, where it is not feasible to maintain or follow the full set of technological interventions.

Table 16: Distribution of respondents according to adoption of improved technology of tasar culture

Sl. No.	Technology	Adopted (n=60)	%	Not Adopted (n=60)	%
1	Rearing on economic plantation	60.00	100%	0.00	0%
2	Advanced nursery technique	0.00	0%	60.00	100%
3	Incorporation of organic manure	25.00	41.66%	35.00	58.34%
4	Chemical fertilizer applications	9.00	15%	51.00	85%
5	Pruning	54.00	90%	6.00	10%
6	Inter-cultivation operations	54.00	90%	6.00	10%
7	Leaf gall prevention	60.00	100%	0.00	0%
8	Protected chawki rearing under nylon net	0.00	0%	60.00	100%
9	Brushing with leaf cup	0.00	0%	60.00	100%
10	Brushing through leaf-twig for transfer	60.00	100%	0.00	0%
11	Sodium hypochlorite spray	60.00	100%	0.00	0%
12	Elimination of diseased worm (collect & bury)	60.00	100%	0.00	0%
13	Shifting of worm by individual picking	22.00	36.66%	38.00	63.34%
14	Shifting of worm by branch cutting	60.00	100%	0.00	0%
15	Maintenance during moulting	30.00	50%	30.00	50%
16	Hygienic condition – bleaching powder/lime	60.00	100%	0.00	0%
17	Hygienic condition – other chemicals	40.00	66.66%	20.00	33.34%
18	Sticky trap utilization	0.00	0%	60.00	100%
19	Categorizing of cocoon	25.00	41.66%	35.00	58.34%
20	Tracking during crop period	60.00	100%	0.00	0%

4.3 Contribution of Tasar Culture to Livelihood

In the study area, tasar culture proved to be a forest- and agriculture-based industry that offers considerable promise to tribal people as a livelihood base. Respondents drew on the host plants Arjun (*Terminalia arjuna*) and Asan (*Terminalia tomentosa*), both of which were abundant locally.

4.3.1 Skills Acquired

Cultivation-practice skills had been picked up by 88.33 per cent of respondents, followed by plant-protection skills (73.33 per cent), cocoon storage (25.00 per cent), microscopic testing of DFLs (15.00 per cent), reeling (6.66 per cent) and weaving (6.66 per cent). The central government, the state government and PRADAN were the leading contributors to this skill development.

Table 17: Distribution of respondents according to skills acquired

Sl. No.	Skills	No. of Respondents (n=60)	Percentage
1	Cultivation-practice	53.00	88.33%
2	Protection of plant	44.00	73.33%
3	Storage of cocoon	15.00	25.00%
4	Microscopic testing of DFLs	9.00	15.00%
5	Reeling	4.00	6.66%
6	Weaving	4.00	6.66%

4.3.2 Employment Generation

Through tasar culture, 33.00 per cent of respondents generated 101–125 mandays, 40.00 per cent generated 76–100 mandays and 27.00 per cent generated 50–75 mandays. Cultivators who took up both the seed and commercial crops could create still more employment and income.

Table 18: Distribution of respondents according to mandays created through tasar culture

Sl. No.	Mandays	No. of Respondents (n=60)	Percentage
1	50 to 75 days	16.00	27%
2	76 to 100 days	24.00	40%
3	101 to 125 days	20.00	33%

4.3.3 Income Generation

From tasar culture, 73.00 per cent of respondents earned an average annual income of up to Rs. 25,000, 23.00 per cent earned Rs. 25,001–50,000, 2.00 per cent earned Rs. 50,001–75,000 and a further 2.00 per cent earned Rs. 75,001–1,00,000. The activity therefore delivers substantial income within a comparatively short window of two to three months.

Table 19: Distribution of respondents according to income through tasar culture

Sl. No.	Annual income (Rs.)	No. of Respondents (n=60)	Percentage
1	Up to 25,000	44.00	73%
2	25,001 to 50,000	14.00	23%
3	50,001 to 75,000	1.00	2%
4	75,001 to 1,00,000	1.00	2%

Table 21: Distribution of respondents according to assets created and investment made through tasar practice

Sl. No.	Asset / Expenditure	Respondents (n=60)	Amount (Rs)	Average Amount (Rs)
1	Daughter's marriage	3.00	2,60,000	86,666.66
2	Levelling of land	57.00	2,44,700	4,292.98
3	Buying of jewelry	2.00	15,000	7,500.00
4	Land purchase / lease	10.00	1,22,000	12,200.00
5	Educational investment	34.00	1,61,900	4,761.76
6	Buying of livestock	41.00	3,91,000	9,536.58
7	House construction	58.00	3,35,500	5,784.48
8	Buying of vehicles	3.00	52,000	17,333.33
9	Medical expenses	12.00	14,500	1,208.33
Total			16,05,900	1,49,284.12

4.4 Problems Encountered in Tasar Culture

Table 22 sets out the difficulties reported by the cultivators, the most pressing of which were pests and diseases affecting both the silkworm and the host plants. The farmers also

4.3.4 Enhanced Living Standards

As Table 20 shows, every respondent reported better food consumption, while improvements were also recorded in housing (98.33 per cent), education (75.00 per cent), clothing (73.33 per cent) and access to transport (23.33 per cent) on account of tasar cultivation. The activity thus played a meaningful part in raising the quality of life of the cultivators.

Table 20: Distribution of respondents according to enhancement in living standard through tasar culture

Sl. No.	Living Standard	Increased Status (n=60)	Percentage
1	Food	60.00	100%
2	Accommodation	59.00	98.33%
3	Obtain education	45.00	75%
4	Apparels	44.00	73.33%
5	Transportation	14.00	23.33%

4.3.5 Assets Generated and Expenditure Of capital

Respondents most commonly channelled their tasar earnings into land levelling and the construction or repair of houses (26.00 per cent), followed by the purchase of livestock (19.00 per cent), spending on education (16.00 per cent), and the purchase or lease of land and medical expenses (5.00 per cent each). A small share (1.00 per cent) also went towards jewellery, vehicles and marriages.

contended with an array of other constraints, including weather destabilization, exploitation by middlemen, inadequate investment finance and unstable cocoon prices.

Table 22: Distribution of respondents according to problems faced in tasar cultivation

Sl. No.	Problems	Greater Extent	%	Medium Extent	%	Lower Extent	%	Total Score	Rank
1	Predators & pests	56	93.33%	3	5%	1	1.67%	116	I
2	Silkworm disease	10	16.67%	40	66.66%	10	16.67%	70	III
3	Unavailability of eggs	2	3.33%	4	6.67%	54	90%	62	VIII
4	Weather destabilization	17	28.33%	31	51.66%	12	20%	77	II
5	Taking advantage by middleman	1	1.67%	38	63.33%	21	35%	61	IX
6	Insufficient funds for investment	3	5%	30	50%	27	45%	63	VII
7	Host plant disease, pests and predators	6	10%	52	86.67%	2	3.33%	66	V
8	Alignment with forest department	0	0%	0	0%	60	100%	60	X
9	Scarcity of skilled worker	4	6.67%	8	13.33%	48	80%	64	VI
10	Transportation	3	5%	1	1.67%	56	93.33%	63	VII
11	Insufficient demand of cocoon	2	3.33%	19	31.67%	39	65%	62	VIII
12	Instability in cocoon price	6	10%	30	50%	24	40%	66	V
13	Low technical guidance	8	13.33%	22	36.67%	30	50%	68	IV
14	Missing proper market	0	0%	15	25%	45	75%	60	X
15	Information gap on market trends	4	6.67%	24	40%	32	53.33%	64	VI

A perusal of Table 4 reveals the range of constraints confronting the cultivators. The tribal farmers of the Kharsawan and Kuchai blocks pursued tasar culture in natural forests as well as around their homesteads, and the activity was exposed to weather vagaries alongside numerous socio-economic, infrastructural and technical problems.

Attacks by predators and pests were experienced to a great extent by 93.33 per cent of respondents, placing this constraint first (rank I). The likely reason is that farmers in the selected area did not practise chawki rearing, an omission that leaves the crop far more exposed; adopting chawki rearing could substantially reduce pest and predator damage. Climatic disturbance came second (rank II), affecting about 51.66 per cent of respondents at a medium level and 28.33 per cent to a great extent. Silkworm disease ranked third, with 66.66 per cent of respondents affected at a medium level and a further 16.67 per cent to a great extent; diseases such as pebrine caused worm mortality and, ultimately, losses to the cultivators.

Inadequate technical guidance ranked fourth, reported at medium and greater extents by 36.67 per cent and 13.33 per cent of respondents respectively, while 50.00 per cent felt it only to a lower extent — a reflection of the technology-transfer role played by PRADAN and the Department of Sericulture in the study area. Fluctuation in cocoon prices shared the fifth rank with food plant disease. Around 50.00 per cent of respondents felt price instability at a medium level; here cocoon prices were fixed by the Raw Material Bank (RMB), Chaibasa, according to quality and grade, yet farmers reported that prices sometimes swung with the market rate of silk yarn. Food plant disease was likewise felt at a medium level by 86.67 per cent of respondents.

A shortage of skilled workers and poor information on market trends were also significant, both taking the sixth rank. Poor market-trend information was experienced at medium and lower levels by 40.00 per cent and 53.33 per cent of respondents respectively, whereas the skilled-worker shortage was felt at lower, moderate and greater levels by 80.00 per cent, 13.33 per cent and 6.67 per cent respectively — a consequence of tasar work being carried out largely by family labour that lacked the requisite skills. Inadequate investment finance ranked seventh; being mostly small and marginal, the farmers had little capital to commit, and 50.00 per cent and 45.00 per cent felt this constraint at medium and lower levels respectively. Difficulties in transporting cocoons were reported at a lower level by 93.33 per cent of respondents, and were not a major concern because the RMB and middlemen tended to buy cocoons directly from the farmers.

The non-availability of eggs (DFLs) and the inadequate demand for cocoons both ranked eighth. Ninety per cent of respondents felt the DFL shortage only at a lower level, while inadequate cocoon demand was reported at medium and lower levels by 31.67 per cent and 65.00 per cent respectively. Farmers procured DFLs from PRADAN (an NGO) and the Kharsawan Pilot Project Centre, and the quality of these layings governed cocoon output — untested or infected DFLs led directly to losses. Exploitation by middlemen ranked ninth, felt at medium and lower levels by 63.33 per cent and 35.00 per cent of respondents; because the RMB fixed the cocoon price, such exploitation remained limited, and farmers preferred to withhold their produce when

middlemen offered less than the RMB rate. The absence of a proper market and difficulties in co-ordinating with the forest department jointly ranked tenth: the market problem was felt at lower and medium levels by 75.00 per cent and 25.00 per cent of respondents, while every respondent reported few difficulties in dealing with the forest department, since most practised tasar culture within natural forests.

5. Conclusion

- Tasar farming across the Kuchai and Kharsawan blocks offered the farming community a productive source of livelihood.
- The bulk of respondents belonged to Scheduled Tribes, were young to middle-aged, and had schooling up to the middle-school stage.
- The ready availability of host plants in the forest encouraged respondents to take up tasar culture on an extensive scale.
- Not every recommended technology was adopted in full; however, rearing on economic plantations, pruning, protection against leaf gall and brushing through leaf-twig transfer were taken up.
- No respondent practised chawki rearing under nylon net, which left the crop open to pest attacks and depressed cocoon production.
- Engagement in tasar cultivation markedly raised the skills, income and employment of the respondents.
- The activity supplied more than half a year's worth of employment to respondents and helped curb inter-state migration.
- The chief constraints were pest infestation, silkworm disease, food plant disease and climatic disturbance.
- The additional income from tasar culture enabled respondents to secure food and nutrition, lift their standard of living and build new assets.
- Beyond its role in rural livelihood, employment, income and the checking of out-migration, tasar culture also served the wider ends of ecological protection, heritage conservation and the preservation of socio-cultural values.

6. Suggestions

- Farmers should be familiarised with improved tasar technologies and market-driven practices through mass media and ICT tools.
- Producer groups should be organised to enable collective production and marketing.
- A timely and adequate supply of DFLs to rearers should be assured.
- Respondents raising only the commercial crop should be encouraged to add the seed crop as well, so as to trim costs and lift profits.
- Compensation provisions should be put in place for disease outbreaks and natural calamities.
- Cocoon-purchase centres should be set up at the block level so that farmers receive fair prices close to home.
- Reeling and weaving units should be established within the tasar-producing pockets of Jharkhand.
- Special care should be taken to conserve the various tasar eco-races.
- Adequate infrastructure, including storage and

marketing facilities, should be developed.

- Planned efforts should be directed at building up the tasar industry and opening fresh avenues of income generation.
- Research and development should be pursued under the Tribal Sub-Plan.

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