

Empowerment of tribal communities through sericulture programmes in Jharkhand State

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Abstract:

Tasar culture is a forest-based tribal oriented industry. It provides income and employment to the rural poor and tribals in Jharkhand and adjoining states in India. The government of Jharkhand has initiated various sericulture development schemes with the support of the Central Silk Board to improve the socio-economic conditions of the people in general and empowerment of tribals in particular. 17 schemes were implemented during the 11th and 12th Five year plan in Jharkhand State by the government. More than 85 per cent of the Tasar rearers belong to tribal community in the pre-cocoon segment. TERI carried out an impact assessment of these programmes including both pre-cocoon and post cocoon segments. This paper discusses the empowerment of tribal people through tasar culture activities especially in the pre-cocoon sectors. The study covered 386 beneficiaries and stakeholders from eight districts by using appropriate tools. The results showed a positive trend with a rapid sericulture growth and involvement of people in this sector. The number of families adopting tasar rearing increased by 15 times, cocoon production by 12 times and silk production by 12 times. Most of the tasar farmers brushed about 200 DFLs per crop. The average income obtained ranged from Rs. 40,000 to 60,000 per annum by Reshamdoot, Rs. 25,000 to 35,000 per annum by seed farmers from two crops and Rs. 10,000 to Rs. 20,000 per annum by commercial and nucleus farmers from one crop. Implementation of the programmes has brought positive changes to the socioeconomic condition of the tribal community to a reasonable extent and their empowerment by skilling and knowledge of the sector.

Key words: Tasar, Silkworm, Sericulture, tribal, rearing, empowerment, cocoon, silk,

1. Introduction:

Sericulture is an integral part of tribal life, practiced by about 1.5 lakh tribals in the states of Jharkhand, Chhattisgarh, Orissa, Madhya Pradesh, Uttar Pradesh, West Bengal, Bihar, Maharashtra and Andhra Pradesh [2]. Tropical Tasar sericulture is the rearing of wild silkworms and is a labour intensive industry in all its phases. It can generate employment for up to 11 persons for every kilogram of raw silk produced [3]. In India sericulture is not only a tradition but also a living culture. It particularly suits rural-based farmers, entrepreneurs and artisans as it requires low investment, but with a potential for relatively higher returns. It provides income and employment to the rural poor especially farmers with small land-

holdings and the marginalized and weaker sections of the society. In this context, sericulture is a good option because of its labour intensive nature and provides direct or indirect employment to about seven million people in India. It plays a vital role in the flow of income from the urban rich to the rural poor [5]. Tasar sericulture is a cottage, agro-forestry and forestry based industry that provides sustainable livelihood to several rural communities in the country and earns foreign exchange [6]. In Jharkhand state two types of silk namely Mulberry and Tasar are produced. Rearing of mulberry silkworm is marginal and mainly Tasar is produced, using forest plants in the wild. In Jharkhand the implementing agency for sericulture is Department of Handloom, Sericulture and Handicraft (DoHS&H), which comes under the Department of Industries (DoI). In addition, there are Central Tasar Research and Training Institute (CTR&TI) at Ranchi, the Raw Material Bank at Chaibasa, Jharcraft etc. The main objective of the government is to promote and encourage growth of Sericulture, Handicraft, Handloom, Khadi and village industries etc, in rural areas for creating employment generation and utilization of local resources. The Government of Jharkhand has initiated various sericulture development schemes with support from Central Silk Board (CSB) to improve the socio economic conditions of the people, development of pre-cocoon and post cocoon sectors. The government schemes are Reshamdoot, Nucleus seed production, Basic seed production, Commercial Tasar seed production, Training on rearing/seed production, augmentation of Tasar food plantation, establishment of cocoon banks, private Grainages, and implementation of health and crop insurance in pre-cocoon sectors.

Jharkand State produces the highest quantity of Tasar silk in the country with a production of 2001.40 tonnes in 2013-14 (sources: DoHS&H) and about 1,65,000 families are involved in rearing in 17,000 villages and 24 districts of Jharkhand (sources: DoHS&H). Tasar culture is a subsidiary occupation of the tribal population in the State.

The impact assessment study of the government programmes was carried out by TERI during 2014-15 with an objective to understand the impact, socio-economic status, usefulness and acceptance of the schemes by the beneficiaries. The study was carried out by collecting secondary data, primary data and discussions with stakeholders.

2. Assessment Methodology

The study was carried out in nine districts based on the number of beneficiaries, practices and geographical locations across Jharkand State in consultation with the DoHS&H. Totally 386 beneficiaries who are tasar rearing farmers were selected for the study comprising Reshamdoot (114), commercial farmers (187), Seed farmers (27) and Nucleus farmers (58). In addition to the banks and Common Facilities Centres, discussions were held with stakeholders such as Director, Joint Director, Project officers, Pilot Project Officer (PPO) and other relevant officers from the state government. Information was also gathered on the implementation mechanism.

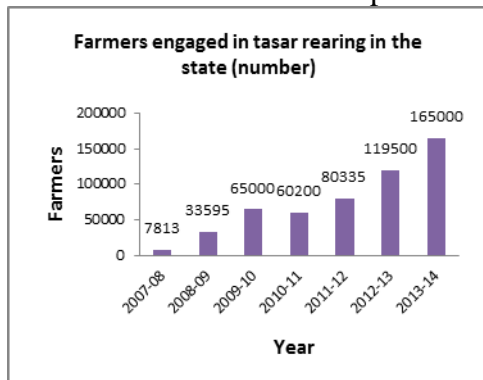
Five types of questionnaires were prepared for collection of primary data based on the stakeholders for all types of farmers and cocoon banks. Checklists were developed to interview officers and faculty. These tools were fielded tested with concerned stakeholders and modified based on feedback.

3. Analysis and Results:

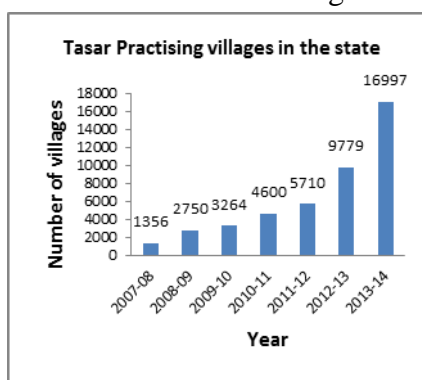
3.1 Growth of sericulture sector:

The number of farmers engaged in tasar culture had increased from 7,813 in 2007-08 to 165,000 in 2013-14 farmers. Similarly, the number of villages which had taken up tasar

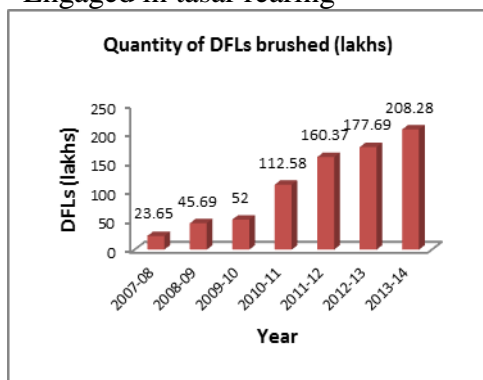
culture had increased from 1,356 to 16997 during the same period. The quantity of DFLs brushed increased from 23.65 lakhs to 208.28 lakhs. The total quantity of cocoons produced by farmers increased from 1,414 lakh cocoons, to 15,327 lakhs. The year wise growth of sericulture in Jharkhand state is shown in graphs 1 to 4. The quantity of silk produced increased to 2,001.4 tonnes from 143 tonnes. These trends indicate that there has been more than 10 times increase in the output of tasar silk sericulture in Jharkhand state. The Government has created useful infrastructure such as 271 common facilities centres (CFC), 25 cocoon banks and developed backward and forward market linkage of cocoon and silk.



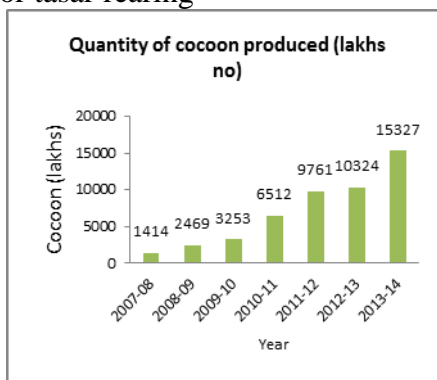
Graph 1: Number of farmers Engaged in tasar rearing



Graph 2: Number of villages involved for tasar rearing



Graph 3: Quantity of DFLs brushed



Graphs 4: Quantity of cocoon produced

3.2 Socio economic background of farmers: In 2013-14 about 1,65,000 farmers were involved in the pre-cocoon sectors including tasar rearing and mulberry cultivation in 24 districts. Out of the 24 districts maximum number of farmers are in west Singhbhum, Dumka and Saraikela–Kharswan districts.

Out of the 386 farmers surveyed, 87.82 per cent of the respondents were from tribal community (ST) and 8.29 per cent from Other Backward Community (OBC). Sericulture was one of the main sources of income for their livelihood. About 43.1 per cent of the farmers have 6 to 8 members in their families and about 16 per cent of them have more than nine members. About 40.9 per cent of the respondents were illiterate due to reasons such as poverty, non-availability of education facilities, etc., Out of the educated, only 3.2 per cent of the respondents were formally literate, 13.5 per cent of respondents had studied up to primary level, 22.7 per cent of people had studied up to high school. About 45.1 per cent of the respondents had less than two acres of land, about 37.4 per cent had between two to five acres of land and about 9.2 per cent respondents were landless.

The main occupation of 97.8 per cent of the respondents was agriculture and secondary occupation was sericulture. The annual income of 46.1 per cent of the respondents ranged

from Rs. 10000 to Rs. 25000, whereas 25.2 per cent of the respondents had an income in the range of Rs. 25000 to Rs. 50000 excluding sericulture. The overall income of the respondents was less compared to the annual income of the State (Rs 50,125). About 98.75 per cent of the respondents owned a house, 4.2 per cent respondents had TV sets in their homes, 43.9 per cent had mobiles, more than 83.5 per cent of respondents had bicycles and 9.2 per cent of the respondents owned motor bikes. Most people used bicycles as a mode of transport.

3.3 Reshamdoots and strengthening of private grainages: Farmers are organized into groups of 20 to 25 and one of them is made the group leader and given the name 'Reshamdoot' The support to the new Reshamdoot for strengthening of grainages includes providing equipment for production of commercial DFLs, rearing equipment and also support for construction of grainage houses. Reshamdoots carry out two rearings per annum. The first crop cocoon is used for production of eggs and the cocoons from the second crop are used as seed cocoons or for reeling.

The study, which was carried out on 114 Reshamdoots from 55 villages in six districts revealed that about 95 per cent of them were rearing Tasar in forest plantations and using Arjuna and Asan plants, with Asan (*T.tomentosa*) as the lead species. About 80.70 per cent of them were practicing pest management, dusting lime, bleaching powder, etc, which are provided by the Government under various schemes. 16.60 per cent use organic manure and 16per cent farmers were maintaining Chawki garden. About 200 to 400 DFLs were brushed in first crops and average 200 DFLs were brushed in the second crops. Most of them were also aware of silkworm diseases and managing them. About 42.92 per cent of the respondents produced 5000 to 10000 cocoons in the first crop. The quantity of cocoons produced by the respondents varied depending on the care taken by farmers, control of diseases, predator and weather conditions. Around 3 per cent of famers lost their crops.



Picture 1: Farmers collecting Tasar Cocoons in a field in Jharkhand.

About 62.4 per cent of the respondents were producing DFLs in their grainages with cocoon storage capacity of 5000 to 50000 cocoons per grainage per season. Most of them purchased cocoons from seed farmers at a rate of Rs. 1.5 to 1.8 per cocoon. They practiced self-coupling method or coupling facilitated by hand method. All the egg producers used earthen cup as egg laying devices and the egg laying duration allowed was 48 hours. Most of them (87.7 per cent) were conducting mother moth examination (80 per cent) using prick method. About 50 per cent of the respondents produced 5000 to 10000 DFLs, while 13.5 per cent of the respondents produced about 10000 DFLs and the rest produced less than 5000 DFLs.



Picture 2: Seed cocoon stored in a Grainage house in Jharkhand

The DFLs produced by Reshamdoots was used by the group members of Reshamdoots for rearing. The annual income from sericulture ranged from Rs. 40000 to Rs 60000 including rearing and egg production. About 4.4 per cent of the respondents earned up to Rs. 75000 per annum. Cocoons produced were procured by Jharcraft for reeling to produce silk and the department purchased cocoons for production of seeds (egg). More than 80 per cent of the respondents expressed that the schemes were very good because they could earn more money in a short period of time with less investment.

3.4 Augmentation of Tasar plantation: The main objective of the scheme was to increase the coverage area of host tasar plantation for increasing cocoon production. Under this scheme each beneficiary or Self Help Group was provided with host plant seedling, funds for plantation development, inputs and soil conservation measure to raise one hectare of new systematic plantation of food plants for tasar silkworms. The augmentation scheme was found useful in increasing the plantation area and also helped the farmers rear more silkworms and thereby produce more number of cocoons. However, there is limited awareness among the farmers on the augmentation of host plantation scheme. Hence, there is a need to create more awareness on the augmentation of plantation scheme and encourage people to raise tasar host plantations on their lands.

3.5 Scheme for Commercial farmers: The scheme was to support commercial farmers and to increase silk production by involving more farmers in Tasar silkworm rearing. The government supports it by providing disinfectants such as lime, bleaching powder and formalin worth Rs. 350 per farmer per annum every year. In addition, farmers are provided with a nylon net and secateurs on a one time basis. The study was carried out on 187 commercial farmers in 39 villages from 10 PPCs in seven districts. About 95 per cent of the respondents brushed 200 DFLs per crop and the rest brushed 300 to 400 DFLs per crop. Generally only one crop was reared per annum. Out of the 187 respondents, 1.07 per cent respondents lost their crop due to diseases. The average number of cocoons produced per farmer was between 5000 and 10,000 per crop from 200 DFLs. The cost of each cocoon was Rs. 1.8 to 2.2 based on the quality. This led to enhanced income ranging from Rs. 10,000 to 20,000 per crop per annum.

3.6 Nucleus farmers: The main objective of nucleus seed production was to enhance seed production and maintain basic seeds for subsequent generations for producing commercial seeds. The support extended to beneficiaries under this scheme included rearing equipment worth Rs. 7500 as one time assistance. The study comprised 58 farmers from five districts. About 81 per cent of the respondents brushed 200 DFLs and normally, one crop was reared per annum. The average number of cocoons produced was from 6000 to 12000 per crop. The cost was Rs.2.0 to 2.2 per cocoon and they earned Rs.10, 000 to 20,000 per crop per annum.

3.7 Seed farmers: Assistance is provided to seed rearers by giving them necessary rearing equipment, fertilizers and technology for host plant maintenance and to produce quality seed cocoons. Generally seed farmers rear two crops per annum. The first crop is for producing seed cocoons to be given to Reshamdoots for production of commercial DFLs. The second crop cocoons are sold for reeling. The average number of cocoons produced from two crops ranged from 13000 to 20,000 and each cocoon was sold at Rs.1.5 to Rs.2.0. Each farmer earned anywhere between Rs. 25000 to 35,000 per annum.

3.8 Cocoon Bank by Government: The State government has established 25 cocoon banks. Of them, 16 are completely constructed and have started functioning and the rest are under construction (status during study period). The cocoon storage capacity of the 25 cocoon banks are 20 crore cocoons. This has been a useful scheme for the farmers and reelers as they are guaranteed the sale of cocoons at a good price without the interference of middlemen and Mahajans. The reelers are guaranteed to get cocoons for reeling throughout the year. It was observed that the reeling activities have increased after the cocoon banks were established.

3.9 Health Insurance: During the 11th plan, only women beneficiaries were eligible to be covered under Health Insurance programme. In the 12th plan, four members of the beneficiary's family were also covered under the insurance. The total beneficiaries enrolled under the health insurance from all the sectors and from all the districts was about 49000. The survey was carried out in nine districts with 649 beneficiaries. Out of them about 69.24 per cent of the respondents were covered by health insurance and the rest were not as they lacked awareness about the scheme. About 93.91 per cent of the respondents received health insurance cards. About 78.17 per cent of the respondents had taken treatment from a hospital identified by the insurance company. This included mobile treatment as outpatient and inpatient. About 18.7 per cent of the respondents had put in claims to the insurance company for reimbursement. As per the insurance company, implementation of the health insurance was having a few problems such as untimely contribution from beneficiaries, travelling from interior places/ village/ remote areas for treatment etc.,.

3.10 Crop Insurance: The objective of the scheme was to provide a minimum assured amount in case a farmer suffered crop loss due to diseases. The crop insurance covers only 30 to 35 per cent of the 1.65 lakh farmers every year. Out of this only 10 to 15 per cent have made claims of crop loss to the insurance company, due to lack of awareness and knowledge on crop insurance. The government can implement the scheme effectively by creating proper awareness among the farmers every year in phased manner.

4. Improvement in socio-economic conditions: Most of the farmers expressed that tasar culture has been a short term work, but generated more income when compared to any other work with minimum investment. In the absence of any other work opportunities, this work also served as an alternative financial source for them, in addition to income from regular

agriculture work and labour.. This work also provided work freedom unlike other jobs. The earnings from tasar rearing by farmers was used for buying clothes and food items, purchase of agriculture inputs, celebrating festivals, house repair and maintenance, children's education, purchasing mobile and purchase of two wheeler. Some of them had kept the earnings as fixed deposits in banks. As per the study, this income was important for them and helped improve their living and socio economic conditions. In addition tasar rearing led to conservation of environment as there is no cutting and felling of trees and interestingly some degree of migration was also checked. All these changes may be attributed to the intervention of various schemes and support by Government.

5. Discussions: Totally 17 schemes have been implemented for pre and post cocoon sectors. Some of the schemes that have been accepted and appreciated by the community includes Reshamdoots, strengthening of private grainages, Commerical farmers, seed farmers, Nucleus farmer, development of private grainages and cocoon banks. The tasar augmentation of plantation has had little impact in the field as it is implemented only in a limited area. The health and crop insurance schemes are implemented across the state, but it has not reached all the families in the pre-cocoon and post-cocoons sectors owing to limited awareness among the beneficiaries. The income generated was used for various purposes, including maintaining their families, education and creating small assets. Jharcraft purchases cocoons for reeling to produce silks and the Department purchases cocoons for production of seeds (egg).

6. Learning from Study: The developmental interventions have fulfilled the objective of empowerment and enhancement of socio-economic conditions of the tribal people. The outcomes have proved that appropriate grassroots planning definitely helps in achieving the goals. Bottlenecks were experienced during the courses of implementation of intervention and this can be reduced as there is scope to realign them to suit the rural setting. In the course of implementation the feedback provided by the respondents has become key information and guiding force to plan future projects on similar lines. The knowledge learned during the survey /implementation of the project has brought forth fundamental issues that are inbuilt in a given setting /ecosystem and helpful for deploying an appropriate planning process in a phased manner.

7. Conclusions:

The main objective of the government is to improve the socio economic conditions of the tribal people. More number of people have adopted tasar culture in Jharkhand and their involvement in this sector has rapidly increased during the 11th and 12 plan. Consequent to the enhanced involvement in the number of families in tasar rearing by 15 times, the cocoon and silk production has increased by 12 times.

Most of the tasar farmers brush about 200 DFLs per crop. The average income earned by the Reshamdoots range from Rs. 40,000 to 60,000 per annum, about Rs. 25,000 to 35,000 per annum by seed farmers from two crop rearings and Rs. 10,000 to Rs. 20,000 per annum by commercial and nucleus farmers from one crop. The involvement of people in sericulture has enhanced their socio-economic status. The training programmes have been well accepted by the beneficiaries across the State. The assessment has led to the conclusion that the intervention of the government has helped generate additional income for the tribal people with less investment. As there are limited opportunities in the given ecosystem, these programmes proved to be more effective to improve their economic status. Tasar silk sector is not only important for generating rural employment and preventing rural seasonal

migration but also of immense value for protection and preservation of ecology, greening the earth, heritage and socio-cultural values in a given ecosystem.

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References:

1. *H H Ninga Setty, Lasya Gopal and Janakaraja Murali Report on "Evaluation of the Impact of Sericulture Programme Implemented by Industries 11th and 12th five year in the State of Jharkhand" submitted to Department of Directorate of Handloom, Sericulture & Handicraft Department of Industries. Government of Jharkhand*
2. *Shetty, K.K. et.al [2007]: Vanya Silks of India-Exploring New Horizons, September 21.*
3. *Ramalaxmi, C.S [2007]: Potential for participation of women in Sericulture sector. March 16.*
4. *Suryanarayana, N.and Shrivastava, A.K. [2005]: Monograph on Tropical Tasar Silkworm. Central Tasar Research and Training Institute, Central Silk Board, Ranchi, India, p p: 1-87.*
5. *Rai, S et.al. [2006]: Tasar sericulture, an emerging discipline for conservation and sustainable utilization of natural resources. The Vision Review.*
6. *Chatterjee,K.K, Chandra,H, Gupta,R and Chakravorty,D [2007]: Tasar culture-An approach of social upliftment of forest dwellers of Achanakmar Amarkantak Biosphere Reserve. Proceedings of workshop*