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## Research Article

### SERICULTURE- NATURAL SOURCE OF SUSTAINABLE RURAL LIVELIHOOD FOR TRIBAL DEVELOPMENT, A ANALYTICAL REVIEW OF TWO TRIBAL BLOCK OF RAIGARH DISTRICT, C.G. INDIA

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#### ABSTRACT

Sericulture is one of the primary occupations for livelihood of poor people in tribal area. Most of tribal are involved in Sericulture. Tasar, Eri are the main forest based cultivation. Among these Tasar Culture is the major crop adopted by the tribals and practiced in respective areas. Out of the 6, 38,588 villages in India, sericulture are practiced in about 69000 villages providing employment to about 8.25 million people. Sericulture is providing livelihood for 9, 47,631 families. The tropical tasarculture in India involve two and half lakh aboriginal families to produce vanya (tasar) silk by growing wild silk-insect as their cultural heritage and livelihood. India continues to be the second largest producer of silk in the World. The total raw silk production in the country in 2015-16 are 28523 MT. Sericulture with its unique features plays an important role in upgrading the socio-economic conditions of the rural folk and with employment opportunities to the educated rural youth and women. Therefore there is a need to provide appropriate forward and backward linkages with necessary technical backup will provide a gateway to the future prosperity of the industry. Basic sericulture activities are village-based; hence migration of people from rural to urban areas in search of jobs can be minimized. In view of the importance of sericulture enterprise for the rural development as well as its cultural bondage, the paper tries to enlighten and discuss the significance of sericulture and strategies to be taken for the sustainable development of Indian sericulture industry for the rural development. Present paper explores the possible livelihood opportunities derived from problem analysis and strategies to be adopted aiming at revolutionary sustainable livelihood development in the study area. This article will endeavor to show how "sericulture" a natural source of sustainable rural livelihood for tribal development, has brought about overall development of individual households, the village, and the community at large. The paper highlights the natural resources of silkworm and its food plants in Raigarh district, their utilization and needs for conservation as they act as sustainable source of livelihood for rural stake holders of the region.

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## INTRODUCTION

In many parts of the developing world, poverty is not so much about a lack of money but about a lack of natural resources. The majority of people live off the land, and prosperity means plenty of water, crops, animals, and timber. For the rural poor, improving the gross nature product is far more important than increasing the gross national product (Agarwal 1985). India consisting of 16% of world's population sustains only on 2.4 % of land resource. (Behre, P.B; Behre, A.P; 2008). About 70% of the population mainly depends on rain fed agriculture characterized by low productivity, unpredictable weather and calamities, degraded soil with low fertility, un-protective irrigation and degraded natural resources (Chakraborty *et al.*, 2009). These factors aggravated the problems of poverty,

migration, unemployment, under-employment, food insecurity and malnutrition for millions of tribal people in India (Mourlin, 2007). The livelihoods among tribal communities in India is complex, dynamic and multidimensional phenomenon, the perception of which varies with geographic location, type of community, age, gender, education, fluctuations in resources, services and infrastructures and social, economic, cultural, ecological and political determinants (Kumar *et al.*, 2009). To improve the livelihoods status in these regions the concept of sustainable livelihoods is increasingly gaining ground important in research and development initiatives for poverty alleviation, rural agriculture development and rural resources management (Chambers, 1987; Ashley, 2000). The sustainable livelihoods framework presents the main factors that affect the sources of people's livelihoods and also make typical relationship between

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them (Wekwete, 1998). The capability of agriculture and livestock production to form sustainable livelihoods of tribal poor is in continuous decline because the current overall endowments of production, distribution of productive assets and productive abilities are out of alignment with what is needed (Maske *et al.*, 2011). The farmers in these areas are very poor and their ability to take risk and invest necessary inputs for optimizing production is low (Sreedevi *et al.*, 2004). For the last few years Government and other development agencies have made structural changes in the villages through interventions of agricultural extension and research services, which helped to improve and provide better livelihoods in the village. (D Silva *et al.*, 2004) India is the second most populous and seventh largest country in the world with a forest and tree cover of 23.68% of its geographical area which is still below the national goal of 33%. The tribal people are constrained to earn their livelihoods from forest resources (State of Forest Report, 2003). The word "Sericulture" has been derived from the word "Su" (Si) which means silk. Sericulture, the art and science of growing silkworm, food plants, rearing silkworms and production of silk is basically an agro-industry and an economically rewarding enterprise consisting of several sets of activities and plays a predominant role in shaping the economic destiny of the rural people. (Dewangan *et al.*, 2012). Sericulture, the production of silk worms and thus ultimately of silk fibre (Ganga and Chetty, 1991), has become a promising rural activity in India because of its minimum gestation period, minimal investment, maximum employment potential and quick turnover for investment (Kasi, 2000, 2009a and 2009d). Out of 6.39 lakh villages in India, sericulture is practised in about 69,000 villages (Central Silk Board, 2002; Geetha and Indira, 2011; Lakshmanan *et al.*, 2011). Sericulture activity brings regular income to the community without any bias of caste, creed, gender, or religion. A remarkable feature of this activity is its egalitarianism-sericulture farmers, rich and poor, earn the same income from it. As women has a crucial role in the activities of sericulture, it equally creates opportunities and make them independent socially, economically, politically, and otherwise (Goyal, 2007; Pillai & Shanta, 2011; Thomas, Muradian, de Groot, & de Ruijter, 2010; Vijayanthi, 2002) Sericulture is an extremely labor intensive industry and occupies a pivotal position from the point of providing employment and additional income to weaker sections (Best & Maier, 2007; Bhatta & Rao, 2003). India enjoys the availability and practice of mulberry sericulture and non-mulberry sericulture like tasar, eri, muga and oak-tasar varieties. Among them, the tropical tasariculture is an important rural tribal occupation in the states of Jharkhand, Orissa, Bihar, Madhya Pradesh, West Bengal, Uttar Pradesh, Chhattisgarh, Maharashtra and Andhra Pradesh of India. The tropical tasar silkworm, *Antheraea mylitta* Drury (Lepidoptera: Saturniidae) is a polyphagous insect exists as ecotypes and feeds primarily on nature grown *Terminalia tomentosa* W&A (Asan), *Terminalia arjuna* Roxb. (Arjun) and *Shorea robusta* Geartn. (Sal), apart from many other secondary and tertiary food plants. (Suryanarayana, N., R. Kumar and Gargi, 2005, Kumar, R., M.C. Joshi, Gargi, S. Beck, A. Gangopadhyaya, A.K. Sinha and B.R.R.P. Sinha 2002, Reddy, R.M., 2010c). The tasar silk industry has acquired a big role in improving tribal socio-economic condition besides generating substantial rural employment. (Goel, A.K., B.N. Brahmachari, M. Thandapani

and K.Thangavelu, 1993, Suryanarayana, N. and A.K. Srivastava, 2005, Rao, K.M., 2007, Reddy, R.M., M.K. Sinha and B.C. Prasad, 2010b). There are 258 well-recognized tribal communities, notified as scheduled tribes in India (Sinha, 2003). There are more than 58 countries practicing sericulture in the world. India is the only Country in the world to produce all the four known varieties of silk including Mulberry, Eri, Tasar and Muga. In India Cultivation is spread Over 22 states. Covering 172000 hectares across 54000 villages operating 258000 handlooms and 29340 power looms (G.Savithri, P.Sujathamma and P.Neeraja 2013). In Chhattisgarh Tropical Tasar and mulberry are reared on commercial scale. Tasar is really named as Kosa. Sericulture is being practiced by the tribal of traditional Districts of Baster, Raigarh, Bilaspur and Surguja. Sericulture activities covered 43760 acres. The total number of Tasar center is 285 (12551.93 Acres), Tasar plantation under CGSP is 155 sites (10000 Acres), Tasar rearing in forest is 18827.9 Acres), Natural Raily Cocoons Area is 500 sq.kms and mulberry gardens are 117 (2380.5 Acres). The total beneficiaries are 51310 in numbers out of them 32,429 are Scheduled Tribe (Dewangan S. K, 2010, 2012).

Various workers have studies on socio-economic condition of sericulturists viz. Giri V.V.1970, Balasubramanyam 1986, Paul D.C.1987, Thangavelu K.1995. Some workers like Jaganath N.1995, Goel A.K.1993, Benchamin K.V.2000, Mohanty P.K.1998, Saluja N.2002, and Brahmachari 2004 have also done work on the tasar income and employment generation.

## **MATERIALS AND METHODS**

The present investigation was carried out in 2 Blocks namely Lailunga and Kharasia of Raigarh district, Chhattisgarh state, based on potentiality and production of tasar/mulberry cocoons, where both types of sericulture - mulberry and tasar are being practiced. Raigarh district is major tasar growing area where tribal are engaged in sericulture activity. Tasar silkworm rearing has been going on since 1956-57 and rearing of mulberry silkworm started in the year 1982-83. Sericulture activity covered 312042 acres; with 5739 beneficiaries out of them 3347 are scheduled tribe. Lailunga and Kharasia are rural populous blocks. The total geographical area of these two blocks is 589.49+397.76(987.25) square kilometers and population is 122405 for Lailunga and 131688 out of which schedule tribe is 80381 and 43221 respectively. Sex ratio is 1006 and 1002. Initially the list of Seri cultural villages and the names of beneficiaries were obtained from local Sericulture department of above 2 Blocks, The primary data was collected from the sampled respondents following the personal interview method using structured interview schedule standardized by Nagaraja (1989). In the above mention blocks four villages were selected with 25 beneficiaries in each village at random for collection of data. Thus, 100 beneficiaries were selected from each block. The farmers were post classified into main and additional based on the engagement of employment.

The information sought from the respondents/ beneficiaries consisted of three types. The first type pertained to general information. The second type sought was related to Occupational Status, Employment days in a year, Total Monthly Income, Occupation before the Sericulture, Duration of Sericulture Work, Average Annual Income from the Old

Occupation, Crops taken in a year, Cocoon produced in each crop, Profit from each crop. The third type of information pertained to the Losses in Sericulture, Compensation by Government, and Loan according to requirement, Traditional Business is affected or not, total labor period, Change in economic status, Change in Annual Income through Sericulture, Displacement by Sericulture, Impact of Sericulture in Life Style and economics of silk production.

Primary and secondary data was analyzed using various statistical tools viz., mean, mode and median where the situation are the basis of vertically received.

$M = (1/N) \sum fx$ , where  $N$ =Number of observation  
 $F$ =Frequency (collected data)  
 $x$ =Variable (as per situation)

## RESULTS AND DISCUSSION

On the basis of study, the analysis pertaining to employment, income, occupation, risks factor and social impact. In Lailunga & Kharasia blocks analysis of the first type of information related that the Kachha houses are 100%. On the other hand Pakka house are nil. Regarding ownership of house in Lailunga & Kharasia all the respondents have their own house. There have been no huts and other type of houses in study area. It is in observation that in Lailunga blocks the employment status as number of working members in 18 families only 1 and the same way in 31 families 2, in 38 families 3, in 10 families 4 and in 3 families 5 members are working. Whereas in Kharasia block the number of working members in 60 families 2, in 19 families 3, in 16 families 4, and in 5 families 5 members are working. It is clear through the analysis that 3 members are involved in the occupation from the average families. It means there is a positive attitude of the members from each family. Sericulture was adopted as Secondary occupation by 82% beneficiaries from Lailunga and primary occupation by 18, whereas Secondary occupation by 99% beneficiaries From Kharasia block and primary occupation by 18 respondents.

$M = (1/N) \sum fx$ ,  $M = (1/N) \sum fx$ ,  
 $M = (1/100) 249$ ,  $M = (1/100) 266$ ,  
 $M = 2.49$   $M = 2.66$

### Graph -A

#### Employment Days/ Man days from Sericulture

In Lailunga block 32% respondents received employment for 100-150 days and 65% received 151-200 days where as only 3% respondents received for 201 to 300 days in year. More than 300 days employment received is NIL. In Kharasia 37% respondents received employment for 100-150 days and 42% received 151-200 days. 201-300 days' employment received by 16% and 301-365 days employment receiver's respondents are 5%. The employment site is situated their own village where they got employment from sericulture activity.

### Graph -B

#### Income from Sericulture

The data indicate that total average monthly income in Lailunga is only Rs. 3840/- and in Kharasia Rs. 3660/- at their village itself. Whereas from the forest minor produce collection and disposal (once in a year) the average income of the respondents has been estimated for Lailunga Rs. 5950/-, and Kharasia it is Rs. 5750/-.The average years of sericulture

occupation in Lailunga is 12.51 and in Kharasia 9.80 year. The economic status in old occupation is normal for 146 and bad for 32 and very poor for 24 respondents.

DfLs were supplied from Sericulture centers and their demand of dfLs was easily fulfilled by the State sericulture department. Out of 200 samples 92 from Lailunga and 97 from Kharasia block rear on *Terminelia arjuna*. 175 respondents stated that host plants are affected by Matamari disease (leaf gall infection) and 159 respondents replied that plants are affected by stem borer where as 54 for leaf spot and 03 for Root rot.

### Cocoon Production and Profit

It is observed in the study area that 15 respondents from Lailunga and 17 from Kharasia take only one crop in a year while 12 from Lailunga and 23 respondents from Kharasia take two crop in a year. In Same manner 73 respondents from Lailunga block and 60 from Kharasia block take 3 crops in a year. The numbers of cocoon produced are 5900/crop/beneficiaries in Lailunga and in Kharasia it is 7800. The economic gain by the respondent of Lailunga is Rs.5720/- and in Kharasia it is Rs.5960/-. The yearly production of cocoons by the respondent of Lailunga 18300 number and in Kharasia 20550 number. Average annual income about Rs 18220/- for Lailunga and Rs 16140/- for Kharasia.

### Graph -C

#### Sericulture and Risk Factor

Out of the total respondent 195 respondents had been bore a loss from Sericulture and 05 had not suffered. It indicates the hardship and risk involved in it. Almost all attributed the loss to fluctuation of atmospheric and adverse weather conditions viz heavy rains; high humidity and high temperature cause disease which leads to a complete failure of their crops. Out of Total respondents only 5% get compensation from government where as 95% denied. All respondents are accorded full cooperation by the officers of sericulture department. Only 8 respondent get loan as per their requirement and 192 not get.

### Sericulture and Social Impact

It is observed that all the respondents attributed the following impact by Sericulture-Conservation of environment, No cutting and felling of trees, Interstate migration is checked, Local employment is generated. It served as additional income generating source, Regular savings habit has been developed, want to attach continue with the sericulture. It is suited to their lifestyle. The work is simple and can be done without any cost. Can serve better for the additional income generation and pave the way for the local employment generation. The total labour period has been estimated In Lailunga 8.08 hrs and in Kharasia 7.40 hrs. All respondents agreed that their economic status has changed. It has been estimated that the annual income rose up to an average of Rs 19800/- respondent in Lailunga and in Kharasia block Rs. 18850/- 17 respondents have been displaced or migrated and 183 respondents denied for any migration.

### Types of livestock (Milching)

In the study area 25 respondents have cow in Lailunga block and 14 respondents in Kharasia, whereas 05 respondents have Buffalos in Lailunga and 03 respondents in Kharasia. 32 respondents have shegoats in Lailunga and 07 respondents in

Kharasia. As a live stock engaged in household burden in Lailunga block, Ox- by 88 respondents and in Kharasia 34 respondents. In Lailunga block 37 respondents have poultry whereas in Kharasia block it covers 16 respondents.

#### **Graph -D**

##### **Domestic expenditure**

In the category of Liquor and Narcotics, 72 respondents from Lailunga block and 12 from Kharasia block consume there expenditure in liquor. On Tobacco maximum expenditure is incurred by the respondents of Lailunga block i.e. 69, followed by Kharasia block 24. Same as on Gudakhu 67 from Lailunga and 46 respondents from Kharasia, domestic expenditure has been incurred. In Lailunga block no respondents incurred expenditure on Gaanja whereas 01 respondents from Kharasia block expenditure on the same.

#### **Graph -E**

##### **Displacement for sericulture as livelihood**

It is observed that in the Kharasia block 13 respondents have been displaced or migrated for livelihood and there is NIL respondents displaced from Lailunga block. 30 respondents from Kharasia feel that sericulture has affected their traditional business/occupation.

##### **Suggestion for change**

It is observed in the study area that 55 respondents from Lailunga block and 66 from Kharasia block suggest for change in field work area. 25 respondents from Lailunga and 16 from Kharasia block suggest for change in rearing. 45 respondents from Lailunga block and 66 from Kharasia suggest for change in training. 37 respondents from Lailunga block and 20 from Kharasia suggest for change in facilitation.

#### **Graph -F**

### **CONCLUSION**

This Tasar silk sector is not only important for generating rural employment and preventing rural migration but also for role in protection and preservation of ecology, heritage and socio-cultural values.

Sericulture provides more than 50% employment to the respondent in a year thus stops the inter-state migration. According to the MNREGA (Mahatma Gandhi National Rural Employment Guaranty Act) population must receive 100 days employment in a year where as sericulture provides 151-200 days employment i.e., 54%. Due to this practice respondents earned around double income compared to their earlier income. It is noteworthy that adopting the Sericulture by tribal they conserve the environment by non-cutting and felling of trees because sericulture is now their way of life. Interstate migration is checked because sericulture provides additional income at their door level. Regular savings habit has been developed by sericulture practices among the tribes because they earn much more than their standard of living. It is remarkable that sericulture is suited the life style of tribe because practice of sericulture is simple and can be done without any cost and skill. The advantage of tasar sericulture is that the practice can be adopted by the farmers without any

difficulties and within shortest possible time. It can engage members of the whole family and the work can be managed in addition to their day to day activities. Initiating sericulture by a farmer invariably leads is generation of further downstream employment in reeling and weaving either in house hold or organized sectors.

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