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RESEARCH ARTICLE

SERICULTURE FOR SUSTAINABLE DEVELOPMENT, EMPLOYMENT GENERATION AND SOCIO-ECONOMIC EMPOWERMENT OF TRIBAL

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ABSTRACT

The present strategy of Sustainable rural development in India mainly focuses on poverty alleviation, better livelihood opportunities, provision of basic amenities and infrastructure facilities through innovative programmes of wage and self-employment. In India, Limited availability of land, limited cash returns and agriculture being confined to one or two seasons in the year have made villages to look for supporting rural industries such as sericulture. In India sericulture has been promoted as an agro-based, labour intensive, rural oriented cottage industry, providing gainful employment mainly to the weaker and marginalised section of the society especially tribal. Sericulture is a multidisciplinary science, which deals with natural science such as plant, insect, soil, environment, etc. Large production base, availability of skills, land and labour, established infrastructure, availability of silkworm breeds/ hybrids, Low investment, short gestation period and higher returns are some strengths of sericulture sector. Seri culture is an integral part of tribal life having immense traditional and ethnic value in their socio-economic structure practiced by about 1.5 lakh tribal populace in the 15 states. 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 2013-2014 the employment in sericulture sector were 7.85 million persons and it goes up to 8.51 in 2016-17.The total raw silk production was 26480 MT in 2013-14 which is recorded as 30265 MT in 2016-17. In Chhattisgarh Tropical Tasar and mulberry are reared on commercial scale. In 2016-17 the Total raw silk production in Chhattisgarh claimed as 361 MT. The sericulture industry has witnessed a quantum jump in raw silk productivity. The average yield of 25 kgs. Of cocoons/100 dfls in the recent past has increased and currently the average yields are in the range of 60-65 kgs./100 dfls. Generation of rural employment and reduction of migration to urban areas are some Opportunities of sericulture sector in study area. This article demonstrates that certain developmental initiatives have been playing an important role in the socio-economic progress of tribal masses in Raigarh district and explains the increased returns from sericulture as a result of development programmes. The study concludes with some suggestions to improve the long term feasibility of sericulture.

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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 natural 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 *et al.,* 2008). About 70% of the population mainly depends on rain fed agriculture characterized by low productivity, un-predictive 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). Indian economy reportedly suffers from high incidence of rural poverty un-employment and under-employment. Rural poverty has many forms and is much more complex phenomenon. Poverty alleviation requires suitable policy interventions and appropriate technological options that can increase agricultural productivity without adversely affecting the productive capacity of natural resources (Dewangan *et al*., 2011). Unemployment is today's basic socio-economic problem eroding national income and living standards, aggravating national development and poverty alleviation,

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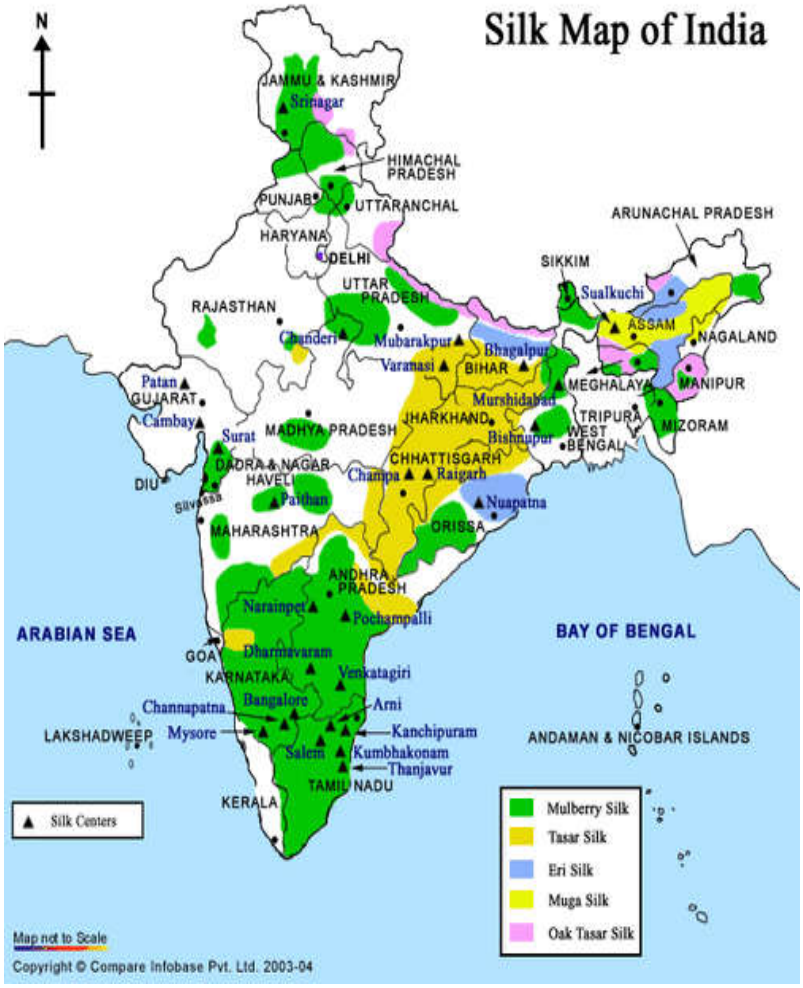
raising government budget deficit, increasing macroeconomic instability (Narasaiah, 1996). The persistence of high incidence of unemployment has become an important challenge for planners and policy makers (Shukla *et al.,* 2008). Employment in agriculture is the predominant form of economic activity providing employment to 58% of the work force and contributing 18% of the gross domestic products in india (Tuteja 2007). Agricultural development alone cannot provide viable solution for alleviating unemployment, poverty and out-migration for growing labour force in rural india (Chadha, 1993). 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). The farmers are encouraged to take up non-agriculture practices which are integrated with live stock culture, animal husbandry, dairy, fisheries, poultry, horticulture and sericulture to generate more income for each house hold. The widespread use of forest as a source of subsistence income and employment by the forest fringe communities often make the forests an important contributor to the rural economy in the forested landscapes in the country (Islam *et al.,* 2013; Bedia 2014; Nayak *et al.,* 2014). About 275 million poor people accounting 27% of the total population depend on forest resource for their livelihood and means of survival in rural india (Pandey, 2009). The establishment of rural based industries like sericulture can be very effective in creating new job opportunities and providing supplemental income. Being a rural agro-based labor intensive industry this sector can also play vibrant role to check migration from rural to urban areas (Gangopadhyay, 2009). The livelihood 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, (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 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). Sustainable development is a pattern of resource use that aims to meet human needs while preserving the environment so that needs can be met not only in the present, but in the indefinite future, is the need of hour (1).

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, is divided in two sectors namely farm and industry. The farm sector involves growing silkworm's food plants, rearing silkworm to produce cocoons and eggs. Reeling, twisting, dyeing, printing, finishing, knitting form the industry sector (Srivastav *et al*., 2005). 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 and Shanta, 2011; Thomas *et al*., 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 and Rao, 2003). India enjoys the availability and practice of mulberry and non-mulberry sericulture like tasar, eri, muga and oak-tasar varieties. Among them, the tropical tasarculture 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 tasar silk industry has acquired a big role in improving tribal socio-economic condition besides generating substantial rural employment (Goel *et al*., 1993, Suryanarayana and Srivastava, 2005; Rao, 2007, Reddy, Sinha, 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 (Savithri, Sujathamma and Neeraja 2013). Sericulture in India is a fairly organized activity in the cottage industry segment, largely rural based and labour intensive. Cultivation is spread Over 22 states.

Covering 172000 hect. Across 54000 villages operating 258000 handlooms and 29340 power loom (Dewangan *et al.,* 2011). India second largest producer of silk in the world and has 16.58% share in global raw silk production. Among the four varieties of silk produced as in 2012-13 Mulberry accounts for 18715 MT, Eri 3116 MT, Tasar 1729 MT, and Muga 119 MT of the total raw silk production of 23679 MT in the country. In 2013-14 the production increased up to 26480 MT. The employment generation in the country is raised to 7.85 million persons in 2013-14 compared to 7.65 million persons in 2012-13. [Annual Report of Sericulture 2016]. In Chhattisgarh Tasar and mulberry are reared on commercial scale. Tasar is realy named as Kosa. Sericulture 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(12551.93Acres), 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 (2380.5Acres).


Silk Map of India
N
JAMMU & KASHMIR
Srinagar
HIMACHAL PRADESH
PUNJAB
UTTARANCHAL
HARYANA
DELHI
UTTAR PRADESH
RAJASTHAN
Chanderi
Mubarakpur
Varanasi
Bhagalpur
BIHAR
ARUNACHAL PRADESH
SIKKIM
Sualkuchi
ASSAM
NAGALAND
MANIPUR
MEGHALAYA
TRIPURA
MIZORAM
WEST BENGAL
Murshidabad
Bishnupur
JHARKHAND
Patan
GUJARAT
Cambay
Surat
MADHYA PRADESH
DADRA & NAGAR HAVELI
DIU
CHHATTISGARH
Champa
Raigarh
Nuapatna
Paithan
MAHARASHTRA
ORISSA
ANDHRA PRADESH
Narainpet
Pochampalli
ARABIAN SEA
BAY OF BENGAL
GOA
Dharmavaram
KARNATAKA
Venkatagiri
Bangalore
Arni
Channapatna
LAKSHADWEEP
Mysore
Kanchipuram
Salem
Kumbhakonam
Thanjavur
TAMIL NADU
KERALA
ANDAMAN & NICOBAR ISLANDS
Silk Centers
Mulberry Silk
Tasar Silk
Eri Silk
Muga Silk
Oak Tasar Silk
Map not to Scale
Copyright © Compare Infobase Pvt. Ltd. 2003-04


Chhattisgarh
India - WRIS
Koriya
Surguja
Jashpur
Korba
Bilaspur
Kabeerdham
Raigarh
Janjgir-Champa
Raipur
Durg
Mahasamund
Rajnandgaon
Dhamtari
Uttar Bastar Kanker
Narayanpur
Bastar
Bijapur
Dakshin Bastar Dantewada


Raigad
Map
DHARMJAIGARH
LAILUNGA
GHARGHODA
TAMNAR
KHARSIA
RAIGARH
PUSAUR
SARANGARH
SARAI LENGHA JBARAM


Surguja
Udaipur
(Dharamjaigarh)
Lailunga
Gharghoda
Tamnar
Kharsia
Raigarh
Pusaur
Sarangarh
Baramkela

The total beneficiaries are 51310 out of them 32,429 are Scheduled Tribe (Dewangan, 2010). Some workers like Jaganath N.1995, and Brahmachari 2004 have also done work on the tasar income and employment generation. Presently in Chhattisgarh three types of silk viz., 'Mulberry', 'Tasar' and 'Eri' silk are producing. Tasar culture is practiced on the forest plants in wild condition. The advantage of tasar culture is that it does not require any investment of plantation, rearing appliances, electricity and other essentials like mulberry sericulture. Various workers have studied on socio-economic of sericulture viz. Giri 1970, Balasubramanyam 1986, Paul, 1987, Thangavelu, 1995, Goeal, 1993, Benchamin, 2000, Mohanty, 1998, Saluja, 2002. All research work done by scientist as mentioned above are outside the Chhattisgarh, so we tried for this type of work and selected Raigarh district, Block Tamnar and Gharghoda.

MATERIALS AND METHODS

The present investigation was carried out in 2 Blocks namely Tamnar and Gharghoda 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. Tamnar and Gharghoda are rural populous blocks. The total geographical area of these two blocks is 902.04, square kilometres. According to census 2001 population is 148903, out of which schedule tribe is 125253 and according to census 2011 population are 97975 for Tamnar and 79425 for Gharghoda. Sex ratio is 1003 and1010 and population density is 160 and 169 per Sqkm.

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 labour 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 is the basis of vertically received.

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

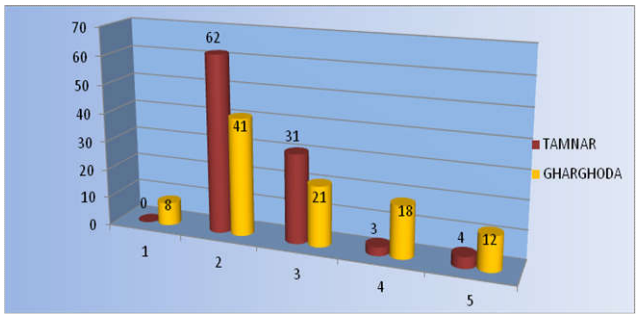
The income and employment opportunities expected from the projected study were computed following standard methods of previous workers Binkley 2005; Sarkar and Chatopadhyay 2006; Mutanlal *et al.,* 2007; Rawat *et al* 2008; Pal 2009; Ansari and Ansar 2011; Bhatia *et al.,* 2011; Pandey and Roy 2011; Dagar 2012.

RESULTS AND DISCUSSION

On the basis of study, the analysis pertaining to employment, income, occupation, risks factor and social impact. In Tamnar & Gharghoda block analysis of the first type of information related that the Kachha houses are 99% for Tamnar block and 100% for Gharghoda. On the other hand Pakka house are 1% for Tamnar . Regarding ownership of house in study area, all the respondents have their own house in Gharghoda block whereas in Tamnar block it covered 94% respondents.

Status of working member in family

It is observed that in Tamnar block the number of working members in 62 families 2, in 31 families 3, in 3 families 4 and in 4 families 5 members are working. whereas in Gharghoda block the number of working members in 8 families is only 01 and the same way in 41 families 02, in 21 families is 03, in 18 families 04 and in 12 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 98% beneficiaries from Tamnar and 99% from Gharghoda block, rest respondents adopted it as primary occupation.



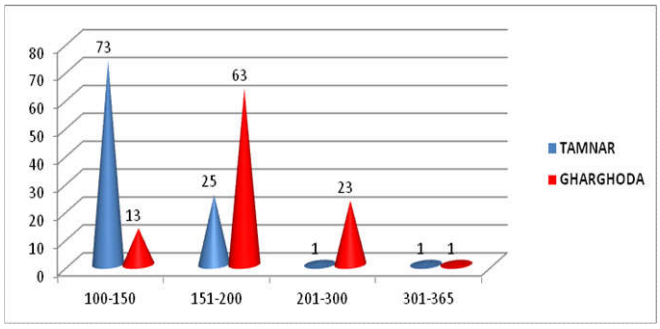
Employment Days from Sericulture

In Tamnar block 73% respondents received employment for 100-150 days and 25% received 151-200 days. 201-300 days' employment received by 1% and 301-365 days employment receiver's respondents are 1%. In Gharghoda 13% respondents received employment for 100-150 days and 63% received 151-200 days.201-300 days' employment received by 23% and 301-365 days employment receiver's respondents are 1%. The employment site is situated their own village for all respondents of Gharghoda block where they got employment from sericulture activity, whereas 89 from Tamnar block got employment from sericulture activity, site is situated their own village level.

Income from Sericulture

The data indicate that total average monthly income in Tamnar is only Rs. 3540/- and in Gharghoda Rs. 3670/- at their village itself. Whereas from the forest minor produce collection and

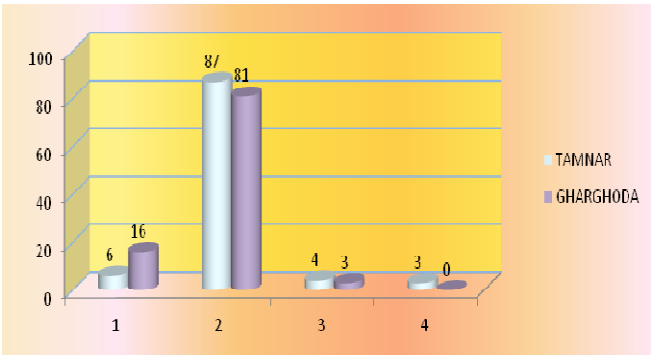
disposal (once in a year) the average income of the respondents has been estimated for Tamnar Rs. 6550/-, and Gharghoda



It is Rs. 5800/-.The average years of sericulture occupation in Tamnar is 09.8 and in Gharghoda 10.3 year. DFLs were supplied from Sericulture centers and their demand of dfls was easily fulfilled by the State sericulture department. The economic status in old occupation is normal for 88 and bad for 111 and very poor for 01 respondent. The total monthly expenditure of the family from all sources are Rs. 2410/- for Respondents of Tamnar Block whereas it measures Rs. 2665/- for respondents of Gharghoda block.

Cocoon Production and Profit

It is observed in the study area that 06 respondents from Tamnar and 16 from Gharghoda take only one crop in a year while 87 from Tamnar and 81 respondents from Gharghoda take two crops in a year. In Same manner 04 respondents from Tamnar block and 03 from Gharghoda block take 3 crops in a year. Only 03 respondents from Tamnar block take five crops in a year. The numbers of cocoon produced are 7750/crop/beneficieries in Tamnar and in Gharghoda it is 7500. The economic gain by the respondent of Tamnar is Rs.5760/-and in Gharghoda it is Rs.5960/-. The yearly production of cocoons by the respondent of Tamnar 19800 nos.and in Gharghoda 20400 number. Average annual income about Rs 18000/- for Tamnar and Rs 17820/- for Gharghoda.



Sericulture and Risk Factor

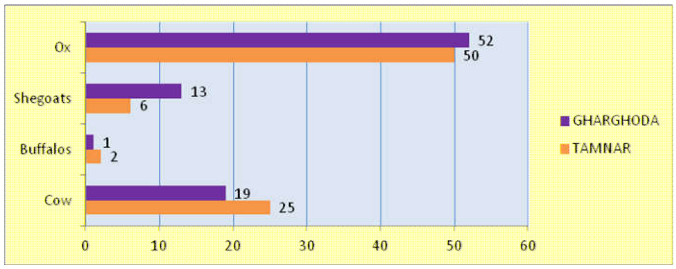
185 respondents had been bore a loss from Sericulture and 15 had not suffered. It indicates the hardship and risk involved in it. Almost all attributed the loss to fluctuation of atmospheric and adverse weather conditions viz heavy rains; high humidity and high temperature cause disease which leads to a complete failure of their crops. Out of 200 respondents only 6 get compensation from government where as 194 denied. All respondents are accorded full cooperation by the officers of sericulture department. Only 40 respondent get loan as per their requirement and 160 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 Tamnar 8.09 hrs and in Gharghoda.7.38 hrs. 97 respondents from Tamnar and 98 respondents from Gharghoda block agreed that their economic status has changed. It has been estimated that the annual income rose up to an average of Rs 23650/- respondent of Tamnar and in Gharghoda block Rs. 18150/-. The present findings confirm the earlier reports of Kumar, 2009; Malathesh *et al.,* 2009; Shendage *et al.,* 2009; Singh *et al.,* 2009; Thakur and Sharma 2009; Mitra and Verick 2013.

Types of livestock (Milching)

In the study area 25 respondents have cow in Tamnar block and 19 rspondents in Gharghoda whereas 02 respondents have Buffalos in Tamnar and 01 respondent in Gharghoda. 06 respondents have shegoats in Tamnar and 13 respondents in Gharghoda. As a live stock engaged in household burden in Tamnar block, Ox- by 50 respondents and in Gharghoda 52 respondents. In Tamnar block 13 respondents have poultry whereas in Gharghoda block it covers 30 respondents.



Domestic expenditure

In the category of Liquor and Narcotics, 35 respondents from Tamnar block and 45 from Gharghoda block consume there expenditure in liquor. On Tobacco maximum expenditure is incurred by the respondents of Tamnar block i.e. 83, followed by Gharghoda block 74. Same as on Gudakhu 65 from Tamnar nar nd 60 respondents from Gharghoda domestic expenditure has been incurred. In Tamnar block no respondents incurred expenditure on Gaanja whereas 01 respondents from Gharghoda block expenditure on the same.

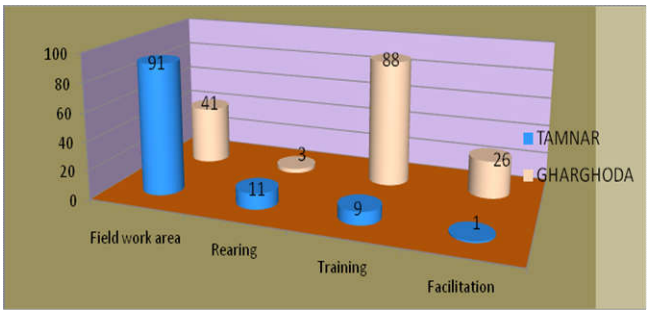
Displacement for sericulture as livelihood

It is observed that in the Gharghoda block 16 respondents have been displaced or migrated for livelihood and there is no respondents displaced from Tamnar block. 01 respondent from Tamnar feel that sericulture has affected their traditional business/occupation.

Suggestion for change

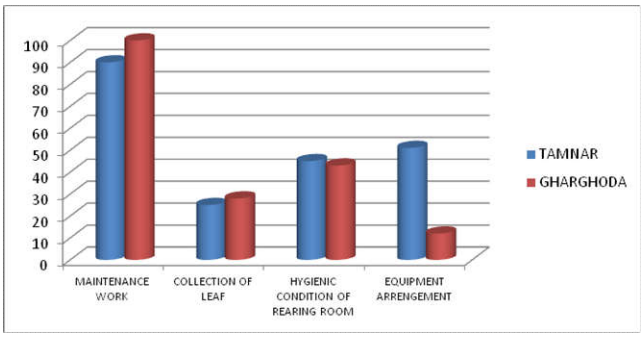
It is observed in the study area that 91 respondents from Tamnar block and 41 from Gharghoda block suggest for

change in field work area. 11 respondents from Tamnar and 03 from Gharghoda block suggest for change in rearing. 09 respondents from Tamnar block and 88 from Gharghoda suggest for change in training. 01 respondent from Tamnar block and 26 from Gharghoda suggest for change in facilitation. Suggestion for change is also observed from the respondents of Tamnar block for Technical Assistance 07 respondents, for collection of cocoon 01 respondent and for Marketing 09 respondents. It is observed in the study area that 85 respondents from Tamnar block and 10 from Gharghoda replied about the consultation with them before enforcing sericulture, whereas 15 from Tamnar and 90 from Gharghoda opined that not consulting with them. So that 22 respondents from Tamnar block and no one from Gharghoda, learn sericulture from training and rest from both the block learn to seeing others work.



Basic preparation for sericulture

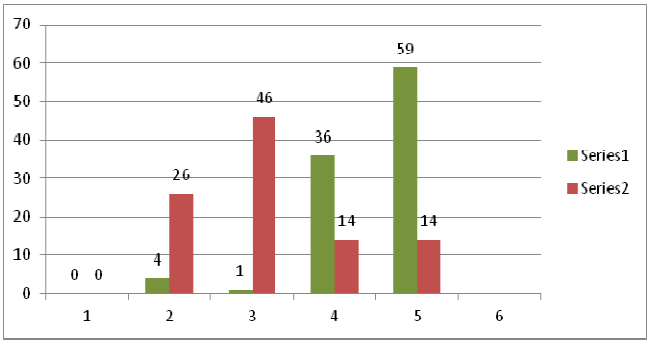
It is observed in the study area that 90 respondents from Tamnar block and all respondents from Gharghoda emphasized that they preferably do the Maintenance work on priority basis followed by collection of leaf by 25 respondents from Tamnar and 28 from Gharghoda. Maintenance of hygienic conditions of rearing room by 45 respondents from Tamnar and 43 from Gharghoda block. So as concerned with arrangement of equipment 51 respondents from Tamnar and 12 respondents from Gharghoda block, prefer the work for basic preparation.



Duration of rearing of silkworm

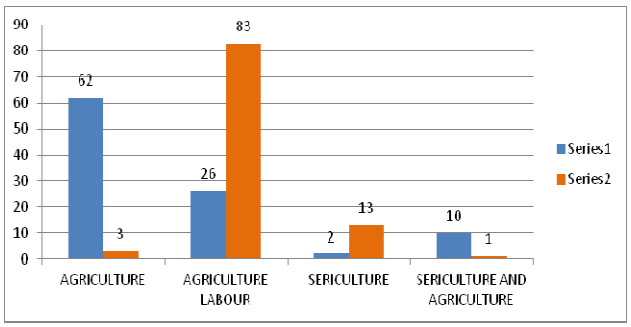
In the study area parameter namely as how long respondents are being working with rearing of silkworm, it comes under observation that 04 respondents from Tamnar block and 26 from Gharghoda block, duration of rearing is only two years whereas 01 respondents from Tamnar and 46 from Gharghoda block do that since three years. Again for four years work as silkworm rearing 36 respondents from Tamnar and 14 from Gharghoda block covered.

For 5 or more than five years it's counted as 59 respondents from Tamnar and 14 from Gharghoda block.



Occupation before adopting sericulture

Out of 200 respondents from study area, 62 from Tamnar and 03 from Gharghoda block the main occupation before adoption of sericulture was Agriculture, whereas 26 respondents from Tamnar and 83 from Gharghoda do as agriculture labour. Only 02 respondent from Tamnar block and 13 from Gharghoda are busy with sericulture, in agriculture with sericulture work are done by 10 respondents from Tamnar block and 01 from Gharghoda.



Conclusion

The tribal people mainly depend on rainfed agriculture characterized by low productivities, Un-predictive weather and calamities, degraded soils with low fertility, un-protective irrigation and degraded natural resources. These factors aggravated the serious problems of poverty, migration, unemployment, under employment, food insecurity, malnutrition, ignorance and exploitation. The development of forest based livelihood interventions has great potential to enhance employment security, poverty reduction and food security for vulnerable section of society. The forest based livelihood interventions are labour intensive, service oriented, less capital and skill intensive, within the reach of the poor, satisfying socio-economic, and ideally suited to local populace. Sericulture has emerged as the most important cash crop with minimum investment, low gestation period, high employment potential and highly remunerative return. It is well suited to the agrarian economy of the Tribal. Suitable for every section of society, a big farmer or a landless farmer, aged person or a youth, man or a woman. This Sericulture sector is not only important for generating rural employment and preventing rural migration but also for protection and preservation of ecology, sustainable development, socio-economic change. 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, whereas sericulture provides 151-200 days employment i.e., 54%. Due to these practices 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. Gapes in technology transfer and extension support, inadequate market accessibility, poor linkage among different stake holders, are observed as weakness of sericulture in study area.

Suggestion

- Research focus of women friendly technologies. Design market infrastructure to favour women's participation. Training cum study visits to women.
- Convergence approach with forest, Rural Development, Women and Child Welfare, Industries, Tribal Welfare, Marketing, Finance, Insurance sectors, Energy Departments to bring in coordinated approach and action plans to maximize the benefits in favour of beneficiaries.
- Externally aided projects integrating Water Shed Development, Agriculture Department (ATMA), Joint Forest Management, Waste Land Development, Tribal Development, Vanya Silks Projects etc.,
- Promote direct linkages between rearer, reeler, twister, and weaver.
- Demonstrate appropriate technologies among the rural artisans.

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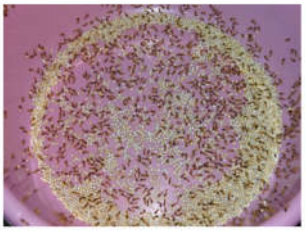
Statistics of sericulture in India

S.N.	Year	Area of mulberry plantation (lakh hect.)	Production of mulberry silk (mt)	Production of tasar silk (mt)	Production of total raw silk (mt)	Employment generation (lakh)
1	2006-07	1.92	16525	350	18475	60.03
2	2007-08	1.85	16245	428	18320	61.20
3	2008-09	1.78	15610	603	18370	63.10
4	2009-10	1.84	16322	803	19690	68.17
5	2010-11	1.70	16360	1166	20410	72.50
6	2011-12	1.81	18272	1590	23060	75.60
7	2012-13	1.86	18715	1729	23679	76.53
8	2013-14	2.03	19476	2619	26480	78.50
9	2014-15	2.20	21390	2434	28708	80.30
10	2015-16	2.08	20478	2819	28523	82.50
11	2016-17	2.17	21273	3268	30348	85.16




Source- department of sericulture, Raigarh

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