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RESEARCH ARTICLE

**EMPLOYMENT GENERATION AND INCOME THROUGH SERICULTURE IN KHARASIA BLOCK,
 CHHATTISGARH, INDIA.**

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Abstract

Sericulture is an eco-friendly agro-based labor intensive and commercially attractive economic activity, falling under cottage and small-scale sector. Sericulture enterprise in its totality is a long chain industry from mulberry cultivation to fabric making. India stands second in silk production; next to China. Sericulture is the only cash crop, which provides frequent and attractive returns in the tropical states of the country through year. Sericulture Industry in India has classified the employment generation pattern of the industry into two major types: Direct Employment – (a) Mulberry Cultivation; (b) Leaf Harvesting; (c) Silk Worm Rearing; Indirect Employment – (a) Reeling; (b) Twisting; (c) Weaving; (d) Printing & Dyeing; (e) Finishing; (f) Silk Waste Processing. The production of raw silk and silk fabrics are limited to only a few countries in the World of which China (1,03,620 MT; 81.95%) occupies the first place and India (19,690 MT; 15.44%), the second. India is the second largest producer of silk in the world next only to China. Karnataka is the leading sericulture state which contributes around 50 per cent of the total silk production in India. It is estimated that the indirect effect of sericulture to the farm income is about 25 per cent. Sericulture is practiced in about 52,360 villages all over the country and employment to about 7.56 million people, most of them being small and marginal farmers in rural areas, creating employment to at least for 12-13 people per hectare of mulberry. Raigarh district stand first in area under plantation of host plant for silkworm rearing. Raigarh district has total area of 2022.6 ha Daba tasar farming under with production of 15,93,7,216 lakh cocoons 63 6375 beneficiaries. In view of the importance of sericulture enterprise, the paper tries to enlighten and discuss the significance of sericulture and strategies to be taken for the employment generation in Indian sericulture industry. Present paper explores the possible employment opportunities derived from problem analysis in the study area. The study concludes with some suggestions to improve the feasibility of sericulture in long term.

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Introduction:-

Sericulture is an agro-based industry, which suits to rural-based farmers, entrepreneurs, and artisans and require of low investment. It has high potential for higher returns and play vital role in improvement of rural economy in India (**Ganie et al., 2012**). Sericulture is rearing of silkworm for production of cocoons which is the raw material for the production of silk. It is the only cash crop that gives returns within 30 days (**Kamili and Masoodi, 2000**). Sericulture is the only cash crop, which provides frequent and attractive returns in the tropical states of the country through year. The average annual income per hectare was around Rs. 40,000 (**Jagannath, N. 1995**). The production of raw silk and silk fabrics are limited to only a few countries in the World of which China (1,03,620 MT; 81.95%) occupies the first place and India (19,690 MT; 15.44%), the second. Other countries such as Brazil (811 MT; 0.6%), Uzbekistan (750 MT; 0.6%), Thailand (660 MT; 0.5%), Vietnam (550 MT; 0.4%), Korea Republic (135 MT; 0.1%), Japan (90 MT; 0.1%), Iran, Turkey, Bulgaria, Yugoslavia (altogether 304 MT; 10.20%) also contribute to World silk production (**Muniraju, 2008**). India is the second largest producer of silk in the world next only to China. Karnataka is the leading sericulture state which contributes around 50 per cent of the total silk production in India. It is estimated that the indirect effect of sericulture to the farm income is about 25 per cent (**Mattigatti and Iyengar, 1995**). Sericulture is practiced in about 52,360 villages all over the country and employment to about 7.56 million people, most of them being small and marginal farmers in rural areas, creating employment to at least for 12-13 people per hectare of mulberry; hence migration of people from rural to urban areas in search of jobs can be minimized (**Planning Commission Report**). India exported silk goods to the value of 364.40, 2278.29 and 2867.52 crores during 1978-79, 2002-03 and 2009-10, respectively and the value of import of silk goods from other countries was 80.11, 647.15 and 933.70 crores during 1978-79, 2002-03 and 2009-10, respectively (**Anantharaman and Khan, 2006; Anonymous, 2011b**). **Usha Rani (2007)** has shown that 96.36 man days of employment are generated from the establishment of one acre of mulberry garden for rearing 300 dfls (disease free layings) of silkworms in two months **Gangopadhyay (2008)**, in his review of Sericulture Industry in India has classified the employment generation pattern of the industry into two major types: **Direct Employment** – (a) Mulberry Cultivation; (b) Leaf Harvesting; (c) Silk Worm Rearing; **Indirect Employment** – (a) Reeling; (b) Twisting; (c) Weaving; (d) Printing & Dyeing; (e) Finishing; (f) Silk Waste Processing. **Manjunath et al., (2015)** employed exponential growth model to know the scenario of mulberry and cocoon production in major silk producing States of India. Data on mulberry area, production, productivity, cocoon production and productivity from 1971-72 to 2008-09 was used for the analysis. They found that all the traditional sericulture states, exhibited significant positive growth in area, production and productivity of mulberry during Period II. **Balakrishanappa and Rajan (2010)** have observed that sericulture is one of the prominent enterprises, which provided full time employment to the entire family, offering high income and better standard of living. **Ali (2010)** revealed that 26.66 per cent respondents had annual income between 50,000/- to 1, 00,000/- followed by 1, 00,000/- to 1, 50,000/- of 20 per cent respondents, respectively. While, there is similar type of annual income from other group. **Dewangan et al. (2012)** revealed that the total monthly income obtained from all sources to the families involved in sericulture occupation is average 3840/-. The total monthly expenditure is about 2380/-. The respondent tribe of study area collects forest minor products and thus they earn income about 5950/- 29 once in year which is a satisfactory amount for poor families. Socio-economic condition of the tasar rearers / reelers/ weavers in Korba district (Chhattisgarh), Were majority of the rearers (44%) fall in the income group of Rs. 5000-10000 from tasar silkworm rearing, which formed about 19% of the total income Rs. 47631.58 (**Brahmachari, B.N.; et.al. 2006**). In Surguja, the tribal women engaged in this activity were living below the poverty line (BPL), having an annual family income of Rs. 11,850.00 or less (**Bhatia, N.K., et.al. 2009**). Sericulture is an eco-friendly agro-based labor intensive and commercially attractive economic activity, falling under cottage and small-scale sector. Sericulture enterprise in its totality is a long chain industry from mulberry cultivation to fabric making. India stands second in silk production; next to China. Total raw silk production in India was 26.5 MT, out of which mulberry raw silk production was 19.5 MT (73.55%) during 2013-2014 (**Annual report, CSB, 2013-2014**). India is the only Country in the world to produce all the four known varieties of silk including Mulberry, Eri, Tasar and Muga. Sericulture in India is a fairly organized activity that is in the cottage industry segment and is largely rural based and labor intensive. Cultivation is spread Over 22 states, Covering 172000 hectares across 54000 villages operating 258000 handlooms and 29340 power looms. (**Dewangan, S. K. et al., 2011**). **Thangamuthu and Venkataravi (1989)** made an analysis of trends in mulberry cultivation, cocoon production and the reeling of raw silk for the period of 1979-80 to 1986-87 found that there was a substantial increase in the area under mulberry cultivation resulting in an increase of about 40 per cent per annum in cocoon production. They also estimated that the development of the weaving sector could result in the generation of direct employment for more than 8000 persons. **Banerjee (1990)** also justified the reason of female dominance in sericulture by stating that silkworm rearing calls for intensive attention as well as mother's care, especially during the later stage of larva. Identification of mature silkworms for putting in spinning trays requires a great deal of

expertise, skill and intensive labour. These beget problems of getting hired labour and, accordingly, dependence on family labour increases. These are the reasons why female dominance in sericulture is so much prevalent in sericulture. **Raigarh** district stand first in area under plantation of host plant for silkworm rearing. Raigarh district has total area of 2022.6 ha Daba tasar farming under with production of 15,93,7,216 lakh cocoons 63, 6375 beneficiaries (**Anonymous, 2012a**).

Material and Methodology:-

The present investigation was carried out in Kharasia Block of Raigarh district, Chhattisgarh state, was purposely selected for the study, and based on potentiality and production of tasar/mulberry cocoons, where both types of sericulture – mulberry and tasar are being practiced. For the study in area Sericultural villages and the names of respondents were selected with 25 beneficiaries in each village at random for collection of data. Thus, 100 respondent's beneficiaries were selected from block. The primary data was collected from the respondents following the personal interview method. 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. The farmers were post classified into main and additional based on the engagement of employment. The information sought from the respondents involved in sericulture activities consisted of three types.

Result and Discussion:-

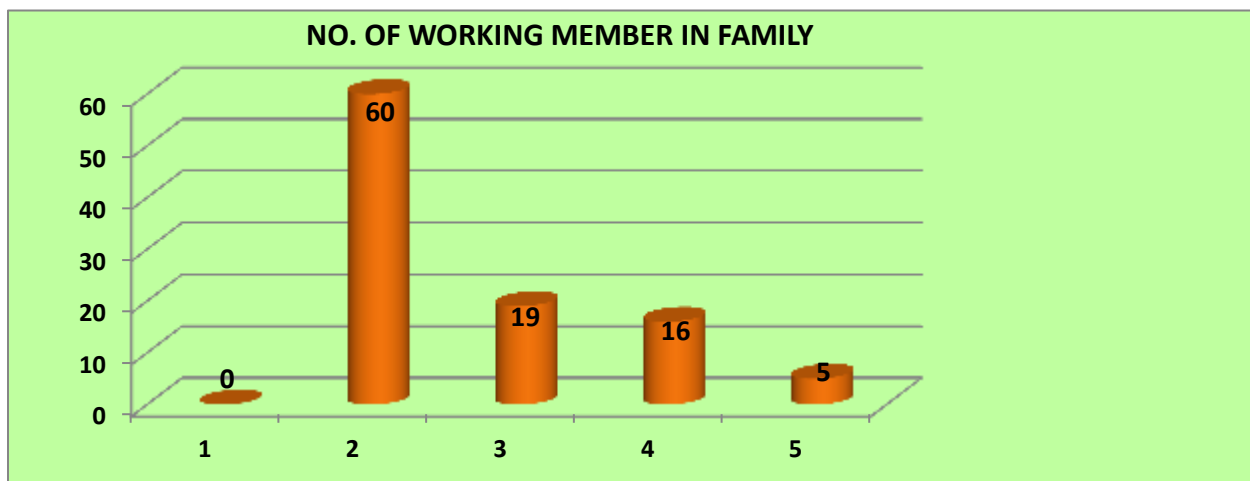
A. Type of house

On the basis of study, the analysis pertaining to employment, income, occupation, risks factor and social impact in Kharasia block. First type of information related that the Kachha houses are 100. On the other hand Pakka house are NIL. Regarding ownership of house in study area, it covered all respondents.

B. Status of working member in family

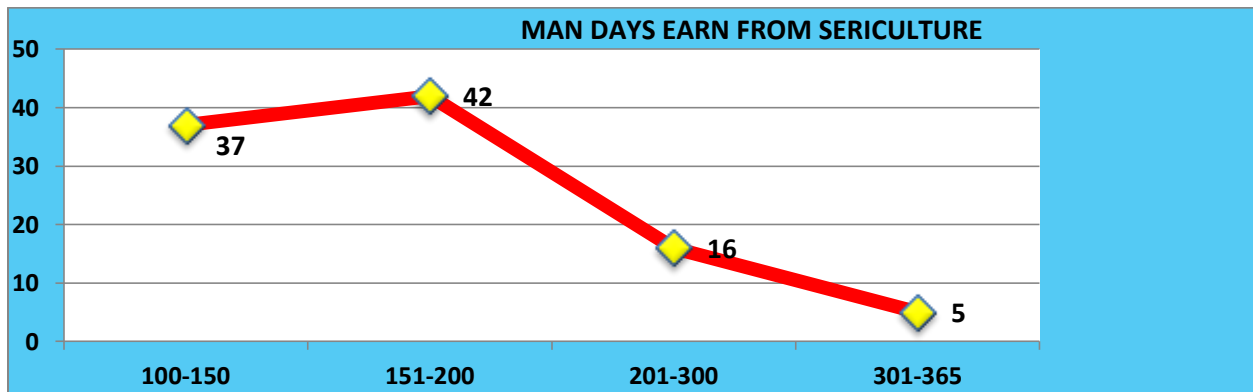
It is observed that in Kharasia block the number of working members in 60 families 2, in 19 families 3, in 16 families 4 and in 5 families 5 members are working. It is clear through the analysis that 3 members are involved in the occupation from the average families. It means there is a positive attitude of the members from each family.

$M = (1/N) \sum fx$, where, N= Number of observation
 $M = (1/100) 266$, F= Frequency (collected data)
 $M = 2.66$ x= Variable (as per situation)



C. Employment Days (Man Days) from Sericulture

In Kharasia block 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%.



D. Income from Sericulture

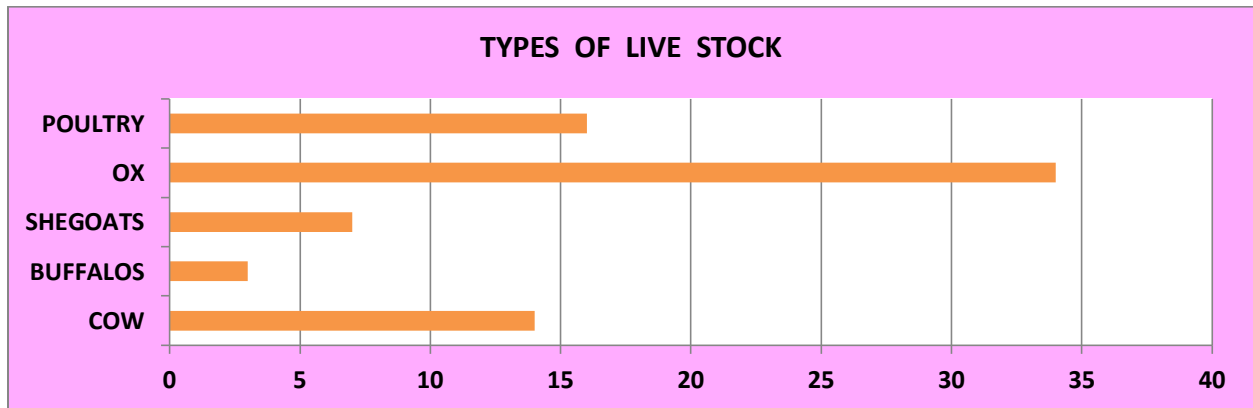
The data indicate that total average monthly income in Kharasia is only Rs. 3660/- at their village itself. Whereas from the forest minor produce collection and disposal (once in a year) the average income of the respondents has been estimated Rs. 5750/- The economic status in old occupation is normal for 74 and bad for 24 and very poor for 02 respondents. The total monthly expenditure of the family from all sources are Rs.2400/-. The average annual income from the old occupation was Rs. 21800/-.

E. Cocoon Production and Profit

It is observed in the study area that 17 respondents take only one crop in a year while 23 take two crops in a year. In Same manner 60 respondents take 3 crops in a year. The numbers of cocoon produced are 7800/crop/beneficiaries. The economic gain by the respondent is Rs.5960/-. The yearly production of cocoons by the respondent is 20550 numbers.

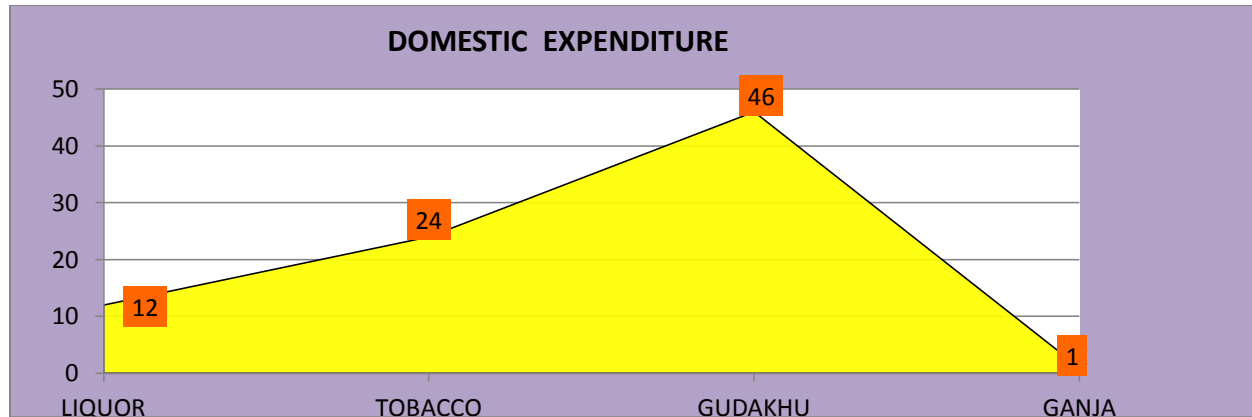
F. Types of livestock (Milching)

In the study area 14 respondents have cow, 03 respondents have buffalos. 07 respondents have she goats. As a live stock engaged in household burden, Ox- by 34 respondents and 16 have poultry.



G. Domestic expenditure

In the category of Liquor and Narcotics, 12 respondents consume there expenditure in liquor. On Tobacco expenditure is incurred by the respondents i.e. 24, same as on Gudakhu 46 respondents domestic expenditure has been incurred. In study area 1 respondents incurred expenditure on Gaanja.



H. Basic preparation for sericulture

It is observed in the study area that 97 respondents emphasized that they preferably do the Plant Maintenance work on priority basis followed by collection of leaf by 4 Respondents, Maintenance of hygienic conditions of rearing room by 3 respondents, So as concerned with arrangement of equipment 25 respondents, prefer the work for basic preparation.

I. Duration of rearing of silkworm

In the study area parameter namely rearing of silkworm, it comes under observation that 04 respondents duration of rearing is only two years whereas 06 respondents do that since three years. Again for four years work as silkworm rearing 3 respondents covered. For 5 or more than five years it's counted as 87 respondents from block.

J. Displacement for sericulture as livelihood

It is observed that displaced or migrated for livelihood, there is 13 respondents displaced from study area. 30 respondents feel that sericulture has affected their traditional business/occupation.

K. Occupation before adopting sericulture

Out of 100 respondents from study area, the main occupation before adoption of sericulture was Agriculture for 56, whereas 44 respondents do as agriculture labor. Only 02 respondents are busy with sericulture Kharasia block. Primary host plant for silkworm rearing is in the priority of *T.arjuna*, *T.tomentosa*, *M.alba* & *S.robusta* with *Z.zuzuba* and that is about 3120 for each respondent. All respondents are accepted that the work of sericulture is comparatively better than other work.

L. Sericulture and Risk Factor

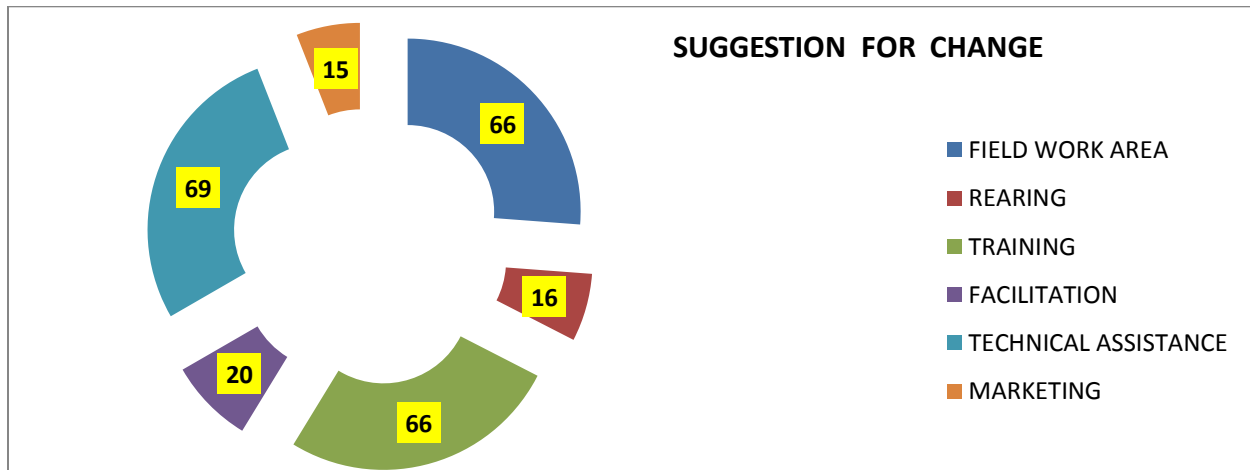
96 respondents had been bore a loss from Sericulture and 04 had not suffered. It indicates the hardship and risk involved in it. The loss to fluctuation of atmospheric and adverse weather conditions viz heavy rains (98 Respondents), high temperature (43 respondents), pollution (20), and storm (30 respondents) cause disease (84) which lead to a complete failure of their crops. Out of 100 respondents only 5 get compensation from government where as 95 denied. All respondents are accorded full cooperation by the officers of sericulture department. Only 3 respondent get loan as per their requirement and 97 not get. This occupation is not new to the tribes in the study area because they are practicing sericulture since average of 9.2 year. DFLs were supplied from Sericulture centers and their demand of dfls was easily fulfilled by the State sericulture department.

M. 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 Kharasia 7.40 hrs. All respondents agreed that their economic status has changed.

N. Suggestion for change

It is observed in the study area that 66 respondents suggest for change in field work area. 16 respondents suggest for change in rearing. 66 respondents suggest for change in training. 20 respondents suggest for change in facilitation. Suggestion for change is also observed for Technical Assistance 69, and for Marketing 15 respondents.



Conclusion:-

Sericulture Research Institutes through their technical development have provided super quality of seed. Large production base, availability of skills, land and labour. Low investment, short gestation period and higher returns. Easily adoptable technologies and strong domestic demand-pull are some strength of sericulture in India. Whereas Unpredictable rainfall and reducing ground water level effects plantation. Climatic condition is another barrier of sericulture. There is resistance in rural masses to adopt new technologies for sericulture. The rearers have small land holding for rearing. There is lack of competitive marketing network are counted as weakness of sericulture in study area. Some Opportunities like sericulture sector includes active involvement of rural women. The demand for silk is growing in the national & international market day by day because of its qualities. Due to awareness in education in rural areas, literate farmers are willing to accept latest technological knowhow. It holds promise as an employment generating industry, especially in rural and semi-urban areas are recorded. It gives Threats as more and more rural population is migrating from farming to urban areas. Other agriculture crops like wheat, grain etc are competitive crops. Majority of farmers have low land holding capacity, the cost of the land is very high. It is clear through the analysis that 3 members are involved in the occupation from the average families. 42% respondents received 151-200 days employment from sericulture. 60 respondents take 3 cocoon crops in a year. The yearly production of cocoons by the respondent is 20550 numbers which converts equal amount of money. As on Gudakhu 46 respondents domestic expenditure has been incurred. Respondents have proper livestock. 97 respondents preferably do the Plant Maintenance work on priority basis. Year for rearing of silkworm as observed is 5 or more than five years it's counted as 87 respondents from block. 30 respondents feel that sericulture has affected their traditional business/occupation. The main occupation before adoption of sericulture was Agriculture for 56 respondents. 96 respondents had been bore a loss from Sericulture. Only 3 respondent get loan as per their requirement and 97 not get. DFLs were supplied from Sericulture centers and their demand of dfls was easily fulfilled by the State sericulture department. 66 respondents suggest for change in training pattern.

Suggestion:-

1. The government should give them compensations for the losses incurred in this occupation due to diseases and the negative impact of natural factors.
2. There should be enough loan facilities for the improvement of their occupation which is still more beneficial.
3. The government should be encouraging them to make clothes along with sericulture occupation.
4. Public Private Participation in the Post-cocoon sector and contract farming with NGOs and corporate participation.
5. Decrease in forest/timber cutting and diversion towards farm/nonfarm activities, saving of forest land from massive soil erosion through contour Bunding .

6. Covering of degraded lands with plantation of Tasar food plants are basic solution for bio-diversity conservation.
7. Diversity of Sericigenous moths needs to be conserved through well planned and sustainable measures. Conservation of forest bio-diversity requires community involvement.

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Table 1:- Status Of Sericulture In Study Area

Years	Total tasar food plants area(Hac)	Total families engaged	Total cocoon production(Lakh)	Toal employment generation
2007-08	34.50	411	3.56	411
2008-09	34.50	364	5.83	364
2009-10	34.50	260	5.21	260
2010-11	34.50	335	7.96	335
2011-12	34.50	356	10.53	356
2012-13	34.50	309	6.69	309
2013-14	34.50	297	3.06	297
2014-15	34.50	107	5.16	107
2015-16	34.50	189	6.77	189
2016-17	34.50	249	8.56	249

SOURCE: DOS, RAIGARH, CHHATTISGARH

Table 2:- Status of sericulture in chhattisgarh

Year	Production Of Tasar Raw Silk (Mt)	Production Of Mulberry Cocoon(Kg.)	No. Of Beneficiaries
2000-01	65.94	17354	899
2001-02	82.79	16840	732
2002-03	63.62	14547	1084
2003-04	65.65	14005	1277
2004-05	127.25	20387	1487
2005-06	101.30	27414	1699
2006-07	104.54	34339	1595
2007-08	126.30	41632	2487
2008-09	146.33	36224	1754
2009-10	160.53	35125	2179
2010-11	167.92	44280	1909
2011-12	298.61	52340	1639
2012-13	387.18	54487	2436
2013-14	394.92	64911	2596
2014-15	225.38	66278	3457
2015-16	254.17	68918	3242
2016-17	353.13	60501	2675

SOURCE: DOS, RAIPUR, CHHATTISGARH

Declaration Of Conflicting Interests:-

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