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Economics of Sericulture - A Study of Raigarh District—Chhattisgarh –India

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Abstract: ***Sericulture, the production of silk worms and thus ultimately of silk fibre has become a promising rural activity in India because of its minimum gestation period, minimal investment, and maximum employment potential and quick turnover for investment. Sericulture is an extremely labor intensive industry and occupies a pivotal position from the point of providing employment and additional income to weaker sections. 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. Sericulture generates high employment and income per unit of land area. Sericulture provides an ample opportunity for increased employability of human resource and can effectively check migration of people to urban areas. Sericulture is the most remunerative when compared to other crop activities in terms of income generation. All the sections of sericulture industry, viz. mulberry cultivation, silkworm seed production, silkworm rearing, reeling and weaving of silk and collection of by products and its processing provide a large scale employment, thereby a source of livelihood for the rural and tribal people. Sericulture identify as a viable rural industry mainly because it provides remunerative employment to families and labour throughout the year and also ensures periodical income even with small land holdings. Sericulture industry is a labour intensive and has very good potential to provide employment to the rural mass at their local level. It is an eco friendly activity which provides an opportunity to rural mass to uplift their socio economic status. India has unique distinction of being the only country on the world producing all the four commercially known verities of silk, viz, mulberry, tasar, eri and munga. 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. Cover 172000 hectare across 54000 villages operating 258000 handlooms and 29340 power looms. Total raw silk production goes up to 30265 MT in 2016-17 with employment generation of 8.51 million persons in India.***

Keywords: Sericulture, Employment, Socio-economic, Tribal.

I. INTRODUCTION

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).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). 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). The word Sericulture is derived from the greek word sericos meaning silk and the English word culture meaning rearing. Sericulture refers to the conscious mass-scale rearing of silk producing organism to obtain silk(Vijaykumar et. al.2007). 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). Sericultureis 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 P. K et. al. 2005).Rakesh Sharma (1980) observed silkworm food Leaf are obtaining from both mulberry trees grown along-side roads and trees of field edges. They found cost of leaf and silkworm rearing cost of one ounce of silk eggs was on an average Rs.30 and Rs.322 respectively. The net returns were estimated from both the seasons is about Rs.596 per annum in the study area. Bhatikar (1985) estimated that one acre of irrigated mulberry cultivation required on an investment of Rs. 8,600 and it provides employment opportunities to more than three persons throughout the year. The net returns they found about Rs. 5,300 per annum per acre, compared to Rs. 3,000 from sugarcane, which shows sericulture

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farming provides more returns to the farmers compare to other crops. Hanumappa and Erappa (1985) observed that the gross and net returns per 100 disease free layings of crossbreed silk worm races is Rs.610 and Rs.49.50 respectively during 1983-84. They found Bivoltine silk worm rearing incurred loss of Rs.135.50 per 100 layings, and also hired labour participation was found in both the cases is about per acre of mulberry cultivation requires nearly 73 man-days per crop, out of which 36 man days for silk worm rearing per 100 DFLs. Manjeet S Jolly (1986) discussed about economics of mulberry cultivation and silk worm rearing, productivity, process and method of cultivation and silk worm rearing. The quality of mulberry leaf also has been improved considerably under the new technology. The overall result is that sericulture under rainfed condition has become lucrative with the added scope of improving the mulberry productivity and raising successful silk worm crops. Nagaraj et al. (1986) work out the costs of establishment of mulberry garden on an average is about Rs.3,560 per acre and the requirement of working capital for regular cultivation is on an average Rs.1,206 per acre in the Kolar district. They also found cost per batch of 300 DFLs is about Rs. 2,431 and net return per batch of rearing was found on an average Rs 2,969 under irrigated area. Subbarayudu et al. (1989) found, the cost of establishment of one acre of mulberry garden through row planting is about Rs.4, 175 in the newly adopted mulberry areas of Andhra Pradesh. The leaf yielding per annum in these areas is about 9,000 kgs per acre and farmers are rearing 100 disease free layings in this gestation period of newly adopted mulberry plants.

They also calculated 100 disease free layings required nearly 833 kgs of mulberry leaf and it yielding 40 kgs of cocoon. The gross costs and returns of newly adopted mulberry areas were found is about Rs.15, 704 per acre in his study area. Prabhashekhar and Dr. C. Ravikumarg 1991 show that sericulture generates high employment and income per unit of land area. H.G. Hanumappa and D. Rajasekhar 1992 are of the view that sericulture is the most remunerative when compared to other crop activities in terms of income generation. All the sections of sericulture industry, viz. mulberry cultivation, silkworm seed production, silkworm rearing, reeling and weaving of silk and collection of by products and its processing provide a large scale employment, thereby a source of livelihood for the rural and tribal people (Gregory, 1994).

Dr. N. Kamalamma, et al. 1995. Identify sericulture as a viable rural industry mainly because it provides remunerative employment to families and labour throughout the year and also ensures periodical income even with small land holdings. According to G. Parameshwara 1996 sericulture provides an ample opportunity for increased employability of human resource and can effectively check migration of people to urban areas. Patil, B. R., et al. 2009 The sericulture industry is a labour intensive and has very good potential to provide employment to the rural mass at their local level. It is an eco friendly activity which provides an opportunity to rural mass to uplift their socio economic status. Sericulture is an ideal programme for weaker section of the society because low gestation, higher returns. Acres of mulberry garden and silkworm rearing can avoid maximum laborers and save wages in the sericulture sector of the state. Utpal Kumar De and Mamjit Das (2010) trace out the age-old agro based sericulture activities have been playing an important role in the generation of employment & income in a slowly progressing economy of Assam. Author tries to make a comparative assessment of different silk cultures in Assam, namely Eri, Muga & mulberry as a source of employment & income. Sericulture industry has been identified as employment oriented industry (Devaraja, 2011). India has unique distinction of being the only country on the world producing all the four commercially known verities of silk, viz, mulberry, tasar, eri and munga (Anitha, 2011). 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. Cover 172000 hectare across 54000 villages operating 258000 handlooms and 29340 power loom (Dewangan, S. K. et. al. 2011). Purushotham et al. (2011) discussed cost and returns structure of cocoon production in the study area and he divided cost and returns from sericulture in terms of rupees per acre per year. Finally overall results indicated that the revenue obtained from sericulture was higher than all other crops cultivated in the area. Ruchira Shukla (2012) found, in garden establishment the highest share of cost associated with human labour (INR 14400,00 followed by that for FYM (INR 2418,75). Similarly human labour (51.93%) accounted for highest element of cost in leaf production activities too owing to high labour wages and shortage of manpower. The average yield of silk cocoon obtained was1289.04 kg/ha per year. The net returns obtained were INR 52039.32 & benefit cost ratio was 1.49.

Sericulture has recently aroused much interest due to their wide industrial applications. Silk is the most elegant textile in the world with unparalleled grandeur, natural sheen, and inherent affinity for dyes, high absorbance, light weight, soft touch and high durability and known as the “Queen of Textiles” the world over (Li, 2012).India continues to be the second largest producer of silk in the world, providing gainful occupation to about six million persons in the rural and semi-urban areas across the country (Rahaman, 2013).Chandrama Goswami (2013) the data collected was classified and put in to tabular form for analysis purpose. Simple statistical tools like average and percentage distribution has used to analyze the data. Finally he suggested that sericulture is taken up as full time activity in the study area; it will go a long way in increasing the income of the respondents and raising their standard of living. Prakasam et al. (2014) Primary data on economic aspects Viz., costs and returns in cocoon production were

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collected and randomly selected from the sample farmers through personal interview method by using pre-test interview schedule, for pilot study farmers having two year old established mulberry garden were considered in his study growth rate of trends line and benefit cost ratio and coefficient of variation have been worked out in addition the diagrammatic representations have been drawn. Subrata Trivedi et al. (2015) he conclude sericulture is capable of generating more income, compare to the other crops like paddy wheat etc. most of the crops can be grown once or twice in a year but sericulture can be practiced 4-5 times in a year. The combined net income from that multiple farming system in a year is Rs 42550 which is still less than sericulture which generate 52900 in one acre of land for irrigated condition. Pankaj Roy et al. (2015) conclusion was overall work participation rate in sericulture by male workers is 76.15% while the female workers are 84.51%. In case of income generation from sericulture production most of the households earns 5000-15000 in a particular season lending to an annual income of Rs 20000 to 60000 per acre.Out of 6.39 lakh villages in India, sericulture is practised in about 69,000 villages (Geetha and Indira, 2011; Lakshmanan *et. al.* 2011).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. Total raw silk production goes up to 30265 MT in 2016-17 with employment generation of 8.51 million persons(Annual Report of Sericulture 2016).

II. MATERIAL AND METHODS

The present investigation was carried out in 3 Blocks namely Tamnar, Gharghoda 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. Tamnar, Gharghoda and kharasia are rural populous blocks. Initially the list of Seri cultural villages and the names of beneficiaries were obtained from local Sericulture department of above 2Blocks, The primary data was collected from the sampled respondents following the personal 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.

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

III. RESULT AND DISCUSSION

On the basis of study, the analysis pertaining to employment, income, occupation, risks factor and social impact, Domestic Expenditure, Type of live stocks, Cocoon production, Duration of rearing of silkworm, Basic preparation for sericulture, Occupation before sericulture, Displacement for sericulture, Suggestion for change.

A. Status of House

In study area analysis of the first type of information related that the Kachha houses are 99 for Tamnar, 100 for Gharghoda and Kharasia block. On the other hand Pakka house are 1% for Tamnar. Regarding ownership of house all the respondents have their own house in Gharghoda, and Kharasia whereas in Tamnar block it covered 94 respondents.

B. 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 03, in 18 families 04 and in 12 families 5 members are working. In Kharasia block in 60 families 02, in 19 families 03, in 16 families 04 and in 05 families 05 members are working. It is clear through the analysis that average 3 members are involved in the occupation from the families. It means there is a positive attitude of the members from each family.

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C. Employment Days From Sericulture

In Tamnar 73, in Gharghoda 13 and in Kharasia 37 respondents received employment for 100-150 days. In same manner 151-200 days employment received by 25 from Tamnar, 63 from Gharghoda and 42 respondents from Kharasia. 201-300 days' employment received by 1 respondent from Tamnar23 from Gharghoda and 16 from Kharasia block. 301-365 days employment receiver's respondents are 1, 1 respondent from Tamnar and Gharghoda whereas 5 from Kharasia. 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 and 87 from Kharasia block.

D. Income From Sericulture

The data indicate that total average monthly income in Tamnar is only Rs. 3540/-, in Gharghoda Rs. 3670/- and in Kharasia it is 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 Tamnar Rs. 6550/-, Gharghoda Rs. 5800/- and in Kharasia 5750/-. The economic status in old occupation is normal for 162 (Tamnar-88, Gharghoda-nil, Kharasia-74) and bad for 135 (Tamnar-11, Gharghoda-100, Kharasia-24) and very poor for 03(Tamnar-1, Kharasia-2)respondent. The total monthly expenditure of the family from all sources are Rs. 2410/- for Respondents of Tamnar, 2665/- for Gharghoda whereas it measures Rs. 2400/- for respondents of Kharasia block.

E. Cocoon Production And Profit

It is found in the study area that 06 respondents from Tamnar, 16 from Gharghoda and 17 from Kharasia block take only one crop in a year while 87 from Tamnar, 81 from Gharghoda and 23 from Kharasia block take two crops in a year. In Same manner 04 respondents from Tamnar, 03 from Gharghoda and 60 from Kharasia 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 and in Kharasia it is 7800. The economic gain by the respondent of Tamnar is Rs.5760/-and in Gharghoda and Kharasia it is Rs.5960/-.The yearly production of cocoons by the respondents of Tamnar 19800 no., in Gharghoda 20400 and in Kharasia 20550 number. Average annual income about Rs 18000/- for Tamnar, Rs 17820/- for Gharghoda and 16140/- for Kharasia block.

F. Occupation Before Adopting Sericulture

Out of 300 respondents from study area, 62 from Tamnar, 03 from Gharghoda and 56 from Kharasia block the main occupation before adoption of sericulture was Agriculture, whereas 26 respondents from Tamnar, 83 from Gharghoda and 44 from Kharasia do as agriculture labour. Only 02 respondents from Tamnar, 13 from Gharghoda and 02 from Kharasia block are busy with sericulture, in agriculture with sericulture work are done by 10 respondents from Tamnar, 01 from Gharghoda.

G. Basic Preparation For Sericulture

It is observed in the study area that 90 respondents from Tamnar, 100 from Gharghoda and 97 from Kharasia emphasized that they preferably do the Maintenance work on priority basis followed by collection of leaf by 25 respondents from Tamnar, 28 from Gharghoda and 04 from Kharasia. Preparation of hygienic conditions of rearing room by 45 respondents from Tamnar, 43 from Gharghoda and 03 from Kharasia block. So as concerned with arrangement of equipment, 51 respondents from Tamnar, 12 from Gharghoda and 25 from Kharasia block prefer the work for basic preparation.

H. Duration Year Of Rearing Of Silkworm

In the study area it comes under observation that 04 respondents from Tamnar, 26 from Gharghoda and 04 from Kharasia block, duration of rearing is only two years whereas 01 respondent from Tamnar, 46 from Gharghoda and 06 from Kharasia block do that since three years. Again for four years work as silkworm rearing 36 respondents from Tamnar 14 from Gharghoda and 03 from Kharasia block covered. For 5 or more than five years it's counted as 59 respondents from Tamnar and 14 from Gharghoda and 87 from Kharasia block.

I. Main Occupation Related To Sericulture

It is analysed in the study area that the main occupation related to sericulture are Rearing of Silkworm done by 78 respondents from Tamnar, 72 from Gharghoda and 88 from Kharasia block. It is noted that the Agriculture is followed by 02 respondents from Tamnar and 1 from Kharasia block. Seed formation is done only by 04 respondents from Tamnar and 3 from Kharasia block. Rearing along with Field formation is done by 01 respondent from Tamnar and 08 respondents from Kharasia block.

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J. Domestic Expenditure

In the category of Liquor and Narcotics, 35 respondents from Tamnar, 45 from Gharghoda and 12 from Kharasia 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 and Kharasia block 24. Same as on Gudakhu 65 from Tamnar, 60 respondents from Gharghoda and 46 from Kharasia domestic expenditure has been incurred. In Tamnar block no respondents incurred expenditure on Gaanja whereas 01 respondents from Gharghoda and 1 from Kharasia block expenditure on the same.

K. Types Of Livestock (Milching)

In the study area 25 respondents have cow in Tamnar, 19 in Gharghoda and 25 in Kharasia block.02 respondents have Buffalos in Tamnar and 1 in Gharghoda and 3 in Kharasia. 06 respondents have she goats in Tamnar, 13 in Gharghoda and 7 in Kharasia. live stock engaged in household burden in Tamnar block, Ox- by 50, in Gharghoda 52 and in Kharasia 34respondents. In Tamnar block 13 respondents have poultry, in Gharghoda30 respondents and in Kharasia it covers 16.

L. Movable And Immovable Property

It is observed in the study that in the status of movable property point of view the 72, 33 and 16 respondent from Tamnar block have livestock, Agriculture equipments and vehicles whereas in Gharghoda block 66, 42 and 23 and in Kharasia 21, 13, 16 respondents have same property. In the mode of immovable property from the Tamnar block 45 respondent have cattle house, 39 have agricultural land, 68 have house and 01 have well or biogas plant. In Gharghoda block the same manner 57, 68, 62 and 02 respondents have immovable property and in Kharasia block it measured as 24, 15, 42 and nil.

M. Disease Of Host Plants

It is found in the study area that host plants are affected by Matamari disease replied by 76 respondents from Tamnar, 78 from Gharghoda and 97 from Kharasia block. Plants are also affected by stem borer according to 92 respondents from Tamnar, 62 from Gharghoda and 97 from Kharasia block. Disease like leaf spot says by 86 respondents from Tamnar and 54 from Gharghoda block. Root rot infection by 09 respondents from Tamnar and 03 from Gharghoda block.

N. Displacement For Sericulture As Livelihood

It is observed that in the Gharghoda block 16 respondents and in Kharasia block 13 have been displaced or migrated for livelihood and there is no respondents displaced from Tamnar block. 01 respondent from Tamnar and 30 from Kharasia feel that sericulture has affected their traditional business/occupation.

O. Sericulture and Risk Factor

281 respondents had been bore a loss from Sericulture and 19 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(Tamnar-89, Gharghoda-60, Kaharasia-98); High temperature (Tamnar-83, Gharghoda-81, Kharasia-43), Storm (Tamnar-75, Gharghoda-54, Kharasia-30), Pollution (Tamnar-45, Gharghoda-92, Kharasia-20) cause disease (Tamnar-93, Gharghoda-86, Kharasia-84) which leads to a complete failure of their crops. Out of 300 respondents only 11 get compensation from government where as 289 denied. All respondents are accorded full cooperation by the officers of sericulture department. Only 43 respondent get loan as per their requirement and 257 not get.

P. 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, in Gharghoda.7.38 hrs and in Kharasia 7.40 hrs. 97 respondents from Tamnar, 98 from Gharghoda and 100 from Kharasia 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 Rs. 18150/- and in Kharasia it is 18850/- Rs.

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Q. Suggestion For Change

It is observed in the study area that 91 respondents from Tamnar, 41 from Gharghoda and 66 from Kharasia block suggest for change in field work. 11 respondents from Tamnar, 03 from Gharghoda and 16 from Kharasia block suggest for change in rearing pattern. 09 respondents from Tamnar, 88 from Gharghoda and 66 from Kharasia block suggest for change in training style. 01 respondent from Tamnar block, 26 from Gharghoda and 20 from Kharasia suggest for change in facilitation. Suggestion for change is also observed from the respondents of Tamnar block for Technical Assistance 07 and 69 respondents from Kharasia, for collection of cocoon 01 from Tamnar and 01 respondent from Kharasia and for Marketing 09 from Tamnar and 15 respondents from Kharasia. It is analysed that 85 respondents from Tamnar, 10 from Gharghoda and 43 from Kharasia replied about the consultation with them before enforcing sericulture. So that 22 respondents from Tamnar block, 13 from Kharasia and no one from Gharghoda, learn sericulture from training and rest from both the block learn to see others work.

IV. CONCLUSION

Sericulture is an agro- based enterprise highly suited for both large and small land holdings, with low capital investment. Generally, silk goods are purchased by the urban rich and middle-class consumers and it is estimated that around 57percent of the final value of silk fabrics flows back to the primary producers in rural areas. Sericulture can also play a very important role in removing rural poverty due to its high work participation rate and can check the migration from rural to urban areas. It is analysed that Kachha houses are 99 for Tamnar, 100 for Gharghoda and Kharasia block. Average 3 members are involved in the occupation from the families. It means there is a positive attitude of the members from each family.151-200 day's employment received by 25 from Tamnar, 63 from Gharghoda and 42 respondents from Kharasia. The data indicate that total average monthly income in Tamnar is only Rs. 3540/-, in Gharghoda Rs. 3670/- and in Kharasia it is 3660/- at their village itself. It is found in the study area that 87 Respondents from Tamnar, 81 from Gharghoda and 23 from Kharasia block take two crops in a year. The numbers of cocoon produced are 7750/crop/beneficieries in Tamnar and in Gharghoda it is 7500 and in Kharasia it is 7800. 62 from Tamnar, 03 from Gharghoda and 56 from Kharasia block the main occupation before adoption of sericulture was Agriculture. 90 respondents from Tamnar, 100 from Gharghoda and 97 from Kharasia emphasized that they do the Maintenance work on priority basis. Duration of rearing for 5 or more than five years it's counted as 59 respondents from Tamnar,14 from Gharghoda and 87 from Kharasia block. The main occupation related to Sericulture is Rearing of Silkworm done by 78 respondents from Tamnar, 72 from Gharghoda and 88 from Kharasia block. 35 respondents from Tamnar, 45 from Gharghoda and 12 from Kharasia block consume there expenditure in liquor. 25 respondents have cow in Tamnar, 19 in Gharghoda and 25 in Kharasia block. It is found in the study area that host plants are affected by Matamari disease replied by 76 respondents from Tamnar, 78 from Gharghoda and 97 from Kharasia block. In the Gharghoda block 16 respondents and in Kharasia block 13 have been displaced or migrated for livelihood. 281 respondents had been bore a loss from Sericulture and 19 had not suffered. It indicates the hardship and risk involved in it. It is concluded 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. It has been estimated that the annual income rose up to an average of Rs 23650/- respondent of Tamnar and in Gharghoda Rs. 18150/- and in Kharasia it is 18850/- Rs. It is observed in the study area that 91 respondents from Tamnar, 41 from Gharghoda and 66 from Kharasia block suggest for change in field work.

V. SUGGESTION

A. Research focus of women friendly technologies. Design market infrastructure to favour women's participation. Training cum study visits to women.

B. 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.

C. Externally aided projects integrating Water Shed Development, Agriculture Department (ATMA), Joint Forest Management, Waste Land Development, Tribal Development, Vanya Silks Projects etc.,

D. Promote direct linkages between Rearer, Reeler, Twister, and Weaver.

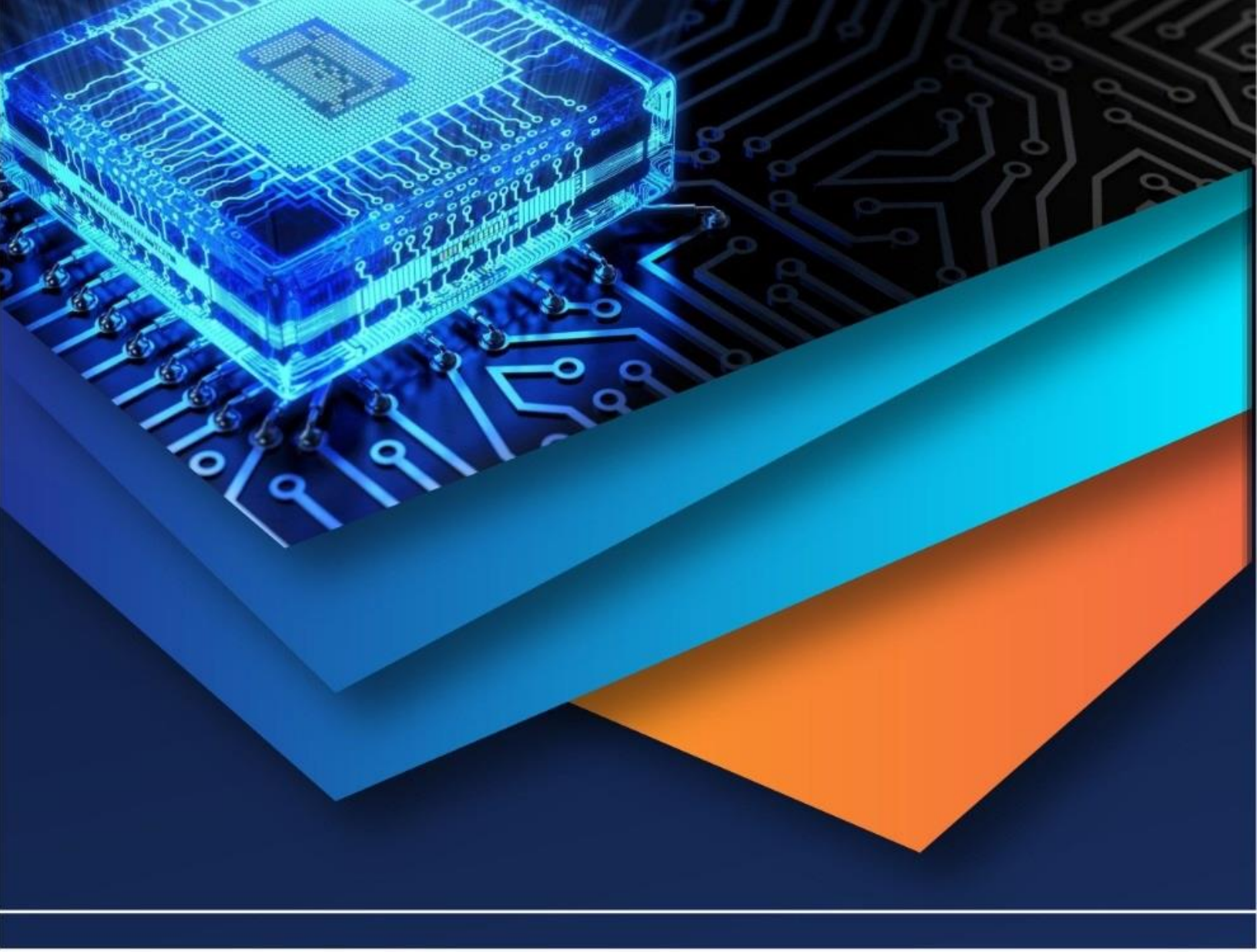
E. Demonstrate appropriate technologies among the rural artisans.

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