

# Work Participation and Income Generation from Sericulture: A Case Study of Alomtola Village of Kaliachak-II Block in Malda District, West Bengal

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**Abstract** Livelihood generation is one of the major potentials of sericulture and silk industry. Sericulture with its high employment potentiality and more income generation in the households itself has been identified as one of the major sources of rural development by empowering women through the financial self-dependent. Men and women have been contributing in all the stages starting from on-farm activities such as Mulberry plantation, indoor rearing of silk worm, feeding the silk worm, processing the cocoons etc. to off-farm activities. This takes one to inspect the proportion of labour in the total labour absorption in the process of sericulture operation to maintain the balance between input and output. Present study has investigated the rate of work participation between men and women in different age groups and earning from sericulture as a livelihood in the Alomtola village of Kaliachak-II Block of Malda District. A structured schedule was designed based on existing literature and used as an instrument for data collection. Collected data had been analysed using standard statistical methods and final conclusion was drawn based on it. Over all work participation rate in sericulture by male workers is 76.15% while the female workers is 84.51%. Exceptionally the difference between male and female participation in the age group below 14 years is higher (26.22%) than the any other age groups. But the difference in participation rate between male and female is below 20 in all the age group of 14-19, 19-30 and above 30 years. In case of income generation from sericulture production, most of the households earn ₹ 5,000- ₹ 15,000 in a particular season leading to an annual income of ₹ 20,000 to ₹ 60,000.

**Keywords:** sericulture, livelihood, income, women empowerment, rural development, Malda District

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## 1. Introduction

Sericulture is an economic activity which includes the production of silk through rearing of silkworm. It includes both on farm as well as off farm activities related to silkworm rearing. Sericulture is a labour intensive, agro based commercially attractive economic activity [1]. Sericulture provides self-employment, quick return and additional income to the farmers especially with small land holdings, marginalized and weaker section of the society. It is an age old practice in India. In due course, most importantly after the independence sericulture has been identified as one of the major means of livelihood particularly in the rural areas of the country. Mulberry sericulture covers 25 states in the country and is practiced in 54 thousand villages, occupying more than 1.8 lakh hectares employing about 7 million people, mainly in the rural areas. India is unique in producing all the four commercial varieties of silk namely Mulberry (*Bombyx mori*), Tasar (*Antheraea proylei*), Muga (*Antheraea assamensis*) and Eri (*Samia ricini*) and stands second

largest producer [1,2,3] with 19,690 MT during the period of 2009-10 accounting for about more than 14% according to [4] and 15.5% by [5] of total raw silk production in the world.

Approximately 8 million families (of these 80% are rural poor) are involved in silk production as part of their livelihood, engaging in sericulture as an agro-based cottage industry. Due to favourable agro-climatic conditions (suitable temperature and humidity), traditional skills and market potential, silk production is mostly confined to states like Karnataka, Andhra Pradesh, West Bengal and Jammu and Kashmir. The predicted demand growth for silk could generate self-employment and remunerative livelihood opportunities for the most disadvantaged sections of society, especially for small and marginal farmers and the landless poor through silk worm rearing, reeling of yarn, weaving of fabric, and value-addition as non-farm activities [3].

Sericulture had been a traditional livelihood activity for rural families of Malda District in West Bengal also. It plays a vital role in the economy of the district. This district shares 75% of total silk production of the state and

6% of country's total [6]. The district has produced 13,086.87 MT cocoon and 1,472.2 MT of raw silk during the last financial (2013-14) year. There are 60,318 farmers engaged in sericulture using 20,789.28 acres of private

land in this district. Sericulture flourished well in the Kaliachak-II Block of Diara region in Malda District of West Bengal which encourages to investigate one of the villages located herein.

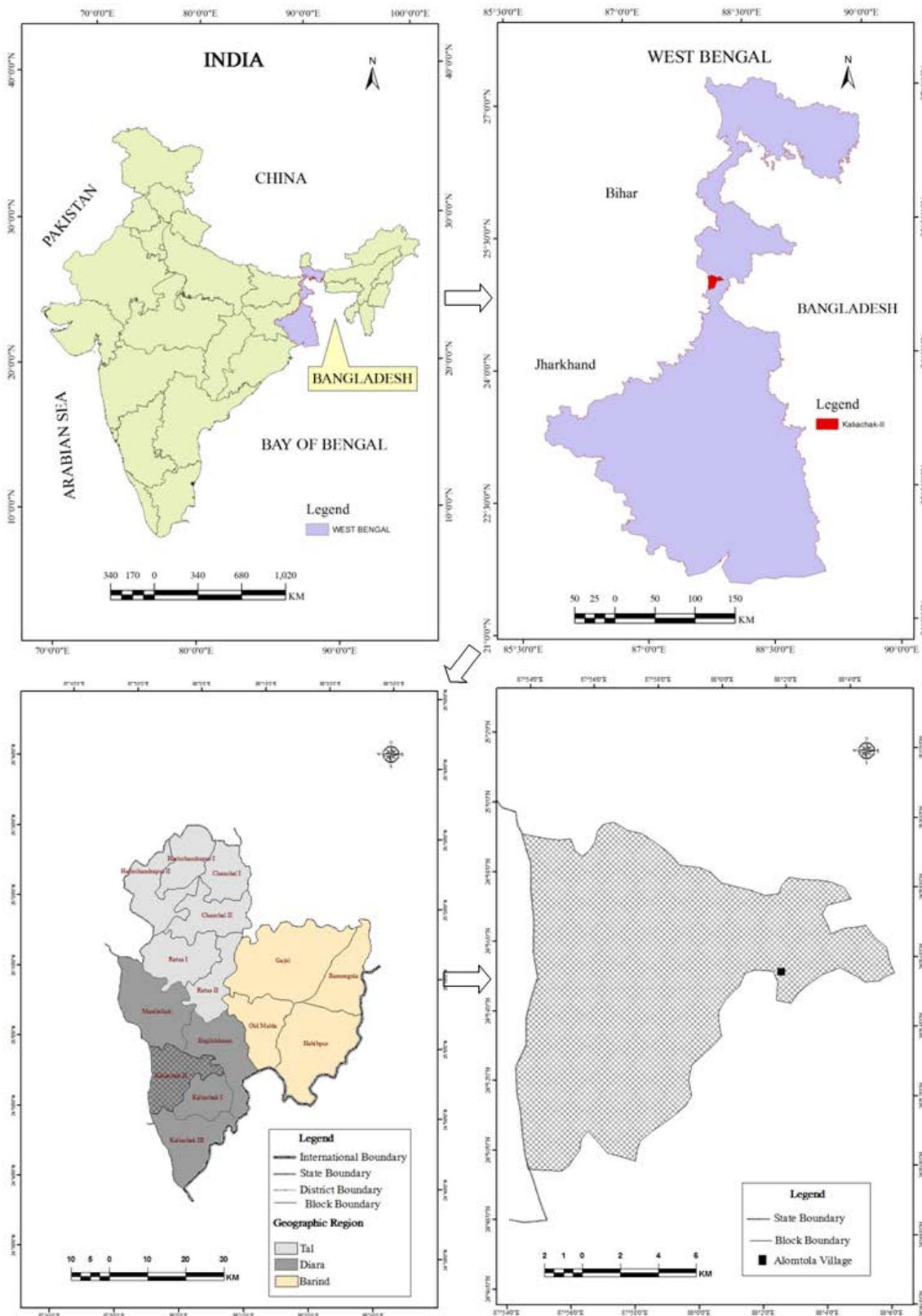


Figure 1. The Location of the Study Area

Labour is a critical factor in the success of sericulture as it is a labour intensive work. A huge manpower is required for sericulture activities throughout the year and the sericulture farmers utilize their family members

particularly the aged persons and women in it. Although the women in agricultural families perform many farm related activities, the pattern of division of labour between men and women varied greatly from regions and activities.

Women are involved in most of the operations in agriculture, including subsidiary enterprises like dairy, poultry, beekeeping, mushroom cultivation, sericulture, fish culture, social forestry etc. [7]. No wonder women play a dominant role in sericulture sector, as the activities are mostly home-based. Women have been contributing in all the stages starting from on-farm activities such as Mulberry plantation for feeding the silk worm, indoor rearing of silk worm [8] to off-farm activities such as decision making, trading and marketing. The importance of sericulture in rural development and utilization of rural women labour force in it is well documented [4].

During 1977-78 the persons employed in sericulture were only 38.06 lakh [9]. During the year 1990-91 about 60, lakh people employed in sericulture activities in the country [10]. In the year 2010-11 the employment in sericulture sector was 72.5 lakh persons (i.e., 52.20 lakh farmers, 3.70 lakh reelers and 16.60 lakh weavers) as compared to 68.17 lakh persons during 2009-10 [1]. As per Census 2011, the workforce participation rate for females is 25.51% against 53.26% for males. Rural sector has a better female workforce participation rate of 30.02% compared with 53.03% for males whereas for urban sector. The participation rate of females trails at 15.44% against 53.76% for males. 41.1% of female main and marginal workers are agricultural labourers, 24.0% are cultivators and 5.7% are household. It is important to learn about participation of Males & Females in Economy, so that corrective decision may be taken for overall economic growth of the Nation. The phenomenon of female economic activity and women's employment in each of these segment are main issues in the economy of all developing nations. The economic activity may be classified as organized and unorganized, each of which may be in the formal or informal sector. Participation of women in economic activities in formal sectors of industries, services and agricultural sector is measurable, but activities of women in informal sectors such as house works, training and education of children, activities in agricultural sectors and household services are unmeasurable [11]. This motivates to inspect the proportion of work done by male and female in the total labour absorption in the process of sericulture operation. The main objectives of this study are (1) to assess the rate of work participation in sericulture among the male and female in different age groups and (2) to analyse the level of income generation among the households from the sericulture.

## 2. Database and Methodology

The Alamtola village of Kaliachak-II Block, Malda District in West Bengal has been purposively chosen for the present study. The village has 342 households (HHs), out of which 58 HHs have been taken for this study as they have been practicing sericulture as a traditional occupation. A pilot survey had been conducted before collecting the primary data to know how many HHs are engaged in sericulture in that village. Primary data has been generated with the help of structured schedule after the pilot survey had done. The data has been processed, analysed using standard statistical tools and presented through various cartographic methods and then interpreted.

Map making is very fundamental and most essential task for the geographers. Maps are used to show locations, distances, directions and size of the study areas [12]. GIS software packages have been successfully used in most recent studies [13,14] of the same author to prepare study area maps. The study area map of this research article has been prepared with the help of GIS software. The location of the study village has also been shown in the map (Figure 1) putting the GPS reading.

## 3. The Study Area

Kaliachak-II Block (Figure 1) is one of the blocks of Malda District in Diara region of West Bengal with a total geographical area of 222.73 square kilometres. The block is surrounded by Manikchak and English Bazar from north, Kaliachak-I and Kaliachak-III from southeast and the states of Jharkhand and Bihar from west. The block is located between 25°N latitude to 24°50' N latitude and 87°55' E longitude to 88°6' E longitude. Total population of the block is 2, 11,406 out of which 9.2% (19,373 persons) scheduled caste and scheduled tribe population. Out of total population 98.17% lives in rural areas and only 1.83% lives in urban areas which clearly indicates that the block is rural in character. The male population is 1, 07,553 and the number of female is 1, 02,552. Sex ratio of this block is 934 and the literacy rate is 46.1% where male and female literacy rate is 53.8% and 41.5% respectively. There are 9 Gram Panchayats and 317 villages in the block. There is only one cocoon market in Kaliachak where the villagers sale their product.

The Alamtola (Figure 1) is a traditionally sericulture practicing village in the southern part of Kaliachak-II Block in Uttar Lakshimpur Gram Panchayat. The village is located almost 10 km away from the district headquarter. There are 342 households in the village. Among the 342 HHs, 58 HHs are engaged in sericulture. This is mainly practised by the weaker section of the village with very small land holding size.

## 4. Results and Discussion

### 4.1. Demographic Structure of Households

Total family members of the sericulture practicing HHs are 293, among them 151 are male and 142 are female. There are 21.19% male and 32.39% female in the age group of below 14, 24.50% male and 11.97% female are in the age group of 14-19 years, 17.88% male and 16.90% female are in the age group of 19-30 years and 36.43% male and 38.74% female are in the age group of above 30 years. Male literacy rate is 82.78% and female literacy rate is 68.31% and overall literacy rate is 76%. Interestingly, 94.83% HHs of the silkworm rearer are Scheduled Caste, 3.45% HHs are General and remaining 1.72% are OBC.

### 4.2. Household wise Work Participation in Sericulture

There are 26 households whose more than 95% of family members are engaged in on farm as well as off farm activities related to sericulture. Seventeen

households have found whose 65% to 80% family members are engaged in sericulture. On the other hand, the family members of eleven households have a share of 50% to 65% involvement. It is worth mention that there are more than 50% engagement of family members in this activity except one household having less than 50% family member involvement. There are 29 households having more than 80% family member engaged in sericulture (Figure 2).

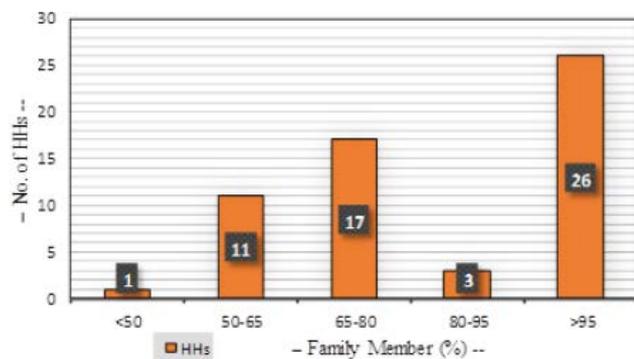


Figure 2. Family member engaged in sericulture

Seventeen households have been found having more involvement by male than the female and other seventeen households have same participation by male and female though it is assumed that women are more dominating than the men. Sixteen households have same ratio of male and female engagement in sericulture. On the other hand, there are fourteen households in the village where the number of female participants are more as compare to male participants in sericulture where two households have only female workers in the sericulture and sericulture related activities (Figure 3).

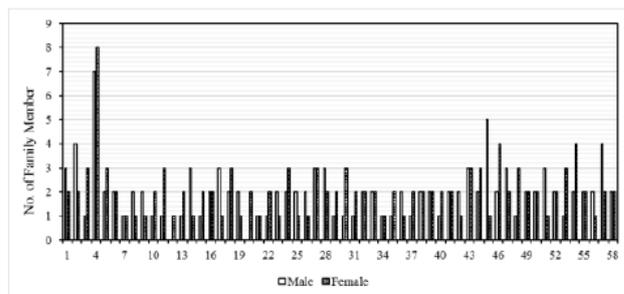


Figure 3. Household wise male-female participants in sericulture

Table 1. Involvement of Family Members of Alomtola Village in Sericulture

Age group (Year)	Male			Female			A ~ B
	Total	Participants	% of Participants (A)	Total	Participants	% of Participants (B)	
<14	32	9	28.13	46	25	54.35	26.22
14-19	37	32	86.49	17	17	100	13.51
19-30	27	22	81.48	24	24	100	18.52
>30	55	52	94.55	55	54	98.18	3.63
Total	151	115	76.15	142	120	84.51	8.36

### 4.3. Age-sex Wise Work Participation in Sericulture

Most of the family members of the sampled HHs are engaged in sericulture practises. It is found that female involvement is more than male in each age group. The significant thing regarding the female participation is that, there is cent percent involvement in sericulture by the two age groups of 14-19 years and 19-30 years while 98.18% are engaged in the age group of above 30 years. On the other hand, the male engagement in sericulture activities significantly differs from female participants. Only 86.49% of male are engaged from the age groups of 14-19 years against the 81.48% percent involvement of female in the age group of 19-30 years. There is a difference of 3.63% in participation among female (98.18%) and male participants (94.55%) for sericulture activities in the age group of above 30 years. It is important to note that more than 50% of female participants are found in the age group below 14 years which is a dependent segment of the population and they are considered as child labour if they are engaged in any economic activities. Over all work participation rate in sericulture by male workers is 76.15% while the female workers is 84.51%. Exceptionally the difference between male and female participation in the age group bellow 14 years is higher (26.22%) than the any other age groups. But the difference in participation rate

between male and female is below 20 in all the age group of 14-19, 19-30 and above 30 years as shown in Table 1.

### 4.4. Production and Income Generation

All the sampled households are able to rear silkworm 2-4 times in a year (Figure 4. A&B). The households of the village have produced 2,120 kg of cocoon in the second season of 2013-14. Average selling price of per kg cocoon was ₹ 253.52 and the average earning was ₹ 9,266.6 per HHs. However the production and the selling price have been highly variable for each and every HHs. The maximum number of HHs has produced 20 to 60 kg of cocoons. The 13.79% HHs have produced less than 20 kg and their calculated earning was below 5,000; 37.94% HHs produced 20-40 kg having a calculated earning of ₹ 5,000-10,000; 34.48% HHs produced 40-60 kg having calculated earning of ₹ 10,000-15,000; 8.62% HHs produced 60-80 kg having calculated earning of ₹ 15,000-20,000 and remaining 5.17% HHs have produced above 80 kg having calculated earning of more than ₹ 20,000. The 72.42% of HHs have produced 20-60 kg of cocoons where 13.79% HHs have produced more than 60 kg of cocoons in the village. If the villagers practise sericulture for four times in a year the production can be increased up to 80-320 kg per households and the earning of every households may potentially rise up to ₹ 20,000 to ₹ 80,000 in a year as shown in Table 2.

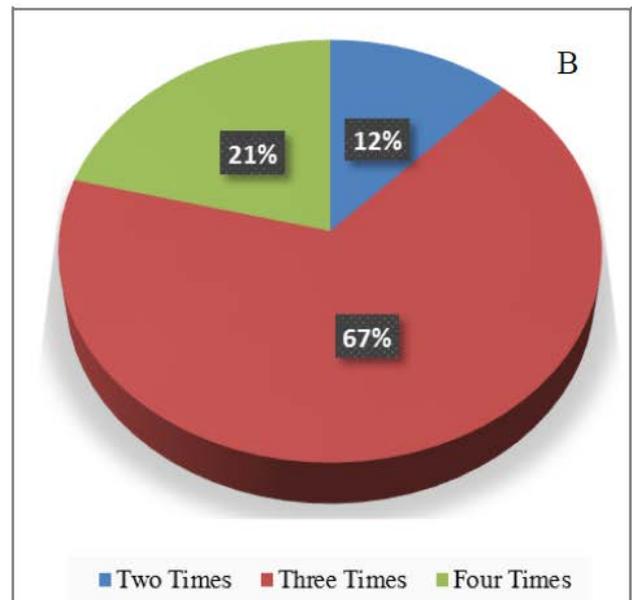
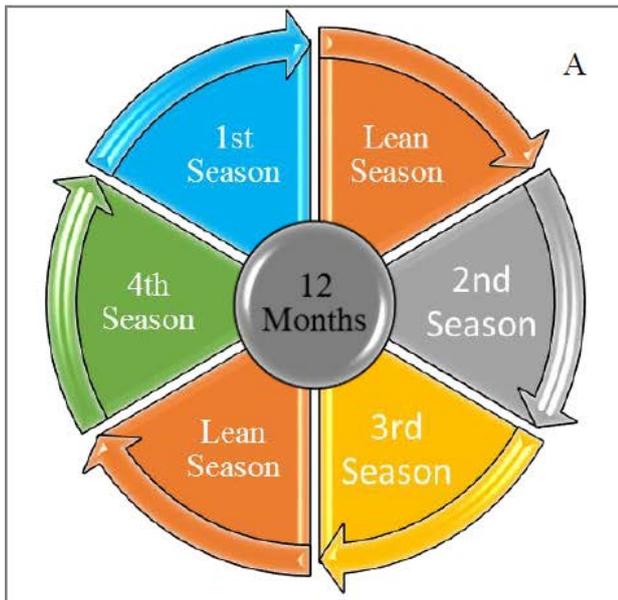
**Table 2. Calculated earnings of HHs based on production level**

Production in kg (A)	% of HHs	Average Price (B)	Calculated Earning for one Time (A×B) (C)	If Produce for Maximum Times (D)	Calculated Maximum Earning (C×D)
<20	13.79	250	<5,000	4	<20,000
20-40	37.94		5,000-10,000		20,000-40,000
40-60	34.48		10,000-15,000		40,000-60,000
60-80	8.62		15,000-20,000		60,000-80,000
>80	5.17		>20,000		>80,000
Total	100		-		-

**4.5. Season and Number of Silkworm Rearing and Percentage of Households**

The sericulture can be practised for four times in four different seasons in a year as per the view of respondents (Figure 4). The first season starts from April to May followed by second season from August to September, third season from October to December and fourth or last season from February to March. For the villagers first season of rearing starts from mid of April and ends at second week of May, second season continues from second week of August to first week of September, the

length of third season is from last week of October to first week of December and the last season of rearing continues from last week of February to First week of April. There are two lean seasons in the sericulture calendar of the year. The first lean season lies between the first and second season and the second lean season lies between third and fourth season (Figure 4. A). The sampled HHs of the village have practised sericulture for 2-4 times in a year. The maximum HHs (67%) of the village reared 3 times in a year. The 21% of HHs reared for 4 times and 12% of the HHs reared only twice in a year (Figure 4.B).



**Figure 4.** A-The seasons of Sericulture in a year, B- Number of rearing in a year and Percentages of HHs

**5. Conclusion**

There is more participation in sericulture by female in every age group in the Alomtola village. The rates of participation in the age group of below 14 years are 28.13% and 54.35% for male and female respectively which is most astonishing fact of the village as this segment of population is considered as the child labour in India. This figure highlights another fact that the female participant is 26.22% more than the male participant. In case of income generation from sericulture production, most of the households earn 5000-15000 in a particular season leading to an annual income of 20,000 to 60,000 though it is basically considered as subsidiary household economic activity. Sericulture with its high employment potentiality and more income generation has been found

as one of the major modes of rural development. All family members, irrespective of gender and age, can contribute to the success of sericulture and, in this sense, it can be considered a home-based industry.

**Statement of Competing Interest**

The author has no competing interest.

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