

Employment Generation to Women in Drought Prone Areas: A Study With Reference to the Development of Sericulture in Anantapur District of Andhra Pradesh

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ABSTRACT The paper presents the details of employment generation through sericulture activity in drought prone area where ninety per cent of the district population subsists on agriculture .It focuses mainly on the employment of women in the activity which can be easily performed by them. It also emphasizes on the income generation through the activity. It also presents a comparison of generation of employment by other crops .The author also presents few suggestions for the development of sericulture in the district .The study assumes significance in the context of employment generation to women in drought prone areas where the non farm employment opportunities barely exist in the district.

India lives in villages as the Indian rural sector is one of the biggest rural sectors in the world after China, with over 74 per cent population living in rural areas. Although self sufficiency in food has been achieved at the national level, food security at the household level has not been reached. The high and persisting incidence of poverty among the rural labour has been caused by degree of unemployment and under-employment in rural areas, low asset base and illiteracy etc. In India more than 90 percent of labour force is employed in unorganized sector i.e., sector which don't provide with social security and other benefits of employment as in the organized sector. In rural areas agricultural workers form the bulk of the unorganized sector. In addition there also exist large scale disguised unemployment and under employment in the agricultural sector. While labour is abundant, the problem lies in the inability of the economy to provide gainful employment to the entire working population.

Women constitute more than fifty per cent of the world's population, one third of the labour force, and perform nearly two thirds of all working hours. It is estimated that India is the home to 12.7 crores working women and 90 per cent of them are working in the unorganized sector. (Census of India, 2001). Women are mostly found in marginal and casual employment and that also mostly in agriculture and the growing informal sector. Women are overwhelmingly concentrated

in agro- based/household-based activities (where they often serve as unpaid family labour) such as dairying, fisheries, small animal husbandry, handlooms, handicraft, social forestry and sericulture.

Anantapur district in AP receives only 52 cm of annual rainfall which is erratic in nature, the economy is based on rain fed agriculture. Just 7 per cent of the cultivated land is under assured irrigation. About 90 per cent of the dry land is cultivated with groundnut monocropping between the months of July and November. Frequent droughts resulting in crop failure has increased the debt burden of the farmers to such an extent that even big farmers have been driven below the poverty line. Ninety per cent of the district population subsists on agriculture .There are no other proper alternative employment generation programmes. Agriculture itself cannot support such high population on full time basis, while non farm employment opportunities barely exists in the district.

In such a situation, sericulture is one of such activity, where most of the activities are carried out by women alone. Though various studies were conducted by the researchers on the participation of women in Developmental Programmes and their role in Sericulture development, very few studies were carried out in view of employment generation to women through sericulture . The studies with reference to the role of women in sericulture in drought

prone regions assume significance in the context of meager employment opportunities and low status of women. Hence, the present study has been taken up.

The present study is important in assessing the employment opportunities those exist for women in drought prone areas. Sericulture plays a unique role in India's economy by improving the income of the rural people. Sericulture is labour intensive and as such it generates lot of employment opportunities for the rural population with limited source of irrigation. Sericulture has been fully recognized as one of the important rural agro-based industries in India. It has attained the status of household industry. It is a labour intensive, export oriented, agro-based industry, generating high employment and income per unit area of land. For instance, one hectare of mulberry plantation and silk worm rearing (sericulture) generates employment to nearly 13 members through out the year unlike in agriculture. Sericulture activity indirectly generates employment opportunities through silk reeling, twisting, dyeing, weaving, printing etc; and generates a net income of Rs.20000. Nearly 60 per cent of the people employed in the industry are women. Chelladundi (1999) in his study on 'Employment generation in Sericulture' concluded that sericulture provides two types of employment 1.Direct – mulberry cultivation and cocoon rearing 2.Indirect –Reeling, twisting, warping, dyeing and weaving. The role of sericulture in generating employment and income is discussed in a very clear-cut manner. The criterion of employment and income in silk reeling units is also dealt with Radha Krishna et al. (2000) in their study on 'Silk and Milk- an economic package for rural upliftment' explained that an acre of irrigated mulberry generates as much as one lakh rupees per year through transaction of cocoons and provide full employment to a minimum of 5 men through out the year.

METHODOLOGY

The multi-staged random sampling method is adopted for the purpose of the study. The department of sericulture has divided the district into six revenue divisions based on the sericulture development. The top two revenue divisions which are having highest acreage i.e., Hindupur and Madakasira have been selected at the second stage. Five villages in each revenue division have

been chosen which have highest acreage of sericulture. Thus, a total of ten villages have been considered for the purpose of study.

In the final stage, in each selected village, 30 sericulture growing households and 15 non-sericulturists households have been considered for the study. Thus the study respondents comprise '300' women in sericulture growing households and '150' women in non sericulturists households for the purpose of the study. In order to select the women respondents, simple random sampling method has been used. As mulberry is cultivated under irrigated conditions, the data has been collected from the cultivators of the irrigated land either leased or owned. A well structured interview schedule was used to collect data from the sample households

Tools of Analysis: The data collected through the schedule has been classified and tabulated into many tables for analysis purpose. Simple statistical tools like averages, percentages, Chi-square etc.; have been used wherever necessary to analyze the data.

RESULTS AND DISCUSSION

Sericulture generates a chain of economic activities providing employment opportunities to the people in rural, urban and semi-urban areas. Through sericulture the incidence of unemployment, disguised unemployment and seasonal unemployment is relieved to some extent, especially in the agricultural sector. Employment opportunities in the sericulture can be classified into agricultural and industrial according to their nature. Mulberry cultivation, silkworm rearing and cocoon production are agricultural and can be taken up in rural areas. Silk reeling, twisting, weaving, dyeing etc., are industrial activities and can be undertaken in urban and semi-urban areas. In this section, an attempt is made to analyze the involvement of women labour in various operations from planting of mulberry to cooking of harvested cocoons.

The labour involvement in sericulture activity per crop of sericulture that can be reared from one acre of mulberry has been presented in the Table 1

Table 1 reveals that the establishment of one acre mulberry garden for rearing 300 dfls of silkworms in two months generates 96.36 man days of employment, of which 72.70 per cent are being women labourers. It is also clear that the

Table 1: The labour involvement per crop of silkworms reared from one acre of mulberry

Operation	Labour in man days								
	Male			Female			Total labour/crop		
	Madakasira	Hindupur	Total	Madakasira	Hindupur	Total	Madakasira	Hindupur	Total
Field preparation	5.34	4.91	5.13	2.66	2.72	2.69	8	7.63	7.82
Planting	3.89	4.3	4.09	6.74	6.24	6.49	10.63	10.54	10.6
Fertilizer application	1.55	1.98	1.76	2.77	3.12	2.95	4.32	5.1	4.71
Weeding	3.19	2.98	3.08	10.81	11.56	11.2	14	14.54	14.3
Leaf harvest and chopping	1.15	2.3	1.73	3.31	4.1	3.7	4.46	6.4	5.43
Transport of mulberry leaves	2.33	1.9	2.15	10.08	11.42	10.8	12.41	13.32	12.9
Cocoon sorting for seed	0.06	0.05	0.16	2.1	2.12	2.11	2.16	2.17	2.16
Cocoon cutting and sexing	0	0	0	1	1	1	1	1	1
Egg incubation	0	0	0	1	1	1	1	1	1
Rearing	1.64	1.91	1.78	7.23	7.03	7.13	8.87	8.94	8.91
Brushing	0.13	0.21	0.17	1.93	1.93	1.93	2.06	2.14	2.1
Feeding	2.91	3.1	3	6.86	7.01	6.93	9.77	10.11	9.94
Transfer to chandrikas	1.15	1.76	1.45	6.11	5.92	6.01	7.26	7.68	7.47
Cocoon sorting	1.34	1.8	1.57	4.32	4.7	4.51	5.66	6.5	6.08
Mounting and cooking	0.39	0.32	0.35	1.61	1.73	1.67	2	2.05	2.02
Total	25.07	24.42	26.3	68.52	64.59	70.1	93.59	99.12	96.4

Source: Field data.

involvement of women is higher in all activities of sericulture when compared to men except in field preparation of mulberry. Cocoon cutting and sexing, and egg incubation are done exclusively by women labourers (100 per cent).

Weeding, transport of mulberry leaves to the rearing sheds and rearing of worms are the important activities where women's involvement is higher creating an employment of 11.18, 10.75, and 7.13 man days per crop respectively to the women with no much variation between Madakasira and Hindupur.

Feeding of worms and Planting of mulberry creates an employment of 6.93 man days and 6.49 man days per crop to the women. Transfer of worms to chandrikas, cocoon sorting and leaf harvest and chopping are the other important activities which creates an employment of 6.01, 4.51 and 3.7 man days respectively to the women.

Preparation of the field for growing mulberry creates an employment of 7.81 man days of which 5.13 man days are for men and 2.69 man days are for women. This is the only activity where employment of men exceeds women of all the activities with no much variation between Madakasira and Hindupur.

Thus, weeding, transport of mulberry leaves

to the rearing sheds and rearing of worms are the important activities where women's involvement is higher creating an employment of 11.18, 10.75, and 7.13 man days per crop respectively. Preparation of field for mulberry growing is the only activity where the percentage of men labour involved exceeds women labour involvement.

Table 2 gives us a detailed account of annual labour involvement in sericulture for rearing silkworms from one acre of mulberry. In a year the whole sericulture activity including mulberry cultivation and silkworm rearing creates an employment of 481.79 man days. Out of this, 72.70 per cent activities were being carried out by women labour indicating higher involvement of women in the activity. In a district like Anantapur, where non-farm employment opportunities are very meager and farm employment is uncertain as the district is drought prone, sericulture proved to be an important activity enhancing the work participation of women in economic activity. The diagrammatic representation of annual labour involvement in sericulture for rearing silkworms from one acre mulberry has been presented in figure 1.

A brief account of comparison of labour involvement in sericulture and other activities/

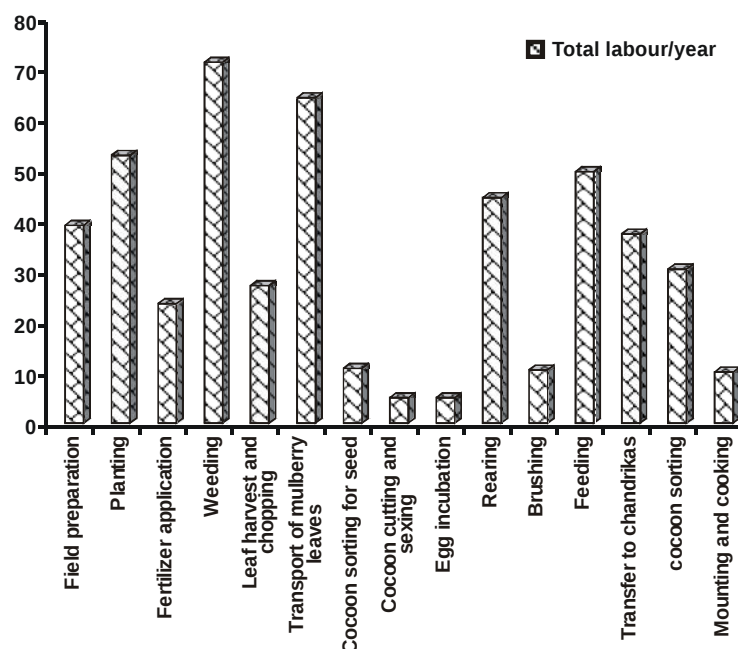


Fig. 1. Annual labour involvement in sericulture for rearing silkworms from one acre of mulberry

Table 2: Annual labour involvement in sericulture for rearing silkworms from one acre of mulberry

Operation	Total labour/year in man days		
	Madakasira	Hindupur	Total
Field preparation	40	38.15	39.06
Planting	53.15	52.7	52.92
Fertilizer application	21.6	25.5	23.55
Weeding	70	72.7	71.35
Leaf harvest and chopping	22.3	32	27.15
Transport of mulberry leaves	62.03	66.6	64.32
Cocoon sorting for seed	10.78	10.87	10.84
Cocoon cutting and sexing	5	5	5
Egg incubation	5	5	5
Rearing	44.35	44.7	44.53
Brushing	10.3	10.7	10.5
Feeding	48.85	50.55	49.7
Transfer to chandrikas	36.3	38.4	37.35
Cocoon sorting	28.3	32.5	30.4
Mounting and cooking	10	10.25	10.12
Total	467.96	495.62	481.79

Source: Field data.

crops has been presented in the Table 3. From the table it may be observed that sericulture activity is generating an average of 481 man days per annum with slight variation between Madakasira

Table 3: Average number of man days generated through sericulture and other activities /crops per year (per acre)

Activity/crop	Madakasira	Hindupur	Total
Sericulture	467	495	481
Dairying	228	206	217
Paddy	170	136	153
Groundnut	142	128	135
Ragi	104	116	110

Source: Field data.

and Hindupur followed by dairying with an average of 217 man days. Thus we can say that sericulture activity is generating more than twice the employment than that of other activities like dairying. The average number of man days generated through sericulture and other activities/crops per year (per acre) has been diagrammatically represented in figure 2.

Thus, 72.70 per cent activities in sericulture are being carried out by women labour indicating higher involvement of women in the activity. Sericulture is generating an average annual employment of 481 man days which is more than double than that of other activities indicating enormous employment generation potential of sericulture activity.

The average income particulars of sericulture

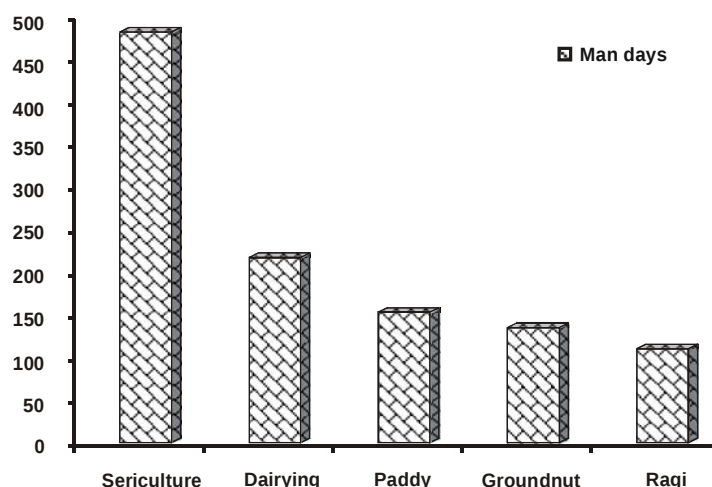


Fig. 2. Average number of man days generated through sericulture and other activities /crops per year (per acre)

from one acre of mulberry are presented in detail in Table 4. From the table it is clear that an average amount of Rs.39134.93 can be obtained as a net income per annum the amount being high in case of Hindupur (Rs.40288.88) compared to Madakasira (Rs.37980.97). From one-acre leaf of mulberry, around 300 dfls of silkworm can be reared. In the sample households, the average production of cocoons from one acre was only 119.65kg/crop. The production was slightly higher in Hindupur (118.95 Kg) compared to Madakasira (120.35 kg/crop). Generally, one life cycle of silkworm completes in 2 months. On an average, a sericulturist grows 5 crops per annum. In sample respondents also, 99 per cent are raising 5 crops per annum.

Thus, the average cost of production of sericulture from one acre of mulberry per annum is Rs.33081 and the average gross income is

Rs.72216.88. So, a net amount of Rs.39134.93 can be obtained per annum through the sericulture activity. The amount of income that could be obtained from cultivation of mulberry in one acre and raising of silkworm provides higher income when compared to other crop which is one of the motivating factors in taking up sericulture.

Distribution of Sample Respondents according to their Income from Sericulture: The distribution of the sample respondents based on their income from sericulture is detailed in Table 5. From the table, it is revealed that almost 64.33 per cent of the respondents have earned an annual income of above Rs.30000. The percentage being high in Hindupur (66.00 per cent) compared to Madakasira (62.67 per cent). The average income per household from sericulture was Rs.39134.93 as mentioned earlier. Only 18.67 per cent of the households got their income less

Table 4: Average income particulars for rearing of silkworms from one acre of mulberry plantation

Particulars	Madakasira N=150 Value	Hindupur N=150 Value	All member N=300 Value
Yield/ crop	118.95Kg	120.35Kg	119.65Kg
Market rate/Kg	Rs.120.10	Rs.121.32	Rs.120.71
Total income/crop	Rs.14285.89	Rs.14600.86	Rs.14443.38
Total cost / crop	Rs.5100.23	Rs.4975.84	Rs.5038.035
Total income/annum	Rs.71429.45	Rs.73004.30	Rs.72216.88
Total costs / annum (5 crops/annum)	Rs.33448.48	Rs.32715.42	Rs.33081.95
Net income/ annum	Rs.37980.97	Rs.40288.88	Rs.39134.93

Source: Field data.

Table 5: Distribution of sample respondents from their income from sericulture

Range of income (in Rupees)	Percentage of respondents		
	Madakasira	Hindupur	Total
Less than 20000	18	19.33	18.67
Between 20000 and 30000	19.33	14.67	17
Greater than 30000	62.67	66	64.33
Total	100	100	100

Source: Field data.

than Rs.20000 per annum from the activity.

Thus, a majority of 64.33 per cent of the respondents are earning their net annual income of more than Rs.30000 from sericulture activity.

The average annual family income including income from sericulture has been presented in the Table 6. It may be observed from the table that there is a significant variation in the income levels of sericulturists and non-sericulturists with no much variation between Madakasira and Hindupur. The average annual income of the sericulturists was Rs.59974.28 and that of non-sericulturists was only Rs.26149.04 indicating higher income levels of sericulturists of which the income from sericulture was highest among all other sources of income. The highest and lowest incomes of the respondents respectively are Rs.95550 and Rs.30200 respectively.

Thus, the average annual income of the sericulturists was Rs.59974.28 and that of non-sericulturists was only Rs.26149.04 reflecting enhanced income levels of sericulturists by adoption of sericulture activity.

CONCLUSIONS

Sericulture proved to be an enterprise which has potentiality to create vast employment opportunities to the women in rural areas

especially in drought prone areas, where there is no scope of non-agricultural employment generation. Development of sericulture in such areas would have influence on the creation of more employment opportunities without disturbing the ecology and environment. Sericulture development brought significant changes in the income levels of the small farmers and also higher profitability though the fluctuations in prices are limiting the profitability. Further, due to adoption of sericulture, debts have been decreased and inculcated the habit of savings.

SUGGESTIONS

In view of the problems encountered by women in particular and their counterparts in general in the activity such as high fluctuations in cocoon prices, pests and diseases, on availability of layings, climatic disturbances, inadequate finance for investment, inadequate market facilities, exploitation by middlemen, transportation problem, shortage of skilled workers and health problems like giddiness, burning of eyes, backache and fatigue and other related problems, following suggestions have been made for the overall development of sericulture in general and for ensuring effective participation of women in sericulture in particular.

- The sericulture activity can be practiced only under irrigated conditions. The area of drought prone nature, where the average rainfall is comparatively very low, optimum utilization of water is more essential not only to have more crops per year but for sustainable employment, production and income also. In order to make use of the available water resources effectively and optimally, the development functionaries

Table 6: Average annual family income of the respondents including income from sericulture

Source of income	Average annual family income of the respondents in Rupees (Including income from sericulture)					
	Sericulturists			Non-sericulturists		
	Madakasira N=150	Hindupur N=150	Total N=300	Madakasira N=75	Hindupur N=75	Total N=150
Agriculture	18776.7	19120.5	18948.9	18820	17799	18309.5
Agriculture labour	1010	1120.23	1065.12	1593.33	1601.25	1597.29
Dairy	2116.67	1985.65	2051.66	4116.67	4200.33	4158.5
Services	2753.33	2495.01	2624.17	2173.33	1994.21	2083.77
Sericulture	32924.8	37644.2	35284.5	-	-	-
Total	57581.5	62365.6	59974.3	26703.3	25594.7	26149

should advice and encourage the farmers for adoption of drip and sprinkler irrigation methods with necessary incentives.

- Higher fluctuations in cocoon prices are limiting the farmers from derivable higher profits, which arise due to heavy import of China silk. Government should take necessary policy decisions to safeguard the farmers from these fluctuations of prices by reducing the imports of china silk based on the supply and demand of Indian silk.
- Various women friendly technologies were developed by Central Silk Board such as shoot rearing, gas lights for removal of dead worms from mountages, fabricated pedal cum motorized reeling and twisting machines. Creating awareness and demonstration in this regard should be done through proper extension services at region specific levels. Moreover, these types of technologies should reduce the drudgery utilization of human resources (especially women). Further, the technology should enhance the skills and talents in order to increase the productivity. The technologies should be economically viable, technologically feasible and adoptable, environmentally sound and should fit in the socio-economic fabric of the rural communities.
- Involvement of women in marketing is almost insignificant in the district. Participation of women in marketing will motivate the women producers on the quality aspects due to demand in market which ultimately leads to

quality consciousness and higher productivity. Marketing know-how should be provided for women with proper incentives.

- There is also need to provide training to the women on bivoltine rearings and other high yielding techniques.
- There is also need to increase the access of the women sericulturists to the inputs such as credit for the development of good infrastructure for higher productivity (such as Jica system of rearing) so as to enable them to derive higher income from sericulture and contribute to the well being of their family and to the national income. Institutional financial assistance can be given to attract more women to participate enthusiastically and effectively in the activity of sericulture.

REFERENCES

- Census of India. 2001. *Primary Census Abstract*. New Delhi: Planning Commission.
- Chelladundi, A. 1999. "Employment Generation in Sericulture." *Khadi Gramodyog*, 38(1): 20-22.
- Devasurappa. 2000. "Problems of Women in Sericulture." *Indian Silk*, Sept. pp.20-22.
- Gita Sen and Chiranjib Sen. 1985. "Women's Economic Work and Economic Activity." *Economic and Political Weekly, Review of Women Studies*, 20(17): 18-22
- Radha Krishna, P.G., B.M.Sekharappa and V.G. Manibashetty. 2000. "Silk and Milk – an Economic Package for Rural Upliftment." *Indian Silk*, Sept. pp.11-12.
- Uma Rani, A. 1998. "Reaching Women farmers: Strategies." *Extension Digest*, 16 (1): 8-10