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Impact of sericulture development project in district Bilaspur of Himachal Pradesh

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Abstract

The study reveals that raising mulberry farm, establishing Chawki rearing centre and cocoon markets have been very effective in enhancing the utilization of silk seed by over four times and the cocoon production by five times over a period of four years (2010-11 to 2013-14). Besides, the awareness level of farmers in sericulture technology was assessed to the extent of 45% through training and exposure visits. The sericulture project has further impacted in terms of raising income and employment of beneficiaries to the extent of 2 and 11%, respectively. However, inadequate financial support for constructing silk worm rearing shed and low average yield of cocoons per ounce of seed due to inadequate supply of mulberry leaves need special attention to harness the potential and achieve set targets of the project timely. The study emphasize some policy interventions viz.; enhancing the supply of mulberry leaves in combating the shortage by expanding area at individual and community level and developing irrigation infrastructure for existing mulberry plantations. Secondly, the financial support need to be enhanced for constructing silkworm rearing house with reasonable financial support to the extent of at least Rs 1 lakh. Education of beneficiaries through training camps and exposure visits be continued and strengthened for updating & up- scaling their skill and capacity building.

Key words: Mulberry, silk worm, cocoon, impact, livelihood.

Introduction

Sericulture has now assumed a great importance as a premier village & cottage industry among the agrarian community in the state that has adopted it as a subsidiary occupation to supplement their income. Sericulture generates 07 lakh mandays employment for the rural people of the state. Currently, sericulture provides a fairly remunerative occupation to over 9000 families in 1836 villages and its major concentration is found in Bilaspur, Mandi, Hamirpur, Kangra, Una and Sirmour Districts. During 11th plan period and latter (2007-08 to 2012-13), silk cocoons production registered growth of 12.50% p.a (Table 1), which has been 183.76 metric tonnes during 2012-13 (Chauhan, 2013). The revenue earned from sericulture during this period recorded a phenomenal growth of 47.39% p.a. The growth in number of rural families adopting sericulture was found to be 1.46% p.a. Similarly area under mulberry tree plantation also observed increase in growth to the extent of 18.81% which was 685 ha in 2007-08 and

Table 1. Trends in production, revenue and employment generation of silk industry

Year	Green cocoon production (MT)	Raw silk production (MT)	Value (Lakh Rs)	Employment to rural families (No.)	Pvt. silk yarn reeling units	Area under mulberry (ha)
2006-07	142.08	17.7	200.25	8275	03	-
2007-08	105.00	13.1	148.30	8385	04	685
2008-09	152.29	19.5	234.00	8450	05	738
2009-10	152.75	19.75	306.00	8606	06	766
2010-11	149.40	19.20	502.80	8634	06	1039
2011-12	180.32	22.54	597.00	9044	08	1249
2012-13	183.76	23.20	570.00	9116	09	1458
CGR (% p.a) 2008-13	12.50	12.85	47.39	1.46	20.83	18.81
CGR (% p.a) 2007-13	4.19	4.44	26.38	1.45	28.57	-

Source : Industries Department Website

increased to 1458 ha during 2012-13. Among the districts practicing sericulture, district Bilaspur is the biggest producer of silk-cocoons, sharing 35% production followed by Mandi (25 %), Kangra (22 %) and Hamirpur (16 %).

The Department has set-up Sericulture Divisional Offices (SDOs) to look after sericulture development in the districts. From infrastructure point of view and following a systematic approach extensively in the potential areas, the Department has further set-up Sericulture Extension-cum-Chawki Centres. These sericulture centres conduct incubation of silkworm eggs, young age rearing and distribute chawki-reared silkworms to the farmers for late age rearing for production of silk cocoons, besides distributing mulberry saplings and providing technical guidance to the sericulturists. In Bilaspur, Kangra, Mandi and Hamirpur district, there are silk reeling units functioning in the private sector for production of bivoltine raw silk. During 11th plan period (2008-09 onwards), the sericulture wing of Directorate of Industries, Govt. of Himachal Pradesh, implemented sericulture project namely Special Central Assistance (SCA) scheme of Central Silk Board (CSB) at Jakatkhana, Tehsil & development block Sri Naina Devi, district Bilaspur. The activities of the project include; mulberry sector, mulberry seed sector, mulberry post cocoon sector and service sector. This project got implemented in 12 villages where majority of the people belong to scheduled castes comprising Harijan, Doomna, Kabirpanthi, Daulla, etc.

Keeping in view the importance of sericulture, the present study pertained to documenting the history of sericulture development in Bilaspur in general and Jakatkhana in particular; examining component wise physical & financial achievements of SCA sericulture project and its impact in terms of income enhancement, employment generation, health & education improvement, assets creation or capital formation and of course the social an economical empowerment of beneficiaries.

Materials and Methods

This research paper is an attempt to study impact

evaluation of sericulture development project in District Bilaspur of Himachal Pradesh. The study can be classified a research work based on primary as well as secondary data. Random sampling method was used to approach the beneficiary households in seven inhabited villages of Jakatkhana area. A random sample of 30% beneficiaries was chosen in seven (7) villages from a list of 100 beneficiaries. The primary data on various socio economic aspects were collected during January, 2014 from the beneficiaries receiving full package of assistance for mulberry saplings, separate rearing shed, rearing equipment, etc and other stakeholders using well-designed and pre-tested formats following personal interview method/technique. Analysis of the data was made by using descriptive statistics and appropriate statistical techniques like cross tabulation, percentages, averages and trend analysis.

Results and Discussion

Success of sericulture in Bilaspur followed by Jakatkhana

Taking lesson from history, Raja Anand Chand during king's rule introduced sericulture in Bilaspur. It was Raja Anand Chand's most favorite and unforgettable development programme that he implemented in Bilaspur. He studied the subject thoroughly. As the climate and soils of Bilaspur were favourably ideal for the production of silk, he was convinced that the sericulture could lift the people from the abyss of poverty. So, he put his heart and soul into the subject and concentrated his energy for the spread of this programme. He used to explain to the people its importance in their economic well-being.

To begin with, he planned to cover about 25% of the total families in the state. It was legislated that no one could cut or fell mulberry trees. A sericulture expert, Mr. Kaul from Kashmir was employed. It was planned that the marketing section would cooperate with Bilaspur commercial cooperation and ensure that the Bilaspur coarse and fine silk and, later, silk fabrics become popular at the earliest, that it fetched the highest price available, that the product was standardized and in quality met the demands of the time and that the packing and transport was properly managed. The silk section was to develop and establish direct connections with leading and reliable firms dealing in silk and silk fabrics in India. Legislation was already taken up for the control of marketing. The department was expected to arrange technical training for the local staff in India and abroad and to assist requirement of temporary and permanent personnel in time as and when necessary. It was also planned to set distinct and latest processing machinery. Before the plan could be fully implemented, India got independence and likewise the Bilaspur state was also merged with Himachal Pradesh. Raja Anand Chand ceased to control the reins, however, the cultivation of silk continued.

Likewise sericulture became prominent in many parts of district Bilaspur since its beginning made by Raja Anand Chand in his kingdom - the Bilaspur state. The success stories of sericulture after reorganisation of states and formation of new districts in Himachal Pradesh were spread in each and every nook of the district. The creation of Bhakra dam popularly known as Gobind Sagar in mid 1960s impacted the livelihood of many areas of the district on account of loosing land and restraining their mobility and personal connectivity with their fellow villagers. Jakatkhana area a part of Kot Kahloor state of ancient time, now situated on the bank of Gobind Sagar dam at a distance of about 45 km falling in Sri Naina Devi constituency earlier Kot Kahloor was one of the areas where sources of livelihood mainly relying on rain-fed agriculture, further impacted their livelihood to a greater extent. Some of the households in dam affected villages and belonging to traditional fishermen could involve themselves intensively in reservoir capture fishery managed through fishery co-operatives. However, majority of the people who were living below poverty line raised their voice before local Member Legislative Assembly (MLA)

and minister in the congress regime Sh. Ram Lal Thakur (2002-2007) for introducing sericulture for their economic upliftment. Since majority of the poors belonged to scheduled castes comprising Daulla, Doomna, Kabirpanthi, Draei, Harijan etc; the sericulture project was prepared and got cleared from both the state govt and CSB as SCA for the benefits of scheduled castes. Initially it was supposed to cover 100 households with its headquarters at Jakatkhana. Likewise a Special Central Assistance (SCA) project for sericulture at Jakatkhana has been operating its activities since 11th Five Year Plan period through SHGs.

Today Bilaspur is still one of the leading districts in the production of silk. There are 12 government sericulture centers in the district. Each centre provides technical assistance and also quality hatched silk worms to the farmers. Bilaspur sericulture division at Ghumarwin produces 35% of the total cocoon production of the state and generates to the farmers an income of about Rupees 200 lakh per annum (Chandel, 2007).

The detailed analysis reveals that almost all the physical and financial targets of SCA project were achieved. The impact of all the activities has been in positive direction as far as knowledge awareness of beneficiaries, the mulberry plantation and cocoon production through improved rearing equipments is concerned. However, the proposal for constructing specified model silk worm rearing shed could not transform into its reality due to paucity of funds disbursed to beneficiaries. Only two sample households had constructed separate rearing house mainly from their own financial resources and whatever assistance received from the department. The survival rate of mulberry plants was not only low in the area but their growth was also slow because of poor texture (rocky and stony) of soil.

The use of silk seed, cocoon production per household and its average yield were found rising. The cocoon production in the project area recorded highest growth rate of 105% p.a during 4 years of project period (Table 2 and Fig 1). Silk seed also witnessed higher annual growth of 82.50% (Fig 2) but the average yield of cocoons per ounce of seed revealed poor growth of just 5.33% p.a mainly due to inadequate supply of mulberry leaves (Fig 3). Initially in 2010-11 only 32 farmers could grow cocoons in 12 villages whose number increased to 172 in 20 villages in 2013-14 thus showing growth rate of 109% and 17%, respectively.

More than one-half of the beneficiary households were female headed in whose name the sericulture benefits were distributed and that

Table 2. Trends in seed utilization and cocoon production under SCA project, Jakatkhana

Sr. No.	Year/Crop season	Seed (Ounce)	Green cocoon production	Average yield	Sericulture farmers	Villages covered
1	2010-11 Spring	10	301	30.00	32	12
2	2011-12 Spring	20	426	21.30	52	8
3	2012-13 (Total)	30	1287	42.90	154	28
	Spring	20	1080	54.00	106	20
	Autumn	10	207	20.70	48	8
4	2013-14 (Total)	43	1565	36.39	172	20
	Spring Crop	30	1350	45.00	118	12
	Autumn Crop	13	215	16.50	54	8
5	Growth rate (% p.a) 2011-14	82.50	104.98	5.33	109.38	16.67

Source : SDO, Ghumarwin (Bilaspur)

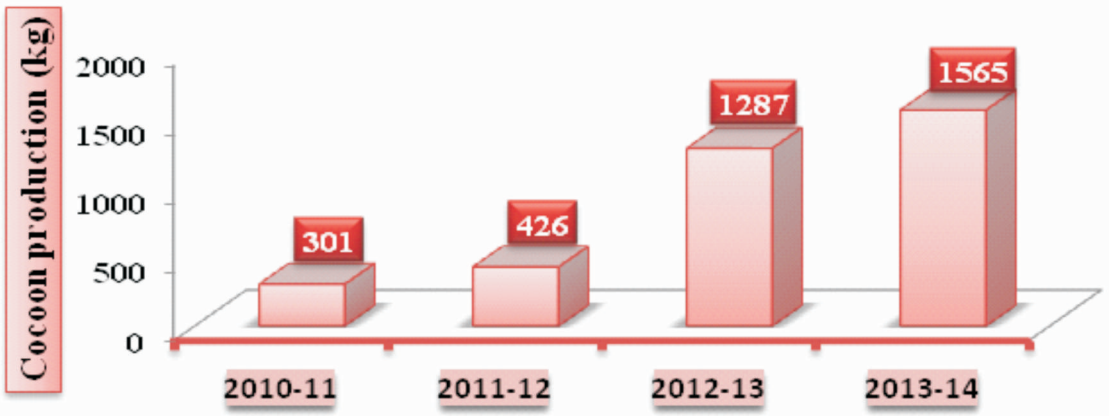

Fig 1 Green cocoon production in project area

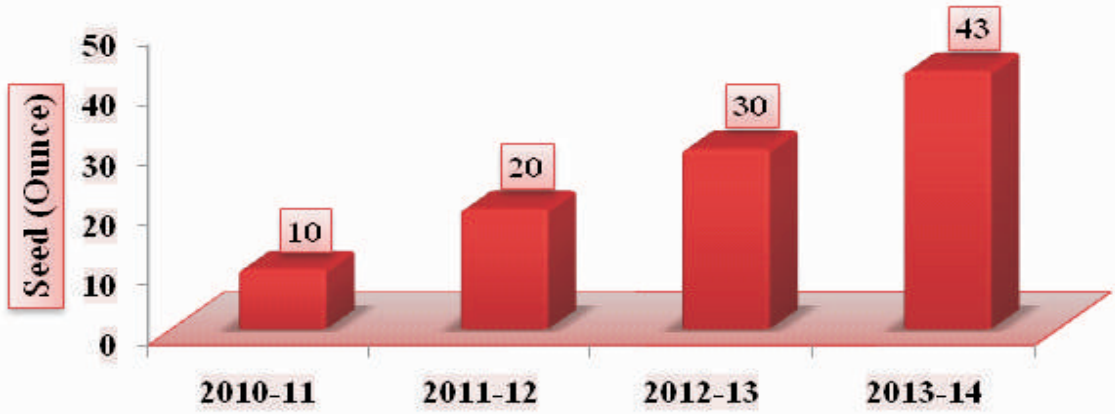

Fig 2 Seed utilization in project area

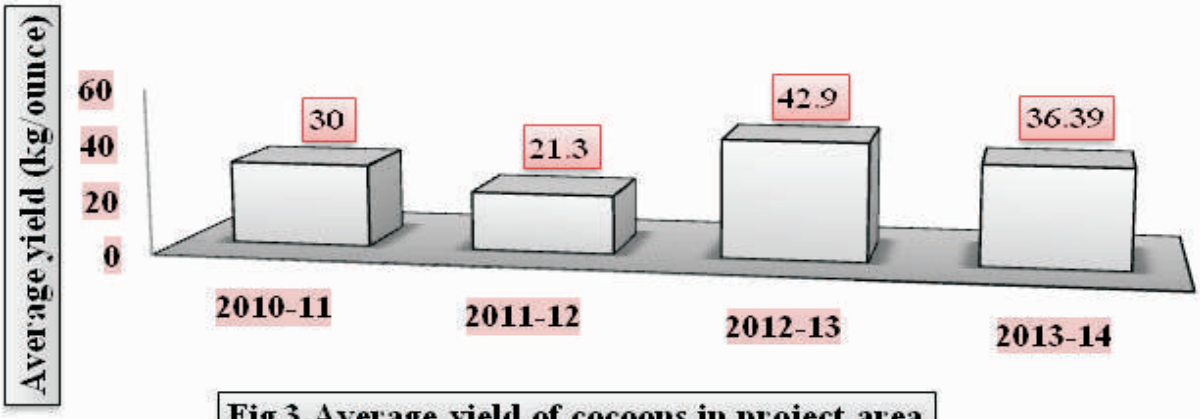

Fig 3 Average yield of cocoons in project area

agriculture was their major source of livelihood. *Harijan*, *Julah, Doomna* and *Darei* were the main sub-castes of scheduled caste beneficiary households. Nearly two - third of the sample households had family members four to five and one-fourth had above five with overall family size of 5.4 (Table 3).

Joint family system dominated in the area; nearly 56% sample households belonged to joint family system in comparison to 44% who belonged to nucleus category. The average size of land holding on sample households was 0.52 ha where the average number of mulberry plants raised per household was 144 with highest of 290 in Naal and lowest of 40 in Dagrahan. All the sample households had sericulture experience of six to seven years since the introduction of sericulture project, Jakatkhana during 2008. The average usage of silk worm seed on beneficiary households was 0.68 and 0.27 ounce which led to produce 5.27 and 1.70 kg dry cocoons per household with average yield of just 7.81 and 6.11 kg per ounce in spring and autumn seasons, respectively. Sericulture enhanced the income of sample households by over 2%. The overall average income generated from sericulture was Rs 3,581 (2.07% of total) and the overall from all sources was Rs 1, 73,399 (Table 3).

In all 371 man days employment was generated in the study area in which the contribution of sericulture was 11.32% with an absolute figure of 42 mandays (Table 3). The major source of income provider, that is, agriculture and its allied activities generated 329 mandays (88.68%) employment per household per annum in the sericulture project.

Table 4 gives information on assets creation on account of income generation from sericulture. It can be seen from the table that kitchen items like fridge, the furniture, education of children, food & nutrition, repayment of loan, completion of silkworm

Table 3. Socio- economic characteristics of beneficiaries

Sr. No.	Name of village	Men: women headed hhs	Average family size (No.)	Income (Rs/hh/annum)			Employment (mandays/hh/annum)	
				Sericulture	Allied sources	Total	Sericulture	Total
1	Dagrahan	100 : 00	4.0	3,425 (2.35)	1,42,500 (97.65)	1,45,925 (100)	41 (11.05)	371 (100)
2	Daulladhar	100 : 00	6.0	3,475 (3.07)	1,09,800 (96.93)	1,13,275 (100)	42 (12.17)	345 (100)
3	Jakatkhana	50 : 50	5.0	3,829 (2.56)	1,45,467 (97.44)	1,49,296 (100)	43 (12.18)	353 (100)
4	Majehar	14.29 : 85.71	4.9	3,836 (2.42)	1,54,928 (97.58)	1,58,764 (100)	42 (10.97)	383 (100)
5	Naal	66.67 : 33.33	4.7	3,058 (2.23)	1,34,184 (97.77)	1,37,242 (100)	43 (11.17)	385 (100)
6	Rouna	80 : 20	5.8	2,860 (1.10)	2,57,630 (98.90)	2,60,490 (100)	38 (10.27)	370 (100)
7	Seota	25: 75	4.0	4,119 (2.35)	1,71,200 (97.65)	1,75,319 (100)	44 (11.80)	373 (100)
	Overall average	48.15 : 51.85	5.4	3,581 (2.07)	1,69,818 (97.93)	1,73,399 (100)	42 (11.32)	371 (100)

Figures in parentheses indicate percentages of total

Table 4. Assets creation on sample households (No.)

Sr. No.	Name of village	Kitchen items	Furniture	Health (food & nutrition)	Education of wards	Loan repayment	Repair of silk worm rearing house	Saving & deposit
1	Dagrahan	-	1 (100)	-	-	-	-	-
2	Daulladhar	-	-	-	-	-	1 (100)	-
3	Jakatkhana	-	1 (16.67)	2 (33.32)	1 (16.67)	1 (16.67)	-	1 (16.67)
4	Majehar	-	1 (14.29)	2 (28.57)	3 (42.86)	-	1 (14.29)	-
5	Naal	-	-	1 (33.33)	2 (66.67)	-	-	-
6	Rouna	1 (20.00)	1 (20.00)	1 (20.00)	1 (20.00)	-	-	1 (20.00)
7	Seota	-	-	2 (50.00)	2 (50.00)	-	-	-
	All	1 (3.70)	4 (14.82)	8 (29.63)	9 (33.33)	1 (3.70)	2 (7.41)	2 (7.41)

Figures in parentheses are percentages of total sample

Source: Field survey, January, 2014

rearing house and deposits in rural saving schemes were the areas of reinvestment or assets creation. Among different sources of spending, education of wards followed by health, that is, food and nutrition were the major items. On the whole it can be concluded that sericulture did help in meeting out the family obligations in respect of education and health in the study area.

Problems and constraints

The problems and constraints reported by sample beneficiary households are depicted in Table 5. It can be seen from the table that inadequate financial support for constructing rearing house was the foremost problem reported by all the sample farmers. In the project area only Rs 10,000 per beneficiary household was provided for the construction of rearing shed which was found too meagre and thus none of the beneficiary could construct it. Some of the beneficiaries had either repaired their old house/rooms for sericulture purpose or some of the households had laid down only plinth for constructing new rearing houses. During the data collection the survey team could identify two households who had constructed silk worm rearing house on recommended line and separately from their dwelling house from their own financial resources. It was realized that such assistance be raised to about Rs 1 lakh. Unfavourable climatic condition was another problem of the area. The project area of Jakatkhana is very near to Gobind Sagar Dam and most of the time

Table 5. Problems and constraints in sericulture (Per cent sample farmers)

Sr. No.	Name of village	Stray cattle and monkey menace	Non remunerative price for cocoons	Inadequate mulberry leaves	Unfavourable climate	Lack of awareness	Non availability of market nearby	Inadequate amount for rearing shed
1	Dagrahan	-	100	-	100	-	-	100
2	Daulladhar	-	100	100	100	100	-	100
3	Jakatkhana	-	50.00	50.00	83.33	-	-	100
4	Majehar	100	57.14	28.57	28.57	28.57	28.57	100
5	Nal	-	33.33	66.67	33.33	33.33	100	100
6	Rouna	-	40.00	20.00	100	-	-	100
7	Seota	25.00	75.00	50.00	50.00	-	25.00	100
	All	29.63	55.56	40.74	62.96	14.81	22.22	100

Source: Field survey, January, 2014

upto 11.00 AM it remains under fog. This fog enhances the humidity and lowers the temperature below the required limits in rearing silk worms. This problem was reported by 63% farmers. Non-remunerative price for cocoons was also one of the problems being reported by sample households. Since the mulberry plants introduced are new and old desi/local are few which do not meet the individual beneficiary demand, thus the sericulture farmers are to purchase mulberry leaves from their neighbours which enhances the cost of raising cocoons. Inadequate mulberry leaves problem was reported by 41% sample households, thus farmers reported that the price offered to them did not provide adequate incentive so as to continue with the enterprise. Lack of awareness in rearing silkworms and improper training and pruning of mulberry trees were noticed another problem in the area. Problem of stray cattle and monkey menace were also reported by nearly 30% households.

Conclusion and Suggestions

To conclude it can be said that inadequate financial help for silk worm rearing house followed by unfavourable climate, non-remunerative price and inadequate mulberry leaves were the problems and constraints in the sericulture development of Jakatkhana study area. To overcome some of the problems the beneficiaries need support in terms of adequate finance for the construction of silk worm rearing house and constant training & exposure visits to enhance their awareness, silk development and know-how about the production and post harvest technology.

Mulberry plants are not performing well in the newly allotted surplus land to the scheduled caste beneficiaries due to stony and rocky structure of land. However, in cultivated land performance is much better. If irrigation facility is provided to such newly allotted land called *Nautod*, the mulberry plants may perform better because the plants becomes dry and dead in summer, though they thrive well in rainy season.

There is shortage of mulberry leaves hence the farmers depend upon their neighbour farmers in fulfilling their deficiencies which enhances the cost of cocoon production. The department of sericulture has provided S-146 and S-30 variety mulberry plants giving better yield than local variety mulberry. Such efforts need to be strengthened. Community suitable surplus land may be brought under such mulberry plants.

The awareness level of beneficiaries has reached around 45% due to new to the profession and taking much interest as there were limited options for diversification. In making them fully aware and equally efficient resource user in the enterprise, the department should continue the process of organizing training and awareness camps along with exposure visits within and outside the state.

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