

**Research Article**

## **PROMOTING OF MULTIPLES SILKWORM REARING CROPS IN PATHANKOT DISTRICT OF PUNJAB**

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### **ABSTRACT**

Silk is a way of life in India Sericulture and Silk Textiles Industry is one of the major sub-sectors comprising the textiles sector. Sericulture is an agro-based cottage and labour intensive industry. Sericulture is an agro based part time family occupation mainly of the below poverty line rural poor mostly belonging to the scheduled caste and backward classes. Punjab's Department of Horticulture, said the silk manufactured in the state is of excellent quality and can be tagged as 'Punjab Silk' just like Kashmir Silk or South Indian Silk. 80% of the cocoon is produced in Dhar block in district Pathankot and presently about 1000 families are in the fold of sericulture producing 3 to 4 MTs raw silk and about 30,000 kgs of cocoon per year valuing about Rs. 60 lacks. According to the experts, Punjab, which each year takes two crops to produce 32,000 kg silk cocoons, can double its productivity by developing four to five crops per year, with climatic conditions in the Kandi regions of Pathankot also being favourable for the same. Each family can earn Rs. 10, 000/ crop. The state can also engage in production of Eri silk, which is produced from a different variety of worm that feeds on Arandi or castor leaves, which are abundantly found in the Kandi region. Integrated sericulture programme undertaken by CSB Sujanpur in Pathankot district of Punjab as a diversified agriculture crop and livelihood source, clearly indicate the possibility of 3 crops with M5 and S-1635 mulberry varieties and additional one crop (4<sup>th</sup> crop) with availability of mulberry leaves. Intercropping of cereal and viable activity without affecting mulberry leaves production level. Promoting mulberry sericulture induces diversification toward crops making the farmer more enterprising. Average green cocoon yield ranged from 20kg-55kg/100 dfl s for M5 and S-1635 mulberry varieties respectively. Present paper deals with the potential and challenges of promoting multiple crops of silkworm rearing as diversified crop along with traditional crops as poverty alleviation tool for families living below poverty line in Pathankot district Punjab.

**Keywords:** *Green Cocoon, S-1635 Mulberry Variety, Intercropping, Cluster Approach, Pathankot District*

### **INTRODUCTION**

Silk is a way of life in India. Sericulture and Silk Textiles Industry is one of the major sub-sectors comprising the textiles sector. Over thousands of years, it has become an inseparable part of Indian culture and tradition. Sericulture is an agro-based cottage industry. Sericulture refers to the mass-scale rearing of silk producing organisms in order to obtain silk. Sericulture is an agro-based labour intensive industry (Anonymous, 2006).

It is the only one cash crop in agriculture sector that gives returns within 30 days. Sericulture emerged as an important economic activity, becoming increasingly popular in several parts of the country, because of its short gestation period, quick recycling of resources. Punjab's Department of Horticulture, said the silk manufactured in the state is of excellent quality and can be tagged as 'Punjab Silk' just like Kashmir Silk or South Indian Silk.

The state can also engage in production of Eri silk, which is produced from a different variety of worm that feeds on Arandi or castor leaves, which are abundantly found in the Kandi region. If the present conditions of cocoon production continue the domestic demand increases through an annual growth rate of population as well as increased generation may be provided plantation areas; etc. There are several centrally sponsored schemes for promotion and development of sericulture sector, through which Government of India has been undertaking different activities like creation of sericulture related

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infrastructure; development of nurseries and farms; expanding to a considerable level and the imported quantity of raw silk will remain as supplementation (Bhatia *et al.*, 2010).

Punjab is spread over an area of 50,362 Km<sup>2</sup> Covering country areas. Sericulture is being practised in 4 districts of which Pathankot district have the unique place being congenial for mulberry. Pathankot district is second highest cocoon producer and 80% of the cocoon is produced in Dhar block in district Pathankot and presently about 1000 families are in the fold of sericulture producing 3 to 4 MTs raw silk and about 30,000 kgs of cocoon per year valuing about Rs. 60 lacs (Bhatia *et al.*, 2010). According to the experts, Punjab, which each year takes two crops to produce 32,000 kg silk cocoons, can double its productivity by developing four to five crops per year, with climatic conditions in the Kandi regions of Pathankot also being favourable for the same. Each family can earn Rs. 10, 000/ crop. If the present conditions of cocoon production continue the domestic demand increases through an annual growth rate of population as well as increased generation may be provided plantation areas; etc. The climate is mostly subtropical and temperate suitable to a wide range of fauna and flora of sericigenous insects.

The state can also engage in production of Eri silk, which is produced from a different variety of worm that feeds on Arandi or castor leaves, which are abundantly found in the Kandi region. If the present conditions of cocoon production continue the domestic demand increases through an annual growth rate of population as well as increased generation may be provided plantation areas; etc.

Like in all north western regions undertaking two mulberry crops is norm being practised for last 40 years in traditional ways. Of late, it is being realised that with low cocoon productivity(20kg/100dfl) leading to low income(Rs. 2000/family/year) and marketing deficiency has failed attract families with small land holding in Pathankot district inspite of growing demand of silk within country and outside. Therefore this has remained as supplementary income for landless and additional crop for small landholder (Bhatia *et al.*, 2010). Therefore, under this prevailing condition it was always a challenge to promote sericulture as sustainable livelihood program as there were no role models. Therefore, this required different approaches to implement programs with goals based on the prevailing practises, technologies gap and risk factors. The performance of multiple sericulture crops in spring, rainy and autumn seasons along with intercrops and challenges of promoting technologies Vs livelihood program in Pathankot district is being discussed (Das and Vijayaraghavan, 1990).

Integrated sericulture programme undertaken by CSB Sujampur in Pathankot district of Punjab as a diversified agriculture crop and livelihood source, clearly indicate the possibility of 3 crops with M5 and S-1635 mulberry varieties and additional one crop (4<sup>th</sup> crop) with availability of mulberry leaves. Intercropping of cereal and viable activity without affecting mulberry leaves production level. Promoting mulberry sericulture induces diversification toward crops making the farmer more enterprising. Average green cocoon yield ranged from 20kg-55kg/100 dfl s for M5 and S-1635 mulberry varieties respectively (Das and Vijayaraghavan, 1990). Present paper deals with the potential and challenges of promoting multiple crops of silkworm rearing as diversified crop along with traditional crops as poverty alleviation tool for families living below poverty line in Pathankot district Punjab (Singh *et al.*, 2006).

### MATERIALS AND METHODS

Suitable improved mulberry varieties of S-1635 for irrigated area and S-146 for rain fed and hilly area were procured from basic seed multiplication centre , CSR Sujampur , and having M-5 and local mulberry varieties too were adopted (Singh *et al.*, 2006). Besides this use of Bio-fertilizers,

Vermi-composting shoot feeding and separate rearing shed have been able made compulsory. After gestation of three years programme have been able to demonstrate the success of multiple mulberry crops at farmers level along with intercropping (Singh *et al.*, 2006). To promote advance method of silkworm rearing under SGSY integrated sericulture livelihood program CSR, Sujampur under took programme with following objectives:

To re-established mulberry garden with improved mulberry varieties for irrigated and non-irrigated conditions.

1. To demonstrate the feasibility of multiple sericulture crop.

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2. To demonstrate the feasibility of inter cropping with mulberry sericulture like Wheat, maize.
3. To promote advance method of silk worm rearing.
4. To adopt and promote families for their livelihood through sericulture.
5. To provide training cum demonstration to 800 families.

Since this is a livelihood programme following approaches were adopted with focus on food security first and building confidence.

a) Family based sericulture programme based on his land holding, labour potential and irrigation potential.

b) Make the primary producer having an ownership on last products. Cluster approach and value addition. Present report is on performance of silkworm rearing season with respect to mulberry varieties and races performance under agro-climatic condition of Pathankot district Punjab (Haque *et al.*, 1990).

## RESULTS AND DISCUSSION

Sub tropic and temperate climatic conditions are found suitable to a wide range of fauna and flora of sericigenous insects in Himachal Pradesh (Haque *et al.*, 1990). Pathankot district occupy second highest cocoon production are in Punjab. However during the year 2012-2013 cocoon production was done by 1.96% as compared to previous year (2013-2014).

**Table 1: Cocoon production in the Pathankot District for the last three year**

Sr. No	Division Name	2011-2012 Seed production (Ozs)(In Kg)	2012-13 Seed production (Ozs)(In Kg)	2013-14 Seed production (Ozs)(In Kg)	% Increase or Decrease
1.	Dhar	974-42435	974-40413	1009-48778	+20.69
2.	Lehroon	1210-30513	1100-32125	1291-31496	-1.9
3.	Dunera	463-8372	437-10775	463-11234	+4.25
4.	Niarie	515-13112	545-15671	605-18516	+18.15
5.	Sarati	550-14426	562-13968	570-21642	+54.93
6.	Sujanpur	260-2857	203-5414	223-6135	+13.31
7.	Pathankot	31-582	27-146	25-484	+54.93

**Table 2: Mean meteorological data (2011-2014) of Dunera cluster Gurdaspur district**

Season	Temperature		Difference	Humidity		Rainfall
	Maximum	Minimum		Maximum	Minimum	
March	27.2	19.82	7.43	75.30	65.38	7.3
April	32.20	25.65	6.55	71.36	60.85	10.56
May	31.77	24.89	6.88	77.57	66.80	54
June	32.20	26.25	5.95	85.34	78.56	81.3
August	32.00	20.99	11.01	85.16	78.06	135.3
Sep	27.86	12.98	14.88	78.86	73.65	145.9
Oct	26.86	19.54	7.32	76.34	73.23	55
Nov	24.14	10.67	13.47	79.65	68.43	3.5

Table 1 Shows that cocoon production has remain static for last three years (Table 1), though maximum dfl 's is used in Pathankot district. Only two crops of spring and autumn are harvested while spring crop contribute maximum to the productivity. The Rearing was carried out in two different agro – climatic conditions namely Dhar Block and Pathankot clusters in all the three seasons rainy (autumn and winter)

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(Mishra *et al.*, 2006). Pathankot is irrigated and low lying area as Dunera is dry rain fed and hilly areas therefore required different management system.

A total of 20,015 dfl's was used during the year 20012 to 2014 and total cocoon production of 5362kg was harvested resulting in average cocoon production of 27kg/100dfl's No of rearing was more in Pathankot cluster compare to Dunera cluster however the average cocoon productivity remain almost same (Raja, 1997).

For both the clusters, surprisingly maximum average cocoon productivity is recorded in winter (41kg/100dfls) followed by summer (30kg/ 100dfl's) and least in rainy season (19kg/100dfl's). Cross breed performed better in all the three season as compare to bivoltine races. Among all S-1635 mulberry varieties performed better in term of leaf productivity as compare to S-146 and M5 varieties under the irrigated condition. While S-146 mulberry variety performed better under dry land and hilly areas. The average cocoon productivity was recorded more with silk worm fed by farmers having S-1635 variety (55kg /100dfls) followed by S-146(52KG/100dfls) and least was in M5 and local mulberry variety From the results it is clear that three crops are possible with right management practices of mulberry of pruning (Dhar *et al.*, 1996; Singh *et al.*, 2002) and selection of silkworm race. Quality of mulberry leaves influences growth, development of mulberry silk worm and greatly affects the economics of sericulture industry (Raja, 1997).

It is necessity to promote intercropping of mulberry with all cereal crops, vegetables and fodder crops is possible (Mishra *et al.*, 2006; Raja, 1997) and till the productivity of mulberry reaches economic points. From the results it is clear that three crops are possible with right management practices of mulberry of pruning (Ramamurthy and Jagdish, 2006) and selection of silkworm race. Quality of mulberry leaves influences growth, development of mulberry silk worm and greatly affects the economics of sericulture industry (Rajinder *et al.*, 2006). It is necessity to promote intercropping of mulberry with all cereal crops, vegetables and fodder crops is possible (Rajinder *et al.*, 2006; Das and Vijayaraghavan, 1990) and till the productivity of mulberry reaches economic points, selection of silkworm race. Quality of mulberry leaves influences growth, development of mulberry silk worm and greatly affects the economics of sericulture industry (Srivastava *et al.*, 2009). The increasing productivity also led to increase in the income.

### Challenges

Families living below poverty line have limited resources therefore; improving the cocoon productivity is constrained. Developing post cocoon processing system for value addition and marketing system are main priority. Multiple agencies working in same area create confusion in mind of participants, therefore role must be defined. Major loss is due to bacterial flacherie in bivoltine as well in the rainy season. Due to agro climatic changes temperature during night goes down to less than 15 degree Celsius there by prolonging the larval duration and delay in spinning leading to more susceptibility. For more beneficial effect long term drawn programme of minimum of 7 years is necessary for dry land sericulture to be successful.

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