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PROSPECTS OF SERICULTURE CLUSTER DEVELOPMENT PROGRAMME IN PACHWADOON AREA OF DOON VALLEY: A STUDY

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ABSTRACT

Sericulture in India is of ancient origin, dating back prior to the inception of Christian era. Presently, sericulture is well established agro based cottage industry in many parts of the country including Uttarakhand. Further, about 70 per cent of the people live in rural areas and more than 40 per cent of the rural population still live below the poverty line. In developing countries like India, the small sized holdings of a large proportion of farmers' are considered as one of the main factors causing rural poverty and hindering agricultural growth. The farmers of northern region of the country hesitate to grow mulberry on their prime land due to the stiff competition with existing agricultural crops viz., wheat, paddy and sugarcane. However they have shown keen interest in sericulture on many occasions as an additional alternative to improve upon income. Sericulture may provide livelihood of low income rural folk at their door step. Sericulture, as a farm based enterprise, is quite suitable to small and marginal farmers' with less capital investment. The diversified activities in avocation of sericulture provide opportunities to all the age group of the family to get themselves involved to earn their livelihood. For comprehensive development of the society 'Integrated Rural Development' is the slogan of National Policy. Economic transformation has been brought about where the integrated approach for the development of sericulture has been adopted. In this direction, Tiparpur and Kalsi area in Pachwadoon area of Doon valley have been selected for the implementation of the Cluster promotion programme in view of its socio-economic and geographical conditions. This paper discusses the progress made so for in the region and future prospect of sericulture in Pachwadoon region of Doon Valley in cluster approach which is holistic, information based and participatory extension mode with Research-Extension-Farmer (R-E-F) linkage.

KEY WORDS: *Cluster, Doon valley, sericulture, Bivoltine*

INTRODUCTION

Uttarakhand is the 27th state of the country carved out of Uttar Pradesh in Nov. 2000. It is situated in the western sub-latitude belt of the country between 28O43' and 31O28' north latitude and 77 O35' and 81O02' east longitude. The state is physio - geographically divisible into three regions- the upper or trans- Himalaya or Alpine zone having high mountains and river valleys with altitude above 1250 m ASL, Mid- Hill zone with an elevation from 800 – 1250 m ASL, the lower Himalaya and low hills and valleys up to 800 m ASL called the Shivalik Himalaya and Tarai region. This Himalayan state has a long tradition and history of silk production. Captain Hutton introduced sericulture in the hill of Massourie in the year 1858 and Messer's Lister & Company took up commercial production in a village on Dehradun - Haridwar road, which is later named as "Resham Majri". Uttarakhand state is generally referred as 'Bowl of Bivoltine silk of India'. More than 98 % of the silk produced in the state is from mulberry sericulture mainly bivoltine. Presently, sericulture is practiced in about 328 villages of the state out of about 16,000 villages. About 4,000 families are engaged in different facets of the silk industry.

In the recent years, continuous and vigorous research are being carried out by Central Silk Board, Govt. of India and other research organisations of the country to evolve high yielding mulberry and silkworm varieties suitable for tropical as well as sub-tropical climatic conditions of the country. Many of the high yielding varieties are already in the field (Mohan et. al., 2007 and Juyal et. al, 2007). Technologies are also developed, accordingly, for the maximum exploitation of the evolved breeds / races. Many extension approaches have been followed in the transfer of sericutlural technologies to the farmers from time to time (Singh et.al, 2007 and Babulal et.al, 2007). For pursuing the goal of sericulture development, a well organised/planned extension system is very much essential for transfer of new sericulture technologies, so as to achieve the targeted production. Towards this direction, an extension system is participatory, decentralised, holistic and information based with demand driven approaches can only be successful. Among them, Cluster Development Approach is one such approach which is holistic, information based and participatory extension mode with Research-Extension-Farmer (R-E-F) linkage.

Keeping in view, cluster development programmes were initiated by the Central Silk Board in association with respective DoS to minimize the yield gap between the potential and harvest. In this direction, Pachwadoon area of Dun valley viz., Tiparpur and Kalsi has been selected as one of the areas for the implementation of the Cluster programme considering its geographical conditions as well as their potential for the development of silk industry through technological intervention. In the present paper future and prospect of sericulture in both the clusters areas has been discussed.

MATERIAL & METHODS

Silkworm rearing is conducted twice in a year i.e., spring and autumn seasons in Uttarakhand. Quality region and season specific bivoltine silkworm seed (Disease free layings - DFLs) were obtained from NSSO, Bangalore through DOS, U.K., Dehra Dun. Chawki rearing centres (CRCs) are established by the department to conduct young age silkworm rearing which is very delicate and sensitive. Chawki rearing was conducted at respective Chawki rearing centres (CRCs) established in the area on prescribed temperature (26-28 OC) and humidity (80-85%) under close supervision of officers and technical staffs so as to improve the cocoon productivity. Chawki reared silkworms were distributed to the selected beneficiaries. Late silkworm rearing was conducted at farmer's places as per the recommended package of practices (Dandin et.al, 2003, Jolly, 1987) under the supervision of technical staffs and officers. After completion of the feeding period i.e., 22-24 days, ripped worms were mounted for cocooning and were harvested on 6th & 7th day of mounting during spring and autumn respectively. Data on rearing performance/parameters were collected and analyzed.

RESULTS & DISCUSSIONS

Cluster development programme under 12th five year was initiated from autumn'2013. Two clusters of Pachwadoon of Dun valley viz., Tiparpur and Kalsi have been taken for the present study. Eight villages in Tiparpur and seventeen villages under Kalsi cluster comprising 250 farmers in each cluster have been taken up for this study. Four and three Chawki rearing centres were operating in the cluster areas of Tiparpur and Kalsi, respectively. The identified beneficiaries were analyzed category wise as well as village wise. It is apparent from the table that both the clusters are dominated by schedule tribe and schedule caste community. In Tiparpur cluster, 239 (95.60%) beneficiaries belong to schedule tribe community out of 250 similarly 164 (65.60%) and 61 (24.60%) beneficiaries of Kalsi cluster belong to ST and SC community respectively (Fig.-01 & 01A). This indicates that sericulture activity is being practiced by economically backward sections of the society in these clusters is in accordance with the report of Yadav, 2008.

Fig. -01: Details of category wise / CRC wise nos. of beneficiaries under Tiparpur Cluster

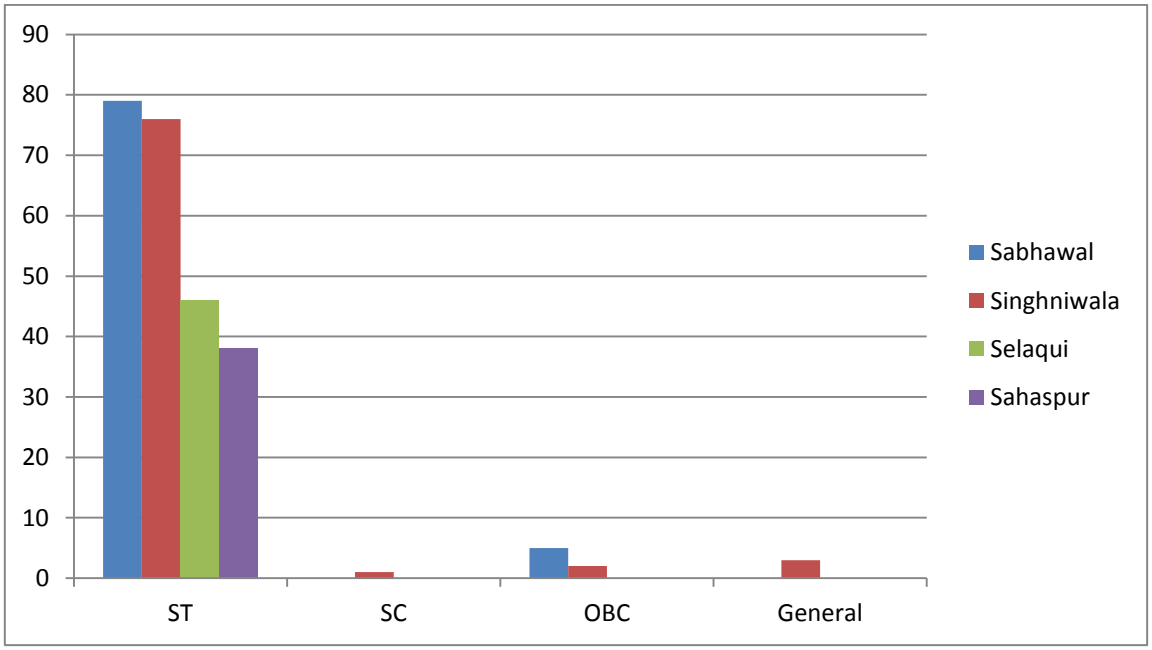
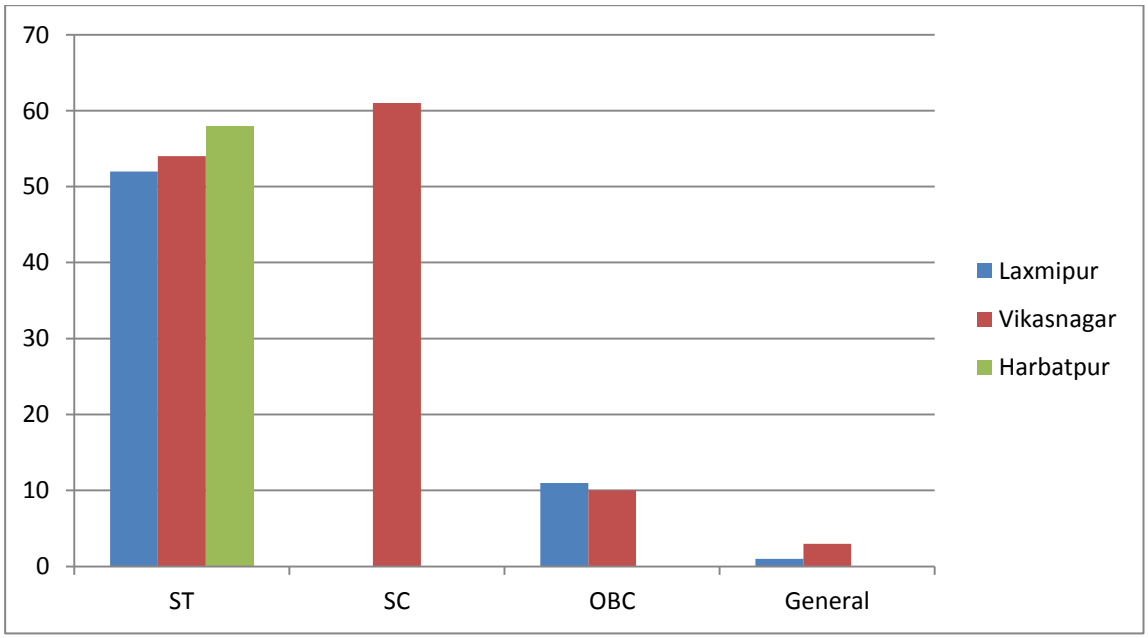


Fig.-01 A.: Details of category wise/CRC wise No. of Farmers under Kalsi Cluster



Further, the identified beneficiaries were also analysed CRC wise and village wise (Table -01 and 01A). It is clear from the table that Sabhawala and Singhniwala CRCs have 84 & 82 farmers under Tiparpur cluster which is more than half of the total farmers whereas in Kalsi cluster 128 beneficiaries are attached with Vaikasnagar CRC. This indicates that the sericulture is being practiced in specific pockets of the Dun valley.

Table-01: Details of CRC wise /village wise nos. of beneficiaries under Tiparpur Cluster

Villages	CRC				Total
	Sabhawala	Singhniwala	Selaqui	Sahaspur	
Sherpur	NIL (-)	46 (18.4)	46 (18.4)	NIL	92 (36.8)
Sekhowala	NIL (-)	NIL (-)	NIL (-)	38 (15.2)	38 (15.0)
Dandapur	NIL (-)	14 (05.6)	NIL (-)	NIL (-)	14 (05.6)
Shingniwala	NIL (-)	22 (08.8)	NIL (-)	NIL (-)	22 (08.8)
Tiparpur	48 (19.2)	NIL (-)	NIL (-)	NIL (-)	48 (19.2)
Tapri	02 (0.8)	NIL (-)	NIL (-)	NIL (-)	02 (0.8)
Sabhawala	27 (10.8)	NIL (-)	NIL (-)	NIL (-)	27 (10.8)
Devtawala	07 (02.8)	NIL (-)	NIL (-)	NIL (-)	07 (02.8)
TOTAL	**84 (33.6)**	**82 (32.8)**	**46 (18.4)**	**38 (15.2)**	**250 (100)**

Figures in parenthesis are percent (%).

Table-01 A: Details of CRC wise/Village wise No. of farmers under Kalsi Cluster

Villages	CRC			Total
	Laxmipur	Vikasnagar	Harbatpur	
Laxmipur	07 (02.8)	NIL (-)	NIL (-)	07 (02.8)
Kedarwala	24 (09.8)	NIL (-)	NIL (-)	24 (09.8)
Baluwala	28 (11.2)	NIL (-)	NIL (-)	28 (11.2)
Godariya	04 (01.2)	NIL (-)	NIL (-)	04 (01.6)
Devthala	01 (0.4)	NIL (-)	NIL (-)	01 (0.4)
Linejeevangarh	NIL (-)	07 (02.8)	NIL (-)	07 (02.8)
Telpur	NIL (-)	06 (02.4)	NIL (-)	06 (02.4)
Badwala	NIL (-)	17 (05.6)	NIL (-)	17 (05.6)
Mainhuwala	NIL (-)	25 (10.0)	NIL (-)	25 (10.0)
Bulakiwala	NIL (-)	12 (04.8)	NIL (-)	12 (04.8)
Amliwala	NIL (-)	04 (01.6)	NIL (-)	04 (01.6)
Ambadi	NIL (-)	02 (0.8)	NIL (-)	02 ((0.8)
Bhood	NIL (-)	33 (13.2)	NIL (-)	33 (13.2)
Badkot	NIL (-)	06 (02.4)	NIL (-)	06 (02.4)
Latikhet	NIL (-)	10 (04.0)	NIL (-)	10 (04.0)
Papdian	NIL (-)	06 (02.4)	NIL (-)	06 (02.4)
Shahpur	NIL (-)	(-)	58 (23.2)	58 (23.2)
	64 (25.6)	**128 (51.2)**	**58 (23.2)**	**250 (100)**

Figures in parenthesis are percent (%)

The studies carried out under sub tropical conditions of North India have reported that the mulberry cultivation is more economical as bush over trees plantation recording more than double leaf production per unit area (Fotadar et.al,1995 ; Dhar et.al,1996). The quality of mulberry leaves is one of the most important factors governing the production of good cocoon crop (Ravi Kumar, 1998). The growth and developmental of the silkworm larvae and the economic characters of cocoons are known to be influenced by the nutritional content of mulberry leaves (Krishnaswamy et. al, 1971). In this study, it is observed that most of the farmers have their plantation in tree mode on bunds of agriculture land and ward side thereby forming a major source of foliage is in accordance with the earlier reports for Northern states of the country (Dhar et.al, 1996, 1999, 2001; Dhar and Bindroo, 1997; Tripathi et.al, 1999; Khan, 2006; Srivastava et.al, 2007).

Findings of the present study clearly indicate that average cocoon production (kg/100 DFLs) in both the seasons viz., autumn & spring have increasing trend under Tiparpur and Kalsi clusters (Fig. -02 & 02A). It has improved 13% and 49% in spring and autumn seasons respectively under Tiparpur cluster. Similarly, improvement in average cocoon production was recorded for Kalsi cluster to the tune of 39% in autumn season and it was more or less same for spring season. Slight decrease in average cocoon production has been recorded due to adverse climatic conditions prevails at the time of spinning.

Fig. – 02: Average cocoon production (kg/100 DFLs) under Tiparpur Cluster

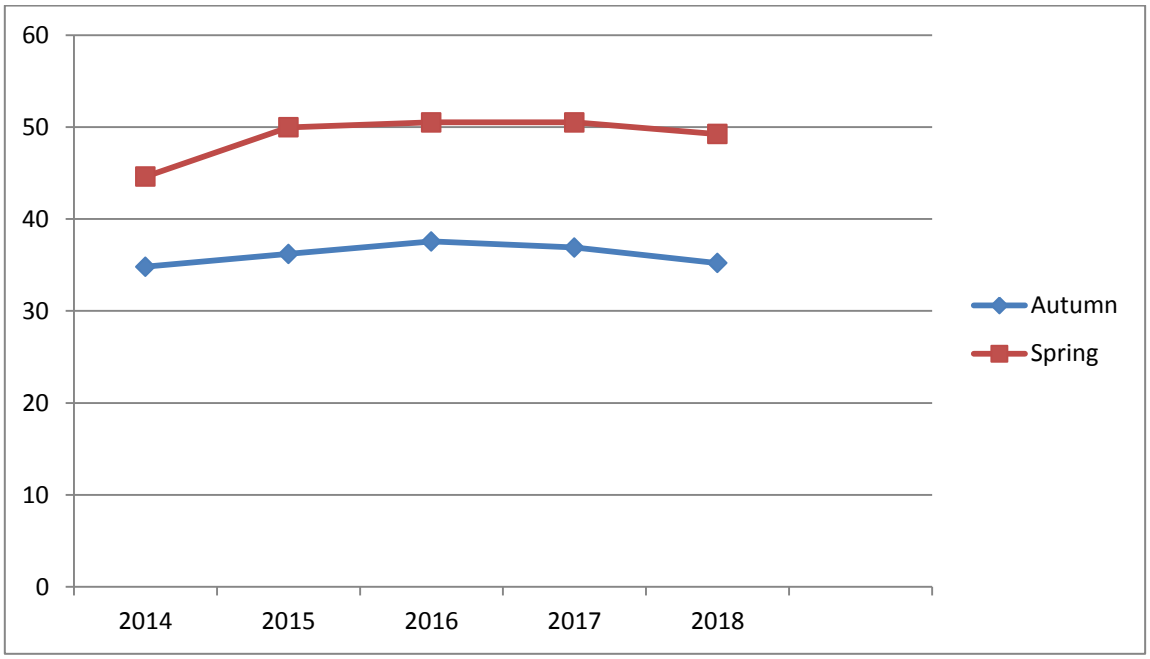
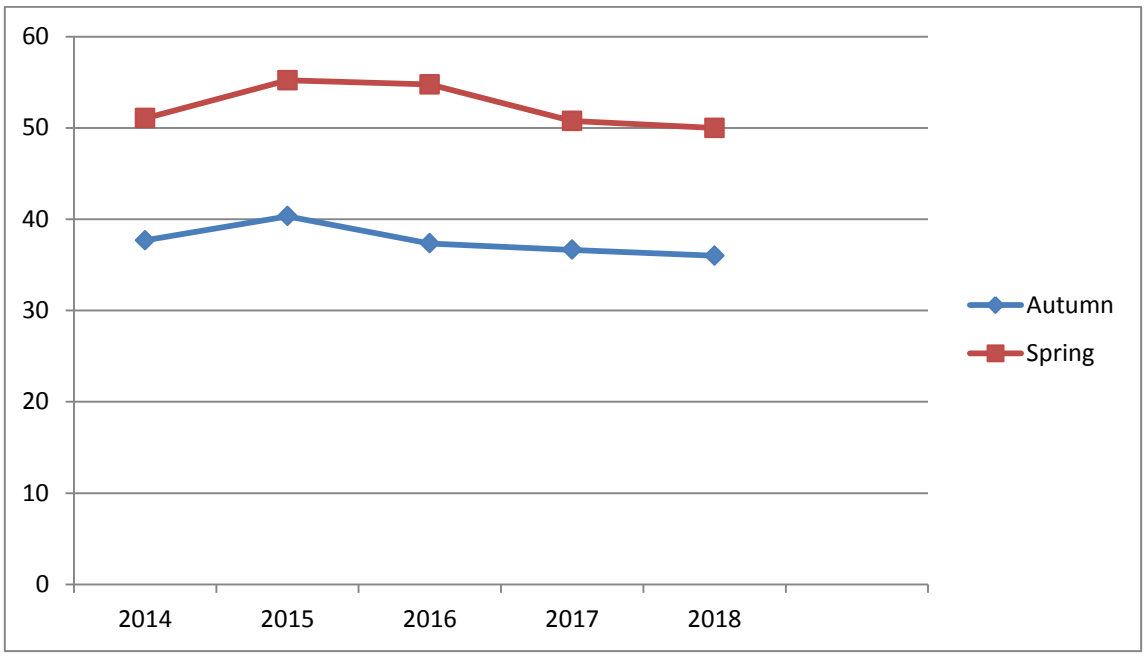


Fig. – : Average cocoon production (kg/100 DFLs) under Kalsi Cluster



Raw silk production is also better in spring season than in autumn season in both the clusters. This is also because of the whether condition favorable in spring season than autumn season.

Fig.- 3A : Raw silk production (MT) under Tiparpur cluster

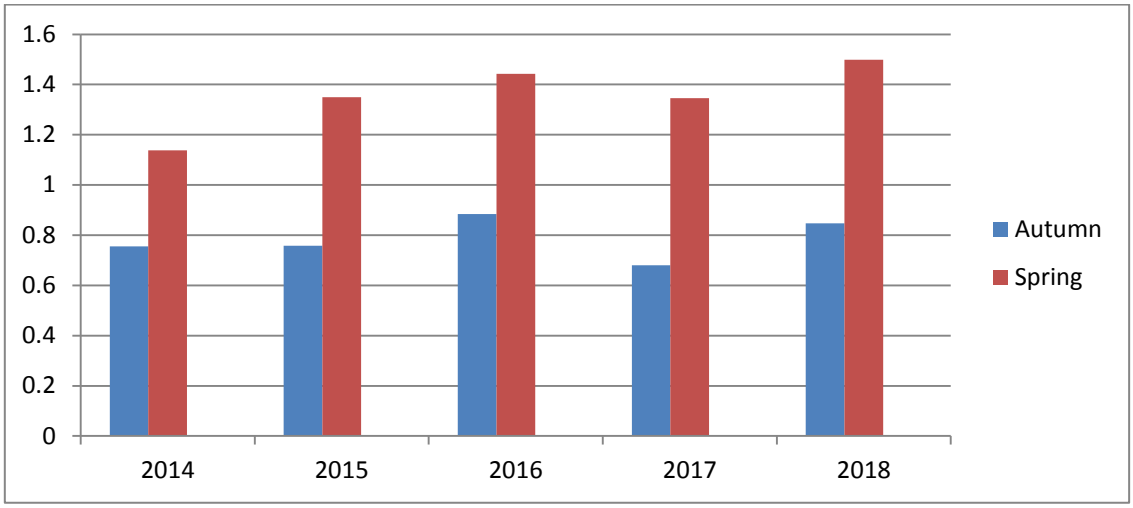
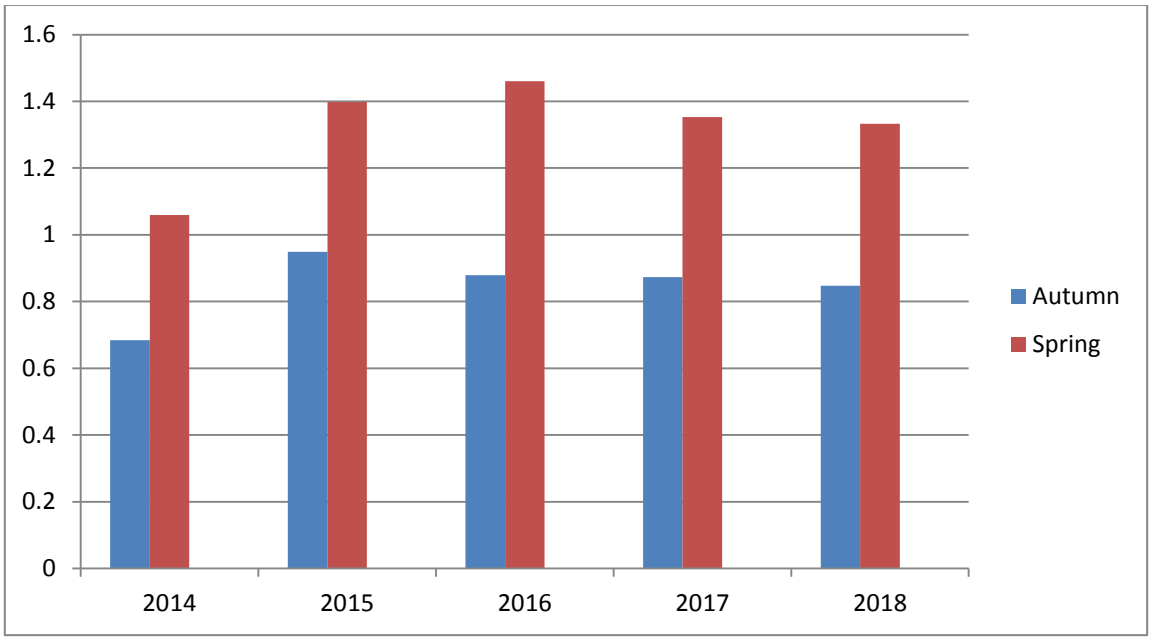


Fig.- 3B : Raw silk production (MT) under Kalsi cluster



Farmer's participatory extension communication programmes are also being taken up by both clusters for effective diffusion and adoption of improved sericultural technologies at field level. They were educated; motivated on the basic aspect of package of practices for quality mulberry leaf production and appropriate silkworm rearing approaches (Ullal and Narsimhanna, 1978; Dandin et.al, 2003 and Chakrabarti et.al, 2005). The importance of rearing house hygiene, leaf quality maintenance (Shankar et.al.,1992) during preservation and also on rearing bed, spinning larvae and cocoon management were also taught to farmers (Maniraju et.al, 2000). This has effected on cocoon productivity as shown in the tables – 03 & 03A. This indicates that adoption of technologies plays an important role is in conformity with the findings of Choudhary et.al, (2000); Gunashekhar et.al, (2003); Negi et.al, (2007) and Aslam et.al, (2007). However, the actual productivity depends on the acceptance and also the extent to which farmers adopt recommended technologies (Jaishankar and Dandin, 2004). Verma et.al, (2007) reported that cocoon yield could be improved if the technologies are transferred meticulously and adopted by the farmers sincerely. This indicates that like other places, sericulture activity may be more remunerative & economic viable in Pachhuadoon of Dun valley and

will be helpful to uplift the weaker section of the society.

It is reported that the optimum temperature for the production of quality cocoons is ranges from 22-28^{O}C (Datta, 1992; Krishanswami, et al., 1993). Similarly, the optimum humidity ranges from 70-85% for successful silkworm rearing resulting in quality cocoons production. The variations in the environmental conditions day to day, season to season and year to year within the same season also effect on the productivity emphasize the need of temperature and relative humidity for sustainable cocoon production as observed in the present study is in accordance with the earlier findings (Rahmatullah, 2012). In general, the early instar larvae are resistant to high temperature which also help in improving survival rate and cocoon characters (Thiagarajan et al., 1993; and Ramesh et al., 2009). The seasonal differences in the environmental components such as temperature, relative humidity, light and nutrition considerably affect the genotypic expression in the form of phenotypic output of the silkworm crop such as cocoon weight, shell weight and ultimately cocoon shell ratio (Rahmatullah, 2012). Further, the spring season is congenial for silkworm rearing throughout the Northwest India as the optimum temperature and humidity prevails in the environment during rearing period whereas autumn season is unfavourable due to high temperature and high humidity prevailing in the environment that's why spring crop is better than autumn crop as observed in the present study.

CONCLUSION

In cluster approach, effective R-E-F linkage is maintained and the technology spread is affected from farmers to farmers. This will minimise the widening ratio between farmers and extension worker by sharing the experiences of lead farmers and their interaction with other rearers. It can be safely concluded from the present study that farmer's participatory extension communication programmes, its effective diffusion and adoption of improved sericultural technologies at field level has improved cocoon productivity resulting in improving their income. Cluster approach will also help in developing mulberry wealth and rearing facilities to the rearers for continuing sericulture in coming years. This indicates that like other places, sericulture activity may also helps to uplift the weaker section of the society in these areas.

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