Bio Bulletin 2(1): 52-57(2016)
(Published by Research Trend, Website: www.biobulletin.com)
ISSN NO. (Print): 2454-7913
ISSN NO. (Online): 2454-7921

Situation Analysis of Sericulture Industry in Jammu and Kashmir

S. Chouhan*, Vishal Mittal*, Babulal*, S.P. Sharma** and Mudasir Gani*
**Scientist, Central Sericultural Research and Training Institute, Central Silk Board, Pampore-192121, Ministry of Textiles – Govt. of India (J & K), INDIA*
***Director, Central Sericultural Research and Training Institute, Central Silk Board, Pampore-192121, Ministry of Textiles – Govt. of India (J & K), INDIA*

(Corresponding author: S. Chouhan, sahadevjodhpur@gmail.com)
(Published by Research Trend, Website: www.biobulletin.com)
(Received 12 December 2015; Accepted 28 February 2016)

ABSTRACT: In this review, we have discussed especially the current scenario of sericulture in Jammu and Kashmir, which is a traditional leading bivoltine silk producing state. India is the second largest producer of raw silk after China and the biggest consumer of raw silk and silk fabric. The salubrious climatic conditions for foster growth of mulberry plants as well as silkworm exist in the states.

Keywords: Sericulture, Silkworm, *Bombyx mori* L., Mulberry, Vanya silk, Economic survey.

INTRODUCTION

Sericulture is an agro-based industry, which suits to rural-based farmers, entrepreneurs, and artisans and require of low investment. It has high potential for higher returns (Ganie *et al.,* 2012) and play vital role in improvement of rural economy in India. Recently adoption and implementation of new ideas by research institutions in mulberry cultivation and silkworm rearing, the industry is now practiced as a main profession.

Sericulture is rearing of silkworm for production of cocoons which is the raw material for the production of silk (Kamili and Masoodi, 2000). It is the only cash crop that gives returns within 30 days. Nowadays it is important economic activity, which has short gestation period and ensures, quick recycling of resources.

Silk production trends in India

Currently, domestic demand of raw silk of the country is 32000 MT. 28,708 MT was produced in the year 2014 - 15 and rest is being mainly from China (CSB, 2016). Thus, there is scope for production of additional quantity of silk in the country to meet the domestic demand. Sericulture can generate employment @ 11 man days per kg of raw silk in on-farm and off-farm activities throughout the year.

Sericulture is practiced in 59,000 villages. The employment generation has been increased 8.03 million persons in 2014-15 as compared to 7.85 million person in 2013-14, with growth rate of 2.29 % (CSB, 2016).

India has the unique distinction of being a producer of all the five commercially exploited silks viz. Mulberry, Tropical tasar, Oak tasar, Eri and Muga. Silk obtained from sources other than mulberry are categorized as non-mulberry silk that is extracted from the domesticated silkworm, *Bombyx mori* L. which feeds solely on the leaves of the mulberry (*Morus* sp.) plant. Production of mulberry raw silk during 2014 - 15 was 21,390 MT as compared to 19,476 MT in the year 2013-14. Production of Vanya silks (tasar, eri and muga) during 2014 - 15 were 2434 MT, 4726 MT and 158 MT respectively, as compared to 2619 MT, 4237 MT and 148 MT during the year 2013-14 (CSB, 2016). Overall vanya silks have shown significant increase in production of raw silk during the year 2014 - 15.

Over the last six decades, Indian silk industry has registered an impressive growth, both horizontally and vertically. The age-old multivoltine hybrids have been replaced by improved multivoltine x bivoltine and bivoltine hybrids.

The average yield of 25 kgs of cocoons / 100 dfls in the recent past has been increased 65 kgs / 100 dfls.

Raw silk production in traditional states during 2014 - 15

There are 5 traditional sericulture states. These states are Karnataka, Andhra Pradesh, West Bengal, Tamil Nadu and Jammu and Kashmir. Raw silk during the year 2014 - 15 is presented in the table 1.

Sericulture in Jammu and Kashmir

In Jammu and Kashmir (J & K) sericulture is practiced in 20 districts. The major silk production districts are Anantnag, Kupwara, Pulwama, Baramula, Gandarbal, Udhampur, Rajouri, Riasi and Kathua. The details are presented in Fig. 1.

Table 1: Raw silk production during 2014 - 15 in traditional states of India.

State	Raw silk production (MT)
Karnataka	9645
Andhra Pradesh	6485
West Bengal	2500
Tamil Nadu	1602
Jammu and Kashmir	138

Source: CSB (2016)

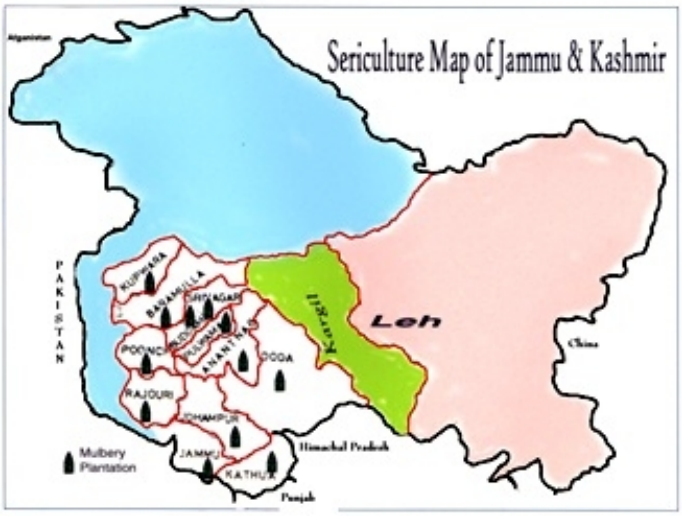

Fig. 1. Sericulture districts of J & K.

J & K is producing bivoltine silk of high quality comparable to international quality helps in improving the economic condition of the sericulture farmer and weaker sections of the society. It is providing high scope of employment opportunities in pre and post cocoon activities. Observing the strength of sericulture in J & K Japanese Scientist Dr. Tazima quoted '*Kashmir in view of its favorable climatic conditions could be converted into silkworm gene bank for sustaining the sericulture of the whole world*'. Presently about 30,000 rural families are generating income of Rs. 2026.00 lakh annually. 3.5 lakh mandays (3.0 lakh on-farm and 0.50 lakh in off-farm) activities are associated in this profession (Economic survey, J & K, 2014-15). With the increased economic needs due to changing social status and unpredictable market trends of different kinds of produces by the farmer to the state, sericulture has assumed special significance as an important subsidiary occupation, which supplements the income of the farmers in additions to their returns from the other crops.

Involvement of Women in Sericulture

Basic feature of this farm based economic enterprise is the involvement of women, which is presented in Fig. 2 & 3. Women contribution in sericulture industry is to the tune of 60 %, mostly in silkworm rearing and reeling.

The production of quality bivoltine silk is still a challenge in J & K in spite of enormous potential and also to reduce the import of bivoltine silk to the country. Active involvement of male member in sericulture is presented in Fig. 4.

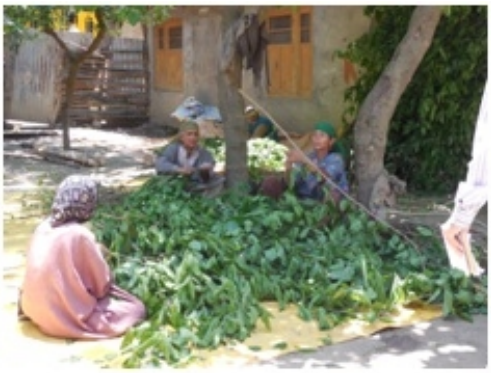

Fig. 2. Women engaged in leaf plucking.

Fig. 3. Women engaged in leaf chopping.

Fig. 4. Farmer engaged in leaf chopping.

Statistics of sericulture in J & K

Analysis of trends of J & K sericulture industry reveals that basic objective of increasing cocoon production, income generation and increasing silkworm rearers has been achieved. The details are presented in table. 2.

Infrastructure for sericulture

The sericulture is the oldest department in J & K. The infrastructure available is discussed below -
(i) 30,000 rural families are practicing sericulture as subsidiary occupation and producing 1032.4 MT cocoons (Anonymous, 2014-15).
(ii) Rs. 2026.00 lakh is earned annually by the farmers without any role of middleman.

Table 2: Statistics of sericulture in Jammu and Kashmir.

Year	Cocoon production (MT)	Income generation Rs. (Lakhs)	No. of rearers	No. of sericulture villages	Mulberry wealth trees (Lakhs)	Raw silk product--ion (MT)	Reeling units (Private)
2012-13	901	1193	27786	2628	90.00	115	31
2013-14	1021	2026	29300	2628	111.62	136	34
2014-15	1032.4	1700	30455	2836	111.62	138	34

Source: Economic survey (2013-14; 2014-15); CSB, 2016

(iii) After demonopolization of the industry, the no. of reeling units in the private sector has increased to 34.
(iv) There are 173 departmental nurseries spread over an area of 963 of acres, and 374 mulberry blocks over an area 2215 acres across the state.
(v) The department has 374 mulberry farms spread over an area of 2215 acres, having mulberry wealth of 30 lakhs trees, helping landless people.
(vi) There are 9 basic seed farms and 6 grainages.

Initiative taken by the state Govt. for promotion of sericulture in J & K

The J & K state has taken many new initiates for promotion of sericulture. Some of the initiatives are enumerated as-

(i) Implementation of scheme 'Health Insurance for women' which aims at providing insurance cover to the women engaged in silkworm rearing. 2500 women rearers were brought under this scheme during 2012 - 13.
(ii) Implementation of scheme 'Marketing support to cocoon growers' Rs. 32.10 lakh has been paid to cocoon growers as marketing support on account of low prices fetched by them.
(iii) Implementation of scheme 'Cluster Development Programme' 25 clusters are operational in the state under holistic approach for development of sericulture in the state.
(iv) Implementation of scheme 'Cluster Plantation' to augment area under mulberry plantation

through farmers and on govt. land during the year 2012-13, 11.00 lakh plants (8.00 lakh plants through farmers and 3.00 lakh departmentally) were planted under the scheme 'support for raising of mulberry plantation' and similar no. of mulberry plants are being planted during financial year 2013-14 with enhanced unit cost of Rs. 5500 / 300 plants.

(v) Implementation of scheme 'Supply of Rearing Kit' under catalytic development programme during the year 2012-13, 2000 silkworm rearers were provided with rearing kit under transfer of technology at a unit cost of Rs, 0.25 lakh under CDP and 1600 more beneficiaries are being covered during year 2013-14.

(vi) Implementation of scheme 'Technological advancement scheme' 20 number hot air dryer at a unit cost of Rs. 1.75 lakh were established in the state to facilitated cocoon drying by farmers on scientific lines by way of shifting the process from the conventional sun drying. This has helped farmers to fetch better prices for their produce.

Support from Central Silk Board (CSB) for development of sericulture

CSB is providing all support for development of sericulture. With the primary aim of the Institute to boost and revitalized the silk industry of J & K, CSR & TI, Pampore with its nested units provide need based Research Development / Extension and HRD support to the state and north-west states of the country.

The Institute has implemented a number of research programmes, which led to the development of region / season specific technologies resulting in increased productivity levels. Based on the ground realities, the Institute after consulting the active players engaged in Development of Silk Sector developed a 'Model' suitable for development of silk industry. Under bivoltine production programme, CSB has established 25 cluster in J & K. The Institute as a part of national responsibility maintains a rich germplasm of 168 silkworm races and 80 mulberry genotypes of temperate origin for conservation and utilization.

Future Priorities for J & K

(i) Focused approach to evolve region / season specific cost effective technologies with the main aim to address the constraints and improve the production / productivity.

(ii) Development of appropriate package of practices for constant up gradation of productivity of mulberry and silkworm races (Fig. 5A, 5B, 5C, 5D & 5E).

Fig.5. (A) Silkworm larvae feeding on mulberry leaves, (B). Silkworm larvae feeding on mulberry leaves, (C) Cocoon formation in plastic trays, (D) Cocoonage in plastic mountage.

E

Fig.5. (E) Green cocoons.

(iii) Undertake programme to promote and develop participatory approach for effective adoption of technologies by the users and encourage such ideas through 'Cluster Approach' by establishing Cluster Development Centers in potential areas and encourage implementation through SHGs, NGOs, or Co-operative Societies, etc.
(iv) To conduct research in identified priority areas viz. Soil Science, Disease forecasting and forewarning and establishment of farmers field schools.
(v) With the help of meteorological data and bionomical studies strengthen the pest and disease forecasting and forewarning system, in order to provide timely messages to the farming community for undertaking effective advocated / needed measures to minimize the crop loss.
(vi) Emphasis on up gradation of knowledge and skill of the development / extension workers and farmers through need based training programmes.

Problem of Sericulture in J & K state

In spite of strengths, there are still problems in promotion of sericulture in J & K state. Important problems are enumerated below –
(i) Silkworm seeds are distributed more than the requirement as per reports, which lead to leaf shortage in the later stages of rearing.
(ii) Farmers conduct rearing in dwelling houses without proper ventilation and do not have separate rearing houses.
(iii) They are reluctant to disinfect their houses properly as they themselves live in the same houses.
(iv) Unhygienic methods of rearing leading to disease outbreak.
(v) Most of the farmers are supplied incubated seed only and not the chawkie worms.
(vi) Farmers use neither stands nor trays for rearing silkworms and rear them either on floors or temporary shelves under crowded conditions.
(vii) Poor quality of mulberry leaf leading to prolonged larval life.
(viii) Monocropping and low leaf production from age old plants of inferior genetic stock.
(ix) Spinning of cocoons is not done properly and sun drying of cocoons is very common affecting the reelability and quality of silk.
(x) Due to these defects, farmers are unable to get remunerative price for their cocoons.
(xi) Weak sericulture extension mechanism.
(xii) Marketing facilities are not adequate.

Strategies suggested for development of sericulture in J & K

Following strategies are suggested for development of sericulture in J & K –
(i) Introduction and development of region and season specific silkworm races and mulberry varieties.
(ii) Increase in area under mulberry cultivation through large scale plantation of improved mulberry cultivars.
(iii) Promotion of mulberry sericulture enterprise in hilly / border and backward areas.
(iv) Promote mechanization and rationalization in the field of mulberry cultivation, silkworm rearing, and silk reeling to bring down the cost of raw silk.
(v) Give sufficient research focus in breeding to obtain suitable bivoltine races.
(vi) Enhance economic viability of reeling activity through effective utilization of by products.
(vii) Apply eco-friendly integrated nutrient / disease and pest management strategies both for mulberry and silkworm.
(viii) Contribution of women in sericulture development needs to be recognized.
(ix) Middle level functionaries and technicians should be trained.
(x) Massive training to farmers on the basis of result demonstration, farm field school, printing of literature etc.

(xi) Study tours / farmers tours to research institutions and advance sericulture states should be organized regularly.
(xii) Assistance to seri enterprises / seri graduates to set up seri clinics / seri business centers.
(xiii) Proper and timely marketing facilities.
(ix) Concentration of efforts on small and marginal farmers.
(x) Joint efforts of researches, extension specialists, and farmers to test and modify improved sericulture technologies appropriate for local conditions.
(xi) Development of sericulture under NREGA.

CONCLUSION

The state of Jammu and Kashmir is having a temperate climate, as such offers salubrious conditions for production of quality bivoltine silk. But unfortunately the industry slipped back to take a lead position among the sericultural zones of the country. Thus future of the modern silk industry has been identified to be closely linked with the stable sericulture carried on scientific lines, active and well knit extension support, propagation of quality mulberry varieties, awareness of the benefits of sericulture activity among farmers, practice of conducting not less than two rearings in a year, a well organized system of production and supply of disease free eggs, use of by-products of sericulture activity, modernization of reeling sector, rationalization of marketing of cocoons and raw silk, building of polyhouses to facilitate the production of grafts and cuttings, popularization of low cost technologies at farmer level etc. This will give an attractive image to the silk industry in the global silk markets. Besides need-based research, keeping in view the status of the rearers and their requirement can also lead to their attraction in sericulture in a big way.

REFERENCES

Anonymous. 2014-15. RSRS, CSB, Miransahib, Jammu.

CSB, 2016. Note on the performance of Indian silk industry & Functioning of central silk board, Central Silk Board, pp. 16.

Economic Survey, 2013-14. Directorate of Economics and Statistics, Govt. of Jammu and Kashmir, pp, 337-341.

Economic Survey, 2014-15. Directorate of Economics and Statistics, Govt. of Jammu and Kashmir. Vol. **1**, pp, 10-11.

Gangopadhyay, D. 2008. Sericulture Industry in India - a Review. A document in India Science and Technology.

Ganie, A. Nissar, Kamili, Afifa. S., Baqual, M.F., Sharma, R.K., Dar, K.A. and Khan, I.L. 2012. Indian Sericulture industry with particular reference to Jammu and Kashmir. *I.J.A.B.R.,* Vol. **2**(2): 194-202.

Kamili, Afifa, S and Masoodi, Amin, M. 2000. Principles of temperate sericulture. Kalyani Publishers, Ludhiana, pp.257.

Tazima, Y. 1958. Report on sericulture industry in India. Central Silk Board, Bombay.