Sericulture as a Profit-Based Industry-A Review

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ABSTRACT

Sericulture is one of the most labour intensive sectors, combining activities of both agriculture (sericulture) and industry. Sericulture being an agro-based enterprise plays a predominant role in shaping the economic destiny of the rural people. It holds promise as an employment generating industry, especially in rural and semi-urban areas. Sericulture is agro-based industry, practiced in India for many centuries. The labour intensive industry remains one of the major strengths of India fascinating with its most exquisite workmanship and beauty which no other country has ever been able to replicate. Silk has always been fashionable and for the last few years, it has remained a strong component of the international fashion trends. Sericulture is multidisciplinary activity consists of mulberry leaf production, silkworm rearing (cocoon production), silkworm egg production, silk reeling (yarn production), twisting, Warp and weft making, printing and dyeing, weaving, finishing, garment designing, marketing etc. In India, Sericulture is not only a tradition but also a living culture. Moreover, women participate in the activities of sericulture, thus provide ample scopes for their development through awareness, capacity building through imparting training demonstration of technologies, processes, techniques etc. and guiding for empowerment so that the society will be socioeconomically uplifted and the country as well. It is a farm based, labour intensive and commercially attractive economic activity falling under the cottage and small-scale sector. It particularly suits rural-based farmers, entrepreneurs and artisans, as it requires small investment, but with potential for relatively higher returns. It provides income and employment to the rural people especially farmers with small landholdings and the marginalized and weaker sections of the society.

Keywords: Agro-based enterprise, Labour intensive, Employment, Women participation, Silkworm rearing.

INTRODUCTION

The word “Sericulture” has been derived from the word “Su” (Si) which means silk. Sericulture, the art and science of growing silkworm, food plants, rearing silkworms and production of silk is basically an agro-industry and an economically rewarding enterprise consisting of several sets of activities and plays a predominant role in shaping the economic destiny of the rural people (Dewangan et al., 2011).
Sericulture, is divided in two sectors namely farm and industry. The farm sector involves growing silkworm’s food plants, rearing silkworm to produce cocoons and eggs. Reeling, twisting, dyeing, printing, finishing, knitting form the industry sector (Srivastav et al., 2005). Sericulture, the production of silk worms and thus ultimately of silk fibre (Ganga & Chetty, 1991), has become a promising rural activity in India because of its minimum gestation period, minimal investment, maximum employment potential and quick turnover for investment (Kasi, 2000, 2009a & 2009d). Out of 6.39 lakh villages in India, sericulture is practised in about 69,000 villages (Central Silk Board, 2002; Geetha & Indira, 2011; Lakshmanan et al., 2011). Sericulture activity brings regular income to the community without any bias of caste, creed, gender, or religion. A remarkable feature of this activity is its egalitarianism—sericulture farmers, rich and poor, earn the same income from it. As women has a crucial role in the activities of sericulture, it equally creates opportunities and make them independent socially, economically, politically, and otherwise (Goyal, 2007; Pillai & Shanta, 2011; Thomas et al., 2010). Sericulture is an extremely labor intensive industry and occupies a pivotal position from the point of providing employment and additional income to weaker sections (Best & Maier, 2007). India enjoys the availability and practice of mulberry and non-mulberry sericulture like tasar, eri, muga and oak-tasar varieties (Savithri, Sujathamma & Neeraja 2013). The tasar silk industry has acquired a big role in improving tribal socioeconomic condition besides generating substantial rural employment (Suryanarayana & Srivastava, 2005; Rao, 2007). There are 258 well-recognized tribal communities, notified as scheduled tribes in India (Sinha, 2003). There are more than 58 countries practicing sericulture in the world.

Global Silk Industry
The major silk producing countries in the world are; China, India, Uzbekistan, Brazil, Japan, Republic of Korea, Thailand, Vietnam, DPR Korea, Iran, etc. Few other countries are also engaged in the production of cocoons and raw silk in negligible quantities as shown in the figure below.

Even though silk has a small percentage of the global textile market - less than 0.2% - its production base is spread over 60 countries in the world. While the major producers are in Asia (90% of mulberry production and almost 100% of non-mulberry silk), sericulture industries have been lately established in Brazil, Bulgaria, Egypt and Madagascar as well.

Global Silk Production (in Metric Tonnes)

| S. No. | Countries      | 2014  | 2015  | 2016  | 2017  | 2018  |
|-------|----------------|-------|-------|-------|-------|-------|
| 1.    | Bangladesh     | 44.5  | 44    | 44    | 41    | 41    |
| 2.    | Brazil         | 560   | 600   | 650   | 600   | 650   |
| 3.    | Bulgaria       | 8     | 8     | 9     | 10    | 10    |
| 4.    | China          | 1,46,000 | 1,70,000 | 1,58,400 | 1,42,000 | 1,20,000 |
| 5.    | Colombia       | 0.5   | 0.5   | 0.5   | -     | -     |
| 6.    | Egypt          | 0.8   | 0.8   | 1.2   | 1.2   | 1.25  |
| 7.    | India          | 28,708 | 28,523 | 30,348 | 31,906 | 35,261 |
| 8.    | Indonesia      | 10    | 8     | 4     | 2.5   | 2.5   |
| 9.    | Iran           | 110   | 120   | 125   | 120   | 110   |
| 10.   | Japan          | 30    | 30    | 32    | 20    | 20    |
| 11.   | North Korea    | 320   | 350   | 365   | 365   | 350   |
| 12.   | South Korea    | 1.2   | 1     | 1     | 1     | 1     |
| 13.   | Philippines    | 1.1   | 1.2   | 1.82  | 1.5   | 2     |
| 14.   | Syria          | 0.5   | 0.3   | 0.25  | 0.25  | 0.25  |
| 15.   | Thailand       | 692   | 698   | 712   | 680   | 680   |
| 16.   | Tunisia        | 4     | 3     | 2     | 2     | 2     |
| 17.   | Turkey         | 32    | 30    | 32    | 30    | 30    |
| 18.   | Uzbekistan     | 1100  | 1200  | 1256  | 1200  | 1800  |
| 19.   | Vietnam        | 420   | 450   | 523   | 520   | 680   |
| 20.   | Madagascar     | 15    | 5     | 6     | 7     | 7     |
| TOTAL |                | 1,78057.62 | 2,02072.83 | 1,92512.27 | 1,77507.55 | 1,59648.00 |

Source: International Sericultural Commission
Indian Silk Industry
India’s silks are known for their finery and artistic designs and distinct colours. The country is known the world over for the exquisite brocade fabrics of Banaras, silks of Karnataka, tie-and-dye and Patola of Gujarat and Rajasthan, ikats from Orissa, fine Bandhej and temple silks of Kancheepuram and Tanjore, etc., are only a few of the myriad range of silk weaves, textures and patterns available in India. Mulberry is the largest practiced sericulture industry accounting for almost 76 per cent of the entire silk production. The industry provides employment to more than 7.6 million people across 51,000 villages, who operate 328,627 handlooms and 45,867 powerlooms with 8,14,616 weavers.

Sericulture was introduced in South India by Tipu Sultan during the 18th Century and since then this enterprise is practiced in Southern parts of India as a household and commercial agriculture activity (Srinivas et al., 2007). India has a glorious sericulture tradition of its own (Patil, 2009). Silk is indispensable in ceremonies and religious rituals, being a must in weddings and festivals. From this, it is very clear that it has very strong domestic market, which is a real strength of our sericulture industry. The labour intensive industry remains one of the major strengths of India fascinating with its most exquisite workmanship and beauty which no other country has ever been able to replicate. Silk has always been fashionable and for the last few years, it has remained a strong component of the international fashion trends (Pandey, 2014) (Anonymous, 2010). Sericulture is multidisplinary activity and it plays a significance for ensuring inclusive growth (Ganie et al., 2012).

In India, due to favorable climatic conditions, mulberry is cultivated mainly in five states, viz., Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal and Jammu & Kashmir. These five states collectively account for 97% of the total area under mulberry cultivation and 95% of raw silk production in the country (Anitha et al., 2013). Although sericulture is considered as a subsidiary occupation, technological innovation has made it possible to take it up on
an intensive scale capable of generating adequate income (Sirajudeen, 2011). India contributes about 20% to the raw silk produced in the world, ranking next only to China. Majority of labour force is village based accounting for a total of about 264 million and rural women labour account for about 83 million, representing 31.5% of the rural labour force (Sarkar et al., 2017). During 2019-20, the total raw silk production in the country was 36,152 MT, which is an increase of 1.9% over the production achieved during the last year and around 93.8% of the annual targeted production for the year 2019-20. The mulberry silk production was marginally up by 0.2% during 2019-20 over the previous year (CSB, 2020).

### Present status of Sericulture

| Particulars                          | 2015-16 Achmnt. | 2016-17 Achmnt. | 2017-18 Achmnt. | 2018-19 Achmnt. | 2019-20(P) |
|--------------------------------------|-----------------|-----------------|-----------------|-----------------|------------|
| Mulberry Plantation (Lakh ha.)       | 2.09            | 2.17            | 2.24            | 2.35            | 2.57       |
|                                      |                 |                 |                 |                 | 2.40       |
| Raw Silk Production:                 |                 |                 |                 |                 |            |
| Mulberry (Bivoltine)                 | 4613            | 5266            | 5874            | 6987            | 8500       |
|                                      |                 |                 |                 |                 | 6993       |
| Mulberry (Cross breed)               | 15865           | 16007           | 16192           | 18358           | 18865      |
|                                      |                 |                 |                 |                 | 18391      |
| Sub Total (Mulberry)                 | 20478           | 21273           | 22066           | 25345           | 27365      |
|                                      |                 |                 |                 |                 | 25384      |
| Vanya                                |                 |                 |                 |                 |            |
| Tasar                                | 2819            | 3268            | 2988            | 2981            | 3515       |
|                                      |                 |                 |                 |                 | 3370       |
| Eri                                  | 5060            | 5637            | 6661            | 6910            | 7370       |
|                                      |                 |                 |                 |                 | 7157       |
| Muga                                 | 166             | 170             | 192             | 233             | 280        |
|                                      |                 |                 |                 |                 | 240        |
| Sub Total (Vanya)                    | 8045            | 9075            | 9840            | 10124           | 11165      |
|                                      |                 |                 |                 |                 | 10768      |
| GRAND TOTAL                          | 28523           | 30348           | 31906           | 35468           | 38530      |
|                                      |                 |                 |                 |                 | 36152      |
| P: provisional                       |                 |                 |                 |                 |            |
| Source: CSB                          |                 |                 |                 |                 |            |

### Salient Features of Sericulture

Sericulture is not restricted to the agricultural activities of mulberry cultivation, silkworm rearing and seed production, but opens up into the post-cocoon sectors of silk reeling, twisting, weaving, dyeing, printing and garment manufacture. While, the farmers in the rural areas practice sericulture for producing cocoons, silk reeling/ spinning and weaving activities are concentrated in semi-urban area, towns and cities. Reeling forms a vital link in converting the agricultural produce viz., Cocoon into an industrial product – the yarn. Reeling involves a series of intricate process converting the cocoons into raw silk. The reeling sector in India is highly decentralised, employing a variety of reeling devices viz., Charka, Cottage basin, domestic basin, multi-end reeling machinery and Automatic reeling machine.

**Versatile enterprise:** Mulberry, the food crop for silkworm, is a hardy and perennial crop. It can be cultivated in a wide range of soil and agro-climatic conditions both in rainfed and irrigated areas. Sericulture can also be integrated with certain other agricultural crops, livestock, vegetables and plantation in the integrated farming system for optimum use of the available resources to maximise the productivity and thereby net farm income on a sustainable basis.

**Eco-friendliness:** Sericulture is an environment-friendly farm occupation. Since mulberry is a perennial crop, it does not require frequent opening of land, which exposes soil to natural vagaries such as wind and water erosions. Eco-friendly technologies such as bio-fertilizers, recycling of sericulture wastes into nutrient rich organic manure, bio-control measures for pests and diseases of mulberry and silkworm, and use of safe chemicals for disinfection of rearing houses and appliances are encouraged in sericulture for preserving and promoting the natural ecosystem.
**Suitable for weaker section of the society:**
The average holding size of agricultural land has declined from 1.01 ha in 1992 to 0.592 ha in 2013. The marginal ownership category (0.002 ha - 1.000 ha) has registered an increasing trend from 52.98 per cent households in 1971-72 to 75.41 per cent households in 2013 (National Sample Survey Organization, 2013). As sericulture is highly suitable to small and marginal farmers, because of its higher income generating nature with comparatively less investment, sericulture is one of the solutions for tackling the concerns of shrinking land holding sizes of farmers. (Doubling Farmers’ Income – Volume 8, 2017).

**Mulberry Silk Production: People and Process**
The commercial production of silk is a long and complex process involving a variety of skilled people at different stages of its production. About 60 lakh people in India are engaged in various sericulture activities throughout the year. Here is an outline of the different steps involved in the production of mulberry silk and the people employed at each step.

1. **Silk rearers:** The process starts with rearing the silkworm, Bombyx mori, in a controlled environment. The female silkworm lays eggs in a box which are incubated for a few days until the eggs hatch into larvae. They are now ready to be fed mulberry leaves.

2. **Silk farmers:** Mulberry saplings are planted in nurseries and take about 6 months to grow. The leaves of the mulberry trees are then harvested to be fed to the silk larvae.

3. **Silk rearers:** The larvae are fed huge quantities of chopped mulberry leaves for about 6 weeks. During this time, they shed their skin 4 times and grow to about 4 inches long. Once it stops eating, the silkworm is now ready to spin silk. The worm is attached to a frame, where it rotates its body continuously, secreting saliva. The saliva hardens in contact with air, forming a pair of silk filaments. It also secretes a gummy fluid, sericin, which binds the filaments together for protection. Over the next 4 days, the silkworm spins about 1 km of filament, constructing a cocoon and encloses itself completely within it, growing into a pupa. From every batch of cocoons, a small portion of the male and female pupae are kept aside until they grow into moths and are mated for producing the next generation of silkworms. The remaining cocoons are sent for processing into silk.

4. **Silk reelers:** The cocoons are boiled in water, killing the pupae and softening the sericin. The silk filaments are unbound from the cocoon and carefully wound onto a reel. Filaments from several cocoons are wound together to create a single thread of raw silk. About 2500 silkworms are required to produce a pound of raw silk.

5. **Silk twisters:** The raw silk still contains the sericin gum. It is removed by washing it with soap and boiling water. The resulting silk is soft, light and lustrous, and is twisted to produce the strands of silk yarn. Different methods of twisting are used to get the various types of silk yarn: crepe, organzine, singles, etc. The yarn is dyed at this stage in baths of dye colours.

6. **Silk weavers:** In the final step, silk fabric is woven from the silk yarns using looms (handlooms and power looms). A variety of looms employ different ways of holding the warp and weft yarns in them and apply various weaving techniques to produce the diverse range of silk fabrics that we can find today.
Involvement of Women in Sericulture

Basic feature of this farm based economic enterprise is the involvement of women as it is an occupation by and for women and their contribution in sericulture industry is to the tune of 60%, mostly in silkworm rearing and reeling (Anitha et al., 2013; Chouhan et al., 2016).

Sericulture provides scope for the direct involvement of women in the process of production and decision making for improving their economic conditions and it enables them to gain greater recognition and status in the family and society (Parimala, 2009; Raveesha et al., 2016).

It is stated that in China as early as 2600 B.C., Lei-su, wife of the Emperor Huang-di, is supposed to have taught the people as to how to rear the silkworms, reel silk and to make garments. Further, in the year 2640 B.C. according to the legend, the usefulness of silk was discovered by a Chinese Empress Sailen-Chi. Thus, the origin and development of Sericulture is linked to women. The sericulture industry fits into the guidelines and principles of the International Council of Women.

In general, women in the house, while attending to household activities, also look after silkworm rearing activities like leaf chopping, bed cleaning, feeding the silkworms, maintenance of hygiene, picking the ripe worms and placing them on mountages and so on. Their participatory role as workers is highly significant; and their rate of participation in silk cocoon production is much higher than that of male counterparts (Chowdhuri, 2011; Lakshmanan, 2012).

| S.No. | Activities               | Involvement Of Women (%) |
|-------|--------------------------|--------------------------|
| 1.    | Mulberry cultivation     | 49.55                    |
| 2.    | Silkworm rearing         | 49.67                    |
| 3.    | Silkworm seed production | 20.46                    |
| 4.    | Silk reeling             | 48.81                    |
| 5.    | Silk twisting            | 56.34                    |
| 6.    | Silk weaving             | 49.02                    |
| 7.    | Dyeing and printing      | 41.00                    |
| 8.    | Silk spinning            | 80.00                    |
| 9.    | By-products utilisation  | 65.00                    |

Source: Doubling Farmers’ Income – Volume 8
State-wise raw silk production during the year 2017-18 to 2019-20

| S.No. | States/UTs           | 2017-18 | 2018-19 | 2019-20(P) |
|-------|----------------------|---------|---------|------------|
|       |                      | Target  | Achievement | Target  | Achievement | Target  | Achievement |
| 1.    | Karnataka            | 11120   | 9322     | 10,750    | 11,592      | 12,000  | 11,143      |
| 2.    | Andhra Pradesh       | 6090    | 6778     | 7805      | 7481        | 7946    | 7962        |
| 3.    | Telangana            | 160     | 163      | 200       | 224         | 295     | 297         |
| 4.    | Tamil Nadu           | 2000    | 1984     | 2190      | 2072        | 2300    | 2154        |
| 5.    | Kerala               | 12      | 15       | 14        | 16          | 20      | 16          |
| 6.    | Maharashtra          | 328     | 373      | 415       | 519         | 630     | 428         |
| 7.    | Uttar Pradesh        | 300     | 292      | 340       | 289         | 365     | 309         |
| 8.    | Madhya Pradesh       | 230     | 103      | 160       | 100         | 165     | 54          |
| 9.    | Chattisgarh          | 405     | 532      | 670       | 349         | 562     | 480         |
| 10.   | West Bengal          | 2590    | 2577     | 2775      | 2394        | 2900    | 2464        |
| 11.   | Bihar                | 85      | 63       | 95        | 85          | 86      | 3           |
| 12.   | Jharkhand            | 2744    | 2220     | 2658      | 2375        | 2604    | 2697        |
| 13.   | Odisha               | 140     | 116      | 148       | 131         | 155     | 118         |
| 14.   | Jammu & Kashmir      | 180     | 132      | 190       | 118         | 170     | 117         |
| 15.   | Himachal Pradesh     | 40      | 32       | 43        | 34          | 50      | 30          |
| 16.   | Uttarakhand          | 44      | 35       | 45        | 36          | 42      | 41          |
| 17.   | Haryana              | 2       | 0.7      | 2         | 0.7         | 2       | 0.2721      |
| 18.   | Punjab               | 6       | 3        | 5         | 3           | 5       | 1           |
| 19.   | Assam & Bodoland     | 4705    | 4861     | 4980      | 5026        | 5395    | 3           |
| 20.   | Arunachal Pradesh    | 58      | 54       | 65        | 59          | 75      | 5316        |
| 21.   | Manipur              | 560     | 388      | 435       | 464         | 600     | 60          |
| 22.   | Meghalaya            | 1070    | 1076     | 1110      | 1187        | 1220    | 470         |
| 23.   | Mizoram              | 100     | 836      | 105       | 92          | 130     | 1192        |
| 24.   | Nagaland             | 770     | 615      | 633       | 620         | 682     | 104600      |
| 25.   | Sikkim               | 17      | 0.001    | 3         | 0.4         | 1       | 1           |
| 26.   | Tripura              | 85      | 87       | 125       | 230         | 130     | 94          |
| TOTAL |                     | 33,840  | 31,906   | 35,960    | 35,468      | 38,530  | 36,152      |

Note: (P): Provisional
Source: CSB, 2020

Sericulture in Jammu and Kashmir

Sericulture industry in the state boasts of its glorious past. Silk has been one of the cherished heritages of Jammu & Kashmir with sericulture activity in the valley finding a mention in the ancient Sanskrit scriptures including Rajtarangni. Sericulture as a sector has been the backbone of Kashmir economy. There is great deal of evidence in ancient Sanskrit literature that the original home of silk is Kashmir. The state of Jammu and Kashmir with diverse climatic conditions viz., sub-tropical in Jammu plains, warm temperate in Jammu hills and temperate in Kashmir valley makes it ideally suitable to rear bivoltine races for the production of quality bivoltine silk (Sharma & Bali, 2019).

Mirza Muhammad Haider in his Tarikhi Rashide mentions mulberry trees as among the wonders of Kashmir. The great king of Kashmir Sultan Zain-ul Abideen who is maker of industrial Kashmir gave special attention to this industry by introducing better techniques. Official reports reveal that Europe was the first continent with which Kashmir had started its silk trade. The reports show that in the year
1855, Kashmir was in a position to supply 25000 Oz of silkworm seeds to Europe. By exporting silkworm seeds to Europe, the silk industry of Kashmir gained a pivotal position on the silk route of Europe. In Kashmiri language the silk-fibre is known as ‘pote’ and the silkworm is the Patikeom (insects). Pote manufacturing in the Valley is an old industry (Seri-States of India 2019: A Profile).

Demand side analysis of sericulture for Jammu and Kashmir
In J&K, sericulture is an ideal enterprise for the rural development especially for the weaker sections of the society. This enterprise provides employment opportunities to all the family members of the farmers. This vocation can bring significant revenue to the households, thereby helping several poverty stricken families in the rural areas, especially the marginalized section of the population (Lal et al., 2017).

The department has 173 mulberry nurseries spread over an area of 963 Acres, and 374 mulberry blocks over an area of 2215 acres across the state of Jammu and Kashmir. Annually about 20.00 lac plants are produced from these nurseries against the potential of 30,00 lac plants. The department has well established seed organization and presently about 60% local annual seed demand is met out from the sector.

| Variety                  | 2014-15 | 2015-16 | 2016-17 | 2017-18 |
|--------------------------|---------|---------|---------|---------|
| Mulberry Plantation(ha)  | 8132    | 8237    | 8444    | 8104    |
| Mulberry raw silk(MT)    |         |         |         |         |
| Bivoltine                | 138     | 127     | 145     | 132     |
| Mulberry total (MT)      | 138     | 127     | 145     | 132     |

Source: Seri-States of India 2019: A Profile

There are approximately 0.38 lakh weavers in the state who are engaged in this industry under organized and unorganized sectors. Moreover the handloom goods have great demand in the national and international markets. There are 3,741 handloom units in the state employing same number of persons producing Losies, Puttos, Tweed, Blankets, Raffals, Pashmina and Dusoti Khad. (Economic Survey, Jammu and Kashmir, 2014-15). In J&K, there are around 7 lakh mulberry trees out of which 53 per cent are available in Jammu region and 47 per cent in Kashmir region (Economic Survey, Jammu and Kashmir, 2015-16).
### District-wise raw silk production during 2016-17

| S.No. | District | JAMMU DIVISION | Mulberry raw silk production(MT) |
|-------|----------|----------------|----------------------------------|
| 1.    | Jammu    | 2.8            |                                  |
| 2.    | Samba    | 0.3            |                                  |
| 3.    | Kathua   | 17.9           |                                  |
| 4.    | Udhampur | 29.6           |                                  |
| 5.    | Reasi    | 3.6            |                                  |
| 6.    | Rajouri  | 29.5           |                                  |
| 7.    | Poonch   | 2.8            |                                  |
| 8.    | Doda     | 1.0            |                                  |
| 9.    | Kishtwar | 1.2            |                                  |
| 10.   | Ramban   | 2.7            |                                  |

### KASHMIR DIVISION

| S.No. | District | Mulberry raw silk production(MT) |
|-------|----------|----------------------------------|
| 11.   | Anantnag | 8.1                              |
| 12.   | Kulgam   | 3.4                              |
| 13.   | Baramulla| 8.5                              |
| 14.   | Bandipura| 6.1                              |
| 15.   | Budgam   | 2.8                              |
| 16.   | Kupwara  | 9.8                              |
| 17.   | Pulwama  | 7.6                              |
| 18.   | Shopian  | 2.9                              |
| 19.   | Srinagar | 1.8                              |
| 20.   | Ganderbal| 2.4                              |

| TOTAL | 145     |

Source: Seri-States of India 2019: A Profile

### District wise population of silkworm rearers of Jammu and Kashmir 2015-16.

| District | No. Of silkworm rearers |
|----------|-------------------------|
| Jammu    | 662                     |
| Samba    | 1371                    |
| Kathua   | 4205                    |
| Udhampur | 6300                    |
| Reasi    | 1005                    |
| Rajouri  | 6620                    |
| Poonch   | 530                     |
| Doda     | 302                     |
| Kishtwar | 407                     |
| Ramban   | 880                     |

| District | No. of silkworm rearers |
|----------|-------------------------|
| Anantnag | 1800                    |
| Kulgam   | 650                     |
| Baramulla| 1400                    |
| Bandipura| 700                     |
| Budgam   | 500                     |
| Kupwara  | 1600                    |
| Pulwama  | 1400                    |
| Shopian  | 500                     |
| Srinagar | 280                     |
| Ganderbal| 770                     |

| TOTAL | 9600 |

Source: Sericulture Development Department Jammu And Kashmir
Present Status of Sericulture in the State

**Mulberry Sector**

| Number of Departmental Nurseries | 173 |
|----------------------------------|-----|
| Total area of nurseries          | 963 Acres |
| Production capacity of saplings/ year | 30 Lac |
| Present annual sapling production in departmental nurseries | 115 Lac |
| Total available mulberry wealth in the state | 110 Lac Trees |

**Commercial silkworm rearing**

| Number of Rearers | 29400 |
|--------------------|-------|
| Number of sericulture villages | 2800 |
| Annual cocoon production(MT) | 1105.00 |
| Income generation(Lac) | 2226 |

**Post cocoon sector**

| Number of rearing units | 37(14 functional) |

*Source: Sericulture Development Department Jammu and Kashmir*

**Cocoon Marketing**

Jammu and Kashmir is a traditional bivoltine silk producing state and producing around 900 MT of cocoons by 27,000 farmers in 2575 villages. Sericulture Development Department (SDD) is the nodal agency responsible for the marketing of cocoons in the state. The state has established nine notified cocoon auction markets for disposal of cocoons. The cocoon markets are equipped with warehouses, hot air driers and allied facilities required for marketing and storage of cocoons by the sellers and buyers (Directorate of Sericulture Development Department, 2017-2031).

**Cocoon and Raw silk production during last few years**

| Year | Cocoon Production(MT) | Productivity per oz of seed (28g) (kg) | Avg. Price for “A” grade (Rs.) | Raw silk production | Rearers population (No.) |
|------|------------------------|----------------------------------------|-------------------------------|---------------------|--------------------------|
| 2008-09 | 738                    | 32.00                                  | 192.00                        | 82                  | 19700                    |
| 2009-10 | 810                    | 35.00                                  | 300.00                        | 90                  | 22800                    |
| 2010-11 | 860                    | 35.00                                  | 410.00                        | 107                 | 25500                    |
| 2011-12 | 917                    | 37.00                                  | 350.00                        | 116                 | 27000                    |
| 2012-13 | 901                    | 37.00                                  | 397.00                        | 112                 | 28000                    |
| 2013-14 | 1022                   | 40.00                                  | 650.00                        | 136                 | 30000                    |
| 2014-15 | 1032                   | 37.00                                  | 625.00                        | 147                 | 30894                    |
| 2015-16 | 944                    | 37.00                                  | 582.00                        | 135                 | 30630                    |
| 2016-17 | 973                    | 40.00                                  | 667.00                        | 145                 | 30296                    |

*Source: Cocoon and Raw silk production during last few years (Directorate of Sericulture Development Department, 2017-2031)*

The government of Jammu and Kashmir is committed to boost the sericulture industry for the benefit of cocoon growers and generate employment for the unemployed youths. In due course of the time evolving of other allied sectors like Agriculture, Horticulture, the Sericulture Sector received less attention and was pushed back in terms of development. Due to efforts of Department, around 30,000 families are involved in Silkworm rearing activity at present and the Crop production in the State is showing increasing trend. Presently only 20 to 30% of the production of raw Silk Cocoons of the state is consumed within the State, while as rest of the Cocoon material goes outside the State through buyers from Bengal and Karnataka.

Sericulture being one of the traditional agro based cottage industries of the J&K state producing high quality Bivoltine Silk comparable to international quality helps in Improving economic conditions of the rural masses and providing employment opportunities in pre and post cocoon activities (Dar et al., 2017).
Employment in the Sericulture sector in Jammu and Kashmir

| Employment in years | Number of persons(Annually) |
|---------------------|-----------------------------|
| 2010-11             | 75,000                      |
| 2011-12             | 1,00000                     |
| 2012-13             | 1,75000                     |
| 2013-14             | 2,25000                     |
| 2014-15             | 3,00000                     |
| 2015-16             | 3,50000                     |

Source: Economic Survey 2015-16, Government of Jammu and Kashmir.

Income generation from sericulture in Jammu and Kashmir

| Years      | Lac. Rs. |
|------------|----------|
| 2010-11    | 800      |
| 2011-12    | 1100     |
| 2012-13    | 963.00   |
| 2013-14    | 1193.00  |
| 2014-15    | 2026.00  |
| 2015-16    | 2226.00  |

Source: Directorate of Sericulture Department, Jammu and Kashmir

CONCLUSION
The sericulture industry is unique for more than one reason. It is based on agricultural output viz., cocoons and cottage based labour intensive in nature. Identification of a market opportunity, research and development, community empowerment and learning from failure are the key factors for the success. Sericulture clearly provides remunerative ‘employment’ for family members and economic benefit to farming households. In India, Sericulture is not only a tradition but also a living culture. It is a farm based, labour intensive and commercially attractive economic activity falling under the cottage and small-scale sector. It particularly suits rural-based farmers, entrepreneurs and artisans, as it requires small investment, but with potential for relatively higher returns. It provides income and employment to the rural people especially farmers with small landholdings and the marginalized and weaker sections of the society. Sericulture occupies a place of pride in the rural economy by being only cash crop that guarantees attractive returns in a short period of time. Moreover, the women in the society particularly the rural women are actively involved in almost all the activities in their family works and in assisting the male member of family to uplift the economy. Women participate in the activities of sericulture, thus provide ample scopes for their development through awareness, capacity building through imparting training demonstration of technologies, processes, techniques etc., & guiding for empowerment so that the society will be socioeconomically uplifted and the country as well.

Sericulture has emerged as the most important cash crop with minimum investment, low gestation period, high employment potential and highly remunerative return. Suitable for every section of society, a big farmer or a landless farmer, aged person or a youth, man or a woman. This Sericulture sector is not only important for generating rural employment and preventing rural migration but also for protection and preservation of ecology, sustainable development, socio-economic change.

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