

Sericulture and Management

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Abstract— Sericulture is an agro-based labour intensive and rural cottage industry. It provides ample employment to the economically weaker section of the society. Sericulture, the art and science of silk production, has been intertwined with human civilization for millennia, originating in ancient China and spreading across the globe. Silk, a natural protein fiber, is primarily produced by silkworms during their larval stage. China leads in raw silk production, followed by India. The industry primarily involves insects from the order Lepidoptera, families Bombycidae and Saturniidae. Major types of silkworms include mulberry, tasar, eri and muga. Silk production varies based on volume, with silkworms categorized as univoltine, bivoltine, or multivoltine. Our country ranks second position after China in the whole world. Sericulture is also known as “Queen of Textile”. In our country India, major sericulture rearing states are Karnataka, Tamilnadu, Andhra Pradesh, West Bengal, Assam and Jammu and Kashmir states. The Mysore and North Bengaluru is known as ‘Silk City’ of India, because this region contributes to a majority of silk production.

I. INTRODUCTION

Silk is the secretion of the salivary glands, which are found on both sides of the dietary channel of silkworm larvae, and this secretion hardens into fine threads called silk. The cocoons with which the chrysalis is covered by the worms are used in silk production. The word Sericulture has been derived from the Chinese word “Su (Si)” which means “Silk” and the English word “Culture” means “Rearing.” Silkworm is the caterpillar of adult silkworm. Sericulture or silk farming is the art and science of rearing of silkworms for the production of raw silk and end product is silk. In general, the production of silk from silkworm by rearing practices on commercial scale is called sericulture. The Sericulture is the only cash crop in agriculture sector that give quick returns income to the farmers within 30 days. Silk being an exclusive fiber and popular as “Queen of Textiles” and is well known for its natural colour, fine, strong, purity and unusual lustrous. The textile industry occupies a unique place in our country.

Sericulture is intensively labour based, agro-based commercially attractive economic activity. Sericulture provides ample employment particularly in countryside of India. Sericulture activity is mainly practiced by the rural people in association with agriculture.

Sericulture activity, is an agro-based cottage industry which is also known as welfare based employment oriented cottage industry, plays a vital role in the stabilization of country's national income. Sericulture is an agro-based business, in which we raise silk insects to produce raw silk. In order to boost agricultural production, there are other businesses or industries in India, such as crop production, horticulture

production, dairy production, poultry farming, which also support their participation to boost the economy of India. One of them is "sericulture", which we can establish from small to large scale and earn profits of millions at the least cost. In silkworm rearing, an insect, which produces a large number of silk, is reared for silk production. It is a business that makes the most profit at the least cost. We can develop this business easily with any other business.

If we talk about silk production, China is the largest producer of silk. India stood second in the production of silk. About the 80% of the silk produced in the country is of mulberry silk, majority of which is produced in the three southern states of Karnataka, Andhra Pradesh and Tamil Nadu followed by West Bengal and Jammu & Kashmir. Silkworm is mainly the second profitable insect after honeybee, which benefits the entire human race, as silkworm helps in increasing the availability of textiles. If we talk about ancient times, China sold silk worth equal to the weight of gold, but if we talk about today, then four varieties of silk are produced in our country as - Mulberry, Tassar, Eri and Muga because with the demand for silk clothes is increasing. In view of this demand, Farmers are showing their interest in sericulture and are moving towards silk cultivation, due to which farmers are also getting more profit. In today's time, if we want to get more income along with crop production, then we can opt business related to sericulture and then we will be able to increase income of our farmers as well as we can increase the economy of our country.

II. OBJECTIVES OF THE STUDY

1. To examine the growth and development of sericulture in India.
2. To analyze the spatio-temporal production of raw silk and highlighted the major silk centre of India.
3. To highlight the problems related with farmers in sericulture activities.
4. To focus the future prospect of sericulture of India.

III. ECONOMIC IMPORTANCE OF SERICULTURE

- Sericulture has other uses besides clothing.
- It's used as operational thread in hospital.
- In sports cycle, thread can be used for preparing rubber wheel.
- It's used as thread in parachutes and rocket.
- Cocoon, protein extracted that can be used for cosmetics and medicine.
- Aesthetic materials made from waste cocoons-Flower vase, Interior decoration, Flower pot, Greeting cards, Animal toys, Garland etc.

IV. TYPE OF SILKWORMS

Around 400-500 species are known to produce silk but only very few are commercially exploited. Silk is divided into two categories: insect silk and non-insect silk, depending on the creature that produces it. Commercially, insect silk is

more significant. The order Lepidoptera, Superfamily, Bombycoidea, and families Bombycidae and Saturniidae comprise the majority of insects that produce silk. Roughly ninety-five percent of commercial insect silk is made from mulberry, which is mostly obtained from the *Bombyx mori* silkworm. The term “non-mulberry silk” (also known as “Vanya silk”) refers to the remaining sources of commercial silk. The only nation in the world that produces all four varieties of natural textile silk is India.

Classification & Characteristics Of Silkworms

Common Name	Scientific Name	Color	Host Plant	Major Regions
Yellow/Green Tasar Silkworm	<i>Antheraea mylitta</i>	Mulberry leaves	In All States of India	
Copper-Brown Eri Silkworm	<i>Samia cynthia ricini</i>	Arjun, Asan, Sal, ber	Bihar, Madhya Pradesh and Odisha, Maharashtra, West Bengal, Andhra Pradesh	
Creamy White/Brick-Red Muga Silkworm	<i>Antheraea assamensis</i>	Golden Castor leaves	Assam, Bihar, West Bengal, Odisha, Manipur	
Som, Champa and Moyankuri Mulberry Silkworm	Assam (Brahmaputra River Valley)	Tasar Silkworm	Eri Silkworm	
Mulberry Silkworm (<i>Bombyx mori</i>)	Muga Silkworm	3	4	

The mulberry silkworm (*Bombyx mori*), which only consumes mulberry leaves, produces most of the commercial silk produced worldwide. All of these silkworms are raised indoors and are completely domesticated. Tasar Silkworm Tasar silk is produced from silkworms belonging to the genus *Antheraea* and is obtained from trees such as Asan and Arjun. Rearing occurs naturally on trees, particularly in Bengal and Andhra Pradesh. Tasar silk has a copperish color and is coarser compared to mulberry silk, but it has its own unique appeal. The main types of tasar silkworms are tropical tasar (*Antheraea mylitta*), temperate tasar (*A. proylei*), Chinese tasar (*A. pernyi*) and Japanese tasar (*A. yamamai*). Eri Silkworm (*Samia cynthia ricini*) Also known as Endi or Errandi, the domesticated silkworm *Philosamia ricini*, which mostly feeds on castor leaves, spins eri silk from open-ended cocoons. Eri culture is commonly practiced in northeastern states like Assam, as well as in Bihar, Orissa, and West Bengal. The silk is mainly used for making wraps called chaddars and eri culture is significant for providing protein-rich pupae, a delicacy for tribal communities. Muga Silkworm (*Antheraea assamensis*) Muga silk, characterized by its goldenyellow color, is unique to India and is particularly associated with the state of Assam. It comes from the mulberry, semi-domesticated silkworm *A. assamensis*, which consumes the fragrant leaves of Som and Soalu plants. Unique to Assam, Muga culture is integral to the state's customs and culture. Muga silk is extremely valuable and utilized in many different items, including chaddars, mekhalas, and sarees.

V. MAJOR PROBLEMS

- Lack of education among the sericulture workers:** Sericulture of Malda district is mostly carried out by the illiterate person. Not a single post graduate or other degree holders rearing this activity. Usually, educated youth do not come forward to take up this occupation. Sericulture is mostly run by the illiterate people of the society, who have no idea about scientific as well as commercial process of rearing silkworms.
- Price fluctuation of Cocoons:** The prices of Cocoons are fluctuated from one season to another season. The

government of West Bengal or Ministry of Textile (Sericulture), West Bengal should fix the remunerative price for cocoons which in turn helps the farmers to overcome the problem of violent fluctuation in cocoon prices.

3. Middlemen interference: Due to absence of sericulture market in the district, large number of middlemen and traders engaged in this activity. The middlemen or the traders are moving door to door to purchase the cocoons from sericulturists. So, the farmers are unable to getting the remunerative price for their hard work.

4. Competition with different cash crops: Sericulture of India has been facing strict competition with different cash crops like paddy, jute, mango, litchi and other horticulture crops. These cash crops are especially market oriented.

5. Financial / Credit problem: Finance is the main pre-requisite of every productive operation. So, the success of this sector depends on adequate financial aid. In sericulture activity, fixed capitals are required for every step such as mulberry leaves plantation, construction of rearing houses, rearing and grain-age equipments. Negligible amount of the grant is generally available to only few selected rearers. Apart from this, most of the rearers are poor and they have to take large scale rearing on commercial basis.

6. Attitude of the society towards sericulturists: In this modern age, some sections of the society who accord lower status to the people who are engaged in rearing of silkworms.

7. Erratic seasonal conditions and effect of natural hazards: Erratic or extreme flood, seasonal conditions and cyclone (Kal Baisakhi) put hurdles in silk worm rearing. They destroy the mulberry plants gardens and also cause the spread of diseases among the silkworm insects.

8. Poor information on market trend: Lack of marketing information is another bottleneck faced by this industry due to which reelers are not getting remunerative price for their finished products. There is not a single agency by the government which may provide the market trend information to the sericulturists in the study area.

VI. SUGGESTION AND POLICY IMPLICATION

- > There is an urgent need to establish regulated marketing system among different districts in the various states such as West Bengal, Karnataka, Andhra Pradesh, Tamil Nadu, Himachal Pradesh, Assam and Jammu and Kashmir etc.
- > The Central Silk Board, Mysore, Karnataka should take necessary steps to educate the farmers by conducting meeting, training programme, publishing materials in vernacular languages and extending messages to traditional sericulture practices in different states of India such as West Bengal, Karnataka, Andhra Pradesh, Tamil Nadu, Himachal Pradesh, Assam and Jammu and Kashmir.
- > The Department of textile (Sericulture), should supply mulberry sapling and silkworms eggs to the sericulture workers to different blocks of the district at subsidized cost and encourage them to cultivate at various the various states

such as West Bengal, Karnataka, Andhra Pradesh, Assam and Jammu and Kashmir etc.

> Other important pre-requisite for the growth of sericulture in the state is financial or credit facility. The government should provide long-term as well short term loans for mulberry plantation, construction of rearing rooms and for rearing equipments in the sericulture farmers of West Bengal, Karnataka, Andhra Pradesh, Tamil Nadu, Himachal Pradesh, Assam and Jammu and Kashmir.

> For the development of sericulture in India, the effective training of silkworms rearing and mulberry plantation should be given to the at various the various states such as West © 2021, IRJEdT Volume: 02 Issue: 04 | August-2021 19 Bengal, Karnataka, Andhra Pradesh, Assam and Jammu and Kashmir etc. rearers of which in turn may increase the quality of silk cocoons and mulberry plantation.

> Promotion of organic farming in sericulture is needed to the at various the various states such as West Bengal, Karnataka, Andhra Pradesh, Assam and Jammu and Kashmir etc. This will make sericulture as more profitable activity in the different states of India.

> The Ministry of Textile (Sericulture), Government of India should fix the minimum standard price of cocoons. So, that the sericulture farmers of the various states such as West Bengal, Karnataka, Andhra Pradesh, Assam and Jammu and Kashmir etc. may get the remunerative price for their hard work.

> Effective extension services should be provided to Sericulture farmers at all stages. There should be a Public Private Participation (PPP) for the better development of sericulture in at various the various states such as West Bengal, Karnataka, Andhra Pradesh, Assam and Jammu and Kashmir etc.

> The Ministry of Textile (Sericulture), Government of India should promote bi-voltine (white races) of silk production on commercial basis at various the various states such as West Bengal, Karnataka, Andhra Pradesh, Assam and Jammu and Kashmir etc.

> The Higher Education Department, Government of India should take required steps to include sericulture course in the syllabus at higher secondary and college level as an elective subject with necessary facilities. This process would motivate the educated youth to adopt innovative inputs and in return this will flourish the entire sericultural activity at various the various states such as West Bengal, Karnataka, Andhra Pradesh, Assam and Jammu and Kashmir etc.

VII. CONCLUSION

Silk which is the secretion of salivary gland of silk worm can be a very good alternate for Indian farmers in increasing their farm income as require an investment of only Rs. 12,000 to Rs. 15,000 (excluding cost of land and rearing space) for mulberry cultivation and silkworm rearing in one acre of irrigated land can generate net income levels up to Rs.30,000/acre/ annum which is comparatively higher than traditional crop cultivation. Along with 8 higher incomes silk

growing is also more resource friendly because Mulberry takes only six months to grow for starting silkworm rearing and once planted it can support five crops in one year under tropical condition. This additional income generating activity will help the farmers to uplift their socio-economic development and bring sustainable livelihood security in the region and will facilitate in biodiversity conservation.

Sericulture activity is the employment generating rural household cottage industry in India. There is a very good prospect for the development of sericulture activities in India. It provides ample employment and income in the rural areas and also thereby helps in alleviating poverty in the countryside of India. If the present trend to be followed in future, the country India will become 60 percent bi-voltine silkworms rearing in mulberry sector. The farmers of sericulture in India are very happy with this activity by earning good returns. Finally co-operation from various sections like officers, Researchers, artisans, traders, rearers etc. engaged in activities related to sericulture is necessary for the successful growth of the sector. The future of sericulture industry in India is seems to be very bright and the state will have to take a big leap in coming years.

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