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ORIGINAL CONTRIBUTION

Sericulture in India: A Case Study

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ABSTRACT

Sericulture is one of the important potential agro- based rural industry in the world. This paper analyzed that socio-economic development through sericulture sector in the world and in India. Majority of the people are engaged in various sericulture related activities in the country. This paper mainly focused on socioeconomic development, employment generation, and sericulture sector activities in the state. This sector expected low investment with higher returns in short gestation, due to this rural economy mainly concentrated on this sector. The sericulture has been known for eco-friendly, helps to soil conservation and foreign exchange earning opportunity for the developing countries.

Key words: Online Banking, Bank Customer Awareness and Satisfaction, E-Banking, Banking System, Banking Industry.

1. INTRODUCTION

Silk has been under use by human beings for various purposes since ancient times. Pure silk is one of the finest and most beautiful natural fibers of the world and is said to be “the queen of fibres.”

Silk clothes have a look and feeling of affluence that no other cloth can equal. Due to its great value and usefulness, there have been many attempts in various parts of the world for the large scale production of silk. One of the methods was the rearing of silkworms on large scale with great care in natural and controlled conditions. Different rearing techniques are applied in different parts of the world for large scale production of silk threads of fine quality. This is known as sericulture.

2. HISTORY

There is no authentic information regarding the origin and use of silk. The ancient literature gives two views. According to one view, silk industry originated for the first time in India at the foot of the Himalayas, and from there it spread to other countries of the world. Second view, which has greater acceptance, says that this industry originated in China about 3000 B.C. According to this, a Chinese Princess Siling Chi was the first to discover the art of reeling an unbroken filament from a cocoon. This art was kept a close secret for nearly 3000 years. This art later on spread to the rest of the world through several agencies like civil war refugees, war prisoners' marriage of royal families etc.

3. HABIT, HABITAT AND LIFE HISTORY:

Out of the four different silk types the two i.e., mulberry and Eri are manufactured from domesticated silkworms, whereas Tasar and

Munga silkworms are wild in nature, although attempts are in progress to domesticate them too. The life-cycle of these four types of silk moths are much in common, as they lay eggs, from which caterpillars hatch. They eat, grow and produces cocoon for their protection, then pupate inside cocoon. After sometime moths emerge from the cocoon, male and female mate, lay eggs, and repeat their lifecycles. The characteristic feature of these silk-producing moths is that they spin a cocoon of silk for the protection of their pupae. The man with his mental superiority has discovered the technique of robbing the silk threads from these cocoons for his own use.

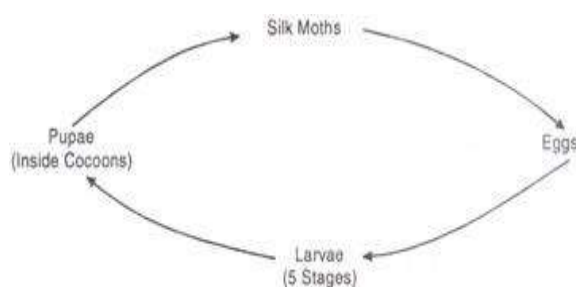


Figure 1: Life History

4. PRESENT POSITION OF SERICULTURE IN INDIA

Sericulture at present is carried on in many parts of the world. India stands fifth in the production of silk. The other major silk producing countries in order of production are Japan, China, South Korea, U.S.S.R., Brazil, Bulgaria and Italy. India accounts for little over 5% of the total global output of mulberry raw Silk and 10% of the Tasar.

However, it is only next to China in production of tasar Silk. Munga is specially an Indian variety. Probably India is the only country which produces all the four types of Silk viz., Mulberry, Tasar, Eri and Munga. In spite of the

challenge posed by the artificial Silk, the production of natural Silk has increased to about 40% in last 15 years and the global output of 1974 was 45 thousand tonnes.

In India the major silk producing states are Mysore, West Bengal, Jammu and Kashmir, Assam, Bihar, Orissa, Madhya Pradesh, U.P., Andhra Pradesh, Tamil Nadu, Punjab, Manipur, Tripura and Maharashtra. The total annual production of raw silk in India is about 31 lakhs kg. Out of which mulberry alone accounts the highest i.e., 25 lakhs kg. and non-mulberry is around 6 lakhs kg. The total output of Silk waste in India is about 12.5 lakhs kg. Annually, out of which mulberry shares about 10 lakhs kg and the rest is shared by non-mulberry Silk.

The value of Silk- product in India is about Rs. 80 crores per annum. Export of Silk brings about Rs. 15 crores in foreign exchange. Mysore state has the distinction of producing alone about 76% of total production of raw silk in this country. In Mysore, W.B., J. and K., T.N., Punjab and H.P. silk produced is mainly of mulberry type, whereas in the states of Assam, Bihar, Manipur, M.P., Orissa, silk produced is mainly of non-mulberry type. Bihar has the oldest set up of this industry and produces all the varieties except the munga. Bihar has also the privilege of producing tasar in largest quantity. The tasar production in the State is mainly based in Santhal Pargana, Chotanagpur and Chaibasa districts. Altogether 16 tasar seed supply stations are functioning in Chotanagpur. The Eri Silk is mainly limited in the state at Gangetic plains. Ranchi, Patna, Bhagalpur, Munger, Muzaffarpur and Saran districts has Eri Seed Supply Station one each. 48 demonstration centres for spinning of Eri Silk have been established in the state. Mulberry Silk is restricted to Purulia district along the border of West Bengal. The total production of Silk is of the value of about 3—5 crores in Bihar. In Bihar

alone about 1.25 lakh persons are engaged in different aspects of this industry.

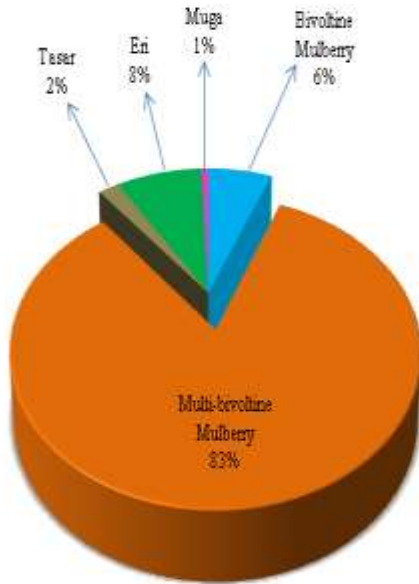


Figure 2: Types of Silk Production in India

Rearing of silkworms on large scale is carried on in villages and remote forests by villagers and tribals. They are assisted by State Government and Central Government agencies. In each Silk producing state there is a special unit under State Government to look after this industry. Assistance in the form of money, seeds, technical know-how, insecticides etc. are provided to the rearers. This unit is also

responsible for maintaining a liaison between rearers, weavers and cloth manufacturing industries. An interest of sericulture in India as a whole is protected by 'Central Silk Board' running under the Union Ministry of Trade and Commerce. A qualitative and quantitative breakthrough has been made due to research conducted on various aspects of the industry by the respective research centres running under this board. The quality control and export of Silk is also looked after by the board.

5. POTENTIAL, STRENGTHS AND CHALLENGES OF SERICULTURE INDUSTRY IN INDIA

R&D achievements like development of indigenous mulberry varieties with highest leaf yields in the world, new bivoltine silkworm hybrids eminently suited to the tropical regions of the country, farmer-friendly technologies, cost-effective new package of practices for cultivation of food plants, rearing and reeling coupled with huge natural and man-made resources and trained manpower clearly indicates the future prospects of sericulture industry to emerge as a promising indicator of economic development for the upliftment of the socially deprived communities and the downtrodden. The strengths, weakness, opportunities and challenges (SWOT analysis) of Indian silk industry have been given in following table.

Table 1: SWOT Analysis

Strengths	Weakness	Opportunities	Threats
Large production base, availability of skills, land and labour.	Gaps in technology transfer and extension support.	Generation of rural employment and reduction of migration to urban areas.	Falling international prices and heavy dumping from China at low prices.
Established infrastructure, availability of silkworm breeds / hybrids.	Inadequate market accessibility, poor linkage among different stake holders.	Liberalization of policies of Govt. of India in line with WTO Agreements.	Unpredictability of China's silk policies.
Low investment, short gestation period and higher returns.	De-centralized nature of the industry inhibits financial institute from extending financial support to the sector.	Reduction of production of silk even by traditional silk countries like Japan, USSR etc.	Inability of the silk industry to react and adopt to the changing needs in terms of quality both for the domestic and export markets.
Easily adoptable technologies and strong domestic demand-pull.	Lack of quality based pricing system in the market, frequent price fluctuations and large scale imports from China at low prices.	Garment exports are on a steady increase with huge employment opportunities.	Lack of awareness in the domestic market to respond to the demand-driven milieu.

6. SERI-BIO-DIVERSITY

Among 34 mega biodiversity countries in the world, India is home to many species of insects with a diverse silk moth fauna. In addition to the

diverse silkworm races, there are vast genetic resources of mulberry, tasar, muga and eri host plants spread over diverse geographical locations. This offers a great opportunity for economic utilization of the natural flora and fauna. However, due to deforestation and destruction of habitats, there is a challenge to bring about development without disturbing the ecological balance.

7. SERICULTURE AND NATIONAL ECONOMY

In India, sericulture related activities ensure the livelihood security of over six million families spread over in some 59,000 villages across the country. The silk sector is also a valuable foreign exchange earner for the country. The export earnings stood at Rs. 3,338 crores during 2006-07. In addition, there is an opportunity to double the export earnings with the free trade atmosphere in Europe and USA. It is estimated that India needs 25,000 MT of raw silk per year to meet its domestic requirement. The growing demand of silk in the domestic market can make the industry a valuable enterprise which in turn can provide employment for the rural masses ensuring assured economic returns at the individual family level.

8. SERICULTURE AND WOMEN EMPOWERMENT

Women contribute to a little less than 50 % of the country's population and most of them are largely rural based, deriving their livelihood through agriculture and other land based activities, either as family members or wage earners. As a cottage industry, sericulture provides ample work for women in the rural areas particularly in silkworm rearing and reeling,

while men, largely work in the field and in weaving. The involvement of women in different activities of sericulture is about 53 % and their contribution in the on-farm activities understandably is lower than that in post-cocoon activities. Sericulture is an ideal avocation for women because of the following facts-

- Being rural based, sericulture needs less specialized skill and hence, suits women well.
- Involves mostly indoor activities, less physical energy and manual labour.
- Work is evenly spread over during the day, with intermittent gaps, offering leisure time and proximity to living place.
- Minimum investment with long life and short gestation period.
- Continuous job with frequent income and scope for utilizing several by-products for value addition.

9. CONCLUSION

Sericulture in India is still at a nascent stage. Sericulture industries in India are very promising and unmistakably it has a significant proportion in the pie of rural marketing. Off late the government is taking active steps to promote the industries by providing financial and intelligence support, yet in comparison to global market India is still lagging long behind. China, Sri Lanka possess significant challenge to India in the global market. It can definitely however pick up a momentum if more scope of employment opportunities are provided for villagers. Another significant challenge which is faced in Sericulture is lack of interest of the rural agricultural based people to grow such plants instead of conventional and traditional crops which they feel will give them a better economic benefit, which is definitely incorrect.

References

- [1] Bandyopadhyay, UK. Santha Kumar, MV. 2007 Record of natural enemies of mulberry whitefly *Dialueropora decempuncta* and *Alleuroclava* (Homoptera: Aleyoroididae), West Bengal. *Insect environment* 13(2):62-64.
- [2] Cori, G.T. and Cori, C.F. 1945. The enzymatic conversion of phosphorylase "a" to "b". *J. Biol.Chem.*, 158:321-332.
- [3] Cori, G.T., Illingworth, B. and Keller, D.J. 1955. Muscle phosphorylase. In: *methods in enzymology*. Vol. I (eds.) S.P. Colowick and N. Kaplan, Academic Press, New York, pp.200-205.
- [4] Etebari, K. & Bizhannia, A.R. 2006. Effects of thrips (*Pseudodendrothrips mori*) infested mulberry leaves on silkworm and commercial cocoon parameters. *Caspian J.Environ.Sci.* 4: 31-37.
- [5] Govindachari, T.R. 1992. Chemical and biological investigation on *Azadirachta indica* (neemtree), *J.Current Science*, 63,117- 121.
- [6] Karippa, B.K. and Narashimhanna, M.N. 1978. Effect of insecticides in controlling the Mulberry thrips and their effect on rearing silkworm, *Bombyx mori*. *Indian J. Seric.*, 17:7-14.
- [7] Manjunath, D. Prasad, K.S. Sidde Gowda, D.K.2003. Ecological approach for the management of Mealybug, (*Maconellicoccus hirsutus*) causing tukra in mulberry. *Proceeding the National Tropical Sericulture for Competitiveness, 2003, CSRTI, Mysore, India*, pp: 41-46.
- [8] Mukhopadhyay, SK. Santha Kumar, MV. Mitra, P. Das, SK. Bajpai, AK. 2008 Botanical mediated control of Whitefly in mulberry (*Morus alba* L.) and their impact on leaf yield and silkworm rearing pp 233- 38, In *insect pest management Environment Safety* , Sup.4. Vol.-I (EdSC Goel) Uttar Pradesh zoological Society, Muzaffarnagar, India.
- [9] Mukhopadhyay, SK. Santha Kumar, MV. Mitra, P., Das, SK., Bajpai, AK. 2009. Studies on the residual effect of botanical pesticides on silkworm, (*Bombyx Mori* L.) and its economic characters pp 171-80, In *Mulberry sericulture:Problems&prospectus* (Eds. Jaiswal, Tribedi, Pandey&Tripathi)APH Publishing Corporation, NewDelhi, India.
- [10] Muralikumar, C. and Baskhran, P.1992. Disease transmission studies pertaining to mealy bug, *Maconellicoccus hirsutus* (Green) associated tukra. *Proceedings of the National Conference on Mulberry Sericulture Research, 1992, CSRTI, Mysore, India*, 51p.
- [11] Muralikumar, N.V. and Bhaskhran, M. 1992. Incidence of severity of Mealybugs associated with mulberry leaf curl (tukra) in tamilnadu *proceedings of National seminar on Sericulture, CSRTI Mysore, India* pp: 49-53.
- [12] Muthuswami, M. Indumathi, P. Krishnan, P. 2010. Impact of chemicals used for thrips control on silkworm, *BombyxMori*. *karnataka j.Agric.sci.* 23 (1), 144-148.
- [13] Purohit, M.B., Mall, L.P. and Dubey, P.S. 1978. Residual toxicity of a few herbicides. *J.Ind.Bot.Soc.* 57, 305-308.
- [14] Ramesbabu, K.S. Ramakrishna, Y. Harishkumarreddy, G. lakshmi, N.V. Naidu, S. 2009. Metabolic molecular Mechanism in silkworm larvae during viral infection: A review, *African journal of Biotechnology*, 8:899- 907.
- [15] Schmidt, S.P. and Platzer, E.G. 1980, Changes in body tissue and haemolymph composition of *Culex pipens* in response to infection *Romanomeris culicivora*. *J. Invert Pathol.* 36: 240-254.
- [16] Veeranna, G. 1997. Biological changes of tukra leaves of mulberry and its biochemical and economic characters of mulberry silkworm, *Bombyx mori* L. *Entomon*, 22(2): 129-133.
- [17] Wyatt, G.R. 1967, The biochemistry of sugars and polysaccharides in insects. *Adv. Insect. Physiol.*, 4: 287-360.