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Soil to silk: A way of sustainable rural development in Tripura

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Abstract
Sericulture with its unique characteristics plays a vital role in upgrading the socio-economic conditions of the rural folk. In view of the importance of the sericulture this paper tries to enlighten the importance of sericulture in rural people of Tripura. Sericulture is the symbol for self-employment and provides vibrancy to village economics. In Tripura, Sericulture schemes are being implemented through SHGs and women Mulberry Rearers Cooperative Societies which become a symbolic medium for empowering women. Plantation area of and Number of beneficiaries are increasing day by day.
From the study it was found that, Sericulture now days are one of the best profitable employment avenues for rural folk, especially tribal women in Tripura. Among 8 districts of Tripura, Sericulture cluster are present in 7 districts except in Unakoti district. Sericulture in Tripura comes under the Department of Handloom, Handicrafts & Sericulture (DHHS) and controlled by the Principal Secretary, Industries & Commerce (HHS), Govt. of Tripura, Agartala. Govt. has given a special emphasis on development of Sericulture with the view to utilize the un-used flat tilla land and to involve the rural masses in the field of Sericulture through implementation of special project for women beneficiaries. As a result, now they can earn on an average Rs. 25,000/-to Rs.2, 00,000/-in 4 seasons of a year.

Keywords: silk, technology, employment, tribal rural people

1. Introduction
Silk is the queen of textiles. Silk yarn is a very delicate fiber obtained from Lepidopteron insect called Silk moth. The productions of silk from the silk worm by rearing practices on commercial scale are called Sericulture. Although a number of species are found producing silk but only few species are used for Sericulture industry such as *Bombyx mori, Anthera assama, Anthera pahia, Attacus ricinii. Bombyx mori* is most widely used and intensively studied silk worm species. China is the native space of this silkworm but now it has been introduced in all the silk producing countries. It is called Mulberry silk worm because the natural food of this worm is mulberry whose scientific name is *Morus alba* Linn, *Morus indica* Linn. Sericulture industry has been identified as employment oriented industry (Devaraja, 2011) [3].
The state of Tripura, with a geographical area of 10491 km2 is predominantly hilly (60%) & is surrounded on three sides by a deltaic basin of Bangladesh. The state is situated between 22º57′ & 24º32′N and 91º10′ & 92º20′E with tropic of cancer passing through it. The State is situated in the south-western extremity of North-East region of the country. It shares border (1001 km in perimeter) with Bangladesh, Assam and Mizoram. International border with Bangladesh is 856 km, which is almost completely open and porous and one of the small states of North East region which has 8 districts, geographically isolated with poor communication means. So the uplift of socio-economic status of rural population is an uphill task. Sericulture in Tripura is a high priority agro-based industry and plays a vital role in the economy and employment potential, particularly in the rural and semi-urban parts of the state.
This is because Sericulture activities starting from mulberry garden management, leaf harvesting and silkworm rearing is more effectively taken up by the women folk. Tripura has unique traditional design and arts in Handloom textiles. The process of Sericulture in Tripura was started with Eri silk Industry and continued up to 1973-74. Since 1975-1976, deviating from normal trend of North East region Tripura Sericulture switched over completely towards Mulberry culture. Initially there were problems but with the passage of time and the guidance of the Central Silk Board (CSB) it has now established. From 1994-95 Government has given a special emphasis on development of sericulture with the view to utilize the unused tilla land and involve the rural masses in the field of Sericulture. To facilitate larger participation of rural women is Sericulture and highlight their active involvement in the sericulture activities the Directorate of Handloom, Handicrafts and Sericulture has taken up special steps through implementation of special projects for women beneficiaries which support them as additional source of income of her family who can earn on average Rs. 25,000/-to
Rs.2, 00,000/-in 4 seasons of a year. Women entrepreneurs have been given special preference under the schemes. Tribals particularly the Jhumias (nomadic farmers who slash and burn forests for cultivation) are also involved in sericulture as an alternative to Jhum cultivation.
Most of the beneficiaries use their wasteland to grow mulberry trees where farmers rear silkworms till it reaches the spinning stages of cocoon.
One of the active beneficiaries told me "We have taken sericulture as we are able to earn handsome amount, the profit can be more if we are able to look after the worms properly." Sericulture involves low investment with frequent income with 5-6 crops per annum once the mulberry plantationis established it will continue to yield consistently for 15-20 years with a minimum expenditure for maintenance (Savithri.G *et. al*.2013**)** [7]. In Tripura land holding capacity is very poor and hence per unit 0.5 acre of

land has been considered for raising of mulberry garden by the beneficiaries under rain fed land and hence they could able to harvest hardly 4 crops in a year and thus the sericulture in the state has been considered as subsidiary occupation. Sericulture highly suitable to small and marginal farmers, as sericulture involves simple technology and requires low investment. The farmers in these areas are very poor and their ability to take risk and invest necessary inputs for optimizing production is low (Sreedevi *et. al.* 2004) [8]. Sericulture, the production of silk worms and thus ultimately of silk fibre (Ganga and Chetty, 1991) [4], 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) [5]. 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 [1]; Bhatta & Rao, 2003) [2].

2. Materials and methods

The present investigation was carried out in different villages of Tripura such as Champaknagar, Lembuchera in west district of Tripura. Survey was done through interview with beneficiaries of different clusters of Tripura during the year of 2016 to 2019. Secondary data was collected from Grainage unit, Indranagar and Department of Handloom, Handicrafts and Sericulture, Indranagar, Govt. of Tripura.

3. Result and Discussion

The agro-climatic condition of Tripura is highly favorable for extensive growth of sericulture and the allied industry has a great prospect. Mulberry grows very well in waste lands of Tripura. At present, in Tripura 14500(2018-19) numbers of farmers has taken up Sericulture as additional source of income of their family and out of this nearly 80% women are beneficiaries. Total area covered for plantation of mulberry plant is 4840(2018-19) acres, it was 3660 during the in the year 2014-15(Table-1). Cocoon production(crossbreed) is increasing day by day.In 2014-15 it was reported as 145MT,but in 2018-19 it was 450 MT. & from Crossbreed cocoon, raw silk was produced 73.1 MT. Disease free laying's (DFLs) were produced maximum during 14.0 lakhs, it was minimum (5.0 lakhs) in 2014-15(Table-1). In Tripura the Sericulture schemes are being implemented through cluster approach. It was informed that among 8 districts Sericulture cluster are present in 7 districts except in Unokoti district. There are 20 numbers of clusters and 18 no. of Mulberry Rearer's Cooperation Societies (MRCS) are present in Tripura. From 2014-15 the no. of MRCS was 17, 2019-2000 it is 18.From the From 1995-96 remarkable changes took place in the field of sericulture. At Badharghat, Udaipur, Santirbazar and Panisagar there are Five (5) reeling units are functioning. No. of Multiend basin are Sixtyfour (64), Six(6) nos. Handloom and Sixteen (16) power loom units are present there in Tripura(2018-19)(Table-1). The grainage unit established at Indranagar, Agartala. At present the target production of disease free laying (DFL's) is fixed up to 70% of total yearly consumption of the state. Establishment of grainage is necessary to provide good quality of seed to the rearers. Due care should be taken of the 'crop of sericulture' for seed production from the very beginning i.e. the caterpillar stage, by providing them with proper nutrition and protection from the attack of disease. Besides imparting technical know-how, the government also distributes silk threads to the weavers for producing the finished products like sarees, dress material through the handloom cluster co-operative societies.

During 2019-20,new 800 beneficiaries added covering 400 acres mulberry plantation;1500 beneficiaries have been imparted training in Sericulture; Six(6) nos. chawki rearing centres have been established to ensure the supply of healthy silkworm amongst beneficiaries,Three hundred fifty beneficiaries have been provided assistance for construction of individual silkworm rearing house' One Central Project "Intensive Bivoltine sericulture Development Project" for amounting of Rs.31.11 crores launched for Sepahijala district. Total 1100 beneficiaries will be benefitted from 4 blocks i.e.Kathalia, Jampuijala,Charilam and Nalchar Block.Different plan of action has taken by the Govt. such as - Coverage of new farmers - 800 nos. Expansion of 400 acres as new areas for plantation, Providing of individual silkworm rearing house 250 nos. Construction of Chawki Rearing Centre-5nos. Much more production of DFL's etc. which will be helpful for rural people of Tripura.

For betterment of Sericulture and production of quality products (i.e., cocoon and silk yarn) the Central Silk Board. Govt. of India has come forward with financial and technical support under CDP (Catalytic Development Programme) with collaboration of State Govt. (CSB-80/-, State-10/-, Beneficiaries-10.The raw silk is being purchased by Tripura Apex Weavers Co-operative Society Ltd. and they are the consumer of the raw silk is and silk fabrics. A glamorous show-room for silk sarees has established at heart of the Agartala city which is directed by Muhuripur Tant Shilpa Samabay Samity and Sarees are being sold by the use of logo of Central Sericulture Research Centre.s such, Tripura Silk saree is highly accepted in the national market and production of silk saree is increasing day by day.

Table: 1. sericulture growth over last five years: Pre-Cocoon

Particulars	Units	2014-15	2015-16	2016-17	2017-18	2018-19
Mulberry						
Total Areas	Acres	3600	4060	4536	4688	4840
No. of Farmers	Nos.	11756	12225	13197	13768	14500
Cocoons production(CB*)	MT	145	238	331	460	450
Cocoons production (B iv.)	MT	250	160	194	215	240
Raw silk production (CB)	MT	32.50	30.61	51.2	59.3	73.1
Raw silk production (B iv.)	MT	15	21.79	23.5	28	29.3
Families involve in seed cocoon rearing	Nos.	20	26	32	40	42
Grainage (Govt.)	Nos.	1	1	1	1	1
Grainage(Private)	Nos.	Nil	Nil	Nil	Nil	Nil
DFLs production(Govt.)	Lakhs	5.0	8.6	9.65	10.80	14.0

DFLs production(Private)	Lakhs	Nil	Nil	Nil	Nil	Nil
No. of Persons involved in Sericulture activities	Nos.	120	115	105	102	96

*Cross Breed

Table 2: Post Cocoon

Particulars	Units	2014-15	2015-16	2016-17	2017-18	2018-19
Mulberry						
Reeling Unit	Nos.	4	5	5	5	5
Multiend basin	Nos.	54	64	64	64	64
Handloom	Nos.	6	6	6	6	6
Power loom	Nos.	12	12	12	16	16

Data collected from Directorate of Handloom, Handicrafts & Sericulture, Govt. of Tripura.

5. Conclusion

In Tripura, a complete scientific technology of Sericulture from "Soil to silk" fabrics attained a full flagged Sericulture Industry. The State emerged as promising State on mulberry silk production among the non-traditional states. Now it has got foot hold as means of important earning tool for improvement of rural livelihood. Sericulture being an agro-based enterprise plays a predominant role in shaping the economic destiny of the rural people and fits very well in India's rural structure. Sericulture highly suitable to small and marginal farmers involving simple technology and low investment. It provides frequent attractive returns with minimum investment, simple working, high employment opportunity, high remunerative return and low gestation period. It is very suitable to their lifestyle. All the respondents attributed the following impact by Sericulture – it is eco-friendly, no need of cutting and felling of trees, local employment is generating and additional income generating source, Regular savings. They want to attach continue with the sericulture. Sericulture industry is an excellent avenue for providing employment with various entrepreneurial opportunities for the rural development, especially Tribal women.

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