

**ANALYSIS OF PROBLEMS AND PROSPECTS OF MULBERRY SERICULTURE IN
KALIACHAK BLOCK UNDER MALDA DISTRICT OF WEST BENGAL**

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ABSTRACT

Kaliachak-I Block is the most intensive sericulture Block in the District of Malda as well as in the State of West Bengal and as such it is the only Block in the State where 04 (Four) Nos. of Technical Service Centre (TSC) of Sericulture are there with the support of biggest Cocoon Market of the State. Almost 70% of the District Sericulture has been confined in this Block. Though the Mango and Litchi are good cash crops in this area yet, almost 80% of the population has been involved directly or indirectly with Sericulture activity. Being a traditional area of sericulture this Block plays a vital role in the State economy on Sericulture. All the three sector of Sericulture i.e. Mulberry cultivation and silkworm rearing, Preparation of Disease free Laying (Eggs) and Preparation of Mulberry Silk Yarn (Silk thread) are in a compact shape in this Block. This paper depicted on analysis of problems and prospects of mulberry sericulture in Kaliachak Block under Malda District of West Bengal.

Keywords: Sericulture, silkworm rearing, mulberry, Kaliachak

INTRODUCTION

In West Bengal, mulberry is grown in 15 districts and among them Malda, Murshidabad and Birbhum have the highest area (Table 3) although marginal fluctuation in different years are indicated. Mulberry varieties such as Ber-1, S-799, S-1, and S-1635 are popular in West Bengal. This industry is facing various constraints, which can be categorized into Ecological, Technological, Socio-biological and Financial. In this piece of study serious attempt will be made to understand the complex, concurrent constraints in the framework and angle of interlinked - interwoven system of the production of mulberry to silk production.

Sericulture in West Bengal has a long tradition and the traditional practices demand an orientation towards adoption of the latest technologies for sustaining the activity with better returns. Since the last decade, the silk production of West Bengal is more or less static for various reasons (i) Fluctuating climatic conditions hampering silk worm rearing; (ii) Closed mulberry plantation mostly with low yielding local variety. (iii) Rearing of *Nistari* on a large scale offering poor productivity (15-20 kg/dfls). (iv) Now, most important problem is feeding of diseased leaves.

West Bengal has a great reputation for its silk industry from historical period. On the basis of feeding of the silk worm, four types of sericulture have been practiced i.e., Mulberry, Tasar, Muga and Eri (Mandal, 2008). Among these, the silk produced from Mulberry is the best type considering its luxuries, fineness and comfort. Mulberry is cultivated both in temperate and tropical climatic conditions (Jaiswal et al., 2009). The major concentration of most cultivated mulberry varieties are found in China-Japan and in the Himalayan foothills (Sanchez, 2000). Mulberry sericulture offers different types of economic activities i.e., mulberry garden establishment, leaf production silkworm rearing, marketing of cocoon etc. (Lakshmanan et al., 2007). In West Bengal, per cent disease incidence was found 10-20 during monsoon on S-1 mulberry cultivar and leaf yield loss was recorded to the tune of 15-29. Different diseases caused extensive damage to mulberry foliage and thus resulting loss in cocoon production. Objectives of the study were (i) study the present status of mulberry sericulture in Kaliachak block (ii) total economy of the study area (iii) to identify the major problems of mulberry sericulture of the study area (iv) to suggest effective policy measures for further development of mulberry sericulture in the region.

METHODOLOGY

The study area, Kaliachak Block is situated in the south-western part of Malda District. It lies between 25° 00'39.03"N and 24° 10'15"N latitudes and 88° 08 27.95"E 25 M attitude. The secondary data regarding silkworm races, average production of silk, mulberry varieties and other necessary information have been collected from Sericulture Office located at Mothabari (RSS) and Office of the Deputy Director, Malda District. Primary data have been collected through extensive field survey. In the field, relevant data and information have been collected through personal interview and questionnaire survey with the farmers and weavers of the area. Descriptive statistical techniques and simple cartographic presentation have been used in this work.

RESULTS AND DISCUSSION

Suitable Conditions for Mulberry Cultivation

The climate of the study area is hot and humid tropical monsoon. The average annual temperature ranges between 28°C and 35°C and the average annual rainfall ranges from 150 cm to 200 cm and the relative humidity ranges between 55% and 85%. The study area is entirely covered alluvial soils having average pH value of 6.5. The above agro-ecological conditions are highly conducive for mulberry sericulture. Apart from these the other favorable condition for the cultivation of mulberry is the distinct topographic characteristics of the area. The available irrigated water, use of fertilizers, and high yielding varieties of mulberry species, rich indigenous knowledge of the local farmers is the fundamental reason for the concentration of mulberry cultivation in this area.

Profile of Mulberry Sericulture in Kaliachak Block

According to the Block Sericulture Office, Mothabari, Malda District in 2014, the total cultivable land has been recorded as 12944.55 acres under mulberry garden in the study area where most of the gardens are fragmented and dispersed in nature. The local varieties *i.e.* S1 and S1635 of mulberry are predominant in the rainfed area while some superior varieties *i.e.* S1, S1636 are cultivated with the help of irrigation (Table 1).

Table 1. Status of sericulture under Kaliachak-I block

Sl. No.	Particulars	Physical status 2014
1	Total acreage under plantation	12944.55 Acres
2	Total number of families involve	34764 Nos
3	Nos. of Seed Producer (Grainure)	230 Nos
4	Nos. of Reeler	4200 Nos
5	Nos. of Spinner	3224 Nos
6	Nos of Kath Ghai under pvt. Sector	1370 Nos
7	Nos of 2 Basin Ghosh Reeling Machine	2871 Nos
8	Annual consumption of Dfls (eggs)	22098930 Dfls
9	Annual production of reeling cocoon	9160 M.T
10	Annual production of Raw silk	1535 M.T
11	Annual production of silk waste	523 M.T

Source: Block Sericulture Office, Kaliachak, Malda District

Most of the rearing houses are found adjacent to the dwelling places of the farmers. For the suitable climatic conditions most of the sericulturists prefer the *Agrahani* and *Phalguni* crops. In these cropping seasons mainly Bivoltine silkworm races are raised (Table 2).

Table 2. Silkworm races in Kaliachak Block

Sl. No.	Crops	Races	Duration
1	Baishakhi	N x F1	22
2	Shrabani	NxN/NxM12W	25
3	Agrahayani	NxN/NxM12W	25-28
4	Aswina	NxF1	28-30
5	Phalguni	NxF1	28

Source: Block Sericulture Office, Kaliachak, Malda District

Table 3. Mulberry Silk growing districts in West Bengal, 2015

District	Area (Acre)	Production of Dfls lakh nos.	Rearing of Dfls lakh nos.	Production of reeling cocoon (MT)	Production of raw silk (MT)	Silk waste (MT)
Darjeeling	629	5.96	0.17	6.75	0.00	0.00
Coochbehar	466	0.40	2.25	3.92	0.00	0.00
Jalpaiguri	1028	1.89	0.00	0.70	0.00	0.00
Uttar Dinajpur	1146	2.57	2.17	57.11	0.00	0.00
Dakshin Dinajpur	163	0.46	0.00	0.04	0.00	0.00
Malda	19692	290.22	337.62	10790.05	1124.65	375.07
Murshidabad	4711	64.97	72.68	2007.1	200.72	60.12
Birbhum	4485	54.19	63.99	1940.00	227.0	76.60
Bankura	148	1.19	0.00	0.04	0.05	0.01
Purulia	77	0.07	0.00	0.00	0.00	0.00
Midnapur (E+W)	1069	0.90	0.90	34.92	0.06	0.00
Nadia	1100	2.30	2.89	119.94	0.00	0.00
Burdwan	58	0.00	0.01	0.05	0.00	0.00
24 Pgs(N+S)	120	0.00	0.04	0.38	0.00	0.00
Total	34892	425.75	480.72	14961	1552.48	511.93

Sericulture and employment generation

Jute is the main crop in the Kaliachak area. Mango, Wheat, Paddy, Oil seeds, potato etc are also grown. Mulberry sericulture generates more employment opportunities than the above mentioned crops because silkworm can be raised 5 to 6 times from a mulberry garden round the year. The comparative statistics between employment in sericulture and agriculture in one agronomic year in one acre of land is very interesting.

Establishment of mulberry

Mulberry flourishes well in soils that are flat, deep, fertile, well drained, loamy to clay can be grown.

1. Preparation of land: Mulberry being a perennial, land is prepared initially. It is ploughed deeply initially using heavy mould board plough, up to a deep 12" to 15" in order to loose the soil. The land should be properly leveled. A basal dose of well decomposed FYM or compost is applied at the rate of 20 tonnes/ ha and thoroughly incorporated in to the soil.

2. Planting: plantation can be raised by using both cutting and saplings. The varieties ideally suited for irrigated condition are SI, S 1635 and V1.
3. Spacing: plant spacing 90 x 90 cm is ideal for mulberry. Two cutting per pit to be used for direct planting. A paired row system (90+150) cm X 60 cm is recommended.
4. Inter cultivation: Two months after planting, weeding is carried out. A second weeding is done after another two to three months.
5. Irrigation: The plantation should be taken up during the onset of the monsoon to take advantage of the rain.
6. Fertilizer: The total fertilizer to be applied in the first year is 100 N : 50 P : 50 K /kg/ha/year/split.
7. Pruning: After six months of plantation, mulberry attains a height of 1.5 to 1.75 m and is ready for harvest. The first harvest is by bottom pruning. The second leaf harvesting is 12 weeks from the first leaf harvest and the third harvest 12 weeks from the second harvest by shoot harvest.

Problems and prospects

Sericulture in West Bengal has a long tradition and the traditional practices demand an orientation towards adoption of the latest technologies for sustaining the activity with better returns. Kaliachak Block in Malda District is famous for its tradition in mulberry sericulture. Mulberry cultivation provides opportunity for diversification of rural economy. In the study area, the management of mulberry gardens, rearing and reeling processes has been done in a traditional way, which often leads to poor economic gain. The silk production Kaliachak is more or less static for various reasons.

1. Fluctuating climatic conditions hampering silk worm rearing.
2. Closed mulberry plantation mostly with low yielding local variety.
3. Rearing of *Nistari* on a large scale offering poor productivity (15-20 kg/dfls)
4. Now, most important problem is feeding of diseased leaves.

In the study area, mulberry sericulture is done in a traditional way. The farmers are not familiar with the use of modern scientific techniques and advanced technologies in the management of mulberry garden, silkworm rearing, reeling and weaving. With the advent of new technologies and increasing competition in the global market, this traditional way of mulberry sericulture proved to be less profitable to the farmers. Frequent crop failure has aggravated the situation and farmers are gradually withdrawing from the age-old practice.

- a. The silkworm races in the study area mainly of hybrid types cocoon and need a sufficient amount of mulberry leaf. The farmers here mainly cultivate local varieties, which are unable to produce sufficient amount of mulberry leaf. The cultivation of high yielding varieties of mulberry *i.e.* V1, S1636 can enhance the production of mulberry leaf.
- b. The quality of the raw silk could be improved with the five tests, *i.e.*, winding, denier or size, seriplane, serigraph, and cohesion are conducted to maintain the quality of raw silk. But no such measures have yet been taken in this region. Proper controlling of production method such as establishment of proper silk conditioning, testing house, reeling processes and modern reeling machines, etc.
- c. The two main important varieties (*Phalguni* & *Baishaki*) of mulberry suffer from insufficient supply of water during winter. Therefore the growth of the mulberry leaf is hindered and the silk worm does not get adequate supply of food.
- d. The acidity of the soils in the study area has gradually increased due to the excessive use of chemical fertilizers. As a result the quality of mulberry leaf has deteriorated and became unhealthy for silkworm. The use of chemical fertilizers in the mulberry cultivation should be

minimized and more effective and scientific way of using organic fertilizers has to be adopted. Waste products of cocoons should largely be used as bio-fertilizer.

- e. Marketing facilities of the silk is poor in the region. Farmers are compelled to sell their products at a lower price due to the fluctuations of market price of raw silk. Often the farmers and weavers sell their products to the middlemen who actually gain the profit. Government should take necessary action so that the farmers and weavers are given protection against the fluctuating market prices and exploitation by the middlemen.

Prospects of sericulture

Sericulture has become quality conscious now. Many educated youth are taking up this activity under self employment scheme as it is giving better yields than cash crops. With the introduction of sericulture in many universities, labour with technical knowhow will be generated, how follow the technology, but they understand the basic principles and are able to also research of their own, modified technology, invent new appliances etc. More and more NGOs are taken interest in this activity, many social organizations it provides employment to the weaker section of the society.



Plate 1. Cocoon market in Kaliachak of Malda District

CONCLUSION

The Kaliachak block of Malda district is having a very good potential for sericulture and to undertake the production of quality silk. In future the Malda district will become 100% good quality and quantity silkworm rearer in Mulberry sector. In the era of modernization and globalization the farmers and the weavers face the challenge of supplying the quality silk in a competitive market price after keeping a satisfactory level of profit. This is only possible through the minimization of the production cost. As the state is nontraditional in silk production activities, it is essential to extend incentives on different activities as provided by traditionally silk producing states. The sericulture activity remained as a boon to the farmers in such adverse climatic conditions. The farmers are very happy with this activity by earning good returns and are satisfied with sericulture. Thus future of the modern silk industry in West Bengal is

very bright and the state will take a big leap in coming years and will be at par with traditional silk producing states.

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REFERENCES

- Jaiswal, K., Trivedi, S., Pandey, B. N., Tripathi, A. K. 2009. Mulberry Sericulture: Problems and Prospects". Daya Publishing House, New Delhi, pp.32-38.
- Lakshmanan, S. and Geetha Devi, R. G. 2007. Tamil Nadu: Employment Opportunities in Sericulture. *Indian Silk* 46 (7):18-20.
- Mandal, S. 2008. An Enquiry into the Non-Mulberry (Tasar) Sericulture Activities of Raghunathpur, Purulia, West Bengal. *Indian Journal of Landscape System and Ecological Studies* 31(1): 231-234. Published by ILEE, Kolkata.
- Sanchez, M. D. 2000. World Distribution and Utilization of Mulberry, Potential for Animal Feeding. FAO electronic conference on 'Mulberry for Animal Production', FAO, Rome, Italy.