



A Brief Study On Sericulture And It's Impact On Socio- Economic Condition In Sualkuchi During Covid– 19 Pandemic

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Abstract: Sericulture is the process of cultivating silkworms and extracting silk from them. The caterpillars of the domestic silk moth (also called '*Bombyx mori*') are the most commonly used silkworm species in sericulture. Approximately 80% of silk fiber is made up of fibroin, which is concentrated at the core. This core is surrounded by a layer of sericin (which makes up the remaining 20% of silk). The presence of pigments (such as xanthophyll) in the sericin layer of the fiber imparts colour to the silk. Finally, the silk filaments are woven together to form a thread. These threads are often implied together to form a yarn . The silk industry of Assam also witnessed a serious downfall during the lockdown. COVID-19 Lockdown has put strict restrictions by completely shutting all shops, institutes, organizations and vehicular movement except emergency services. The paper aims to study the impact of sericulture on the socio-economic conditions in Sualkuchi along with the impact of Covid-19 on the production of Muga Silkworm in Sualkuchi.

Keywords: Silkworm, Sericulture, Cultivation

1.INTRODUCTION

Sericulture is the process of cultivating silkworms and extracting silk from them. The caterpillars of the domestic silk moth (also called '*Bombyxmori*') are the most commonly used silkworm species in sericulture. Other types of silkworms (such as Eri, Muga, and Tasar) are also cultivated for the production of 'wild silks'. Sericulture is a very important domestic industry in many countries. India and China are the world's leading producers of silk. The silk output of these two countries combined accounts for over 60% of the global production. Silk is a fiber made up two different proteins – sericin and fibroin. Approximately 80% of silk fiber is made up of fibroin, which is concentrated at the core. This core is surrounded by a layer of sericin (which makes up the remaining 20% of silk). The presence of pigments (such as xanthophyll) in the sericin layer of the fiber imparts colour to the silk. Finally, the silk filaments are woven together to form a thread. These threads are often plied together to form a yarn .

1.1. HISTORY – According to the past records the weaving of Muga silk has been trace back from 1228 to 1828 during the reign of Ahom. The Ahom rulers prioritized the growth of Muga as an industry. They made it mandatory for all the higher officials in their kingdom to wear adorn clothes made from Muga silk. It was during this period that Muga culture thrived and became an integral part of the social and economic lives of the locals. Ahom kings were known to don only Muga silk and the fabric was stocked in the kingdom as well presented to visitors of their court as one of the finest local offerings.

1.2. SILKWORMREARING - In sericulture, the silkworm rearing process begins with the laying of eggs by the female silk moth. Typically, 300-500 eggs are obtained from one female silk moth. These eggs (laid on a paper/cardboard sheet) are then disinfected with the help of a 2% formalin solution. A feeding bed is prepared on a rearing tray by sprinkling chopped mulberry leaves onto it. The hatched larvae are transferred into this tray via a process known as brushing. In order to maintain humidity, foam strips are soaked in water and placed on the tray. The silkworm larvae initially have a good appetite. As they grow, their appetite slowly diminishes until their active stage. At this stage, the silkworm eats enthusiastically until its final feeding stage. After reaching maturity, the larvae begin searching for hospitable places to begin their pupation. At this stage, the body of the silkworm shrinks and becomes translucent. These mature larvae now wrap themselves in a cocoon by secreting saliva from the two salivary glands on their heads. This saliva solidifies and becomes silk when it comes in contact with air . Inside the cocoons, the larvae undergo metamorphosis and turn into pupae. The harvesting of silk from these cocoons is the final stage of sericulture. First. the pupae inside the cocoon are killed by boiling the cocoon and exposing it to steam and dry heat. This process is called stifling. Now, the silk filaments are removed from the dead cocoon via a process called reeling. When the cocoons are placed in boiling water for approximately 15 minutes, the adhesion of the silk threads reduces, enabling the separation of individual filaments. These filaments are twisted into a thread with the help of a series of guides and pulleys. This silk is then re-boiled in order to improve its luster. One thread of silk contains approximately 50 silk filaments. However, over 900 meters of filament can be obtained from a single cocoon. Thus, raw silk is obtained from the silkworm and the sericulture process is completed. Muga culture is endemic to erstwhile Assam

and is the largest producer of the famous golden Muga silk in the world. Muga silkworm (*Antheraea assamensis*) is endemic to Assam and adjoining areas in North – Eastern India, and naturally produces golden silk. From time immemorial, many ethnic and tribal groups have produced muga silk. Muga silkworms are mostly wild unlike the mulberry silkworm, which is completely domesticated. The muga silkworm is a single species with little genetic variation among populations, survives harsh climatic conditions and is subject to various diseases, pests and predators. Due to the high incidence of disease and natural enemies, and variations in climatic conditions, the production of muga silk has recently declined dramatically. In order to improve the productivity of this silkworm it is important to have a better knowledge of both its host plants and biology. Muga silk is a variety of wild silk geographically tagged to the state of Assam in India

1.4.OBJECTIVE – The objective is to study the impact of sericulture on the socio-economic conditions in Sualkuchi along with the impact of Covid-19 on the production of Muga Silkworm.

2. FIELD OF STUDY AND METHODOLOGY

2.1. FIELD OF STUDY -

1. The Central Muga Eri Research and Training Institute (CMER&TI) established at Ladoigarh, Jorhat, Assam in 1999 is a R&D institute in the field of Muga and Eri culture. It is under the control of Central Silk Board, Ministry of Textiles, Govt. of India.
2. The Sericulture Training Institute is located in the district of Jorhat of Assam state, 20km away from Jorhat airport and well connected by road and railway. The nearest railway junction is at Mariani about 16 km away from Titabar. The institute was established in the year 1854 and continuously producing grass root level workers for NE region since inception.
3. Sualkuchi is a census town in Kamrup district in the Indian state of Assam. It is situated on the north bank of the river Brahmaputra, about 35 km from Guwahati, Sualkuchi is a block of Kamrup District. It has large number of cottage industry engaged in handloom, for which it is also known as the “Manchester of Assam”. Sualkuchi is located at 26.17°N 91.57°E. It has an average elevation of 35 m (115 ft).

2.2. METHODOLOGY – The study has been done through primary source and self observation. Primary data is collected from – Dr. Arun Kumar K.P. Sir and Devanjali Baruah Ma'am, CMER&RI, Ladoigarh; Horbodhon Baruah Sir, Manager and Director of STI (Titabar) and Mohendra Borah, Principal, Sericulture Training Institute (Titabar); Deepok Gogoi sir and Nabajyoti Kalita sir of a reputed weaving mill in Sualkuchi.

3. OBSERVATIONS AND FINDINGS

3.1.Muga Silkworm rearing –

Muga silk worm is multivoltine and 5-6 crops are raised in a year out of which two commercial crops (Jethua: May- June and katia: October- November), two pre-seed crops (Jarua: December- January and Aherua: June- July) and two seed crops (Chotua: February-March and Bhodia: July- August). Usually pre-seed and seed crops encounter adverse climatic condition resulting in heavy loss during the early stages due to environmental rigours, disease incidence and infestation of pests and predators. (Data enquired from Sericulture Training Institute, STI, Titabar)

3.2.Food plants of muga silkworm –

Muga group comprises of Antheraea aassama are endemic polyphagous insect and feeds on different host plant species mainly Som(Persea bombycina Kost.), formerly named as Machilus bombycina and Soalu(Litsea monopetala Roxb.) and few other food plants, likewise Digloti (Litsaea salicifolia Hook), Mejankari (Litsaea cubeba Lour.), Bogori or ber (Zizyphusju juba Mill), Champa (Michelia champaca Linn.), Bhomloti (Symplocous grandifolia Wall.), Gamari (Gamelina arborea Linn.)Panchapa (Magnolia sphenocarpa Roxb.), Katholu(Cyclicodaphnenitida Roxb.), Gansarai (Cinnamomum glanduliferum Meissu), Bojramoni(Xanthoxylum rhesta DC.). (Data and specimen collected from Sericulture Training Institute, STI, Titabar)

3.3 Pest and disease of muga silkworm–

Silkworms are vulnerable to several diseases such as pebrine and flacherie. Also, several pests threaten the healthy growth of silkworm larvae. Some important challenges faced in sericulture are listed below. The pebrine disease can infect the eggs, resulting in their death before the hatching of the larvae. Any larvae affected by this disease develop dark spots and become lethargic. Viral infections in the larvae may result in the shrinkage of their bodies. They may also start giving off an unpleasant odour. Other viral infections such as cytoplasmic polyhedrosis can cause the larvae to lose their appetites. The muscardine infection, caused by fungi, can cause the larvae to become extremely feeble and eventually die. The larvae of dermestid beetle can bore into the silkworm cocoons and eat the pupae. Silk cannot be reeled from these damaged cocoons. Some mites produce a toxic substance that kills silkworm {Data observed from The Central MugaEri Research and Training Institute (CMER&TI), Ladoigarh, Jorhat}

3.5.Silkworm obtaining process – (Said and Explained by Horbodhon Baruah Sir, Manager and Director of STI Titabar)

The silkworm spins a protective covering, or cocoon, using silk filaments. The unwinding of these filaments is called reeling. The cocoons are first boiled to soften them and are then lightly brushed to find the ends of the filaments so they can be unwound. Since filaments from a single cocoon are thin, five to ten cocoons are reeled simultaneously to obtain a single, strong and continuous silk thread. For obtaining good quality silk filaments, the cocoons are boiled before the moth can emerge from them. But at times, the moth dissolves the silk to emerge out of the cocoon. These cocoons are called cut and pierced cocoons. Although they have silk

filaments, these cannot be reeled because they are cut or pierced from one side. These cut and pierced cocoons to make inferior quality gicha yarn. This yarn got a quarter of the price fetched by the reeled yarn.

3.5.1. Silk reeling devices – (Information collected/observed from Sualkuchi, Kamrup)

3.6.Silk Weaving Process and it's Description –

A weaving loom in almost every home of the village of Assam mainly in Sualkuchi and Dhemaji. The process of preparing the silk garments carried out, at its various stages in each of these households. The colourless silk threads are woven at some homes, though many prefer to buy the readily available coloured ones imported from the southern parts of India especially Karnataka, Andhra Pradesh and Tamil Nadu for economic reasons. Currently the silk thread used in Sualkuchi is supplied from Bangalore. As the men folk are involved at twisting the thread in the spools most women folk patiently weave the silk threads on the looms. The Process of Weaving: The silk thread that is woven in to the loom is basically classified into two. The vertically woven silk thread that forms the base of the garment is called the Digh and the silk used to weave the horizontal patterns or flowers is called the Bani. First, the readymade silk thread which is the Digh, is spun around a bamboo instrument called the Sereki. The Sereki has five small bamboo sticks attached to a longer, common bamboo stick at the centre forming a cylindrical shape. This is done to remove the knots or uneven fibres of the thread. The thread is again spun into a smaller bamboo frame called the letai in the local language. Later the spinning of the thread into smaller spools called Bobin, is performed with a help of the spinning wheel called the Jotor. The Jotor is run single handed by a person who spins the thread into the wheel with one hand while wrapping the thread into the spools with the other hand. After the thread is woven into a number of such Bobin, these Bobin's are then placed on a huge frame called Ugha serially. The thread from each of these Bobin placed on the Ugha is spun around a huge wooden wheel called the Warping Drum. The spinning enables the weaver to get the exact size and length of the silk garment that is to be woven on the loom. The thread is then very systematically taken out from the wheel and placed on the long wooden bar of the loom called the Norosh. Throw shuttle loom and the loin loom constitute a very important part of weaving in Assam. The digh thread from the warping drum is slowly taken out systematically and slowly encircled around the Norosh. This is done with the aid of a sharp iron tool inserted at the end of the Norosh. Once the thread are placed around the Norosh systematically, the lose threads will be inserted one by one into a threaded frame called the Boa, This step is done with a lot of precision. These threads are then inserted into a comb like frame called the Rash. These threads are then taken by the weaver to weave fine garments. As the Digh thread is placed on the Norosh the bani thread is then placed on small spools inside a small wooden frame called the Mohura. The Mohura is again placed on a bigger frame called the Maku attached at the side of the loom. The colourful thread from the Mohura is then woven into fine flowers, patterns and motifs on the Digh thread which now forms the entire base of the garment. Once the raw silk is prepared, the silk is used for dyeing. In the recent times however, many traders and weavers prefer to buy readymade coloured silk, as the cost of colouring and deriving the right amount of material from uncoloured silk becomes non profitable for them.

3.7. Impact of Covid-19 on Muga Silk Production

The silk industry of Assam also witnessed a serious downfall during the lockdown. COVID-19 Lockdown has put strict restrictions by completely shutting all shops, institutes, organizations and vehicular movement except emergency services. The silk industry of Assam has been a source of livelihood for entire North East India since decades. The Assam silk production is mainly for sale locally & nationally and exports internationally. Assam is the leading state in the country in terms of handloom weaving and natural silk production. Assam is worldwide popular since ancient times in production and manufacturing of high quality silk products. Assam produces Muga Silk, Mulberry silk & Eri silk, which are weaved by the skilled artisans of Sualkuchi, the Silk Weaving cluster of Assam.

According to Sualkuchi Handloom Survey 2016, there are 10398 active handlooms in Sualkuchi silk weaving cluster and 3452 weavers, 198 helpers, 1278 manufacturers, 190 silk traders having own shops all over Assam and 80 raw silk suppliers. There are 6312 Mulberry (Pat) silk handlooms, 110 Muga silk handlooms, 2304 Tasar silk handlooms, 06 Eri silk handlooms and 1666 non silk handlooms but during the year 2019 to 2021 everything get declined due to the impact of Covid-19. This make a huge loss to the common people livelihood as well as to the finance sector.

4.DISCUSSIONS

4.1. Problems faced by the raw silk material suppliers

- 1) Entire supply chain of silk is affected. The silk yarn price falls due to lack of demand.
- 2) Distribution channel disturbed badly as there arises labor problem due to containment zone in many places, so the truck drivers found difficulty in loading goods. So, the raw Silk materials are not delivered on time.
- 3) Transportation problem, during lockdown only essential commodities were allowed to moved and silk is a luxury item not basic essential goods for survival.

4.2. Problems faced by the manufacturers of Assam silk

- 1) Finished silk products are stocked in home as many orders were cancelled and no new orders placed by the buyers.
- 2) Instant rise of silk yarn prices during lockdown created problem in shortage of fund by the manufacturers to purchase raw silk yarns at high prices.

- 3) No new bulk orders of silk products as many occasions and ceremonies were postponed and strict restrictions on social gathering.

4.3. Problems faced by the weavers of Assam silk

- 1) Many people were out of job, they were weaving up till the manufacturers had silk yarns in stock. The handlooms were closed due to unavailability & high price of raw silk yarns.
- 2) Many orders were cancelled and no new orders were placed so the weavers had no assignments. The earlier stocks were not sold so manufacturers have no liquid cash in hand finding problem in paying the weavers full amount of wages.
- 3) Weavers had to search other jobs for their daily meal. The male weavers started working in construction sites on daily wage basis to earn daily meals.

4.4. Problems faced by the finished silk products suppliers (distributors, wholesalers and Retailers)

- 1) All silk shops or outlets were closed and restricted to open on certain days and timings so offline business faced interruptions. The online orders faced delay in delivery due to certain places lockdown.
- 2) Foreign orders were cancelled and no new order placed locally, nationally and internationally storing huge stocks in home and in stores.
- 3) COVID -19 pandemic has spoiled the wedding and Bihu season sale so it aroused fund shortage to run their business. The finished silk products suppliers faced problem in salary payment to its employees, pay electricity bills and shops rent etc.

5.PHOTO GALLERY



6.CONCLUSION

It conclude that from the survey done on Muga Silkworm at Central MugaEri Research and Training Institute at Ladoigarh, Jorhat ; Sericulture Training Institute at Titabor, Jorhat and at Sualkuchi , I came across many new things starting from it's rearing to weaving. From my point of view if any modern means of technology develop or supplied in rural areas which lessen the efforts of our weaver it will lead to the production of more muga silkworm and if the means of transport from rural areas to main cities get more develop it will be one more good factor for the increase of muga production and earning.

7.REFERENCE

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