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Entrepreneurial opportunities in sericulture sector of Assam: A review

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Abstract

Sericulture, involving the cultivation of mulberry and non-mulberry silkworms, is a significant cottage industry in India, particularly in Assam. It plays a vital role in the socio-economic development of rural communities, with Muga and Eri silk being integral to Assamese culture and traditions. Given the region's heavy reliance on agriculture for employment, there is a pressing need for strategic planning and execution of entrepreneurial programs to foster economic growth. Promoting entrepreneurship in rural industries offers a promising solution to create job opportunities for the rural populace. Despite many young individuals having innovative business ideas, a lack of resources and opportunities hinders their ability to establish successful ventures. Therefore, the sericulture industry holds considerable potential for entrepreneurship development in India and Assam.

Keywords: Assam, entrepreneurship development, muga silk, eri silk, employment

Introduction

The art and method of silk production is known as sericulture. Sericulture, as an agro-based business, plays a significant role in determining the economic fate of rural people. It broadly comprises interlinked activities such as food plant cultivation and maintenance to feed the silkworm, silkworm rearing to produce the silk cocoons, reeling the cocoons for unwinding the silk filament, yarn making, weaving and processing of fabric (Ahmed and Ranjan., 2011) ^[1]. It has potential as a source of employment. Agriculture and agro-based enterprises play a critical part in the strengthening of rural economies in developing countries, such as India. Due to its low labour costs, India has a particularly favourable position among emerging countries for tripling its current silk production of 34903 MT. India is the second largest producer of silk in the world after China and the largest consumer of raw silk and silk fabrics. Among the four varieties of silk produced in India, as in 2021-22 mulberry silk production was 25818 MT. In case of Vanya sector, tasar silk production was 1466 MT, eri and muga raw silk production was 7364 MT & 255 MT respectively (Anon., 2021) ^[2]. Sericulture is multi-disciplinary activity consists of food plant cultivation, silkworm rearing (Cocoon production), silkworm egg production, silk reeling (Yarn production), twisting, warp and weft making, printing and dyeing, weaving, (Fabric production), finishing, garment designing, marketing etc.,

(Savithri and Sujathamma, 2013) ^[13]. The industry covers a variety of on-farm and non-farm operations, requiring a diverse set of talents, involving a diverse group of people, and bringing people from all walks of life together to work on silk production. Sericulture is a year-round hobby with opportunities for employment.

Sericulture industry constitutes an important aspect and holds a unique position in the economy of Assam. Sericulture comprises cultivation of four varieties of silkworm mainly eri, muga, mulberry and tasar. India is the only country where all four major types of silkworms is produced, these are eri, mulberry, muga and tasar. Among them muga silk producing muga silkworm is endemic to Assam and few neighbouring states in the north-east India. At present nearly 3 lakh families are engaged in sericulture in Assam (Anon. 2021) ^[2]. The youth is the heart of India as well as for Assam, India has the largest youth population in the world. For any developmental strategy to be successful importance must be given to self-employment and entrepreneurship (Bhattacharyya *et al.* 2015) ^[14]. In India, the rural sector is no longer backward and isolated. As a result, fostering entrepreneurship in rural and tribal areas has the potential to solve challenges like poverty, unemployment, economic injustice, poor utilization of rural capacity, low quality of life, and India's economic backwardness. Sericulture development would undoubtedly result in a thriving rural by providing income-generating

entrepreneurship opportunities, thus reducing poverty and halting rural-to-urban migration.

Concept of Entrepreneurship

Entrepreneurship is the process of innovation that reallocates resources, often creating new opportunities through unusual combination of resources and skills of risk taking and in the field of agriculture, it can generate wide range of economic benefits such as increased agricultural productivity, creation of new business ventures, new jobs, innovative products and services, development of rural areas and increased wealth (Gogoi *et al.* 2020) [7]. The term “entrepreneur” has derived from the French word “Entreprendre” that means to take the responsibility or initiative of doing something. In 17th century the word entrepreneur was used to mean the architects and contractors of the public works. After 18th century the term began to change and started to use “Entrepreneurship”, but conceptually they are different, yet they are just like two sides of a coin. ‘Entrepreneur’ refers to a Person while ‘Entrepreneurship’ refers to the function. Entrepreneur and Entrepreneurship are positive and value-oriented concepts in the field of economy. Entrepreneurship is one of the key drivers for economic development of any country, promotion for Sericulture entrepreneurship is key element to turn sericulture more productive and profitable for rural people (Kumar & Kumar 2019) [10].

Entrepreneurial Opportunity

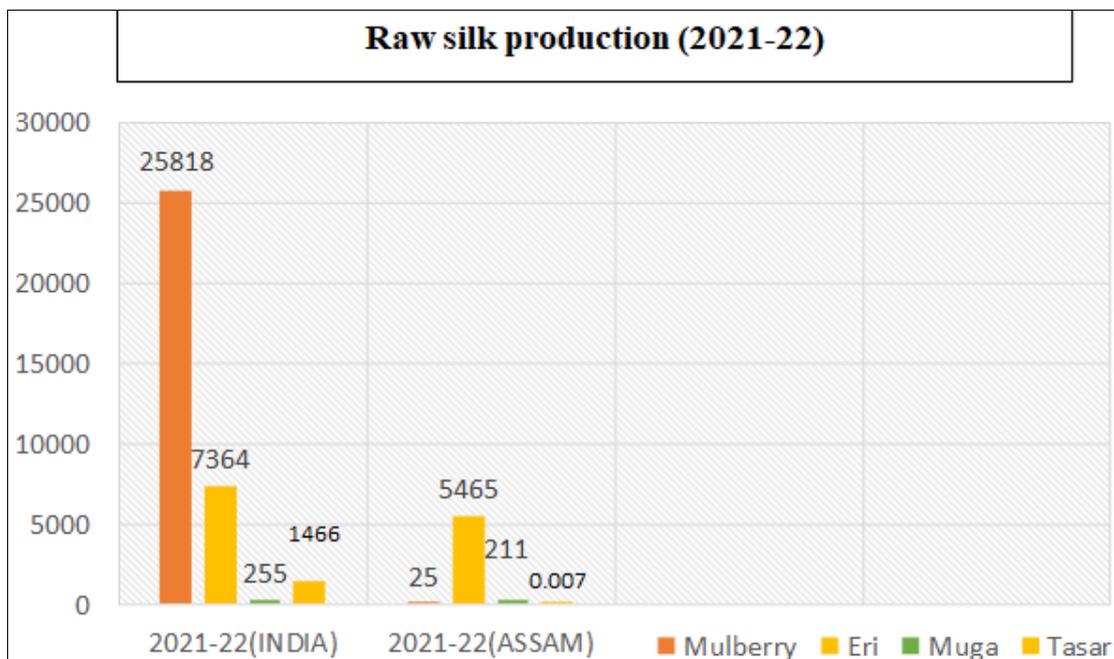
According to Casson entrepreneurial opportunity is a “Situation in which a new goods, services, raw material and organizing method can be introduced and sold at a price that is greater than their cost of production” or it can be defined as a “Situation in which a person can develop a new business idea that has potential to generate profit”. An opportunity in business is best describes as an idea with commercial value.

Assam sericulture thrives

High employment potential	Around 3 lakh families
Women friendly occupation	Most of the workers are females
Ideal for weaker sections	Tribal populations/poverty eradication
Eco-friendly activity	Perennial crop Soil conservation/ Green cover
Satisfies equity concerns	Money flow – rich to poor
Sustainable development	Aligns with UN- SDGs

Scope of Seri Enterprise in Assam

- The demand for superior quality of eri and muga silk is increasing in India for domestic consumption as well as value added silk products for the export market.
- Monopoly in muga production.
- Richest bio-diversity hot spot.
- Availability of raw materials.



Source: CSB Annual report 2021-22

Fig 1: The above graph it is shown that the total raw silk production of mulberry and non-mulberry silk in India & Assam during 2021-22

Opportunities of sericulture industry in Assam

1. Strong domestic & international demand with a growth rate of over 8%.
2. Global demand in the context of declining production in China.
3. Increasing demand for eco-friendly natural fibres in the export market.
4. Scope for rural employment to limit urban migration

and equity distribution.

The various entrepreneurial opportunities in sericulture industry are Raising of nurseries, Preparation and supply of silkworm eggs (DFLs), Chawki rearing units (Young age silkworm rearing), Cocoon production, Silk reeling, Silk twisting, Silk yarn and fabric dyeing, printing, Silk weaving, Silk fabric finishing and Cocoon and silk-based handicraft

etc. (Sujathamma *et al.* 2018) ^[16].

Silkworm Rearing: It involves following three steps.

Preparation and supply of silkworm eggs

The silkworm seed is the heart of sericulture industry. A key factor for success of Sericulture industry depends not only on food plants but timely supply of superior quality of silkworm seed (Silkworm eggs) to the farmers should also be ensured. The establishments where the disease-free commercial seeds are produced in mass to be supplied to rearers are called Grainages. Success of silkworm rearing largely depends on careful grainage operations. Therefore, management of seed production plays an important role on overall returns. To produce quality seed, it is very important to adopt scientific methods of egg production process, right from the seed crop rearing to egg incubation. There are only few government grainages in Assam and they are unable to full-fill the required demand. To overcome this, any licensed seed producer under private sector can start this venture to meet the existing demand of silkworm seed production in Assam. The venture is highly profitable; each rupee of investment will fetch one rupee or even more as net profit.

Chawki rearing (young age silkworm rearing)

The lack of Chawki Rearing Concept is most affecting the healthy growth as well as good quality and quantity cocoon production in the state (Khan *et al.* 2016) ^[9]. Young-age silkworm rearing popularly called as Chawki Rearing is an important component in quality bivoltine silk production (Pandey *et al.* 2011) ^[12]. The centre where the young age silkworm is reared are called as “Chawki Rearing Centre” (CRC). The CRCs facilitate the farmers to purchase healthy and uniform chawki worms after 2nd moult at a reasonable rate, saving them nine days’ labour and from the delicate task of incubation, brushing and young age rearing. It is recorded that the cocoon productivity from CRC supplied worms is about 20-25% higher which very much profitable business is. A commercial Chawki Rearing Model was established at CSRTI, Mysore with the capacity to brush 1, 60, 000 dfls (Disease-free-layings) per annum @ 5000 dfls per batch for 32 batches in a year. But the concept of CRC is not very popular in Assam as compared to southern states. So, any young entrepreneurs can come forward to adopt this as a profitable venture.

Cocoon production

Silkworms are reared for the production of cocoons which is the raw material for the silk production. At the end of 5th instar, it ceases its feeding and spins a golden cocoon. The farmers rear silkworms and produce cocoons. By marketing the cocoons, the farmers earn money. It is ideally suitable for the rural folk. In Assam there is no Government cocoon market, due to which farmers are facing lots of problem, so private enterprise can take this opportunity.

Silk reeling

Reeling is the process of unwinding the silk filaments from the cocoon and combining them together to make a thread of raw silk. The silk production is industrial activity, is best suitable to the educated youth to produce quality silk and to earn their comfortable livelihood and to provide

employment to others.

Mulberry silk reeling

Mulberry silk reeling is carried out by using different types of traditional and modern reeling device. Those are -

- Charkha reeling
- Cottage basin
- Multi-end reeling
- Automatic reeling
- Re-reeling & Twisting etc.

In the case of Assam, reelers mainly used traditional reeling devices such as bhir or bhaori, but it consumes more time and produce low-graded silk. As a result, the reelers earn less profit. The amount of production/ hour also less as compare to other devices.

Multi-end reeling and Automatic silk reeling technologies are capable of producing superior grade raw silk. Automatic silk reeling technology can handle bulk quantities of cocoons and suitable for large scale production of superior grade raw silk. Presently, automatic silk reeling technology produces superior grade raw silk of 3A-4A grade; multi-end silk reeling technology produces international grade raw silk of 2A-A grade. Govt. of India has decided to arrest the import of silk to the bare minimum by 2022 and become self-sufficient by 2024-25 through producing international-grade silk indigenously. By establishing this type of modern reeling unit any young entrepreneur can earn more profit.

Muga silk reeling

Different types of reeling device are used to reel the muga silk. Those are-

- Bhir (Traditional)
- Pedal driving (RMRS, Choudhary Type)
- Motor driven (CSTRI reeling cum twisting machines)

In Assam, Muga reeling about 56% production is done on “Bhir”, the traditional age-old device and remaining 44% is coming from CSTRI motorized cum peddle operated machine. The productivity of “Bhir” is very low (80 gm per day) and the quality of yarn is also not uniform. However, the weavers prefer to use the untwisted yarn produced on “Bhir” for weft, which accounts for 60% of the total requirement. Therefore, there is need for an alternative technology to full-fill the need of weft yarn.

Eri silk spinning

Eri cocoons are spun since they are opening mouthed and not composed of continuous filament. The device which are used for spinning are:-

- Takli (Traditional).
- Ambar Charkha.
- CSTRI spinning wheel.

In Assam, eri silk are spun using ‘Takli’ in almost all the production areas. ‘Takli’ the age-old device for Eri spinning is still in vogue. About 57% spinners are engaged in spinning of yarn on ‘Takli’ and there is demand for such yarn or products in domestic as well as international market. But it required more time and production is less/hour as compared to other device. To overcome the gap between supply-demand of eri silk any entrepreneur can establish

“Eri spun mill” with improved machineries for commercial purpose.

Silk Dyeing & Printing

Dyeing is the process of imparting colour to a textile material. Silk dyeing is an important commercial activity to fetch the good dividends. Natural dye can be used for dyeing of yarn which are mostly non-toxic, non-allergic. Some of the natural colours have added value for its medicinal effects on skin and are more than skin friendly (Srivastava *et al.* 2019) ^[15].

Printing is described as localized dyeing. Printing produces the colourful effect on the fabrics. Printing can be done by hand or by machine. Printing process involves preparation of printing paste, printing, fixation of prints, washing and finishing. Dyeing & Printing are one of the best enterprises especially for women in Assam.

Weaving

Looking at the global scenario, India is leading in handloom production with 95% contribution. It seems that there is scope for weavers' products in the market in future being sustainable in nature (Tarai, 2020) ^[17]. Handloom is one of the most important cottage industries of Assam. In rural areas, Handloom is regarded as one of the most important activities and most of the rural folks get engaged in weaving activities. In the traditional non-commercial areas of Assam, the weavers preferred throw shuttle looms having low productivity which is easier to operate and also cheap. The weavers due to their poor economic condition cannot convert their looms to fly shuttle one. The loom owners of Assam are getting a readymade domestic market for their products. But there is no proper marketing channel for displaying and selling the products outside the state, particularly “Sarees”, which could get a good market in the national arena. Due to the high potential of weaving product, any individual or private group can come forward to established modern weaving unit for higher productivity as well as for upliftment of the society.

By-product utilization

During the production process a lot of waste material results along with the main product at every stage of sericulture activity. In sericulture and silk industry nothing goes as a waste. All the leftovers i.e., by products whether it is litter, pupa, cocoon or silk waste are useful and can be well utilized in the industry. Therefore, byproduct utilization and management deserve as special mention which could make sericulture further more attractive (Savithri *et al.* 2013) ^[13].

Different types of by- product are-

1. **Dupion silk:** Raw silk reeled from double cocoon is known as dupion silk. Dupion silk fabric is in great demand in temperate countries, due to their warming character and soft feel. Dupion silk yarn is commonly used for carpets, furnishing cloths, curtains and shawls.
2. **Spun Silk:** It can be obtained from different waste such as de-flossing waste, cooking waste, throwers waste etc. Spun silk is used for shantung, pile fabrics, dress trimmings and linings, elastic webbings, sewing silk, summer wear silks, velvets, umbrella fabrics and insulation.
3. **Mulberry tea:** A special tea called mulberry tea is

made from mulberry leaves. It is caffeine free. The tea is known to improve the function of liver and kidney and sharpen the hearing and brighten the eyes. Furthermore, it relieves colds, coughs, throat infections, supposed to prevent oxidation of cholesterol consequently keeping the arteries free of fat deposits and hence hardening of arteries (Nazim *et al.* 2017) ^[11].

4. **Mulberry fruit wine:** Mulberry fruit is having a high content of vitamin C hence is commonly used for the preparation of special wine and beer in most of the temperate countries (Burhoo *et al.* 2018) ^[5]. Mulberry wine is obtained from Over-ripened and sour mulberry fruits. The wine has a sweet taste. It has been found that a glass of mulberry wine a day helps get rid of oxides and faecal residue from the body which can help make the body slim. The wine made by immersing the mulberry in grape wine works as medicine for weakness after diseases that can also be used to tonify masculine vitality. The wine has a sweet taste. In Europe mulberry fruit wine is very popular as a lady's drink. The mulberry fruits are also used for many medicinal purposes such as for balancing internal secretions and enhancing immunity (Chauhan *et al.* 2008) ^[6].
5. **Silkworm pupae:** Pupa contains crude 50 - 60% proteins, 25 - 35% fats, 5-8% free amino acids, 8 - 10% sugars, E, B1, B2 vitamins, calcium, phosphorous, 100 g of dried silkworm pupae can provide 75% daily protein requirement of the human individual (Singh and Suryanarayana, 2003) ^[14]. Silk worm pupae is either directly used in different purposes, like poultry feed, fish feed, etc. or a special oil is obtained from them which in turn is used in different products. In some countries like China, Japan, Thailand, etc., the silkworm pupae are used as delicious human food. Nowadays in Assam and other NE states people also use pupa for consumption which it become as a high demandable product in the market.
6. **Cocoon handicrafts:** Cocoon-crafted items maintain luster for years to come with visual appeal and demand. As a handicraft activity, utilization of cocoon by-products is gaining ground and popularity in the market. The cocoon by-products though having less commercial value can generate handsome returns if utilized for the preparation of cocoon handicrafts skill fully. An amount of about Rs.1500.00 can be earned from one kg of cut cocoon, as there is a good demand of cocoon-crafted items in the market (Kaul *et al.* 2014) ^[8]. Different types of handicrafts can be made from cocoons such as cocoon flowers, flower “bunch” bouquets, cocoon cap garlands, fancy items of gift/interior decoration, etc.

Conclusion

Sericulture, a rural-based economic activity, should be prioritized in national development, where entrepreneurship thrives. Thus, through extension employees from the department of sericulture, it is necessary to urge people to engage in sericulture activities, train them, and provide assistance in adopting new technology. The key to entrepreneurship development in Assam is to raise public awareness about entrepreneurship and transform people's

mindsets. So, to be successful in the next years, the government will need to provide more support in terms of establishing training programmes and making financial funding available when needed. The sericulture sector is a great place to work with a variety of opportunities. Sericulture provides employment opportunities not only for rural residents but also for educated youth in semi-urban and urban locations. Sericulture growth will undoubtedly result in a thriving rural by creating income-generating business opportunities, hence reducing poverty and halting rural-to-urban migration. In the sericulture industry, there is a lot of room for entrepreneurship development. It is necessary to educate the general public about the entrepreneurial opportunities in sericulture, as well as the different elements and benefits of Seri-Business start-ups, for them to consider entrepreneurship as a career opportunity, hence reducing poverty and halting rural-to-urban migration.

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