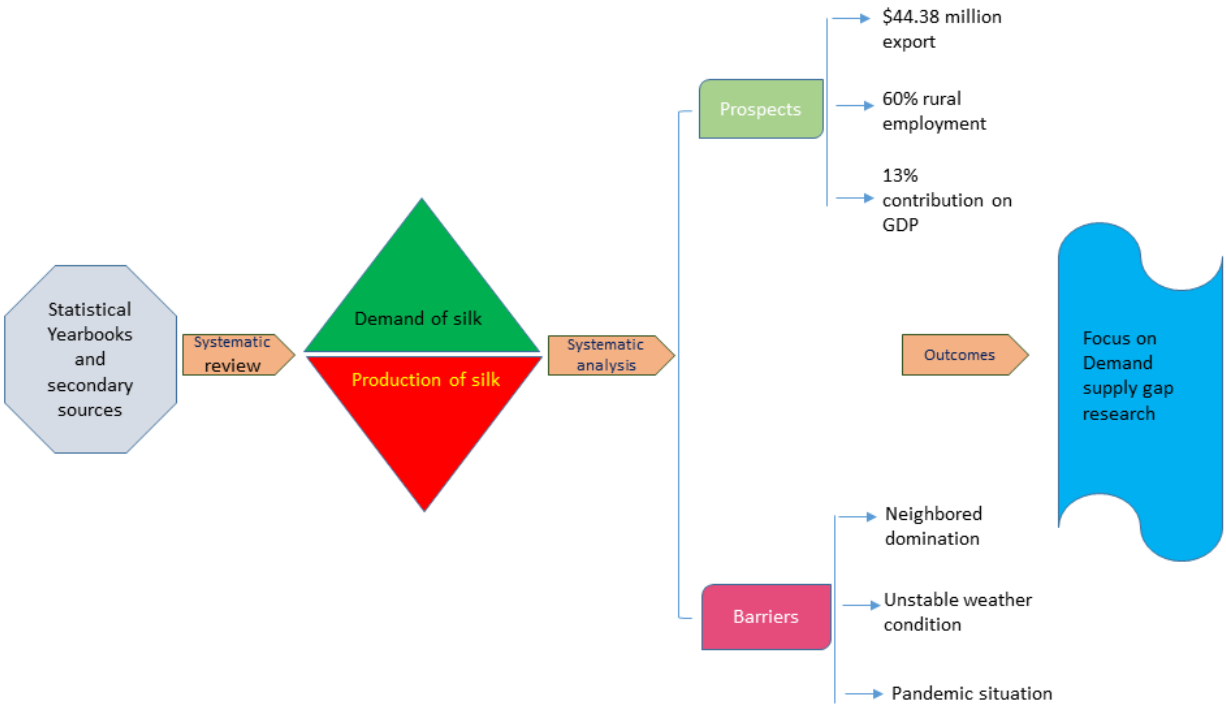
Review Article

A Systematic Review on Prospects and Barriers of Silk in Bangladesh

Abstract

Sericulture is an ancient agricultural practice and silk production has economic as well as historical importance in Bangladesh. The study has reviewed the prospects and barriers of silk compiling the production to industry level. In the last five years, silk production has decreased from 46 to 41 metric tons. As the total demand for silk in Bangladesh is 300 metric tons, it created import pressure, accounting for an average of 393.73 metric tons. Bangladesh produced 1099 kg silk yarn which contributed to the 4.43million USD export return and made the emergence of light more than in previous years. This paper shows that 75% of the total rural population lived in rural areas, and more than 60% of the total population directly or indirectly depended on agricultural activities where majority of employees were women, accounting for 60%. Bangladesh has achieved the honor of becoming the second largest exporter of Readymade Garments (RMG) which employed 4.4 million people and exported 81.16 million dollars, contributing about 18% of the total GDP. But the condition stagnated regarding the proper timing of raw materials procurement, temperature fluctuation, the Covid-19 outbreak, and others. Bangladesh Sericulture Development Board, Bangladesh Sericulture Research and Training Institute, and other non-government organizations support are required for its further growth.

Keywords: Sericulture, mulberry, bombyx mori, readymade garments, GDP, silk, employment, covid-19



Graphical abstract

Introduction

Silk is an outcome of a biological process performed by the silkworm named *Bombyx mori* (Ram, 2016). The production of silk originated in china around 4500 years ago. China had a monopoly over silk until it spread worldwide due to the Silk Road opening (Islam et al., 2010). Today, silk is called the queen of fabrics. Sericulture is a science and method which is related to silk production where the cultivation of mulberry, silkworms are needed (Gau, 2011, Rahmatullah, 2012). It became a significant enterprise that plays a vital role and shapes one's economy, especially for rural people (Dewangan et al., 2011). Sericulture turned into an essential activity for them because of its short gestation period, minimum investment, maximum employment generation, and quick turnover for the investment. (Sharma and Kapoor, 2020). According to the World Bank report, 75% population in Bangladesh lives in rural areas. Sericulture has the potential that can generate income and opportunities for women (Lewis, 2003).

Bangladesh has a long and distinguished history in sericulture, owing to its suitable agro-climatic conditions for the growth of this business (Ishtiaque, 2017). Sericulture is basically a multi-cycle crop coordination of value-adding activities that process the silk thread into a textile. The production risk is low, and loss in one cycle can be substituted by gains in other cycles (Patil et al., 2009). The cultivate segment includes growing silkworms nourishment plants, raising silkworms to deliver cocoons and eggs, and knitting shape is the industry division (Srivastav et al., 2005). In accordance with the International Sericulture Commission, silk represents 0.4% of the global textile. Silk production exceeding demand can result in a booming export trade in raw and textile goods (Banerjee, 1990). For the past decade, the Bangladeshi silk industry has been fighting for its survival (Haider, 2007). Bangladesh is the prospectus for the sericulture sector with the help of the Government and non-Government sectors. It cannot be efficient and economically viable for many reasons, such as lack of financial support, support for construction, modern technology, modern knowledge and increasing taxes and levies, competition, trade issues, and raw materials. By paying concentration on the sericulture industry with effective measures, the level of progress can be stimulated (Murad et al., 2018).

Sericulture brings rational income to rural people without bias of caste, gender, creed, and religion. As women have a dominant percentage in Bangladesh, it creates opportunity and opens

the floor, making them independent socially, financially, politically, and otherwise (Goyal, 2007). The cottage industry is considered a small and medium enterprise involved in sericulture. Most cottage industries build on agricultural product supply (Islam et al., 2010). Sericulture is regarded as a short and medium enterprise because it needs minimum capital. Short and medium enterprise (SME), which requires very small capital, plays a significant role in poverty reduction, reducing unemployment with socio-economic growth. According to the Bangladesh Bureau of Statistics (BBS), there are more than 6 million micro, small and medium enterprises (MSMEs). It creates employment for approximately 31 million people, which represents 17% of the total population in this country. The age of that population is above 15, considered the most active population. More than three-quarters of households' income generates from MSMEs in both rural & urban areas (Rahman and Majumder, 2020). Sericulture being a SME, has excellent possibilities in Bangladesh. For this sector's improvement, related and non-related sectors should be concerned (Ishtiaque, 2017). There is an urgent need to mark the problems and future expectations of the Bangladesh silk industry. Therefore, to regain the glorious status of Bangladesh's silk industry and promote the development of the economy, it is necessary to formulate an effective plan and proper implementation (Murad et al., 2018).

Focusing on the consideration, the current study is generalized with objectives-

1. To review the present scenario of sericulture and the silk industry in Bangladesh.

2. To explore the constraint behind the growth of the sericulture sector.

Materials and Methods

All the information was assembled from different types of data sources. The important and vital information was collected from various research papers, journals (e.g. Google Scholar, Web of Science, AGRIS, SCOPUS, Academic Search etc.), newspapers, website browsing, and relevant books. Additionally, statistical information was collected from the Bangladesh Bureau of Statistics (BBS), under the Planning ministry of Bangladesh. Finally, the collected data were analyzed systematically and so for that researchers, educators can easily use this as a reference tool in future.

Review of Findings

Prospects of silk production in Bangladesh

Silkworm rearing is not for harming any creatures"-Mahatma Gandhi. In Bangladesh, silk production plays an essential role in the agro-industry. Local yarn weavers supply fabrics for the textile industry (Lewis et al., 2003). Lacking sufficient production and investment facility, the quality of silk gradually declined which create pressure on imports (Van schendal, 1995).

Current status of sericulture

Table 1 Activities and Achievements of Bangladesh from silk cultivation

No.	Activities	Achievements		
		2018-19	**2019-20**	**2020-21**
1.	Mulberry cultivation and maintenance	140 acre	140 acre	140 acre
2.	Mulberry leaf production and distribution	4.15 lac	5.85 lac	5.85 lac
3.	Silkworm egg production & distribution	4.31 lac	4.515 lac	4.00 lac
4.	Cocoon production	1.74 lac kg	1.927 lac kg	1.45 lac kg
5.	Silk yarn production (govt.)	1.52 Metric ton	1.72 Metric ton	1.099 Metric ton
6.	Silk fabric production	15,650 miter	16,330 miter	10,810 miter
7.	Silk cocoon	11,770 kg	9563 kg	8675 kg
8.	Farmer Training (No)	805	810	625
9.	Chaki polu distribution	2.00 lac	2.00	2.00 lac

(Source: Bangladesh Sericulture Development Board, annual report 2018-19, 2019-20, 2020-21)

Previously, silk production might not provide the expected result, but silk production's interest has grown after including different types of NGOs and private organizations (Rashid et al., 2014). Silk production requires low capital, which is one of the major driving forces for

employment. The silk production process can be increased by effective and cautious rearing of larvae and its cocoons (Sinha, 1990). About seven factories in Rajshahi BSCIC Industrial City created 15,000 jobs, while Sopura alone created 10,000 direct. It generates indirect jobs in several northern regions and the capital city. Soft fiber made Rajshahi silk is a famous name for clothing. Sarees and other Rajshahi silk products are very demanding at home and abroad (Wadud, 2018).

Resource of silkworm and amount of production

Silk is a royal ingredient. But for some significant causes, silk industries cannot expand their sector like Cocoon maximization in Jaistha (May-June), and Bhadra (August-September) season, appropriation innovation in the field and foundation are the major challenges in Bangladesh. But some factors can be a driving force, like Reasonable agro-climatic conditions and the presence of unemployment (Sarker *et al*., 1995). Hybrid improved silk moth races have increased cocoon production from 20-25 kg / 100 disease-free layings (dfls) to 40-60 kg / 100 disease-free layings (dfls). These silkworms that are improved are below:

Table 2 Improved silkworm and its production in Bangladesh

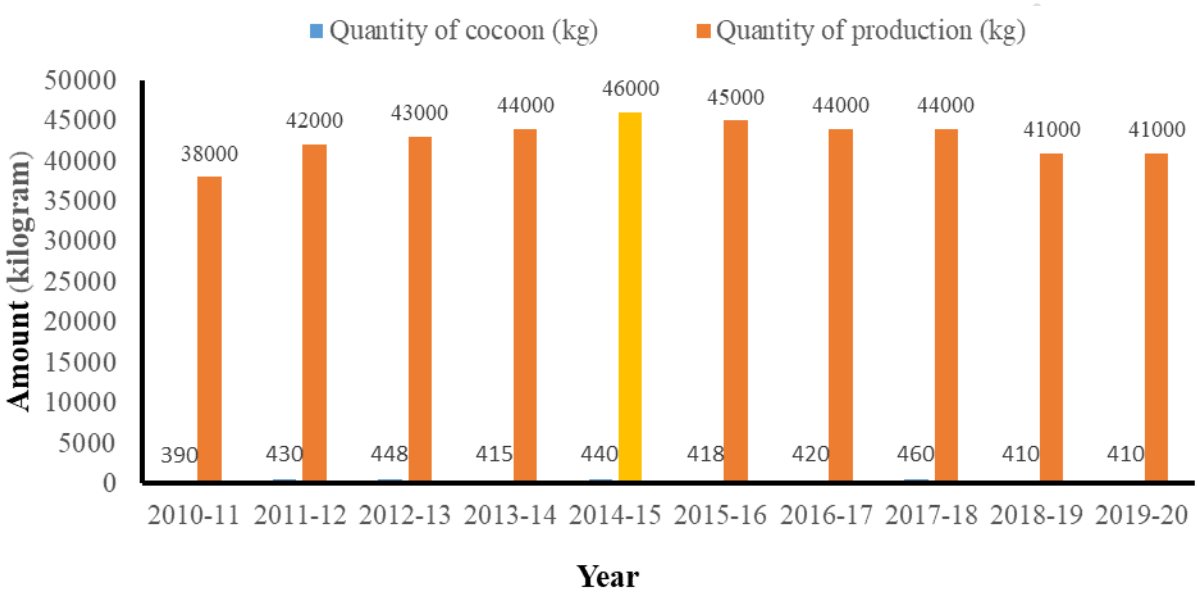
Serial no	Improved silkworm name	Production level (per 100 disease free laying(dfls)/(kilogram)
01.	Bipul	45.00
02.	FT-B	45.00
03.	HTHHRB-3	44.00
04.	BSR-95/14	46.00

(Source: International Sericulture Commission, 2020)

Production scale and volume

In 2020-2021, Bangladesh produced about 5.85 lac silk plants, contributing to producing about 41 Metric Tons of raw silk. Successful administration practice, advancement of forms and machines for post cocoon handling and through participatory (contribute to producing about 41 Metric Tons raw silk) expansion instrument and incentivize ventures at farmer's level to reduce input costs. Though the demand for silk is very high, Bangladesh produces only 18,000,000 meters in this circumstance, rest sum is imported (The daily star). The NGOs have taken different steps to develop silk production expansion by helping the government accumulate

foreign currency by empowering silk yarn makers, forming silk items, generation at a universal standard, and utilizing advanced innovation technology (Islam et al., 2010). It is noted that most of the silk is produced in the northeastern part, especially in Rajshahi, with satisfactory improvement in the Bogura district. Between 2005 and 2010, the total demand was 300 MT, whereas the total production was only 40 MT (Rashid et al., 2014).



(Source: International Sericulture Commission, 2021)

Figure 1 Production of cocoon and raw silk during the past ten years in Bangladesh

Market share of competitors

Silk competes with cotton, which currently accounts for 90% of global natural fiber production, while silk only accounts for 0.2%. This is due to the expansion of cotton production, the imbalance of supply and demand. According to several reports, Bangladesh is the 8th highest silk production country (Popescu, 2018).

Table 3 Market share of silk products (competitors) throughout Bangladesh

Competitors	Market Share	Competitors	Market Share

Usha	8%	North Bengal	5.3%
Sopura	10%	Amena	4.6%
Doel	5%	Fousdar	4.4%
Adarsha	7%	Naoshad	4.2%
Antar	6%	Tanzil	4.0%
Sunflower	5.50%	Others	36%

(Source: BSCIS handbook, 2018)

From the table, it is clear that in Bangladesh, the competition is mainly among the silk factories of Sopura, Usha, Adarsha and Antar. Sopura silk plays a dominant role in the market, controlling 10% of the total silk product market share. Then Usha Silk has only 8% of the total market share, while Adarsha Silk has 7% of the market. Rest of the market share taken by others.

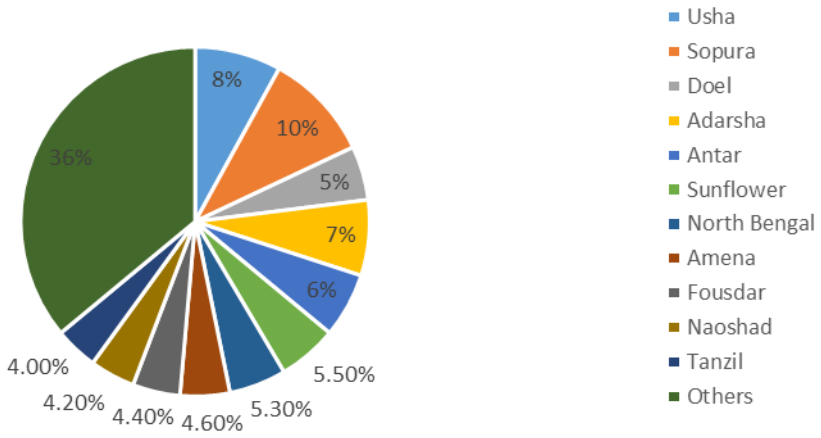
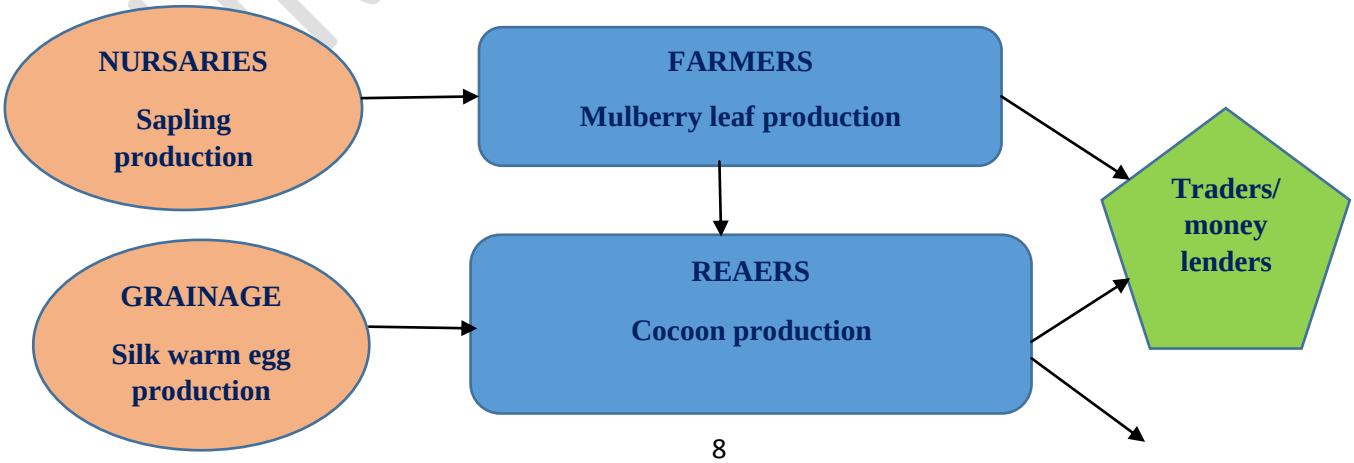


Figure 2 Market share of the competitor in Bangladesh (Source: BSCIS handbook, 2018)

Supply chain of silk:



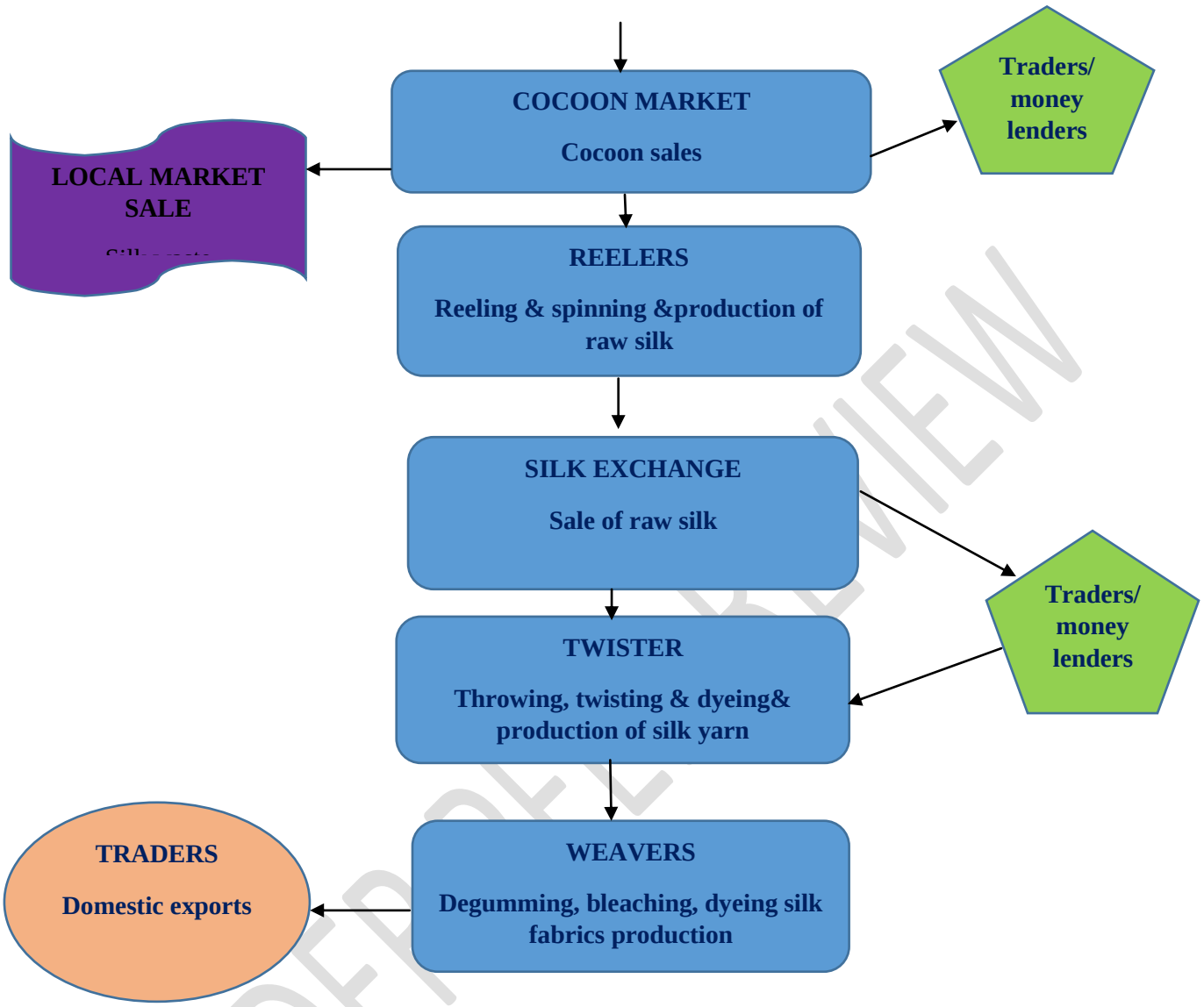


Figure 3 Supply chain of silk (Adopted by: Roy et al., 2015)

Women's involvement in different types of silk production activities

In farm-based economics, women's involvement is a significant part. As silk production activities are mainly an occupation of women, they contribute about 60% in the case of silkworm rearing and reeling (Anitha et al., 2013, Bhat et al., 2016). Sericulture provides space for women to directly participate in the production and decision-making process to improve their economic conditions and gain respect and their identity (Parimala, 2009, Raveesha et al., 2016). In silk

production activities, women's participation is very alarming than men's (Chowdhuri, 2011, Lakshmanan, 2011).

Table 4 Involvement of women in sericulture activities (in percentage)

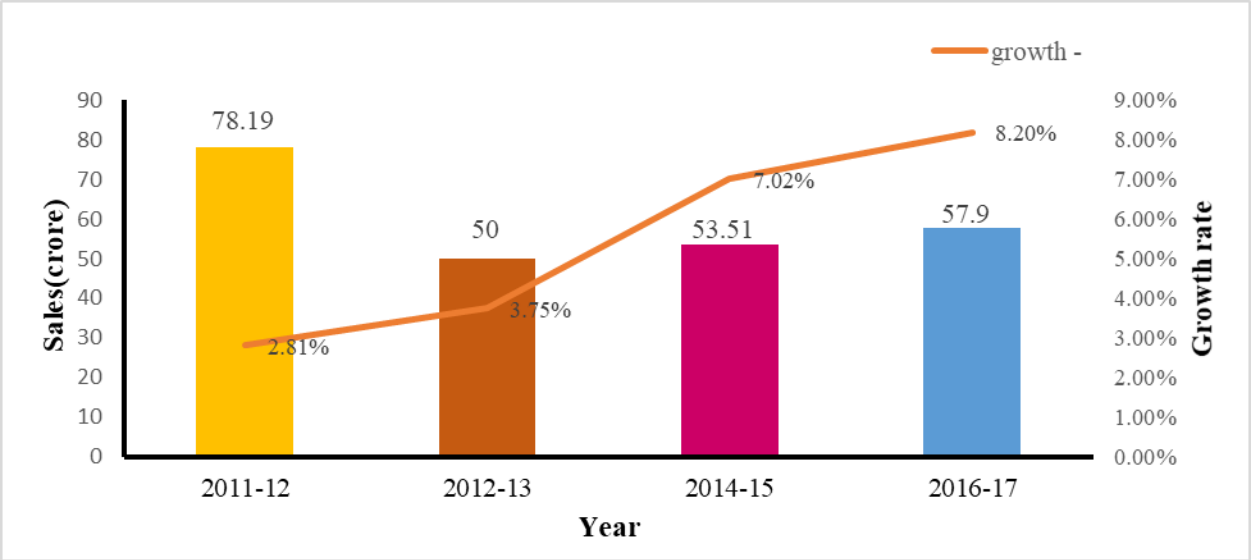
SI No	Activities	Women involvement (%)
01.	Cultivation of mulberry	49.55
02.	Rearing of silkworm	49.67
03.	Silkworm seed production	20.46
04.	Reeling of silk	48.81
05.	Twisting of silk	56.34
06.	Weaving of silk	49.02
07.	Printing and dyeing	41.00
08	Spinning of silk	80.00
09.	Utilization of by product	65.00

(Source: Sarker et al., 2020)

The world's unemployment rate was 5.42% in 2021, which was 5.4% in 2019. It is noted that more than 60% of Bangladesh's population directly or indirectly depends on agricultural activities. 1.1 billion People are engaged in agriculture, with 300-500 million paid workers. It is assumed that by 2050, about 9.7 billion people will depend on agriculture for their livelihood (International Labor Organization, ILOSTAT database, 2021). In Bangladesh, 60% of workers are women, and women consume 80% of the total consumption of silk products. It is noted that more than 60% of employed women are participating workforce through sericulture (Ssemugenze et al., 2021). The employment ratio between men and women is very promising from 2000-2018. In this period, female employment increased by 136.025%, whereas male labor increased by 35.633%. And in the agricultural sector, female employment has grown by 192.84%, indicating a sharp decrease in male participation by 16.26% (Kabir et al., 2019).

Development practices and flourished scenario of sericulture in Bangladesh

Industry Sales and industry growth



(Source: BSCIS reports, 2017)

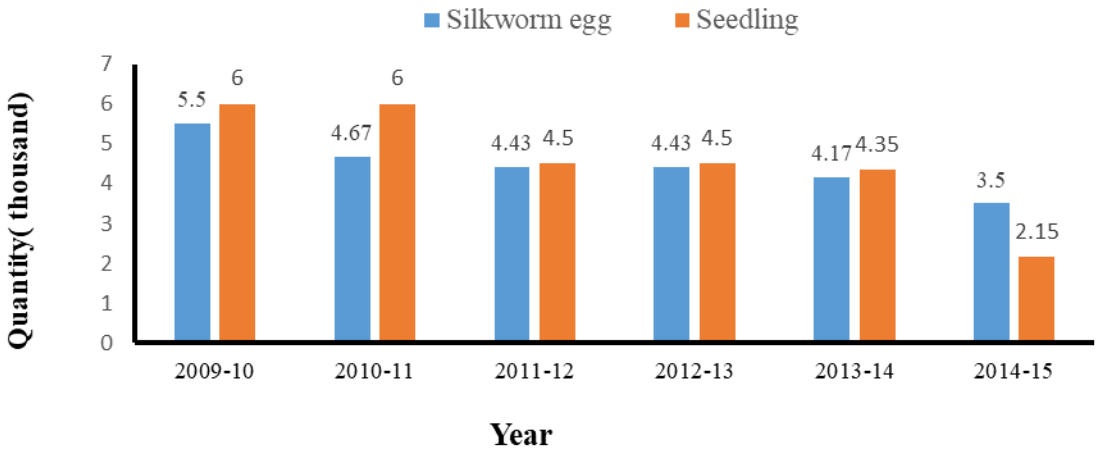
Figure 4 Industry sales and Industrial growth during the past five years.

From the figure, we can see sales progress with the increasing population in our country. From the figure, in 2010-12 the total sale was about 46.87 crore taka, but at the end of 2016-17, the sale achieved 57.9 crore taka, where the maximum sales occurred in 2011-12. So, the silk industry's deal is expanding quickly. Industrial growth is significant for our country, where poverty is a common word to us. Handloom industry is one driving force in alleviating rural poverty (Raihan, 2010). From graph 2, we see that the industry sales, industry development, and growth are increasing at an increasing rate with the number of silk items expanding. In the 2010-11 period, its industry development was 2.81%, but in 2016-17 it came to 8.20%. So, this silk sector is developing quickly.

Number of silkworm eggs and seedlings supplied

With a prepared advertisement of weaver's adjacent, the beginning industry holds a part of the guarantee. As a rural endeavor, raising silkworms is moderately simple. It's conceivable for family individuals of any age to take an interest, and it doesn't require much space (The daily star, 2018). Bangladesh's government has taken many extension programs to supply seedlings. Many development programs started with different projects, completed from 1978-79 to 2014-2015, with 15,371.78 lac, indicating a higher industry growth. Supply of saplings is an essential

developing program, including mulberry plantation through tree plantation. 275,000 saplings of mulberry had been provided to silk farmers with a very minimal price range.



(Source: SAARC agricultural center, 2016)

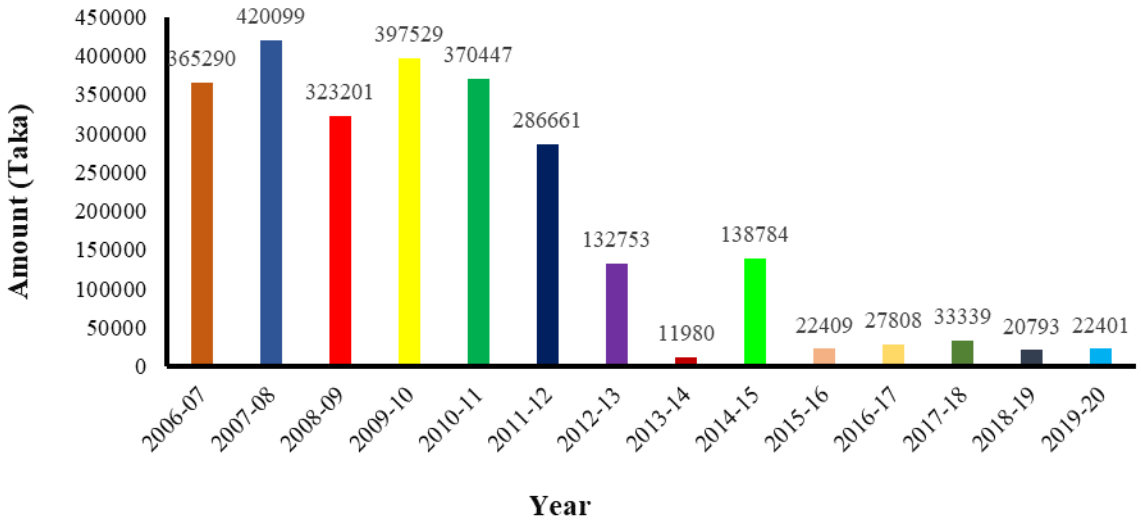
Figure 5 Silkworm eggs and seedlings supplied (in thousand)

As the sericulture agriculturist's farmer within the nation are not financially capable of purchasing disease free silkworm eggs. Additionally, silk eggs were provided to agriculturists at a down cost. And 2009-2015 a long time 267,000 infection-free silkworm eggs were provided to the silk farmer. More productive approaches were taken for more perception and serious and successful specialized supervision at the point to the sericulture expansion.

Amount of raw silk material imports

Bangladesh is an underdeveloped agricultural country where the silk industry has a long and glorious history, but the growth and market share of the industry cannot meet national and global needs. There is an urgent need to mark the problems and future expectations of the Bangladesh silk industry. Therefore, to regain the glorious status of my country's silk industry and promote the development of my country's economy, it is necessary to formulate an effective plan and properly implement it (Murad *et al.*, 2018). The national demand for raw silk is 300 tons/year. But the country's annual production is 41.60 tons. The remaining amount needs to be imported to

feed the domestic silk industry. The yearly average import volume is 393.73 tons (including woven fabrics).



(Source: Bangladesh Bureau of Statistics reports-2020)

Figure 6. Total amount of Import in case of raw silk material

Production of silk yarn at the Governmental level

Table 5 Produced silk yarn during the last three fiscal years

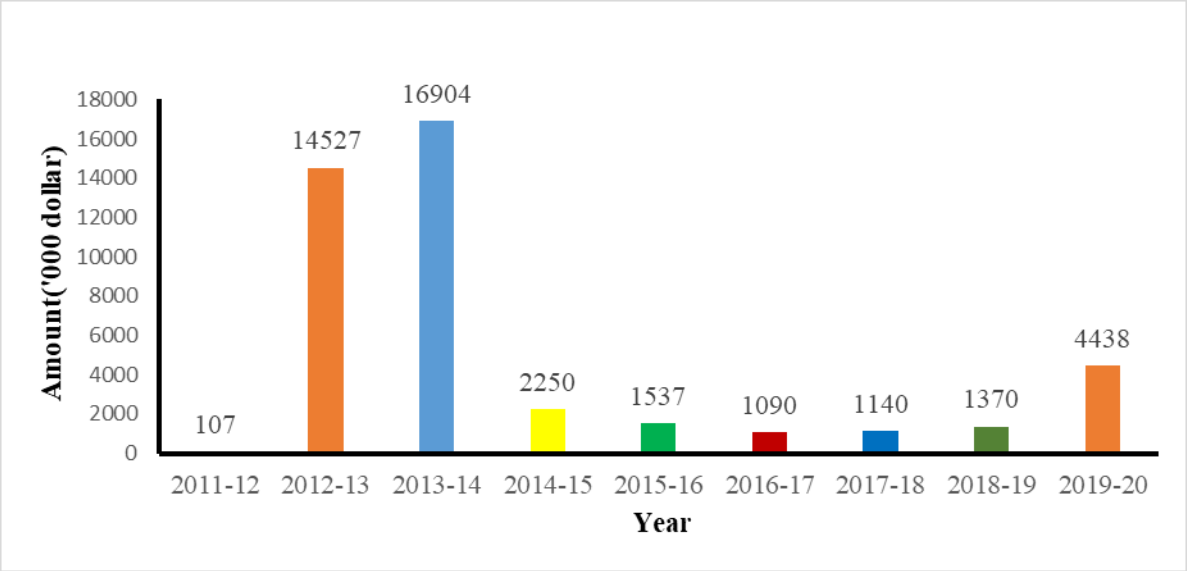
Fiscal year	Amount of produced silk yarn(kg)
2018-19	1059
2019-20	1438
2020-21	1099

(Source: Bangladesh sericulture development board, 2021)

It is considered that, silk is one of the most valuable agricultural products in the economy (Popescu, 2018). Exporting silk can take the economy to the next level, if we can cope with the production function and market strategy. From the above graph, we can see the decrease in yarn production in FY-2020-21.

Amount of silk fabrics export

Processed silk fabric is more profitable than raw silk yarn (Murad et al., 2018). The USA and the European Union are Bangladesh's leading importers of garment products. These two destinations account for over 90% of the country's total clothing export revenue. Recently, the country has achieved a certain degree of product upgrades in the European Union, but not significant in the United States. Bangladesh is less competitive than China or India. China and some other countries have made sharp implementations. Bangladesh has not been able to respond effectively to price over the past few years (Haider, 2007). In 1980-81, according to a survey by the Bangladesh Sericulture Commission, the total employment was 43,700, and 1987-88 was 140,000 during the sericulture growth period, but the current scenario is the opposite (Bangladesh Sericulture Commission (BSB), 2021). Silk is a potential sector that can create many direct and indirect employment opportunities worldwide.



(Source: Bangladesh Bureau of Statistics yearbook-2018, 2019, 2020)

Figure 7. The total amount of exported silk fabric

From the above graph, we can see that the total export in 2011-12 was 0.10 million dollars which were very low, but after a year, it increased to 14.52 million dollars, which represents the maximum amount of export till now. But due to export duties, competition, and lack of our awareness, this sector loses its control over export, which causes a decrease in the export rate. But we can see the light of emergence because that export sector has earned 4.43million dollars from silk fabrics. Local silk products are used only in the local market, and not widely exported.

By producing a full-quality product, it can be exported. So, the prospects and survivability of the sericulture industry are still high (Rashid et al., 2014).

Success and achievement for the last ten years (2011-2020)

Creating positive leadership, a good economic philosophy, and Interdisciplinary to meet market demands that are primarily considered as "power" and "communication" factors for good governance-based management, horizontal network support, and changing social, economic, and political schemes lead the increase of silkworms production (Surapolchai and Hongwityakorn, 2020).

Table 6 Comparison of the conditions of the silk production scenario

SI No	Activities	Status until 2011	Achievement and success of 2020
01.	Mulberry preservation in the germplasm bank	Preserved mulberry variety was only 60 in the germplasm bank	Preserved mulberry updated from 60 to 81
02.	Mulberry leaf production per hector	37.40 MT	40.47 MT
03.	Alley cropping system with mulberry	No	Preferable alley cropping variety invented, which ensure multidimensional profit earning.
04.	Irrigation facility underground system	No	Underground irrigation system build which ensure the nutrition amount for producing more mulberry leaves.
05.	Mulberry and silkworm preservation in germplasm	Silk worm variety was 85 varieties.	Developed from 85 to 111 varieties.
06.	Silk cocoon production per 100 from disease free silk egg	50.70 kg	70.75 kg
07.	Raw silk production	1 kg raw silk could be collected from 18-20 kg cocoon.	1 kg raw silk could be collected from 10-12 kg cocoon.

(Source: BSRTI, 2021)

Potentials of sericulture extension in Bangladesh Garments Manufacturers and Exporters Association (BGMEA)

Silk is considered one of the best natural fibers. This fiber has excellent properties such as good tensile strength, comfort, and dyeing behavior (Babu, 2020). It provides employment to about

7.63 million people (Satsangi, 2014). Nowadays, BGMEA is the spine of the economy (Rahman and Chaity, 2018). Globally, Bangladesh has achieved the honor of becoming the second largest exporter. The population participation is above 4.4 million, making Bangladesh the second largest after china. "MOSLIN" producing in Bangladesh has become the second largest exporter worldwide (Muzib and Chaity, 2018).

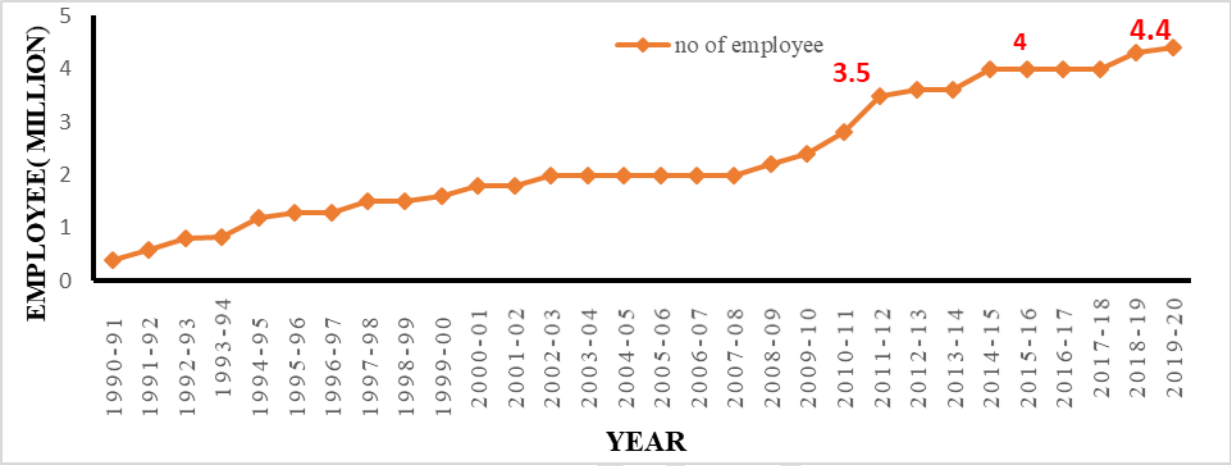
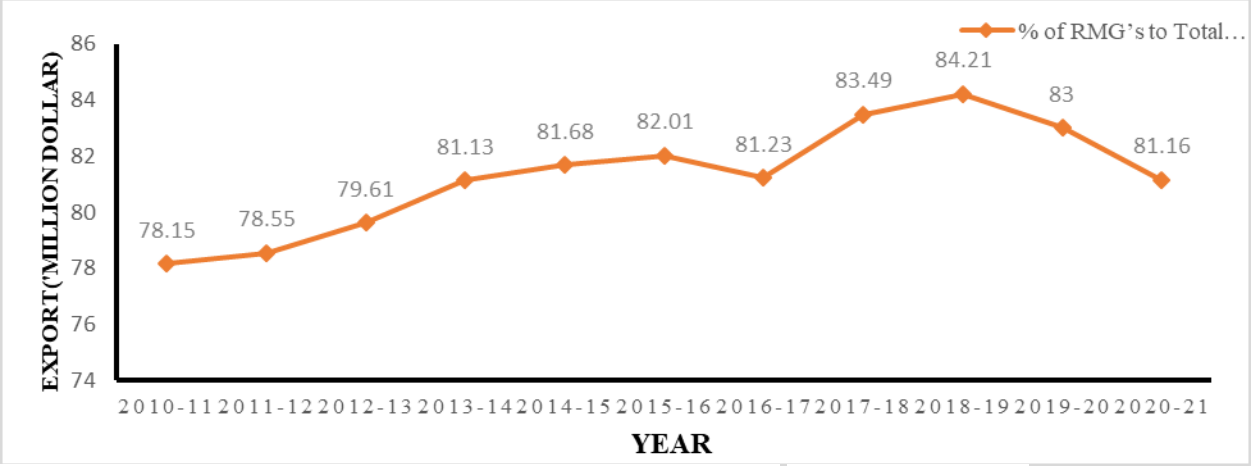


Figure 8 Employment status of the garments sector in Bangladesh.



(Source: Bangladesh Garments Manufacturers and Exporters Association, 2020)

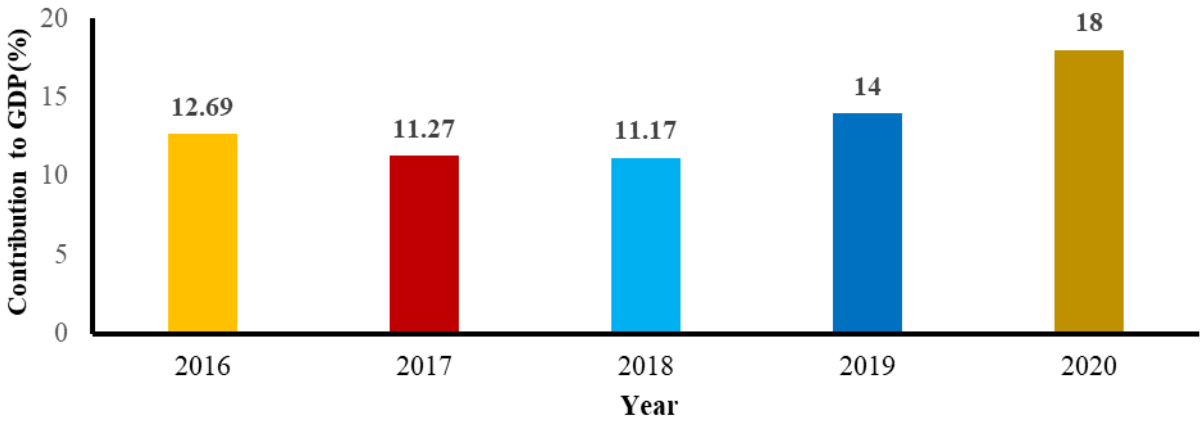
Figure 9 Export of RMG sector in Bangladesh

The RMG sector plays a vital role in the case of employment. In the absence of this opportunity, many people would have unemployed. In the RMG sector, more than 90 percent of workers are women. RMG sector makes them independent and employed (Islam et al., 2016). RMG

contributed more than 10 percent of the total GDP and provided 84 percent of total foreign exchange in FY 2018-19, which is very significant (World Bank, 2019; BGMEA, 2019). The RMG sector in Bangladesh earned 29 billion dollars, contributing a 6.5 percent share of the world market (Islam, 2021). In Bangladesh, the garment manufacturing sector had a new slogan: "$50 billion by 2021." Bangladesh's export has achieved the $30.76 billion target set by the Export Promotion Bureau (EPB) in Fiscal Year 2021 from sources at the garment exporters association (Islam, 2021).

Contribution to GDP by the RMG sector in Bangladesh

The RMG sector is the heart of the economy, plays a vital role in development, and is a significant contributor. The recent figure for the last five years is below-



(Source: Textile today, 2020)

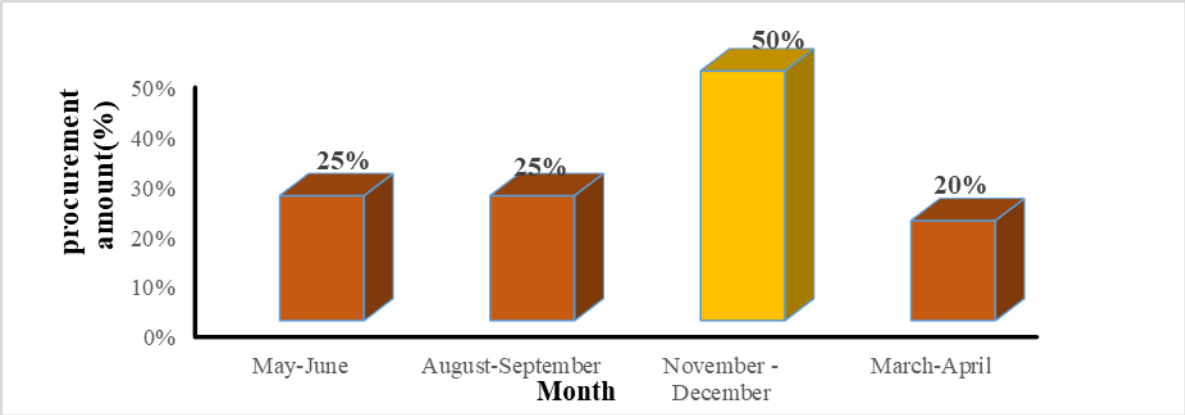
Figure 10 Readymade Garments sector's contribution to GDP

RMG sector's contribution was 11.17% of GDP in 2018. In 2018 total GDP was taka 22,504,793 million whereas RMG sector contributed about taka 2,513,471 million. About 4% of GDP in 2020 showed an apparent increase compared to the past year (Textile today, 2020).

Barriers to silk production in Bangladesh

Procurement of raw material

A major problem facing sericulture entrepreneurs is the procurement of raw materials. As a local vendor and supplier of raw materials, the sericulture committee also uses sericulture entrepreneurs. Most weaving entrepreneurs mentioned that they encountered difficulties obtaining the primary raw materials. Silk thread is the main raw material of silk fabrics. There are many techniques for obtaining raw silk. Generally speaking, wealthy weavers quickly adapted to these techniques and managed to obtain all the silk threads from the Sericulture Committee and BSCIC, and later on, these procedures were not easy for the poor to understand an uneducated weaver (Salimullah, 1988).



(Source: BRAC, 2020)

Figure 11 Favorable month for procurement of raw material

Sometimes the eggs do not hatch properly, and the breeders do not receive the planned number of cocoons. Producers noted that this is likely related to the production and quality of the mulberry leaves. HYV worms (high-yielding variety) are also susceptible to disease. HYV worms are very sensitive and require 23-28 ° C temperature, 65-85% humidity, good growing technique, and good quality mulberry leaves to survive. In the latter stages of growth, silkworms require more leaves, which means they spend more time collecting leaves that the growing plants do not have or cannot afford. The power outage also caused the death of worms in chondrokes on one occasion. The worms are usually fed four times a day (from 6:00 to 13:00 - 17:00 to 21:00 or from 3:00 to 10:00 - 14:00 - 17:00 - 19:00). The highest cost to grow is the time it takes to harvest the leaves (Akhter, 2010). Bangladesh has a pleasant climate and a long history of silk production. It should be a well-known name in the world's sericulture industry. However, the fact is just the opposite. While Bangladesh's neighbors China and India have become the top two

countries in the sericulture industry, the Bangladesh silk industry is fighting for survival (Haider, 2007). The number of people involved in this industry is huge (about 600,000), but running companies are losing about 4-5 taka. Thousands of factories are closed daily, and many others are virtually dying (Roy et al., 2012).

Fluctuation of temperate in Bangladesh region

Temperature plays a vital role in the growth of silk moths. Since silk moths are cold-blooded animals, body temperature directly affects various physiological activities. Early larvae are generally resistant to high temperatures and help improve survival and cocoon characteristics. The temperature has a direct correlation with silk moth growth. Large fluctuations in temperature are harmful to the growth of silk moths. The production of silkworm cocoons was adversely affected during the (May-June) and (August-September) seasons (Rahmatullah, 2012).

Table 7 The optimum temperature and humidity requirements for silkworms at each stage

Environmental factors	Temperature	Relative humidity
Incubation	25°C	75–80%
I	28°C	85–90%
II	27°C	85%
III	26°C	80%
IV	25°C	70–75%
V	24°C	65–70%
Spinning	25°C	70%
Cocoon preservation	25°C	80%

(Source: Rahmatullah, 2012))

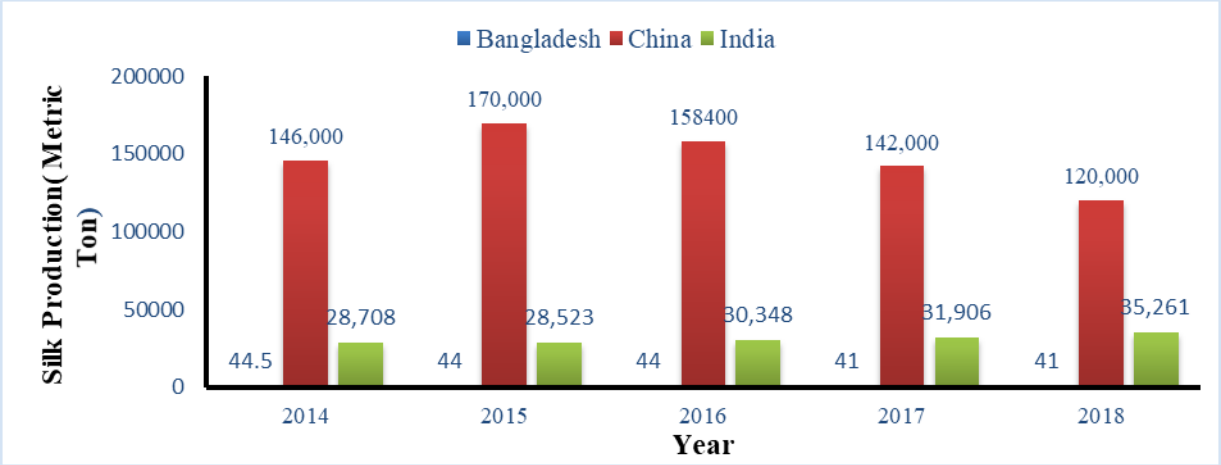
Global warming is expected to result in low yields of silkworms and raw silk, broken silks during spinning or reeling, increased outbreaks of diseases and insect pests, risks of soil acidification and salinization, competition from crops and weeds, changes in silkworm feeding plans.

COVID-19 Outbreak Threat & Infection with the Disease

The long-term coronavirus pandemic has posed a severe threat to the survival of the traditional silk industry. At present, in the case of abnormal decline in production and sales, entrepreneurs and entrepreneurs are trying to maintain their businesses. In recent years, due to intensive cultivation practices and the indiscriminate use of nitrogen fertilizers and pesticides, many pests and diseases have been reported to be the major limiting factors affecting mulberry leaf production and productivity. These pests are hairy larvae (*Diacrisia oblique*), mites (Bud mites), and the disease is powdery mildew. Scale insects, leaf rust (*Peridiospora mori*), leaf spots (*Cercospora moricola*) (Ram et al., 2020).

Neighbored silk aggression

Before Chinese silk entered Bangladesh, the entire industry was run through local spinning. Chinese yarn dominated the silk market, and local producers died. At present, domestic producers supply only 41 tons of silk thread for an order of 500 tons.



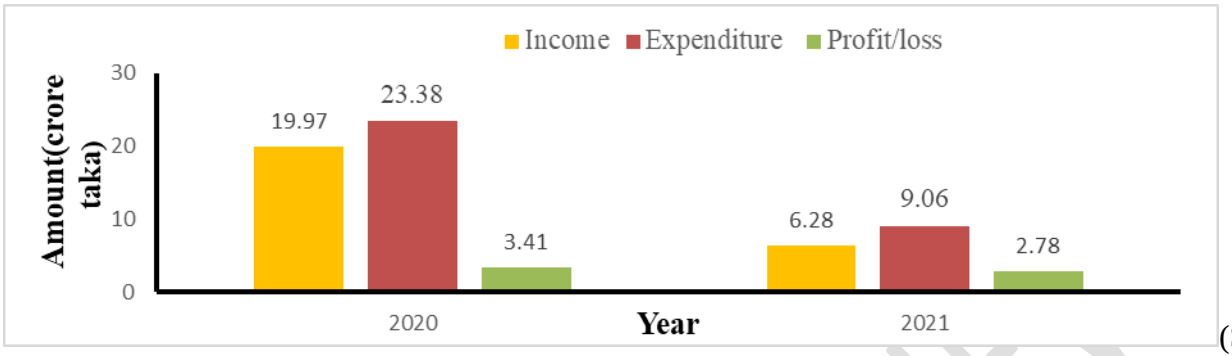
(Source: Sharma and Kapoor, 2020)

Figure 12 Amount silk production in Bangladesh compared with China and India

The scenario of profit and loss during the last two years in the textile industry through sericulture

The textile industry has made a significant contribution to economic growth. It is also a source of export earnings and helps reduce poverty. Many men and women are directly involved in this

sector, which makes them economically flourish (Kabeer and Mahmud, 2004). But the scene of the last two years is very disappointing (Figure 12).



(Source: Ministry of jute and textile, annual yearbook, 2021)

Figure 13 Scenario of profit and loss in textile industry

Bangladesh is suitable for sericulture practice because of its climatic advantage and soil condition. In Bangladesh, the available labor force, land in hilly area, unemployment ratio are the main advantage in sericulture. According to the findings, 420 bigha of land is used for mulberry cultivation. But during 2021, total silk yarn production 1.099 metric tons under government supervision. It shows an unfortunate decline from the recent past, which was 1.724 metric tons. Silk is collected from silkworms. Among them, BSR-95/14 variety can produce most, 46 kilograms per 100 disease-free laying. Compared with cotton fabrics, silk only accounted for 0.2%, whereas cotton accounted for 90% of global production. Among silk quality, sopura silk plays a dominant role in capturing 10% of the total market share, Usha 8%, Adarsha 7%, and others. Women's participation in agriculture is an ancient culture. Therefore, more than 60% of women are directly involved in silk production, with a 192.84% increase in employment in the agricultural industry. In 2016-17, the growth of the silk industry was 8.2%, which was tremendous. The total demand for silk in Bangladesh is 300 Metric tons, but the entire production in 2021 is only 41 metric tons; the rest amount to 393.73 tons needed to import, which cost 22401000 taka. Furthermore, in Fiscal Year 2020-21, Bangladesh produced 1099 kg of silk yarn by processing this, about 4438000 taka earned from export. Moreover, producing full-quality products can be exported through Readymade Garments (RMG). Bangladesh is the second largest manufacturer.

Through it, Bangladesh earned 29 billion dollars, accounting for a 6.5 percent share of the world market. So, the prospects and survivability of the sericulture industry are still high. Thus,

Governmental and Non-government organizations should come forward for sericulture. Farmers sometimes find sericulture unprofitable because HYV worms are susceptible and require 23-28 ° C temperature, 65-85% humidity, which is favorable only from November to December. The coronavirus pandemic and the neighboring country's cheap products hinder the growth of Bangladesh's silk industry.

Research and development activities, providing modern technology, and proper monitoring systems should be established for the uptake of silk production activity. Government and other organizations should come forward for the greater interest in sericulture. Population, unemployment rate, socio-economic condition, and a substantial supply-demand gap in Bangladesh can make sericulture more prospectus and demand.

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