

**SOCIO-ECONOMIC STATUS AND DETERMINANTS OF THE
PARTICIPATION OF THE FARMERS IN SERICULTURE:
A STUDY IN RAJSHAHI DISTRICT**

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PARTICIPATION OF THE FARMERS IN SERICULTURE:
A STUDY IN RAJSHAHI DISTRICT**

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CERTIFICATE

This is to certify that the thesis entitled “**SOCIO-ECONOMIC STATUS AND DETERMINANTS OF THE PARTICIPATION OF THE FARMERS IN SERICULTURE: A STUDY IN RAJSHAHI DISTRICT**” submitted to the Department of Development and Poverty studies, Sher-e-Bangla Agricultural University, Dhaka-1207, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE (MS) IN DEVELOPMENT AND POVERTY STUDIES**, embodies the result of a piece of bona fide research work carried out by **Jannatun Fardus, Registration No. 15-06829** under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that any help or source of information, received during the course of this investigation has been duly acknowledged.

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Dedicated to
My Beloved Parents

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LIST OF ACCRONYMS AND ABBREVIATIONS

% = Percentage

BBS = Bangladesh Bureau of Statistics

e.g. = exempli gratia (L), for example

et al. = And others

etc. = Etcetera

Yr. = Year

BDT. = Bangladesh Taka

J. = Journal

No. = Number

SAU = Sher-e-Bangla Agricultural University

GOB = Government of Bangladesh

DFLS= Disease Free Layings

ABSTRACT

Sericulture is an agrarian small-scale farming that benefits both marginal and small landholders, generates profits, and creates employment to family members. Previous research found that socioeconomic status of silkworm cocoon producers has a significant impact on their understanding and acceptance of mulberry and cocoon production strategies. In this context, a study has been conducted in Rajshahi district of Bangladesh to know the socioeconomic status of sericulture farmers. Information for the current inquiry was gathered from 90 farmers in three upazilas through formal discussion and an interview schedule. According to the study, most of the farmers who responded had small families, and relatively few had medium-sized and large families. The majority of farmers had completed elementary and high school, and very few had completed college. Notably, the majority of farmers showed minimal interest in social activities. A significant number of farmers participated in meetings, field trips, farmer training sessions, demonstrations, exhibitions, field days, and educational tours in relation to extension activities. The findings indicate that sericulture farmers in Rajshahi face various challenges, including limited access to credit, inadequate training, and extension services, and low market prices. Furthermore, government policies and programs aimed at improving the socio-economic status of sericulture farmers have been limited in their impact. Based on the findings, this study recommends that sericulture farmers in Rajshahi be provided with better access to credit, training, and extension services. Additionally, policies and programs aimed at improving the market conditions for sericulture products should be prioritized. This research concludes that addressing these challenges can enhance the socioeconomic status of sericulture farmers in Rajshahi and improve the sustainability of the sericulture industry in the region.

CHAPTER I

INTRODUCTION

1.1 Background

Sericulture is an agro-based highly labour intensive and commercially attractive economic activity, falling under cottage and small-scale sector. Sericulture enterprise in its totality is a long chain industry from mulberry cultivation to fabric making. It plays a vital role in the uplift of rural population both socially and economically (Sreenivasa and Hiriyanna, 2014)

Asia is the top producer of silk in the world contributing 95% of the total global output. There are 58 countries on the world map of silk; bulk of it is produced in China and India, followed by Japan, Brazil and Korea (Nagaraju, 2008).

Sericulture, or silk farming, is believed to have started in China 5,000 years ago or more. Bangladesh has a long history of sericulture which is closely linked with India dating back to the 1st century, has been a part of the nation of Bangladesh since its independence in 1971.

Only the Rajshahi district produced 186 tons of silk in 1857. In 1897, a sericulture school was established in Rajshahi, and in 1889, a silk business committee was formed. Since the British period, silk production has occurred in the Rajshahi zone because the British Government chose the Rajshahi zone for mulberry tree cultivation because the weather and soil are suitable for mulberry tree cultivation. Just after 1947, the majority of the silk was exported to India. In Rajshahi, the East Pakistan government established 12 silk nurseries, 20 expansion centers, 1 silk factory, and 1 silk research and training institute under the supervision of small and cottage industry. The Bangladesh Sericulture Board was established in 1978.

1.2 Importance of Sericulture

Sericulture is an important source of income and employment for many people in countries where it is practiced. It provides a means of livelihood for silk farmers, workers, and traders, contributing to the local and national economy.

While the textile industry produces a diversified range of natural, synthetic, and blended fabrics, many would agree that nothing beats the luxurious texture of pure silk, a product with a long history that is still popular today. Silk is a high-value, low-volume commodity that is in high demand both domestically and internationally. It transfers wealth from the richer to the poorer sections of society because silk is consumed by the wealthy, and the money spent on silk is distributed among the sericulturists, reelers, twistors, weavers, and traders.

With favorable weather and soil and with a glorious history in silk production Bangladesh should be a bright name in World sericulture industry. Yet, the reverse is true. While China and India, neighbors of Bangladesh, become the top two countries in the sericulture sector, Bangladeshi silk industry is fighting for survival (Hassan and Bakshi, 2005; Haider, 2007).

Sericulture provides a great opportunity for generation of rural employment, empowerment of women and income generation and become a part of region's development. Sericulture is a farm-based enterprise highly suited for both large and small land holdings. The socio-economic status of the farmers has been an important parameter in determining their level of technology adoption. The factors such as education, income and social participation, extension contact, mass media use, cosmopolitanism and risk orientation were found to have positive relationship with adoption, while age showed negative relationship with it. The contribution of limited availability of land, limited cash returns and agriculture being confined to one or two seasons in the year have made villages to look for supporting rural industries such as sericulture (Rai, 2006).

So, for employment generation, keeping our heritage alive, to avoid seasonal risk, to earn remittance silk industry is very important.

1.3 The Linkage between Mulberry Cultivation and Cocoon Production:

Mulberry trees, particularly the *Morus alba* species, are the primary source of food for silkworms, which in turn produce silk cocoons. Here's a detailed explanation of the linkage:

Mulberry as Silkworm Food: Silkworms, the larvae of the silkworm (*Bombyx mori*), feed almost exclusively on the leaves of the mulberry tree. The mulberry leaves are rich in nutrients and provide the necessary sustenance for silkworms to grow and spin their cocoons.

Mulberry Cultivation: To support sericulture, mulberry trees are cultivated. The quality and quantity of mulberry leaves harvested from these trees have a direct impact on the health and productivity of silkworms. The cultivation process involves selecting suitable mulberry varieties, managing the growth of the trees, and ensuring a consistent supply of fresh leaves.

Impact on Cocoon Quality: The nutritional quality of mulberry leaves plays a crucial role in determining the quality of silk cocoons. Well-nourished silkworms that feed on high-quality mulberry leaves produce silk cocoons that are strong, uniform, and have a desirable texture and color. Inferior mulberry leaves can result in lower-quality cocoons.

Quantity of Cocoons: The number of mulberry leaves available for silkworms to consume directly affects cocoon production. Adequate mulberry cultivation ensures a sufficient supply of leaves, which in turn leads to a higher quantity of silk cocoons.

Economic Implications: For sericulture farmers, the linkage between mulberry cultivation and cocoon production has significant economic implications. A well-managed mulberry plantation can increase the overall yield of silk cocoons, leading to higher revenue.

Sustainability: The sustainability of sericulture is closely tied to the sustainability of mulberry cultivation. Ensuring a consistent, healthy mulberry supply is crucial for the long-term viability of silk production.

The health and productivity of silkworms and the quality and quantity of silk cocoon production are intricately linked to the cultivation of mulberry trees. Successful sericulture operations pay careful attention to both mulberry cultivation and the well-being of the silkworms to produce high-quality silk and sustain the silk industry.

1.4 Bangladesh Sericulture Research & Training Institute (BSRTI)

It plays a pivotal role in the development and advancement of the sericulture industry in Bangladesh. Established with a mission to promote sericulture and silk production, this institute has been a vital hub for research, education, and training.

Located in a region with a rich history of sericulture, the BSRTI is ideally situated to leverage the traditional knowledge and skills of the local community. The institute conducts research to improve sericulture practices, focusing on mulberry cultivation, silkworm rearing, silk production, and pest management. By developing and disseminating best practices, the BSRTI has helped sericulture farmers enhance their productivity and the quality of silk they produce.

One of the institute's core functions is training. It offers comprehensive programs for sericulture enthusiasts, farmers, and entrepreneurs, equipping them with the technical know-how to succeed in the industry. These training initiatives cover a wide range of topics, from silkworm biology to modern silk processing techniques.

Bangladesh Sericulture Research & Training Institute serves as a dynamic center for sericulture research, education, and training. It plays a crucial role in elevating the sericulture industry in Bangladesh by fostering innovation, sharing knowledge, and improving the socio-economic status of sericulture farmers.

1.5 Area and Production of Silk

Rajshahi, located near the Indian border, is Bangladesh's leading sericulture region. The climate in this area is ideal for growing mulberry trees, which are required for sericulture because the *Bombyx mori* silkworm feeds exclusively on mulberry leaves. Since the British period, silk production has occurred in the Rajshahi zone because the British Government chose the Rajshahi zone for mulberry tree cultivation because the weather and soil are suitable for mulberry tree cultivation. Bangladesh currently produces 30 to 32 tons of raw silk, but besides the country's total demand for raw silk is around 200 tons.

Rajshahi silk is a well-known brand in the world of clothing, especially saris. Silk is a delicate and soft fiber made from silkworm cocoons that is covered with a protein called sericin. Saris and other Rajshahi silk-based products are widely valued after both domestically and internationally. Rajshahi silk fabric is available in a variety of colors and patterns for designers. Silk fabric is available in a variety of weights and weaves for use in

clothing and other applications. Rajshahi is home to a number of silk industries; the region's sericulture produces almost all of Bangladesh's silk output. However, silk's past glory is fading fast due to a lack of government support, although private sector silk industries have created many jobs in the country, including Chapainawabganj, Rajshahi, Naogaon, and Bogra districts. Like other state-run organizations of its kind, Rajshahi Silk Factory had to close its operations in 2002 for a lack of supervision and proper planning. However, many private silk companies, including Sapura Silk Mills Ltd, are successfully operating across the country. The seven factories in Rajshahi's BSCIC Industrial Town have created 15,000 different types of jobs, while Sapura alone has created 10,000 direct and indirect jobs across several northern districts and the capital. More importantly, money is being transferred indirectly from rich to poor in the sense that the majority of silk products are used by the richer section of society due to the high cost of silk products, whereas cocoon growers and raw silk makers are from the poorer section of society. Thus, in a country like Bangladesh, where income inequality is high, the sericulture industry has its own significance.

1.4 Objective of the study

Specific objectives of the present study are as follows:

1. To document socio-economic profile of the farmers related to sericulture;
2. To identify the determinants of participation of the farmers in sericulture;
3. To find out the constraints of sericulture in the study area.

1.5 Justification of the study

The silk industry is promising. If proper emphasis can be given, it can thrive again. It has the potential to create employment opportunity and alleviate poverty for a large portion of the country's population, particularly in rural areas. Bangladesh has a great opportunity to develop this sector with proper aid and support from government and non-government organizations. Sericulture farmers can improve their conditions by receiving proper training and funding. Fewer studies had been conducted to assess past conditions, current conditions, and to observe future challenges. However, it is essential to observe farmers' socioeconomic

conditions as well as the determinants that influence factors related to people's participation in sericulture.

The present study is designed to investigate the socio-economic status of sericulture farmers and some major issues. Therefore, the findings of the study will help the farmers, planners and policy makers in making correct decision and formulating right policies regarding silk production. For better understanding the current scenario and for taking strategies to accelerate regional development programs specifically in the Rajshahi district of Bangladesh. This study will also be helpful to the academicians and researchers for further conceptualization.

1.6. Organization of the Thesis

The background and importance of sericulture, rationale and objectives of the study is described in chapter one. The second chapter comprises the review of literature. The third chapter covers of the research methodology. Chapter four describes the socio-demographic profile of the sericulture farmers. Chapter five consists of factors influencing the participation of the farmers in sericulture. Chapter six describes the constraints associated with silk industry and suggestions for further improvement and Chapter seven contains summary, conclusion, and recommendations of the study.

1.7. Concluding Remarks

Sericulture farming is a source of livelihood for a significant number of people lived in the Rajshahi district of Bangladesh. A study on socio-economic status of sericulture farmers as well as observe constraints associated with the industry can be an important media to initiate and implement a regional development program in Bangladesh. The development of silk industry can be an important source of livelihood for the people who are related with silk industry.

CHAPTER II

REVIEW OF LITERATURE

The present study was concerned with the perceived socio-economic status of sericulture farmers. This chapter deals with the reviews of the past works that relates to this investigation directly or indirectly. The researcher searched internet and reviewed related literatures. But frantic search, the researcher found no studies which are directly related to perceived socioeconomic status of sericulture farmers. The researcher intensively searched internet, available books, journals and printed materials from different sources of home and abroad and tried his best to collect related information.

Bukhari R. *et al.* (2019) found that about 53-80 percent of women engage in sericultural activities in India but this is more dependent upon the type of activity. Women contribute at almost all stages of silk production such as Mulberry production for silkworm feeding, indoor rearing of silkworm. They highlighted that though, women are employed in Sericulture and earn a living but face challenges as lack education, qualification therefore need for capacity building through effective sensitization trainings as this will ensure economic development through women empowerment in form of employment in rural communities.

Suraksha C. *et al.* (2019) conducted research entitled Sericulture: An opportunity for the upliftment of rural livelihood. They found that majority respondents were marginal farmers having land holding less than one-hectare, small farmer with land holding of 1-2 hectares of land. The reason may be that this enterprise requires less land as well as the respondents were poor and they adopted this enterprise just to meet their livelihood needs or for support to their other economic resources. None of the respondents were found in large and medium category.

Choudhury *et al.* (2017) opined in their study that the primary barrier to farmers' use of technology was their financial inability to build separate rearing houses, which was determined to be a major constraint. Systematic adoption of recommended technologies improves cocoon yield, which increases the sericulture industry's revenue.

Ram et al. (2016) predicted that the effects of climate change will lead to low mulberry and raw silk production, thread breaks during spinning or reeling, an increase in pest and disease incidence, a danger of soil acidification and salinization, crop-weed competition, a shift in the timing of silkworm rearing, etc.

Ali S.S et al. (2014) opined that the implementation of cluster concepts can speed up the growth of sericulture because the cluster promotion programme (CPP) has created a significant impact on all socio-economic aspects of sericulturists.

Upadhyay and Barman (2013) reported that Sericulture is a significant labor-intensive and agro-based cottage industry in India, employing approximately 7.25 million people in rural and semi-urban areas. A large percentage of these workers come from the financially deprived sections of society. Women have a significant presence in this industry.

Roy et al. (2012) investigated that the farm and non-farm activity of Sericulture create sixty hundred thousand employments every year mostly in rural India. Although the number of people involved in this industry is quite large (about 60000) the running enterprises are incurring losses of around Taka 4 to 5 thousand everyday with at least 60 factories having been shut down and many others virtually dying.

Ishtiaque A. (2011) stated that the owner of the silk industries of Bangladesh though are very disappointed on the role of silk board to the development of silk industries, they are still expecting some assistance from the board. Most of the small industrialists' demand debt from the silk board with simple condition. Invention of new seeds and thread is also their major demand.

Venkatesh et al. (2010) observed that women in rural India participate in a variety of economic activities. Women have been involved in the sericulture activities in various capacities viz., worker, supervisors and supporting personnel within the family.

Gangopadhyay (2009) reported that Sericulture is a farm-based enterprise that is well suited for both large and small land holdings and requires low capital investment. Largely the silk goods are purchased by urban wealthy and middle-class consumers which are estimated 57% of the total final value of the silk fabric in rural areas.

Jones (2009) stated that as compared to regional competitors' sericulture in Bangladesh suffers from a less proactive attitude from the Government. The Ministry of Textiles, Bangladesh Sericulture Board (BSB) and its Research and Training Institute (BSRTI) all requires a more outward looking approach, sadly excessive bureaucracy is also stifling innovation. Time and motion studies are urgently required to improve every aspect of business efficiency. Greater deregulation would certainly help companies compete and access improved silk moth varieties. With a fragmented industry, a largely unskilled workforce and rising import costs the whole industry is suffering. There is also the issue of the disparity between the tonnage of yarn produced and that needed by the local industry. Rival silk industries are forging ahead, from investment in Research and Development to design and new technologies. The sector demands change. Sericulture in Bangladesh has a long and illustrious history, but must adapt to survive. Sericulture in Bangladesh is at a crossroads, the choice is clear, stagnation and decline or innovation and survival.

Lakshmi C.S. (2007) reported that Sericulture is a labor-intensive industry in all its phases. It can generate employment up to 11 persons for every kg of raw silk produced. Out of which more than 6 persons are women. More than 60.00 lakh persons are employed as fulltime workers in the production chain out of which 35-40 lakh persons are women.

Vijaykumar et al. (2007) analyzed that one hectare of mulberry can create employment for 13-16 persons per year and their location specific analysis showed that for production of 1kg of raw silk 11man days are needed which in turn employ 30 man-days for production of silk fabric.

In a report of **Khan (2002)** Silk Fabrics and Product Design Advisor' demonstrated that Bangladesh Silk Foundation (BSF) should develop its own design development unit. It also pointed out the significance of building relationship with stakeholders and development partners.

Sunildutt and Chole (2002) in their study reported that age indicated a negative relationship with adoption, although factors including education, income, social involvement, extension

contact, mass media consumption, cosmopolitanism, and risk orientation showed a positive relationship with it. The contribution of education and cosmopolitanism was significant too.

Geetha *et al.* (2001) in their article attempted to present that Farmers' socio-economic status has been an important factor in determining their level of technology adoption. Various field studies involving parameters such as caste, family form, main occupation, experience, family size, cocoon yield/100 DFLs, income, education, land holding size, mulberry under irrigation, and extension support have determined this.

Thapa R.B. and Shrestha K.B. (1999) reported that Sericulture is a promising agricultural sector with the potential to improve the farming community's economic status and also earning foreign revenue. Sericulture is an income-generating agro-enterprise in the mid-hill region to alleviate poverty by increasing rural women's employment and income, and thus, has been made a priority by the Agriculture Perspective Plan.

Lakshmanan *et al.* (1998) observed that lack of knowledge about a certain technology result in none adopting of technology. Due to lack of awareness and expensive costs, mechanization was not widely adopted. It was also noted that need to educate the farmers about the benefits of the low-cost technologies by state sericulture departments through establishing strong links between the research, extension, and input agencies.

Thangaraju (1979) described that the only difference between trained and untrained sericulturists was their economic status, sericulture experience, and urban contact. However, there was no statistically significant difference between trained and untrained sericulturists in terms of age, education, family size, annual income, social participation, contact with extension agencies, and media participation.

Research Gap of the Study

There is a lack of comprehensive and systematic studies on the socio-economic status of those involved in sericulture. Most of the existing literature focuses on the technical aspects of sericulture, such as silk production and silkworm rearing, rather than the socio-economic

factors that affect the livelihoods of silk farmers, workers, and traders. Much of the existing research on sericulture has focused on the formal sector, such as large-scale silk production companies, while neglecting the informal sector. However, the informal sector plays a crucial role in the sericulture industry, and a significant portion of silk farmers, workers, and traders operate in the informal sector. There is a lack of research on the role of gender in the sericulture industry, particularly on the socio-economic status of female sericulture farmers. Gender dynamics play a crucial role in the industry, and it is important to examine the challenges and opportunities faced by female sericulture farmers. This is the research gap of the study. Hence, the researcher carried out the present study to assess the factors to improve the livelihoods of sericulture farmers and promote sustainable sericulture practices in several upazilas of Rajshahi district of Bangladesh.

CHAPTER III

METHODOLOGY

3.1. Introduction

The validity of farm management research is contingent upon the research approach. Appropriate technique is a precondition for doing sound research. The design of every survey is largely governed by the nature, purpose, and goals of the study. Additionally, it is contingent upon the availability of required resources, supplies, and time. There are a variety of data collection techniques available for farm management studies. Farm business research often entails the gathering of data from individual farmers; data collection for farm business analysis requires the analyst to use judgment in selecting data collecting techniques within the constraints given by the available resources for the assignment (Dilion and Hardaker 1993).

The "survey approach" was mostly used in this research for two reasons:

- i. Survey enables quick investigations of large number of cases;
- ii. Its results have wider applicability.

To address this issue, frequent trips to the research region were conducted to gather data, and in the event of any omission or contradiction, farmers were contacted to get the 'missing and/or correct information. The following stages were used in designing the survey for this investigation.

3.2. Selection of the Study Area

The study area selection is a critical stage in conducting farm management research. The region chosen suited both the specific objective of the study and the possibility of cooperating with the farmer. Puthia, Mohonpur, Tanore upazila in Rajshahi are the most prominent upazilas for mulberry cultivation. These were purposefully chosen for the research based on their greater concentration of cocoon production.

3.3. Description of the Study Area

3.3.1. Puthia Upazila

The total area of Puthia Upazila is approximately 192.64 sq km, located in between 24°20' and 24°31' north latitudes and in between 88°42' and 88°56' east longitudes. It is bounded by Durgapur (Rajshahi) and Baghmara upazilas on the north, Charghat and Bagatipara upazilas on the south, Natore sadar upazila on the east, Paba and Durgapur upazilas on the west.

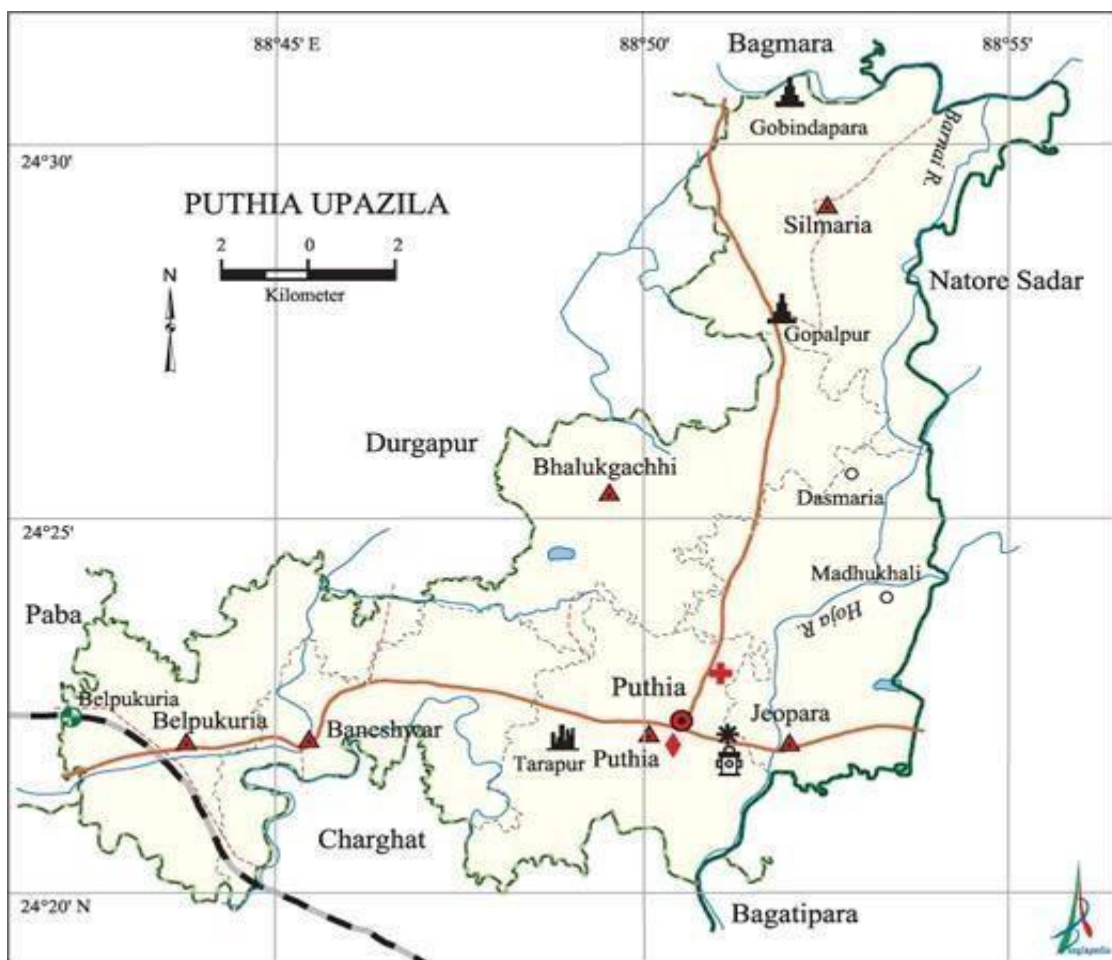


Figure 3.1 Map of Puthia Upazila Showing the Study Area

3.3.2. Mohanpur Upazila

Mohanpur Upazila (rajshahi district) area 162.65 sq km, located in between 24°29' and 24°38' north latitudes and in between 88°34' and 88°43' east longitudes. It is bounded by Manda and Tanore upazilas on the north, Paba and Durgapur (rajshahi) upazilas on the south, Bagmara upazila on the east, Tanore upazila on the west.

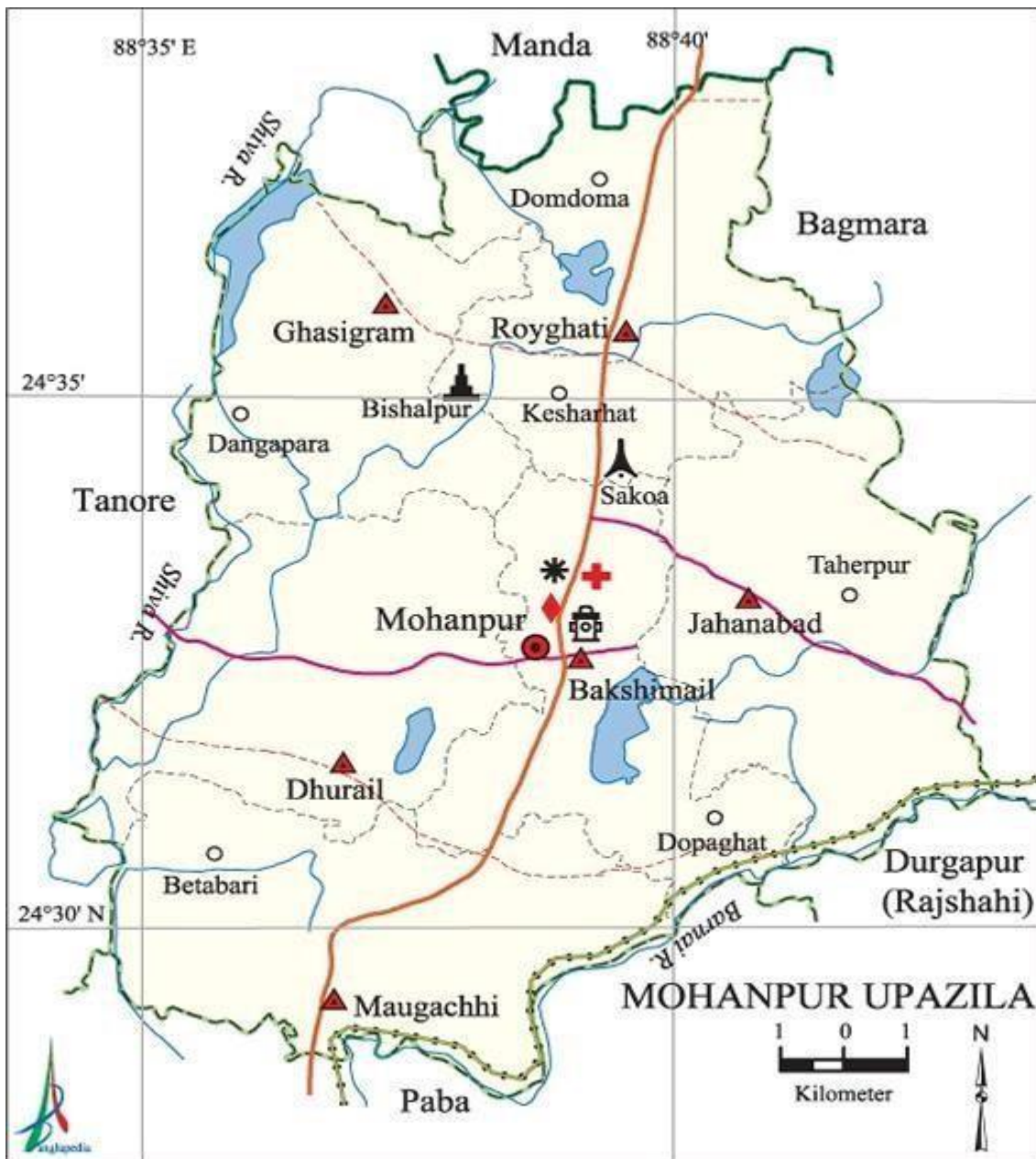


Figure 3.2 Map of Mohanpur Upazila Showing the Study Area

3.3.3 Tanore Upazila

Tanore Upazila (rajshahi district) area 295.39 sq km, located in between 24°29' and 24°43' north latitudes and in between 88°24' and 88°38' east longitudes. It is bounded by Nachole and Niamatpur upazilas on the north, Paba and Godagari upazilas on the south, Mohanpur and Manda upazilas on the east, Nachole, Nawabganj sadar and Godagari upazilas.

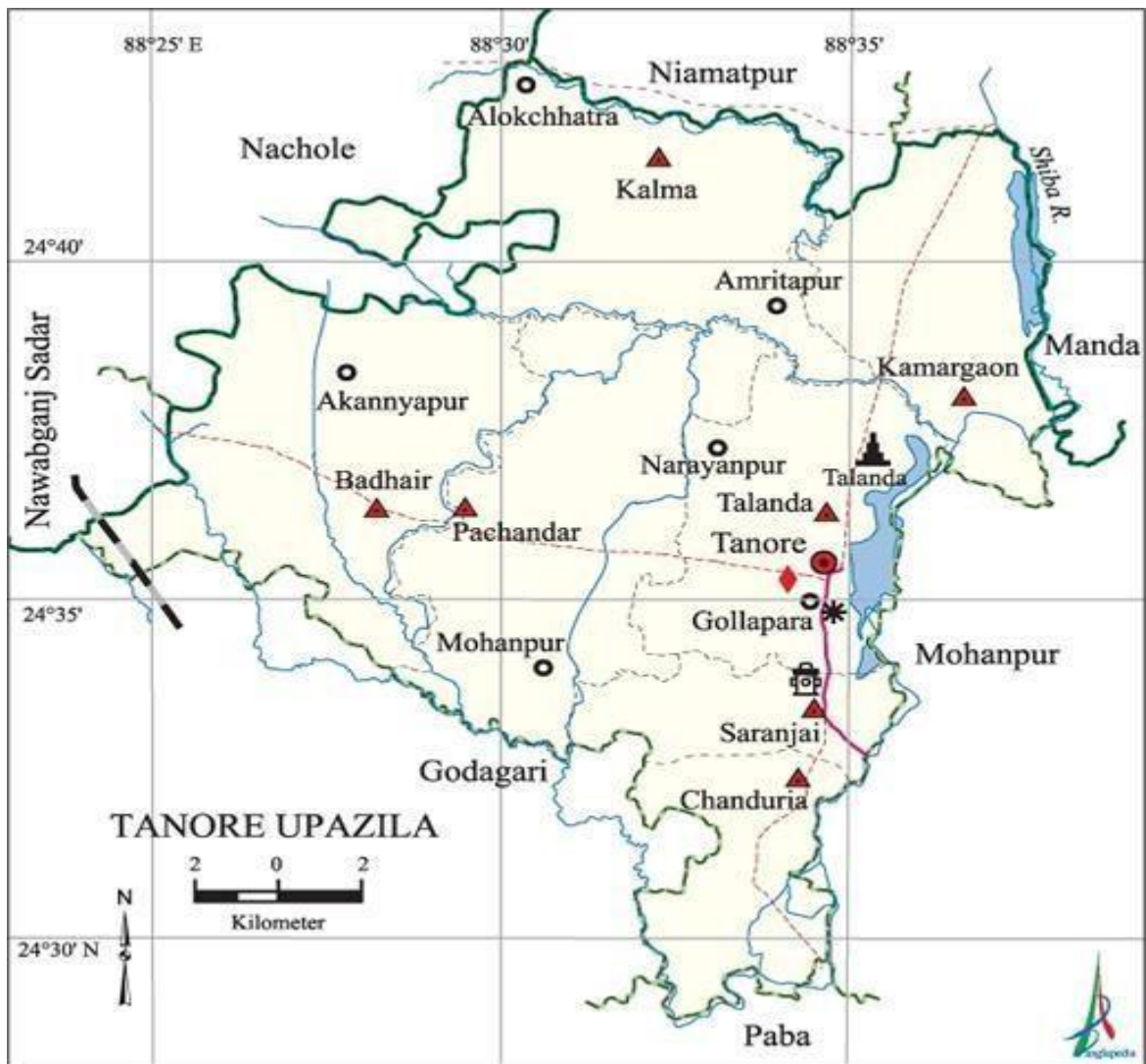


Figure 3.3 Map of Tanore Upazila Showing the Study Area

The main reasons of selecting the study area were as follows:

- a) The study area contained a large number of sericulture farmers;
- b) No previous study of this type was conducted in these areas;
- c) These villages were easily accessible and had adequate communication facilities; and
- d) The cooperation of respondents was anticipated to be strong in order to collect trustworthy data.

3.4. Sampling Technique and Sample Size

Two criteria must be considered while choosing samples for research. The sample size should be as big as possible while yet providing sufficient degrees of freedom for statistical analysis. On the other hand, field research administration, data processing, and analysis should be doable within the constraints of physical, human, and financial resources. However, due to the variety of the technological and human environments, it is required to sample a representative sample of the population before drawing any conclusions. Thus, objective of sampling is to choose a subset of the population that is representative of the whole population (Kabir, 2016).

Due to time, financial, and manpower constraints, it was not feasible to enroll all of the farmers of study area. A total of 90 farmers were chosen randomly. The current research used a simple random sampling method to save costs and time and to accomplish the final aims of research.

3.5. Preparation of the Survey Schedule

A draft questionnaire was developed for the purpose of gathering data from the sample farms. With the study aims keep in mind, the questionnaire was pre-tested by interviewing 10 farmers who involve in sericulture, and any required revisions, additions, or alternations were made before the draft questionnaire was finished.

Three areas of information were included in the final questionnaire. The first category objective was to elicit information about the farmers' socio-economic circumstances. The

second group included data on expenses and returns. The final type of information included the limits and difficulties encountered by farmers while involving in sericulture.

3.6. Period of the Study

Data collection took place during 12 March to 11 April of 2022. Throughout this period, data on inputs and outputs were gathered by periodic visits to the research region.

3.7. Data Collection Methods

The current research gathered data from sericulture farmers through a field survey. The researcher gathered the necessary data directly from the chosen sericulture farmers. Prior to interviewing, chosen farmers were contacted to arrange for interviews at their convenience. During the interview, the researcher asked systematic questions and discussed the goals and objectives of the study as needed. The farmers were informed that the investigation was completely academic in nature. Each time an interview concluded; the interview schedule was reviewed to ensure that all pertinent information was accurately documented for each item. If any such things were missed or were contradictory, they were fixed on a revisit.

3.8. Processing, Tabulation and Analysis of Data

Manual editing and coding of the gathered data occurred. The acquired data was then meticulously compiled and analyzed. Additionally, data analysis was conducted using the appropriate tools, Microsoft Excel and STATA. It should be remembered that information was first gathered in local units. After required checks, it was converted to international standard units.

3.9 Analytical Technique

The data were evaluated with the goal of attaining the objectives of the study. Numerous analytical techniques were used in this investigation. A significant portion of the data analysis was conducted using the tabular form. This approach is widely utilized because it has the natural ability to provide the most accurate image of the agricultural economics in the simplest manner. To evaluate data and define socioeconomic profile of sericulture farmers. To identify the determinants of participation of the people in sericulture, a logistic regression function was used in this work.

3.9.1 Data Analysis Method

The logit model is used to address the objective, which is the determinants of participation of the people in sericulture, because its likelihood function is well behaved and consistently produces maximum likelihood estimate (MLE) coefficients and standard error of the estimate (s) (Maddala, 1992). After adjusting the pertinent model variables, the logit model calculates the likelihood that sericulture farmers will be adopted. The first step's dependent variable is described as a dichotomous variable with values of 1 for participants and 0 for nonparticipants.

$$U_i^* = X_i'\gamma + u_i \dots\dots\dots (1) \text{ with}$$

$$U_i = \begin{cases} 1 & \text{if } U_i^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

where, U_i^* is the latent variable which represents the probability of the household's decision to participation in sericulture, and takes the value '1' if the farmer participates in sericulture '0' otherwise. The term X_i' represents explanatory variables explaining the participation decision, γ is a vector of parameters to be estimated, and u_i is the error term assumed to be independent and normally distributes as $u_i \sim N(0, 1)$.

The study has been employed a logit model (STATA 5.1) to determinants of participation of the people in sericulture using plot-level data. The logit model is the most suitable tool to determine the probability of whether or not to choose adoption, particularly at the plot-level data analysis (Gauchan et al, 2012). Further, the study has been interested in assessing the influence of each of the independent variables on the decision of the farm household to participation of the people in sericulture. For that, the study estimated the marginal effect of independent variables in the logit model which can be obtained by differentiating the first and second order conditions as follows (Greene, 2012):

$$\partial E[U_i^*|X_i] / \partial X_i = \Phi(X_i'\gamma) \gamma$$

Based on the above-mentioned theoretical model and previous study experiences (Gao et al, 1995; Newman et al, 2003; Feleke and Zegeye, 2006; Langyintuo and Mungoma, 2008; Gauchan et al, 2012; Noltze et al, 2012; Kohansal and Firoozzare, 2013, Chakma, 2021), we selected our explanatory variables and specified a logit model as follows:

$$\text{Log [P/1-P]} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + e$$

Where,

P = Probability of Outcome (Participation in Sericulture)

X₁ = Age (Years)

X₂ = Education of the Farmer (Yes/No)

X₃ = Family Size (Numbers)

X₄ = Earning members of the family (Numbers)

X₅ = Credit Received (Yes/No)

X₆ = Training (Yes/No)

X₇ = Extension Contact (Yes/No) X₈ = Received Input from

Office (Yes/No) β_0 = Intercept β_1, \dots, β_8 = Co-efficient of respected

independent variables; e = Random Error.

STATA software was used to analysis the data. A probability of 10% (0.10) was utilized to reject the null hypothesis. Asterisks (***) indicate the significance of coefficient values at the 0.01 level, while two asterisks (**) indicate the significance of coefficient values at the 0.05 level and three asterisks (*) indicate the significance of coefficient values at the 0.10 level.

CHAPTER IV

SOCIO-DEMOGRAPHIC PROFILE OF THE SERICULTURE FARMERS

In accordance with the objectives of the study, the recorded observations have been reported in a systematic way and probable discussion of the findings have done with their justifiable and relevant researches. The findings of the study and their interpretation have been presented from this chapter to onwards.

Various characteristics of the respondent might have significant contribution to the attitude or behavior they do in their entire life. Many of those traits can be discussed to explain the sociodemographic profile of the sericulture farmers. But in this study, ten characteristics of the respondents were selected including their age, gender status, level of education, family size, marital status, religion, annual household income, annual household expenses, extension media contact, training exposure and access to credit of the respondents. These abovementioned attributes are explained in this section of the thesis.

4.1 Age

According to (Sannappa et al., 2017) In the study, all categories of farmers of the study area were classified into different age groups as presented in table 4.1.

Table 4.1: Age Distribution of the Farmers

Age	Sericulture Farmers		Others Farmers	
	Number	Percentage (%)	Number	Percentage
20-30 years old	5	8.33	4	13.33
30-40 years old	16	26.67	6	20.00
40-50 years old	31	51.67	9	30.00
Above 50 years old	8	13.33	11	36.67
Total	60	100.00	30	100.00

Out of the 60 sericulture farmers, 8.33% belongs to the 20-30 years old age group 26.67% belonged to the age group 30-40 years, 51.67% were 40-50 years old age group and 13.33% were under the age group of above 50 years old. For other farmers, 13.33% belonged to the age group of 20-30 years old, 20% belonged to the group of 30-40 years, 30% belongs to the 40-50 years old and 36.67% were under the age group of above 50 years. This finding imply that majority of the sericulture farmers were in the age group of 40-50 years and majority of the other farmers were in the above 50 years old age group (Table 4.1).

4.2 Gender Status

Gender of the sample farmers is indicated in the following Figure 4.1. It is obvious from the data that 66.67% farmers were male followed by 33.33% farmers were female among the sericulture farmers. And in other farmers case 50% farmers were male and 50% were female.

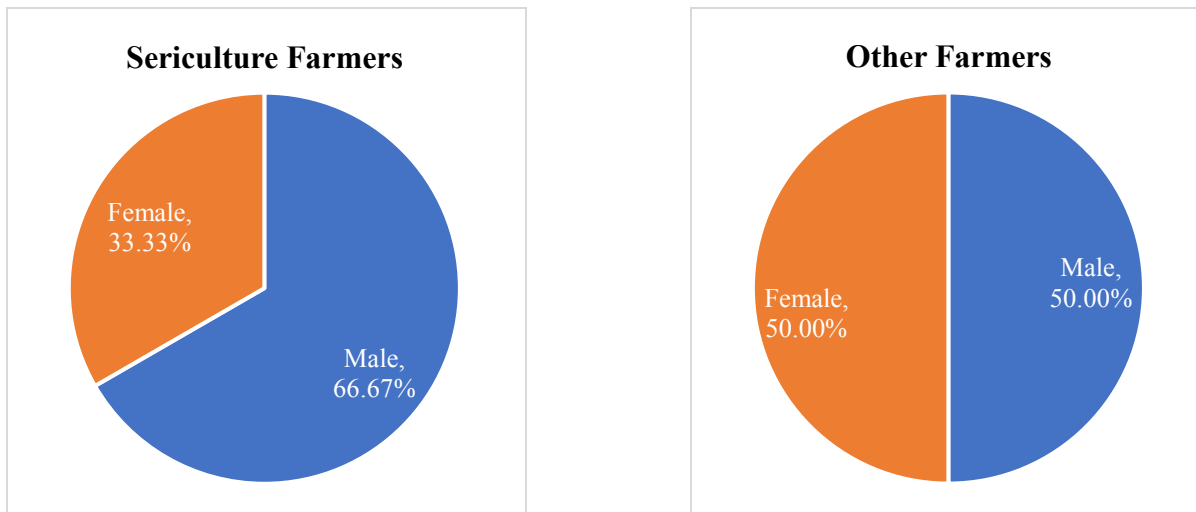


Figure 4.1: Gender Status of the Farmers

4.3 Educational Status

Education increases the efficiency of man. Bangladesh it has, an adult literacy rate of 74.66% (MoF, 2022). Table 4.2 shows for sericulture farmer 23.33% farmers were illiterate, 35.00% farmers had primary education, 31.67% farmers had completed secondary level education, and 10.00% farmers had completed SSC. And for other farmers, 50.00% farmers were

illiterate, 36.67% farmers had primary education, 13.33% farmers had completed secondary level and there were no farmers who had completed SSC.

Table 4.2: Educational Status of the Farmers

Education Level	Sericulture Farmer		Other Farmers	
	Number	Percentage (%)	Number	Percentage
Illiterate	14	23.33	15	50.00
Primary	21	35.00	11	36.67
Secondary Level	19	31.67	4	13.33
SSC	6	10.00	-	-
Total	60	100.00	30	100.00

4.4 Religion

Religion of the sample farmers is indicated in the following Figure 4.2. It is obvious from the data that 81.67% farmers were Muslim followed by 18.33% farmers were Hindu among the sericulture farmers. And in other farmers case 66.67% farmers were Muslim and 33.33% were Hindu.

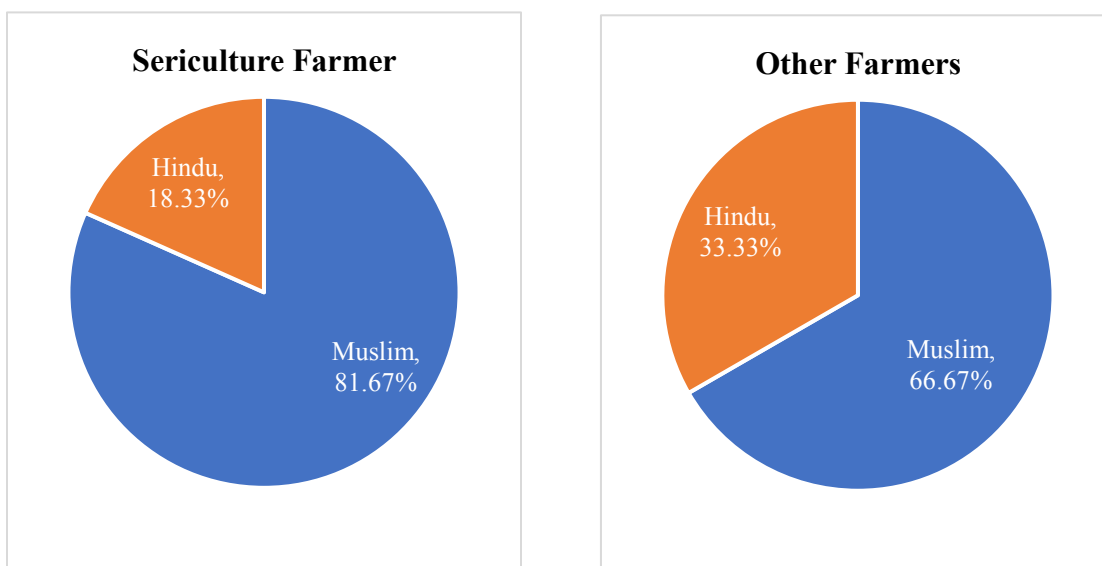


Figure 4.2: Religion of the Farmers

4.5 Family Size

In the study, all categories of farmers of the study area were classified into different family size groups as presented in table 4.3. It is evident from the table that most of the farmers were small family in the study area. Out of the 67 sericulture farmers, 3.33% belonged to the group of small family, 95.00% belonged to the group of medium family and 1.67% fell into the group of large family. And out of total 30 other farmers, 73.33% belonged to the group of medium family, 26.67% fell into the age group of large family and there were no small family. This finding imply that majority of the sample farmers were medium family.

Table 4.3: Family Size of the Farmers

Family Size	Sericulture Farmer		Other Farmers	
	Number	Percentage (%)	Number	Percentage
Small (≤ 3 members)	2	3.33	-	-
Medium (4-6 members)	57	95.00	22	73.33
Large (more than 6 members)	1	1.67	8	26.67
Total	60	100.00	30	100.00

4.6 Marital Status

Marital status of the sample farmers is indicated in the following Figure 4.2. It is obvious from the data that 72% farmers were married, 5% were single, 8% were separated, 7% were divorced and 8% were widowed among the sericulture farmers. And in other farmers case 15% farmers were married, 44% were single, 30% were separated, 7% were divorced and 4% were widowed. So, most of the sericulture farmers were married and most of the other farmers were single in the study area.

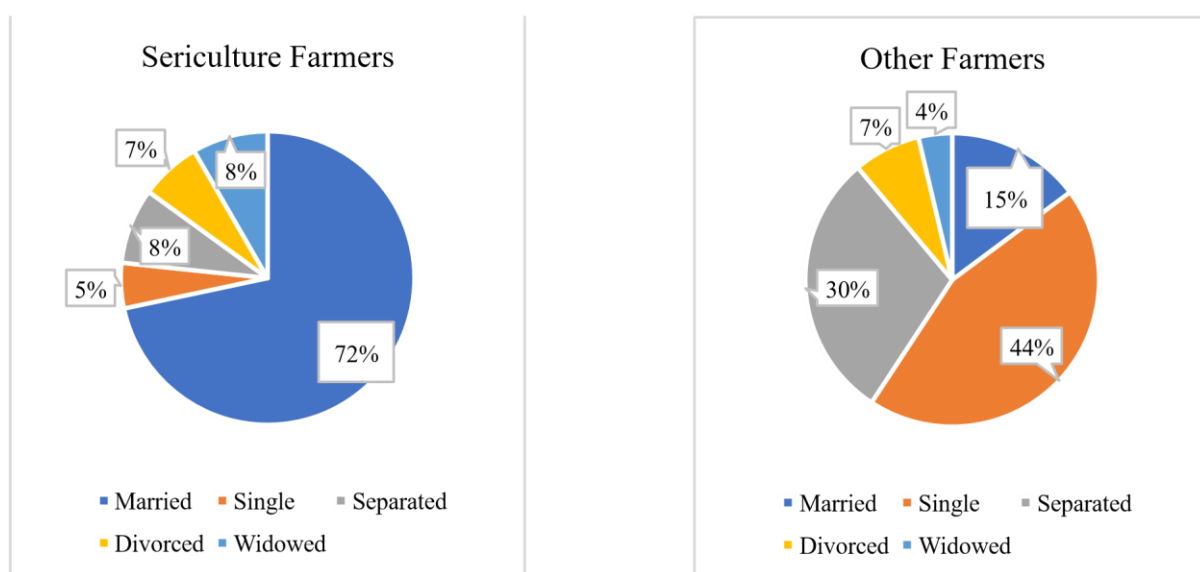


Table 4.3: Marital Status of the Farmers

4.7 Access to Agricultural Credit

Table 4.4 shows that out of the total sample, majority (65.00%) of the sericulture farmers hold agricultural related credit and remaining 35.00% farmer didn't receive any kind of agricultural credit from any organization. This finding refers most of the farmers were depend on agricultural credit or loan. Again, for other farmers 50.00 % of farmers received agricultural related loan and another 50.00% farmers didn't receive any kind of agricultural related credit.

Table 4.4: Access to Agricultural Credit by the Farmers

Access to Agricultural Credit	Sericulture Farmer		Other Farmers	
	Number	Percentage (%)	Number	Percentage
Yes	39	65.00	15	50.00
No	21	35.00	15	50.00
Total	60	100.00	30	100.00

4.8 Farmers Training Received on Sericulture

Table 4.5 shows that out of the total sample, majority (78.33%) of the sericulture farmers received training and remaining 21.67% farmer didn't receive any training. Again, for other farmers only 43.33 % of farmers received training and majority (56.67%) farmers didn't receive training.

Table 4.5: Training Exposure by the Farmers

Training Exposure	Sericulture Farmer		Other Farmers	
	Number	Percentage (%)	Number	Percentage
Yes	47	78.33	13	43.33
No	13	21.67	17	56.67
Total	60	100.00	53	100.00

4.9 Extension Contact

Table 4.6 shows that out of the total sample, majority (71.67%) of the sericulture farmers had extension contact and remaining 28.33% farmer didn't have any extension contact. Again, for other farmers 50.00% of farmers had extension contact and other 50.00% farmers hadn't.

Table 4.6: Extension Contact by the Farmers

Extension Contact	Sericulture Farmer		Other Farmers	
	Number	Percentage (%)	Number	Percentage
Yes	43	71.67	15	50.00
No	17	28.33	15	50.00
Total	60	100.00	53	100.00

4.10 Average Annual Income, Expenditure and Savings

Table 4.7 shows that for sericulture farmers the average annual income, expenditure and savings were Tk. 308800, Tk. 201400 and Tk. 107400, respectively. And for other farmers the average annual income, expenditure and savings were Tk. 304800, Tk. 200800 and Tk. 104000, respectively. It is evident from the table that Sericulture Farmer had higher income and savings than other farmers in the study area.

Table 4.7: Average Annual Income, Expenditure and Savings by the Farmers

Particulars	Annual Income (BDT.)	Annual Expenditure (BDT.)	Annual Savings (BDT.)
Sericulture Farmer	308800.00	201400.00	107400.00
Other Farmers	304800.00	200800.00	104000.00

CHAPTER V

DETERMINANTS OF PARTICIPATION OF THE PEOPLE IN SERICULTURE

The second objective of the thesis is “To identify the determinants of participation of the people in sericulture”. In this chapter, findings of the data analysis explaining the second objective of the study are discussed.

Table 5.1 presents the results of the Logistic regression of estimated parameters and marginal effect. Overall, the regression offers a good fit with the determinants of participation of the people in sericulture by the study households. The chi-square statistics indicate the strong explanatory power of the model. Moreover, most of the explanatory variables in the model were found to be statistically significant with an expected sign.

P-values and coefficients in regression analysis describe which relationships in model are statistically significant and the nature of those relationships. The coefficients discuss the mathematical relationship between each independent variable and the dependent variable. The p-values for the coefficients indicate whether these relationships are statistically significant. If the p-value for a variable is less than significance level, sample data provide enough evidence to reject the null hypothesis for the entire population. Changes in the independent variable are associated with changes in the dependent variable at the population level. Marginal effects show the change in probability when the predictor or independent variable increases by one unit.

5.1.1 Significant Contribution of Family Size to the Participation of the Farmers in Sericulture

From Logistic Regression, it was concluded that the contribution of family size to the participation of the farmers in sericulture was measured by the testing the following null hypothesis;

“There is no influence of family size on participation of the farmers in sericulture”

The p-value of independent variable family size for participation of the farmers in sericulture is 0.003 which is significant at 1% level of significance that means we will reject the null

hypothesis. The co-efficient of the family size was -1.24 which indicates that family size had a negative significant relationship with participation of the farmers in sericulture at 1% level of significance ($p < 0.01$). The marginal effect was -0.12 indicates that 1 members addition in family will decrease the likelihood of participation of the farmers in sericulture by 0.12% (Table 5.1).

Table 5.1: Determinants of Participation of the Farmers in Sericulture

Dependent Variable	Independent Variable	Co-efficient	P Value (Co-efficient)	Marginal Effect	P Value (Marginal Effect)
Participation of the Farmers in Sericulture	Constant	1.56	0.584	-	-
	Age (X ₁)	-0.30	0.446	-0.03	0.443
	Education (X ₂)	0.21	0.605	0.02	0.604
	Family Size (X ₃)	-1.24****	0.003	-0.12****	0.000
	Earning members of the family (X ₄)	1.74****	0.008	0.18****	0.002
	Credit Received (X ₅)	1.24*	0.084	0.12*	0.068
	Training (X ₆)	1.70**	0.017	0.17****	0.006
	Extension Contact (X ₇)	1.54**	0.045	0.15**	0.032
	Received Input from Office (X ₈)	1.26*	0.071	0.13*	0.052
LR chi²		55.74****			
Pseudo R²		0.49			
Log likelihood		-29.42			

**** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

The Pseudo R^2 was 0.49. It means the empirical model is 49% successful while predicting the respondents' responses against farmers participation in sericulture. Besides, the LR χ^2 (55.74) was highly significant at 1% level (Table 5.1). These findings indicate, the model is valid.

5.1.2 Significant Contribution of Earning Members of the Family to the Participation of the Farmers in Sericulture

From Logistic Regression, it was concluded that the contribution of earning members of the family to the participation of the farmers in sericulture was measured by the testing the following null hypothesis;

“There is no influence of earning members of the family on participation of the farmers in sericulture”

The p-value of independent variable earning members of the family for participation of the farmers in sericulture is 0.008 which is significant at 1% level of significance that means we will reject the null hypothesis. The co-efficient of the earning members of the family was 1.74 which indicates that earning members of the family had a positive significant relationship with participation of the farmers in sericulture at 1% level of significance ($p < 0.01$). The marginal effect (0.18) indicates 1 members addition in earning members of the family will increase the likelihood of participation of the farmers in sericulture by 0.18% (Table 5.1).

5.1.3 Significant Contribution of Credit Received of the Farmer to the Participation of the Farmers in Sericulture

From Logistic Regression, it was concluded that the contribution credit received of the farmer to the participation of the people in sericulture was measured by the testing the following null hypothesis;

“There is no influence of contribution credit received of the farmer on participation of the people in sericulture”

The p-value of independent variable contribution credit received of the farmer for participation of the people in sericulture is 0.084 which is significant at 10% level of significance that means we will reject the null hypothesis. The co-efficient of the credit received of the farmer was 1.24 which indicates that credit received of the farmer had a positive significant relationship with participation of the people in sericulture at 1% level of significance ($p < 0.01$). The marginal effect (0.12) indicates 1 contribution credit received of the farmer will increase the likelihood of participation of the people in sericulture by 0.12% (Table 5.1).

5.1.4 Significant Contribution of Training to the Participation of the Farmers in Sericulture

From Logistic Regression, it was concluded that the contribution of training to the participation of the farmers in sericulture was measured by the testing the following null hypothesis;

“There is no influence of training to participation of the farmers in sericulture”

The p-value of independent variable training to participation of the farmers in sericulture is 0.017 which is significant at 5% level of significance that means we will reject the null hypothesis. The co-efficient of the training was 1.70 which indicates that training had a positive significant relationship with participation of the people in sericulture at 5% level of significance ($p < 0.05$). The marginal effect (0.17) indicates that 1 additional training will increase the likelihood of participation of the farmers in sericulture by 0.17% (Table 5.1).

5.1.5 Significant Contribution of Extension Contact to the Participation of the Farmers in Sericulture

From Logistic Regression, it was concluded that the contribution of extension contact to the participation of the farmers in sericulture was measured by the testing the following null hypothesis;

“There is no influence of extension contact to participation of the farmers in sericulture”

The p-value of independent variable extension contact to participation of the farmers in sericulture is 0.045 which is significant at 5% level of significance that means we will reject the null hypothesis. The co-efficient of the extension contact was 1.54 which indicates that extension contact had a positive significant relationship with participation of the farmers in sericulture at 5% level of significance ($p < 0.05$). The marginal effect (0.15) indicates that 1 additional extension contact will increase the likelihood of participation of the farmers in sericulture by 0.15% (Table 5.1).

5.1.6 Significant Contribution of Received Input from Office to the Participation of the Farmers in Sericulture

From Logistic Regression, it was concluded that the contribution of received input from office to the participation of the farmers in sericulture was measured by the testing the following null hypothesis;

“There is no influence of received input from office to the participation of the farmers in sericulture”

The p-value of independent variable received input from office to the participation of the farmers in sericulture is 0.071 which is significant at 10% level of significance that means we will reject the null hypothesis. The co-efficient of the received input from office was 1.26 which indicates that received input from office had a positive significant relationship with the participation of the farmers in sericulture at 10% level of significance ($p < 0.1$). The marginal effect (0.13) indicates that 1 received input from office will increase the likelihood of participation of the farmers in sericulture by 0.13% (Table 5.1)

Earning members of the family, credit Received, training received, extension Contact, received input from Office had a positive significant relationship with participation of the people in sericulture. And family size had a negative relationship with participation of the people in sericulture. So, for the development of the sericulture farmers socio-economic status, authority should give proper emphasis on the positive inputs like earning members of the family, credit received, training received, extension contact etc.

CHAPTER VI

PROBLEMS FACED BY THE SERICULTURE FARMERS

The purpose of this Chapter is to determine the problems faced by sericulture farmers. Farmers had several difficulties in sericulture. This chapter will discuss some of the socioeconomic issues and limits associated with sericulture. Farmers challenges and limits were identified based on their perspectives. These problems were first counted in response of the number of respondents. Then the counts were transformed into percentage. Hereafter, the problem that obtained the greatest percentage was ranked number 1. And the other problems were ranked accordingly on the basis of greater percentage of respondents facing these problems, constraints (Table 6.1).

6.1 Lack of Disease-Free Laying

The absence of disease-free laying is a major issue in sericulture that has an impact on the amount and quality of silk produced. Silkworms can become susceptible to diseases due to a number of factors, including poor nutrition, environmental stress, and poor hygiene. Pathogens, parasites, and viruses can induce infections that kill silkworms and lower the quantity and quality of silk produced. 92% of farmers who cultivate sericulture considered this to be a serious concern.

6.2 Incidence of Disease in Silkworm

Due to their susceptibility to a wide range of illnesses, silkworms pose a serious threat to sericulture. Silkworms are susceptible to a number of common diseases, including muscardine, pebrine, flacherie, and grasserie. These illnesses may lower the quantity and quality of silk produced, resulting in financial losses. 83% of farmers that cultivate sericulture considered this to be a major concern.

6.3 Lack of Capital for Seed Procurement

One big issue facing sericulture is funding shortages for seed purchases. Purchasing seeds is an essential step in the sericulture process since it has a direct impact on the quantity and

quality of silk produced. Farmers might not be able to afford premium seeds without sufficient funding, which would lead to lower yields and lower revenue. Sericulture farmers regarded this as a serious concern in about 87% of cases.

6.4 Lack of Marketing Information

Sericulturists might not be able to decide which markets to target and what kind of silk products to produce if they don't have enough information about market demand and prices. Low returns and financial losses may follow from this. This was deemed to be a major concern by roughly 83% of sericulture farmers.

Table 6.1 Problems to Sericulture by no. of Farmers

Problems	Frequency	Percentage
Lack of disease-free laying	55	91.67
Lack of capital for seed procurement	52	86.67
Lack of marketing information	50	83.33
Incidence of disease in silkworm	50	83.33
Involvement of Middleman	48	80.00
Low price of output	21	35.00
Lack of training	20	33.33
Lack of availability of proper space for post cocoon operations	28	46.67
Lack of availability of reeling and spinning machinery	32	53.33

6.5 Involvement of Middleman

In sericulture, using middlemen is a standard procedure. Middlemen serve as go-betweens for sericulturists and purchasers, offering a variety of services like grading, transportation, and quality assurance. Although intermediaries can offer beneficial services, they can also deceive farmers by presenting their silk goods at a discount. This was regarded as a major concern by about 80% of sericulture farmers.

6.6 Lack of Training

In the sericulture industry, proper training is crucial because it affects both the quantity and quality of silk produced. Sericulturists might not be knowledgeable about the best techniques for raising silkworms, producing silk, and managing disease if they are not properly trained. This was believed to be a serious concern by roughly 33% of sericulture farmers.

6.7 Lack of Availability of Reeling and Spinning Machinery

Spinning and reeling machines are necessary for creating silk yarn of the highest caliber. In the absence of these devices, silk producers might be forced to use labor-intensive manual methods that yield lower-quality silk. This was regarded as a major concern by roughly 53% of sericulture farmers.

6.8 Lack of Availability of Proper Space for Post Cocoon Operations

Reels, twists, and dyeing are examples of post-cocoon operations that need a clean, well-ventilated area. Sericulturists might not be able to perform these tasks effectively in an inadequate space, which would lead to lower-quality silk products. This was regarded as a major concern by roughly 47% of sericulture farmers.

6.9 Low Price of Output

One of the biggest challenges in sericulture is low output prices, which can make sericulturists less profitable. The low costs of silk goods are frequently brought on by competition, market saturation, and problems with quality. This was regarded as a serious concern by about 35% of sericulture farmers.

CHAPTER VII

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter summarizes the study's findings, conclusions, and recommendations. The summary of the study shows the findings in brief. By conclusion, the main points of the report can be identified quickly. Recommendation draws the attention of the relevant authority to the implementation of some strategy for improving the position of sericulture farmers.

7.1. Summary

Rajshahi district is one of the leading silk production areas of Bangladesh. Puthia, Mohanpur and Tanore upazila of this district produced most of the silk products of the country. That's why the upazilas were selected as the study area of this research to delineate the sociodemographic profile of the sericulture farmers.

Data were collected from 90 randomly selected respondents of three selected Upazila: (i) Puthia; (ii) Mohanpur; (iii) Tanore under Rajshahi District. Data were collected by using an interview schedule from the farmers during period June to August, 2022. Primary data were collected from the farmers. For the purpose of consistency and completeness, the obtained data were examined and validated. Prior to entering the data into the computer, it was edited and coded. All acquired data were thoroughly summarized and analyzed to weed out any probable inaccuracies. The data were entered onto a computer and analyzed using the appropriate software, Microsoft Excel and STATA.

The age group of 40–50 years old accounted for the largest percentage of sericulture farmers (51.67%), followed by 20–30 years old (8.33%) and 30–40 years old (26.67%). Of the farmers that cultivate sericulture, men make up the largest percentage (66.67%), with women making up 33.33% of the farmers. Of the farmers that practiced sericulture, the largest percentage (35.00%) had only completed their elementary school, followed by 31.67% with a secondary education, 23.33% with no literacy, and 10% with an SSC. Among farmers engaged in sericulture, Muslims made up the largest percentage (81.67%), followed by

Hindus (18.33%). The group with medium family members accounted for the largest percentage (95.00%). 3.33% of the families were tiny families, and 1.67% were large families. Among the farmers involved in sericulture, the majority (72%) were married, while 5% were single, 8% were separated, 7% were divorced, and 8% were widowed. The majority of sericulture farmers (65.00%) possess credit related to agriculture, while the rest 35.00% did not obtain any credit from any institution. 21.67% of sericulture farmers had no training, whereas the majority (78.33%) of farmers obtained instruction. Of the farmers who practiced sericulture, the majority (71.67%) had contact with extension, while the remaining 28.33% had no such relationship. The average yearly income, expenses, and savings for farmers engaged in sericulture were Tk. 308800 and Tk. 201400.

At the 1% level of significance, the family size co-efficient of -1.24 suggests a negative significant association between family size and sericulture involvement. The marginal effect of -0.12 means that adding a family member will reduce people's likelihood of participating in sericulture by 0.12%. The family member who earned the highest income had a co-efficient of 1.74, meaning that at the 1% level of significance, there was a positive significant association between the earning member and the people who participated in sericulture. According to the marginal effect (0.18), every additional family member who earns a living will raise the likelihood that people will participate in sericulture by 0.18%. At the 1% level of significance, the co-efficient of the farmer's credit was 1.24, indicating a positive and significant association between experience and sericulture participation. According to the marginal effect (0.12), a farmer's receipt of one contribution credit will raise the possibility that individuals will participate in sericulture by 0.12%. The training's co-efficient for sericulture was 1.70, meaning that at the 5% significance level, there was a positive and significant association between training and people's participation in sericulture. The marginal effect (0.17) shows that a single extra training session will raise people's chances of participating in sericulture by 0.17%. The extension contact's co-efficient was 1.54, meaning that, at the 5% significance level, there was a positive and significant relationship between extension contact and people's participation in sericulture. The marginal effect (0.15) shows that there will be a 0.15% increase in the likelihood of people participating in sericulture for every additional extension contact. The office's input was positively correlated with people's

participation in sericulture at a 10% significance level, as indicated by the co-efficient of 1.26 for the office's received input. The marginal effect (0.13) shows that one office input will raise people's chances of participating in sericulture by 0.13%.

Earning members of the family, credit Received, training received, extension Contact, received input from Office had a positive significant relationship with participation of the people in sericulture. And family size had a negative relationship with participation of the people in sericulture.

Constraints faced by sericulture farmers and suggestions for improvement were explored by offering open ended questions regarding the constraints of sericulture farming and suggestions for improvements.

Of the various limitations cited by the farmers, the absence of disease-free laying was cited by 93.33% of the respondents. Furthermore, there is a high rate of disease among silkworms (83%), a lack of funding for the purchase of seeds (87%), a lack of marketing information (83%), middlemen's involvement (80%), low output prices (35%), a lack of training (33%), a lack of suitable space for post-cocoon operations (47%), and a lack of reeling and spinning machinery (53%).

Among the various proposals made by sericulture farmers, arranging training in the community, providing loans at the lowest possible interest rate, and adopting new technology were the most notable.

7.2 Conclusion

Based on the findings, it is possible to conclude that sericulture farming is economical in the studied locations. Sericulture farmers may be able to enhance their earnings and so improve their living conditions. Sericulture producers face a number of challenges as well. Capital available through financing, skill development trainings, and awareness building programs, market information and government support can all help to improve the situation.

7.3 Recommendations

Based on the findings of the research on the socio-economic status of sericulture farmers in Bangladesh, the following recommendations can be made:

- **Supply of disease-free Laying:** Sericulture farmers should be provided with disease free laying supply for greater output.
- **Access to credit:** Sericulture farmers should be provided with access to credit facilities with favorable interest rates and flexible repayment terms. This will enable them to invest in their farms and improve their productivity.
- **Market information:** Sericulture farmers should be provided with up-to-date market information on silk prices, demand, and supply. This will enable them to make informed decisions about their production and marketing strategies.
- **Training and extension services:** Sericulture farmers should be provided with training and extension services on the latest sericulture technologies and best practices. This will enable them to improve the quality and quantity of their silk production.
- **Government support:** The government should provide support to sericulture farmers through policies and programs such as subsidies, incentives, and insurance schemes. This will help to improve the socio-economic status of sericulture farmers and support the growth of the sericulture industry in Bangladesh.

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Serial no:



**Department of Development and Poverty Studies
Sher-e-Bangla Agricultural University, Dhaka.**

Title: SOCIO-ECONOMIC STATUS AND DETERMINANTS OF THE PARTICIPATION OF THE FARMERS IN SERICULTURE: A STUDY IN RAJSHAHI DISTRICT

General information:

Upazila:

Union:

Village:

A. Personal and socio-economic characteristics:

Sl. No.	Question's/query	Response/Answer	Code
1.	Name		Mobile:
2.	Age	_____ Years	1=20-30 years, 2=30-40 years, 3=40-50 years, 4=50- above years
3.	Sex		1=Male, 2=Female
4.	Religion		1=Islam, 2=Hindu, 3=Christian, 4=Buddhist, 5=Other (Specify)
5.	Education level	_____ Schooling Years	1=No education, 2=Primary level, 3=Secondary level, 4=SSC,5=HSC,6=Others
6.	Household head		1=Father, 2=Husband, 3=Son, 4=Women herself, 5=Others (specify)
7.	No. of family members	1= 2= 3=	1= Male 2= Female, 3= Children
8.	Earning members:	1= 2=	1= Male 2= Female
9.	Marital status		1= Married, 2= Single, 3= Separated 4=Divorced, 5= Widowed
10.	Occupation		1=Unemployed, 2=House wife, 3=Day labor, 4=service, 5=Student, 6=Others (specify)
11.	Sources of income from Sericulture	1=..... Tk. 2 =..... Tk. 3=..... Tk. 4=..... Tk 5=..... Tk 6=..... Tk 7=..... Tk 8=..... Tk 9=..... Tk	1= Mulberry Cultivation, 2= Leaf Harvesting, 3=Silk worm rearing, 4= Reeling, 5= Twisting, 6= weaving, 7=Printing & dyeing, 8= Finishing, 9= Silk Waste Processing
12.	Others sources of Income	1=..... Tk 2=..... Tk 3=..... Tk 4=..... Tk	1= Agriculture 2= Fisheries 3= Livestock 4= Services

		5=..... Tk	5= Others
13.	Total Income (monthly)	Tk =	
14.	Expenditure	1 =..... Tk 2 =..... Tk 3=..... Tk 4=..... Tk 5=..... Tk	1= Food, 2= Education, 3= Health, 4= Cloth, 5= Festivals, 6=Others

B. Accessibility to land:

<u>Sl. No.</u>	<u>Question's/query</u>	<u>Response/Answer</u>	<u>Code</u>
1.	Owner of the land		1=Self, 2= Father,3= Husband,4=Son,5=Relative,6=Other
2.	The way of acquiring land		1=Allocated, 2= Inheritance, 3=Through marriage, 4=Purchase, 5=Other
3.	Total cost of production	Tk=	
4.	Return from sale	1= Tk 2= Tk 3= Tk	1= Family consumption, 2=sale 3= others (specify)

C. Access to credit:

<u>Sl. No.</u>	<u>Question's/query</u>	<u>Response/Answer</u>	<u>Code</u>
1.	Any experience of credit obtaining		1=Yes, 2=No
2a.	(If yes) Last time credit obtained	1=..... Tk. 2=..... Tk. 3=..... Tk. 4=..... Tk.	1=Last season, 2= A year ago, 3=Two years ago, 4=Three years ago
2b.	(If no) Reason of not obtaining		1=No collateral, 2=Not aware of any credit facilities, 3= It's a difficult process, 4=Unable to repay, 5=Do not require credit, 6=Other
3.	Purpose of credit		

D. Access to Extension Service:

<u>Sl. No.</u>	<u>Question's/query</u>	<u>Response/Answer</u>	<u>Code</u>
1.	Awareness to extension services in the area		1=Yes, 2=No
2.	Do the extension agents organize training programs for sericulture related people?		1=Yes, 2=No
3.	Have you attended any training program?		1=Yes, 2=No
4.	Would you want to receive more training program?		1=Yes, 2=No
5.	What type of benefits receive from training?		1= know how about technology, 2= get input support, 3= others (specify)

E. Access to Inputs:

<u>Sl. No.</u>	<u>Question's/query</u>	<u>Response/Answer</u>	<u>Code</u>
1.	Is inputs readily available?		1=Yes, 2=No
2.	If yes, From where?		
3.	Have you ever receive any inputs from the government or any other organization		1=Yes, 2=No
4.	Indicate your level of participation		1=Low, 2=Medium, 3=High
5.	Indicate your overall rate of participation in decision making		1=Low, 2=Medium, 3=High
6.	Constraints to your participation		1=Time constraints, 2=Water shortage, 3=No own land, 4=Financial constraints, 5=Limited agricultural inputs, 6=Distant extension training sites.
7.	Benefits from participation		1= Increase family income, 2= meeting labor crisis 3= other (specify)
8.	What are your recommendations for more effective participation		1= Open women sales point 2= more training needed 3= other (specify)

F. Cost of Production

<u>Particulars</u>	<u>Unit</u>	<u>Rate/Unit</u>	<u>Amount (Tk)</u>
1. Fixed cost			
a. Rearing shed			
b. Chawki rearing trays			
c. Rearing racks			
2. Recuring cost			
a. Hired human labour			
b. Family labour			
c. Disease free laying			
d. Mulberry leaves			
e. Silk worm eggs			
f. Disinfectants			
g. Electricity			
h. Miscellaneous			
Total Cost			

G. Return from production

<u>Particulars</u>	<u>Unit (kg)</u>	<u>Rate/Unit (Tk/kg)</u>	<u>Amount (Tk)</u>
1. Yield of leaves (kg)			
2. Income from leaves			
3. Number of silk worm (dfls) reared			
4. Cocoon yield (kg/ 100dfls)			
5. Cocoon Production			
Total			

H. Please identify the problems faced by you in cocoon cultivation (put tick marks)

1. Facing market related problems

a. Yes b. No

2. If Yes, type of problems

a. low price b. distant place c. less consumers d. Others (specify)

3. Other problems

a.

b.

c.

d.

I. What are your suggestions to overcome the above problems?

1.

2.

3.

4.

5.

Thank you for kind co-operation