

VIABILITY AND PROSPECTS OF *MUGA* SILK CULTIVATION IN THE LAKHIMPUR DISTRICT OF ASSAM

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ABSTRACT

Muga Silk industry has an abode of self-importance in the socio-economic and cultural life of the rural people of Assam. It is, therefore, needless to say that *muga* silk industry occupied an indispensable role in the economy of Assam throughout the reign of Ahom and the following period to present-day, as the trade of *muga*, the golden silk, is valued at Rs 200 crore. With good organization, the industry could develop up to 10 times of its current size. There are around 9500 sericulture villages manufacturing *muga*, Eri, and mulberry silk in the state of Assam. The age old *muga* silk industry is deteriorating due to many factors. It is evident that the production of *tassar* and *eri* raw silk is increasing and is satisfactory, but the production trend of unique *muga* silk is fluctuating and declining. Thus, through the present paper, an effort was made to study the viability and prospect of *muga* culture in the Lakhimpur District of Upper Assam.

KEYWORDS: Assam, Cost-Benefit, Lakhimpur, Muga Silk, Prospects, Value-Chain, Viability

INTRODUCTION

India enjoys a distinct position in the world silk map producing all four varieties of silk viz. *Eri*, *Muga*, *Tasar* and Mulberry. The country is the second largest producer of silk next to China with 15 percent shares in the Global silk market. Among the four varieties of silk produced, mulberry accounted for 91.7 per cent, *Eri* 6.4 per cent, *Tasar* 1.4 per cent and *Muga* 0.5 per cent of the raw silk production (Govt. of India, 2010-2011). In the process, India has developed an international market for silk goods having its own weaves, textures and designs. In 2013-2014, India earned foreign exchange revenue of Rs.3830.02 cores through exports of silk goods (Kumaresan, 2002). Mulberry silk is produced extensively in the State of Karnataka, Tamil Nadu, Andhra Pradesh, West Bengal and Jammu & Kashmir. The State of Karnataka alone contributes around 65 per cent of the country's production of Mulberry silk. While the tribal people of Madhya Pradesh, Bihar and Orissa rear *Tasar* silkworm traditionally. These three States contribute about 96 percent of *Tasar* silk production of the country. On the other hand, Eri silk production remains confined mainly in Assam, Manipur and Meghalaya. Importantly, Assam has a global monopoly in the production of *Muga* silk, which is popularly known as the golden silk of Assam (Krishiworl, 2003).

The golden *muga*, the heritage of North-East India, especially Assam is being exposed to the world market. The present position of the *muga* silk industry is not very encouraging. The number of sericulture villages has decreased from 8669 in 1975-76 to 8289 in 1998-99. The *muga* cocoons produced in the North-Eastern states to the tune of 4430 lakh in 2015-16 are mostly reeled in Sualkuchi and upper Assam. Almost all the products being traditional, *Mekhala-Chaddars* are consumed by the Assamese while a few *muga* and *paat* sarees are used by others also. A good collection of these

products is marketed by Emporia and ARTFED. The all India data show good prospects of exporting silk goods from the North East too. As a strictly business secrecy is maintained by the exporters and importers with a view to avoid competition, it is difficult to collect market information about this trade. The region has the prospects for exporting eri yarn and fabrics too. The demand is also for *paat*, *muga* or *tasar* like filament twisted yarn. The main problem is, however, the lack of uniform quality or standardization of the products. Hence, there is a need for modernization of reeling, spinning and weaving technology. While the Central Silk Board has already developed a reeling-cum-twisting machine for *paat*, *muga* and *tasar*, efforts toward introducing improved weaving technology or to renovate the existing fly-shuttle loom would go a long way (Baishya, 2002, Phukan, 2000).

Muga silk is one of the unique and rarest silk found only in Assam. The point that distinguishes this silk apart from all other varieties of silk is that it is absolutely golden yellow in colour. The word '*muga*' means yellowish in Assamese. The origin of the *muga* silkworm is dated back to the age of the dinosaurs. The Assams silk industry has prospered and grown during the Tai-Ahom rulers (1228-1828 AD). They patronized *muga*-culture by naming it as the Royal Regal Formal Attire. The attires made of '*muga*' and other attires embroidered with '*muga* thread' were the prerogatives for the noblemen. Headgear or turban, '*Phachau*' or '*Pag*', '*Chapkon*', '*Kinkhwab*', wrapper termed '*Cheleng*' (*muga gutidia cheleng*) & '*Khania*' (*muga phular khania*), '*Churia*' or '*Dhoti*', female attires '*Mekhela*', '*Riha*' etc. were used by the imperial upper-class or high-ranking families which are made of up *muga* silk.

The clothes prepared out of the finest class of *muga* silk, i.e. when *muga* silkworms are nurtured on *mejankari* or *adakuri* trees (called *mejankari* silk) and on *chapa* or *champa* trees (named *chapapatia muga* silk) solely worn by the Kingly families. *Mejankari* silk, which was reared in Assam proper on a tree that was cultivated, and said that it was generally considered as the highest quality and constituted the dress of the upper grades. These '*mejankari*' and '*chapapatia*' silks were affluent than natural *muga* silk fed on '*som*', '*sualu*' and '*dighlati*' trees. The practice of raising silkworm on '*mejankari*' & '*chapa*' tree is entirely abandoned now a days due to non-availability of feeder plants and high death rate of *muga* silkworms.

Muga silk is prepared from the semi-cultivated silkworm called *Antheraea Assamensis*. It is organic and natural and has the tough natural fiber. *Muga* silk is the most affluent type of Silk and is utilized for manufactured products only in the upper section of the society. One of the major features of *muga* silk is its durability. It is commonly known that a *muga* silk garment last longer than the person who own it. *Muga* Silk is well-known for its flexibility. It can be given an adequate texture by dry ironing it in a wet state, or it can attain a crushed look by not getting ironed. This is one distinctive fabric where the golden luster rises with age. Any type of embroidery and colour dyeing can be done on it.

OBJECTIVES AND METHODOLOGY

Objectives

The present study aims to analyse the prospects and viability of *muga* silk cultivation as a livelihood option in Lakhimpur District.

Hypothesis

H_0 : The prospects and viability of the *muga* silk cultivation in Lakhimpur District is not satisfactory.

Methodology Adopted

- Area of study: Lakhimpur District of Assam
- Period of study: 2010- 2016.
- Target group: *Muga* silk farmers and weavers, Middlemen in the distribution channel, Officials of the Silk and Sericulture Board, Local people and customers.
- Sources of Data
 - Secondary sources: Reports, books, journals and internet sources.
 - Primary Sources: Data had been collected through a schedule. The schedule was administered over the target groups after it was pilot tested in the study area. Data were also collected through focus group discussion, interviews and personal observations.
- Samples and Sampling: For the present study the data were be mainly collected through a primary survey by interviewing the respondents and also through observation and schedule method. A sample of 200 respondents selected randomly and as per convenience, was drawn from the Lakhimpur district. Out of 200 sample *muga* silkworm rearers (*Muga sungia*) of Lakhimpur, 75 % of household (150) are from *Tai-Ahom* communities and the remaining is from *Kachari, Chutia, Koch, Kalita, Jogi* and other communities of Assam. It was also found that *Tai-Ahom* rearers are well acquainted in reeling, weaving of *muga* fabrics. 65% of the rearers are found as commercial reeler and weaver, 20% of the rearers reel and weave for domestic purposes and rest of the rearers from other communities' sale their cocoons soon after harvesting. All the rearers use traditional appliances made of bamboo and biological method to control pest and predators during the rearing period. Cocoonage (*Jali*) made of dry leaves, *Khorika* (a stick-like bundle of straw or culms), bamboo tray of different size and design called *chandali, chalani*, bamboo *pera* (cocoon cage) for collection & storage of cocoons, bow (*dhenu*), clay pellets (*batalu guti*), *Khurung* (basket for keeping clay pellets), etc. are different types of traditional appliances used by traditional rearers in rearing.
- Tools used for Analysis: The collected data were analysed through various statistical tools as well common accounting procedures were undertaken for calculation of cost and benefits. Triangulation analysis was also undertaken to derive various conclusions, scientifically.

ANALYSIS AND FINDINGS

Traditionally, sericulture is a major cottage industry in the State. Non mulberry silk in general and *muga* silk in particular has been closely associated with the rituals and traditions of Assam and, thus, silk production and its usage has been an important household activity in the State over the years. Rearing of *eri, muga* and mulberry silk worm are playing an important role in the economic development of a large section of the rural population of the State. It is practiced in more than 10532 villages and provides employment to 2.6 lakh families. Assam accounts for the highest production of non-mulberry silk, *muga* and *eri* in the country - for which it is well known and famed.

The age old *muga* silk industry is deteriorating due to many factors. Different species of *muga* host plants and their various morph types are quickly depleting from the scene; some are endangered, and some others have already

become extinct due to environmental degradations. It is evident that the production of tassar and eri raw silk is increasing and is satisfactory, but the production trend of unique *muga* silk is fluctuating and declining. It is unfortunate that despite remarkable scientific and technological developments, in the manufacture of raw mulberry silk in India for last two decades *muga* culture could not be fully supported to increase the production of raw silk to a reasonable height from what it was almost 50 years before (Chowdhury, 1984, 1992). Thus it is pertinent to analyse the prospects and viability of *muga* silk cultivation as a livelihood option in Lakhimpur District through the following analysis and studies:

- SWOT Analysis
- Cost-benefit and Value Chain Analysis
- Analysis of Future Prospects
- Viability Analysis

SWOT Analysis

The supreme *muga* silk fabric despite its unique natural golden colour and delicate nature remained confined to the State of Assam due to the lack of quality consciousness among the reelers and weavers of Assam, and there is a lack of systematically organized excellent marketing facility to encourage the buyers. While analysing the strength, weakness, opportunities and threat, the following were revealed from the study:

Strength

- The presence of natural environment (soil, inclination, rainfall, etc.) that is supportive for growth of *som* and *sualu* trees which is necessary for the *muga* silkworms to feed.
- Availability of indigenous knowledge, expertise, and skill for *som* plantation and extraction of *muga* silk threads from the *muga* cocoon and the weaving.
- Change in policy of the present Government in developing handloom sector and developing area-specific schemes for developing the *muga* silk weavers
- Easy availability of cheap labor with appropriate level of skill
- *Muga* silk is a labour intensive industry, so does not require huge capital. So lower rate of investment and high rate of ROI and higher profitability can encourage unemployed youth with an area for a kitchen garden to start the venture.
- High and growing demand of *muga* silk in national and international market.
- *Muga* is associated with the cultural and religious life of the Assamese populous.

Weakness

- No access to formal financial sources and Institutions
- Lack of land holding and land deeds
- Presence of exploitative middlemen in the marketing channel

- Lack of marketing amenities like insurance, storing facilities, transportation, publicity etc.
- Lack of *muga* silk processing facilities lead to the *muga* silk weavers to distress selling their cocoons, yarns and finished products to large *muga* silk producers or to the middlemen and earn a meager profit margin where the profit margin of finished garments is quite high.
- Absence of organized and regulated market and govt. Support price.
- Forward trading and agreements regulating the price to lower it.

Opportunities

- Scarce supply with a higher demand and growing market for hand-woven *muga* silk garments in domestic and international market
- Good source of employment generation and minimization of unemployment problem
- Recent emphasis and development of infrastructural facilities by the present government, removed the distribution bottleneck
- Development of awareness among the youths about the allied, ancillary and supplementary activities to *muga* silk cultivation and production.
- Establishment of cooperative, forums and associations to safeguard the interest of the *muga* silk weavers.
- Designation of Dhakuwakhana and Ghilamara as silk zone is a boost to indigenous and traditional small cottage industry.

Threat

- Change of natural environment and global warming deteriorate the natural environment
- The Dominance of large-scale weavers and Silk Processing Units to regulate the entry of *muga* silk weavers into the market
- Open and regulated market are a distance dream
- Presence of political and social disturbances
- Effect of natural calamities on productivity of *muga* silk cultivation
- The effect of *muga* silk cultivation on *muga* silk farming because *muga* silk garden uses harmful chemicals to protect from pest attack and improve productivity.
- Mobility of skilled artisans to other areas in search of better opportunities

Cost-benefit Analysis

In order to determine the cost and return of *muga* rearing following five (5) factors are taken into account for computing cost of rearing – C_1 = Seed cost, C_2 = Labour cost, C_3 = Rearing instruments depreciation cost, C_4 = Rent for host feeding the plants, and C_5 = Other cost including transport and ritual cost. The rearing cost (RC_{ij}) with respect to the above factors is calculated as per the following formula-

$$RC_{ij} = \sum_{j=1}^5 (C_1 + C_2 + C_3 + C_4 + C_5)_{ij} \quad (1)$$

Where, RC_{ij} = Rearing cost of i^{th} HH with respect to the j^{th} cost factors where $i = 1$ to 200 and $j =$ all five cost factors.

To calculate the gross return (B_{ij}) from *muga* silk rearing following four (4) factors is taken into account – B_1 = return from cocoon sold, B_2 = return from seed cocoon sold and B_3 = return from silk yarn sold and B_4 = return from the finished garments.

The gross return with respect to the chosen factors is determined in terms of the following formula as-

$$B_{ij} = \sum_{j=1}^4 (B_1 + B_2 + B_3 + B_4)_{ij} \quad (2)$$

Where, B_{ij} = Gross Return or Benefits of i^{th} HH with respect to the j^{th} revenue factors where $i = 1$ to 200 and $j =$ all four revenue factors.

$$\text{Then gross profit is - } GP_{ij} = B_{ij} - RC_{ij} \quad (3)$$

Generally the *muga* rearing has been done five to six times in a year, it is very difficult to arrive at a uniform cost of the labour day of rearing for different phases in a year. Thus the total labour days spent by the responding households for rearing *muga* are taken into account for calculating the labour cost. Again seed cocoon and cocoon sold at a different price. So, the percentage of seed cocoon and cocoon sold out of the total cocoon production is needed to count for computing the return of rearing. During the survey period following characteristics is observed in *muga* rearing in the surveyed area.

- All farmers are traditional rearers, i.e. they have been following the inherited or indigenous methods of rearing. No modernized tools or methods is used in any phases of *muga* production.
- *Muga* is the primary occupation of the respondents.
- Average for the last six calendar years (2010 – 2016) were taken from the responses of the sample *muga* farmers, with respect to the production of different saleable products, average workers, and total man-day used whereas the wages were average wages paid by the respondents in the calendar year 2015-16.
- The ratio of spun cocoon of the total cocoon production is 7:10, as found from the one month's average production of all respondents. The average cocoon production per year per hectore is 71286. In this respect, an average of 7.05 kg saleable *muga* yarn was produced.
- A Price of 1000 seed cocoon is Rs.1000 and that of 1000 cocoon is Rs.520.
- Average workers = 5.65 (skilled) +0.87 (Semi-skilled) +0.02 (Unskilled) = 6.54 per day
- Total man-day used = 2387 days (6.54 X 365) out of which 955 (40% of 2387) man-day is through hired labour
- Average Per day wage = Rs. 218 {(5.65 X 225 + 0.87 X 175 + 0.02 X 125) /6.54}
- Transportation cost for seed gathering in the sample households is Rs.24000 (Rs.4 per capita seed gathering cost) and rearing cost during the cropping period is Rs.24000.

- Amount of seed cocoons sale is - 11107 @ Rs. 1000 for 1000 seed cocoons and that of cocoon is - 38793 at the rate of Rs. 520 for 1000 cocoons.
- Price of 1 kg raw *muga* silk is Rs.900
- Total production of garments = Rs. 8,90,423

Table 1: Value Analysis for One Year Cropping Per Hectore (Amt. on Rs)

Factors	Details of Calculation	Amt.
Cost / Expenses Made		
C ₁ = Seed cost	No. of Seed cocoons used × price of per cocoon. = 6,000 x Rs 1.	6,000
C ₂ = Labour cost	{Numbers of hired labour × Wage of per labour (paid out)} + {Numbers of family labour ×Wage of per labour (Imputed Labour Cost)}= (955X Rs.218) + (2387 X Rs.218) = Rs. 208190 + 520366	7,28,556
C ₃ = Rearing instruments depreciation cost	Total value of rearing instrument is Rs.70000 subject to 10 year economic life period. So depreciation charge is determined as Rs. 70000/10 = Rs.7000 and the rearers did not pay for the rearing instrument, so paid out charge of depreciation is zero. (Imputed)	7,000
C ₄ = Rent for host feeding plants	10 per cent of the total land value (10% of Rs.1,60,000)	16,000
C ₅ = Other cost including transport & rearing cost.	Transportation cost + Rearing cost =Rs. 24000 + Rs.24000	48,000
Total Cost (RC_{ij})	(C₁++ C₅)	8,05,556
Gross cost excluding imputed labour cost and imputed depreciation cost		2,78,190
Benefits or revenue Earned		
Revenue from Seed Cocoons (B ₁)	Total no. of seed cocoon products X selling price of per cocoon = 11107 × Rs.1 = Rs 11107	11,107
Revenue from yarn Cocoons (B ₂)	Total amount of yarn cocoon selling × price of per cocoon = 38793 × Rs.0.52	20,172
Revenue from Spun or Yarn (B ₃)	Amount of spun selling × Price of per kg.= 7.05 kg × Rs.900	6,345
Revenue from Garments (B ₄)	Amount of garment produced	8,90,423
Total Revenue (B_{ij})	(B₁++ B₄)	9,28,047
Profit (GP_{ij})	Total Revenue-Total Cost = B_{ij} - RC_{ij}	1,22,491
Real Profit	Total Revenue – Total Cost minus imputed cost	6,49,857
ROI		15.21 %

Source: Primary data Collected in 2016 and Analysis Thereafter

It is seen that per hectare annual gross cost of *muga* rearing in Lakhimpur district is Rs. 8,05,556 but the real cost is Rs. 2,78,190 as the imputed labour cost and depreciation charges are omitted. The average revenue is Rs. 9, 28, 047 annually, which provided a profit of Rs. 1,22,491 where the imputed cost is taken into account and Rs. 6,49,857 after taking the cost minus the imputed cost. So in the former case the ROI is 15.21%, which is quite high for any kind of small scale production houses. It is also seen that both the gross return and net return are positive and net return decreases with the addition of gross cost in *muga* rearing. Thus the earning of *muga* rearing in the study area is remunerative compare to other conventional crops in the study area and the study suggest to develop the silk industry as an instrument of rural development.

Value Chain Analysis

The value chain adopted by the *muga* silk market players can be classified into two, viz., for products going to export and domestic market. The market players in export silk channels are rearers, reelers and dyers, weavers, textile producers, exporters and foreign retailers whereas the players in domestic channel are rearers, reelers and dyers, weavers, textile producers, wholesalers and retailers. The value chain is prepared and presented in the following table -2:

For Export Market Channels of Distribution: Value addition is calculated based on one square meter of high-end silk fabric produced by the *mega* weavers, on the basis of simple home supply chain and the foreign consideration is added up in later stages. The value added to the *muga* rearers is 30.23% (Rs. 13 over Rs.43, 30.23%), for reelers and dyers is Rs. 28 (50%), for handloom weavers Rs. 235 (279.80%), for home textile producers Rs. 207 (64.89%), for exporters Rs. 342 (65.02%), and that of for foreign retailers is Rs.2170 (250%). Further, the rearers (1.56%), reelers and dyers (3.39%) add less than 5% of the value per square meter of the *muga* silk apparel they produced, while handloom weavers, home textile producers and exporters contribute 28.46%, 25.10% and 41.49% respectively. The causes of not including the foreign retailers in the chain is to provide the information about the value each of the domestic actors is retained, in a more precise way. Considering the home portion of the channel, the domestic middleman (home textile producers and exporters) controls the majority portion of the value added, i.e., 67% Thus the marketing channel is dominated by the middlemen.

For Domestic Market Channels of Distribution: In contrast to the foreign market, the value addition to the *muga* rearers is 30.23% (Rs. 13 over Rs.43, 30.23%), for reelers and dyers is Rs. 17 (30.36%), for handloom weavers Rs. 131 (179.50%), for home textile producers Rs. 61 (29.90%), for wholesalers Rs. 79 (29.81%), and that of for retailers is Rs.275 (79.94%). Further, the rearers (2.23%), reelers and dyers (2.90%) add only 5.13% of the value per square meter of the *muga* silk apparel they produced, while handloom weavers, home textile producers, wholesalers and retailers contribute 22.74%, 10.60%, 13.78% and 47.75% respectively. Considering the channel, the domestic middleman (home textile producers, wholesalers and retailers) controls the majority portion of the value added, i.e., 72.13% Thus the marketing channel is dominated by the middlemen. Compared to export silk home textiles, producers of domestic silk control a smaller portion (11% of the value added). Retailers control a majority portion of 48% of the value added. Wholesalers and retailers make up more than 60% of the value added in the domestic market. Thus, the producers and weavers are marginalized with respect to the value addition in the market.

Table 2: Generated Value in the Export and Domestic Silk Chain

Chain Actors	Exported Silk					Domestic Silk				
	Cost	Sales	Value Added (Fig in () is in %)	Value Added Along the Chain		Chain Actors	Cost	Sales	Value Added (Fig in () is in %)	Value Added Along the Chain
				Including Retailer	Excluding Retailer					
Rearers	43	56	13 (30.23)	0.43%	1.56%	Rearers	43	56	13 (30.23)	2.23%
Reelers and Dyers	56	84	28 (50.00)	0.93%	3.39%	Reelers and Dyers	56	73	17 (30.36)	2.90%
Handloom Weavers	84	319	235 (279.8)	7.84%	28.46%	Handloom Weavers	73	204	131 (179.5)	22.74%
Textile Producer	319	526	207 (64.89)	6.92%	25.10%	Textile Producers	204	265	61 (29.90)	10.60%
Exporters (FOB)	526	868	342 (65.02)	11.43%	41.49%	Wholesaler	265	344	79 (29.81)	13.78%
Foreign Retailers	868	3038	2170 (250.0)	72.45%	-	Retailers	344	619	275 (79.94)	47.75%

Source: Primary data Collected in 2016 and Analysis Thereafter

Analysis of Future Prospects

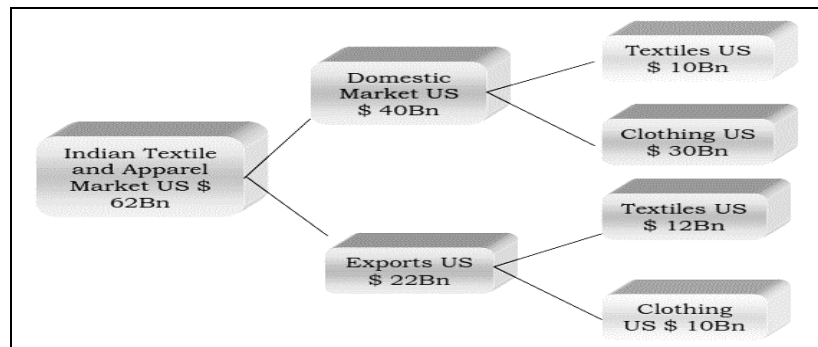


Figure 1: Annual Demand of Indian Textile and Apparel Market

Moreover, this *muga* silk can also very well be mixed with other natural spun and related silks, if blending technology of *muga* silk fibre with other synthetic fibres and other natural fibres originating both from the plant and animal adequately developed an indefinite variety of textile products can be obtained suitable for all seasons and acceptable to all. *Muga* silk fiber can also offer scope for blending with the reeled *muga* silk for the ultimate production of various textile finished products at a low price. Therefore, *muga* silk industry can be developed as a regional textile industry in Assam, which can produce excellent finished products of export quality. This will invariably generate ample employment opportunities in the Region. Large scale plantation of *muga* host plants through social forestry scheme in the ceiling surplus land of *muga* silk gardens and other fellow area, roadsides, premises of the various establishments and institutions will not only enable the rearers to use these plants but also will protect soil erosion and ecological balance. Multipurpose farms where *muga* culture along with pisciculture and poultry farming can be feasible may be encouraged to grow simultaneously, as the *muga* pupae are very nutritious food for the poultry and fishes, *muga* can profitably support both the culture. Inter-cultivation of various horticulture plants along with *muga* food plants can give more incentives and profits to the *muga* silkworm rearers in per unit area of land. This aspect of multipurpose *muga* farming is to be thoroughly studied. There is the bright prospect of *muga* by-product, industry in Assam. Different by-products of *muga* silk industry can be consumed to grow diverse new industries. The new and old plants, branches after pruning can be used as fuel, lumber and raw materials for pulp and paper industry. *Som* seeds can be utilized for the preparation of a dye and mejankari seeds, leaves and bark can be used for extraction of a very fine aromatic oil. Guts and sutures can be manufactured from matured *muga* silkworm which is used for surgical stitching. Also, to use it as food for cattle, fish, and poultry. The pupae can also be utilized for the production of oil. This oil can be employed for the preparation of soap, cosmetic, and candle. This refined pupae oil may be used as alternative edible oil and dalda. Pupa and litters are upright manure for rural and horticultural farms. Moreover, silkworm's litters can also be actually utilized in the biogas plant with cow dung. The *muga* pupae utilized as appetizing and nutritious food item particularly by the people of some community of Assam. Extensive research is needed to study the efficient use of these *muga* by-products as raw material for new industries. The demand of the silk in the world market is growing day-by-day. Figure 5.06, below, has described the scenario of the growing demand of the textile market. Thus, with a high ROI, the *muga* silk industry can be very much productive to provide an alternative to the failing agricultural sector in Assam.

Table 3: Contribution of Handloom to the HH Income of the Weavers

State	Rural	Urban	Total
Assam	20.96%	14.52%	20.81%
All India	27.50%	50.98%	30.18%

Source: *Handloom Census 2009-10*

According to the Handloom Census 2009-10 by Development Commissioner (Handlooms), Ministry of Textiles, Government of India and National Council of Applied Economic Research, the contribution of the handloom earning of the total income of the weavers of Assam is 20.81%, 20.96 in rural areas and 14.52% in urban areas (Table 3). Though the figure is lesser than the all India figure, but the number of handloom artisan HH in rural is 1, 22, 025 and in urban areas it is 20,792. The total weavers is 13, 78, 817 in rural areas and 22,583 in urban areas with an average income of Rs. 40, 102 per month in rural areas and Rs. 54,463 in urban areas. The average income of all weavers is Rs. 40,343.

Thus, from the above analysis, it is concluded that *muga* silk industry in Assam has a bright prospect for development as a rural livelihood option. With grand reputation and epic rich heritage and a bright prospect for future development, golden *muga* silk industry of Assam at present is undulating with uncertainty and is under high threat of decline and extinction, if not accepted as a livelihood option by the younger generation.

Viability Analysis

To study the viability of the *muga* silk rearing and culture of Lakhimpur district, triangulation methodology had been adopted. Scores have been given for the respective group of respondents based on the five major parameters taken for the triangulation. Then the total point for each group of response is calculated sum of all scores it received across all the parameters taken. Ranking is done on a 10 point scale where 1 is lowest and 10 is highest. The five parameters taken from the study of the viability of the *Muga* silk culture are-

- Availability of critical mass which includes all factors of production
- Potential of the artisan growth with respect to the skill and technology
- Livelihood dependency of artisans on the craft
- Market potential of the craft
- Status of basic infrastructure, which includes roads, road connectivity, CFCs, electricity connection and other basic facilities like medical, education etc.

It is concluded from the table no – 4 that the status of the basic infrastructure like, road connectivity, power, water facilities, research and innovation, marketing facilities, etc. are an area of concern for the development and growth of the weavers. Though the availability of the critical raw materials and the market demand shows a higher figure (more than 7 points) as well the dependency of the artisans for livelihood shows a 6.4 points in average, the hindrance for the development and growth is the basic infrastructural facilities. As the total average score of trade viability is 33 out of 50 which is more than 60%, the *muga* silk activities are very much viable for weavers of Lakhimpur district. The trade viability score is 33, which is 66%, and is reasonably high which can be encashed with timely involvements by the intervening agencies.

Table 4: Trade Viability (Out of Total 50 Points)

Responses From	Availability of Critical Mass	Potential of Growth	Livelihood Dependency	Market Potential	Status of Basic Infrastructure	Total Score
Respondents	9	6	7	7	5	34
Silk / Sericulture Board Officials	7	6	6	9	5	33
Experts/ Literature	9	7	6	6	4	32
Agriculturist	9	6	7	8	4	34
Self-Observation	8	6	6	7	5	32
Average	8.4	6.2	6.4	7.4	4.6	33

Source: Primary data Collected in 2016 and Analysis Thereafter

FINDINGS

The identified prospects, SWOT analysis, cost-benefit analysis and viability study show that there is a huge scope of business prospects in *muga* farm in the Lakhimpur District of Assam along with some specific problems. Thus, inferences have been drawn to reject the null hypothesis and accept the alternative hypothesis, i.e. H_1 : *The prospects and sustainability of the rural micro-entrepreneurship in the study area are immense and satisfying.*

CONCLUSIONS

It is concluded that the prospects and viability of the commercialisation of indigenous knowledge in the form of *muga* culture in Lakhimpur District of Assam are immense along with various challenges in the present market conditions. There are different factors creating hindrance in the development of *muga* silk cultivation and its growth in these areas. The problem of *Muga* silk weavers is multifold ranging from procurement of finance, production and to market. Some common problems like absence of *muga* silk processing factories, low price of *muga* silk leaves, damage to *muga* silk leaves, infrastructural bottleneck, exploited by the distribution channel agents etc. is most sought problems. Further detailed study can identify different prospective areas to make *muga* silk farming as a promising tool for development of rural economy.

REFERENCES

1. Government of India, (2010-2011): *Ministry of Textiles, Annual Report*, New Delhi
2. Kumaresan, P. (2002): "Quality Silk Production: Some Economic Issues", *Economic and Political Weekly*, Vol.37, No.39, pp41-46.
3. Krishiworl, (2003) <<http://Krishiworl.com>> internet material, access on 24th May 2017.
4. Baishya, P., (2002), "Prospects in *muga* silk", *Indian Silk*; Vol. 41, Issue. 5; Pp-27-29.
5. Phukan. B. (2010), *Muga Silk: Problems and Prospects of Muga Silk Industry of Assam, India*, VDM Verlag Dr. Miller.
6. <http://silkmkindia.com/>, <http://assamsilkshopping.com/Assam-silk>, accessed on 13-09-2016
7. <http://www.csb.gov.in/silk-sericulture/silk/vanya-silk/>
8. Choudhury S.N., (1984), *Mulberry Silk Industry*, Greham Bazar, Dibrugarh, Assam
9. Choudhury S.N., (1992), *Muga Silk Industry*, DOS & W, Guwahati

