A Study on Present Status of Muga Culture and Income Generation Through Muga Culture in Assam

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Abstract
Muga is an Assamese word which indicates the golden brown (amber) colour of the cocoon. Muga silk is extracted from Muga silkworm which is mainly confined to the Brahmaputra valley of Assam and foothills of East Garo hills of Meghalaya. It particularly suits rural based farmers, entrepreneurs and artisans as it requires low investment but with potential for relatively higher returns. Rearing of Muga is an age old culture for the people of Assam. Assam has monopoly in producing Muga silk and the demand is also very high in national and international level. Although muga culture has potential of higher return but the muga farmers are tempted to shift from muga farming to rubber plantation and tea plantation due to change in climate conditions, pollution, predators, diseases etc. The study helps to understand the income generation of commercial Muga seed crops in the study area.
KEYWORDS: Muga, Silkworm, Income, Muga culture, Rearing, Cost.

1.1 INTRODUCTION

Assam, the gateway to the North East India is the largest State in the North East is bordering seven states viz. Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and West Bengal and two countries viz. Bangladesh & Bhutan. The State is endowed with abundant fertile land and water resources with total geographical area of 78,438 sq.km. of which 98.4 % area is rural. Assam shares about 2.4 % of the country's total geographical area and provides shelter to 2.6 % population of the country. In Assam sericulture is a major cottage industry comprising of both mulberry and non-mulberry silk worm culture and production of natural silk. The characteristic climate, ecological conditions and soil quality have been congenial in Assam for the silkworm food plantation. The sub-tropical climate, humid and moist temperature with frequent rainfall in summer, pleasant atmosphere in winter and the soil structure make the region the natural home of the sericigeneous insects and their food plants [1]. As a result, sericulture is considered as one of the promising rural industries in Assam. Assam has the GI tag for the aesthetic golden Muga silk. It produces about 95 percentage of the total Muga silk production in the world [2]. Because of its unique characteristics of being eco-friendly, labor intensive, having short gestation period, capacity to develop into a family enterprise, limited capital investment and its interlink ages with other enterprises makes this industry an economically viable industry of Assam. Seri-cultural activities are practiced in the State in more than 20,333 villages involving 3,53,000 families. The commercial production of Muga silk is mainly confined to upper Assam while seed cocoon production is generally confined to lower Assam. Almost one third of the silk production of the State is contributed by two districts namely Dhemaji and Lakhimpur. The present study is conducted in Lakhimpur district. The district covers an area of 2277 square k.m. out of which 2257 square k.m. is rural and 20 square k.m. is urban area. Lakhimpur district is situated on the North East corner of Assam and at the north bank of the River Brahmaputra. The district lies between 26°48' and 27°53' Northern latitude and 93°42' and 94°20' East longitude (approx). It is bounded on the north by Siang and Papumpare District of Arunachal Pradesh and on the

east by Dhemaji District and Subansiri river. The river Brahmaputra along with Majuli District stands on the southern side and Gahpur sub division of Biswanath District is on the West. Several studies have found that muga production is highest in Lakhimpur district. For the present study Lakhimpur district is selected as it is the highest muga producing district in Assam.

1.2 Muga Culture

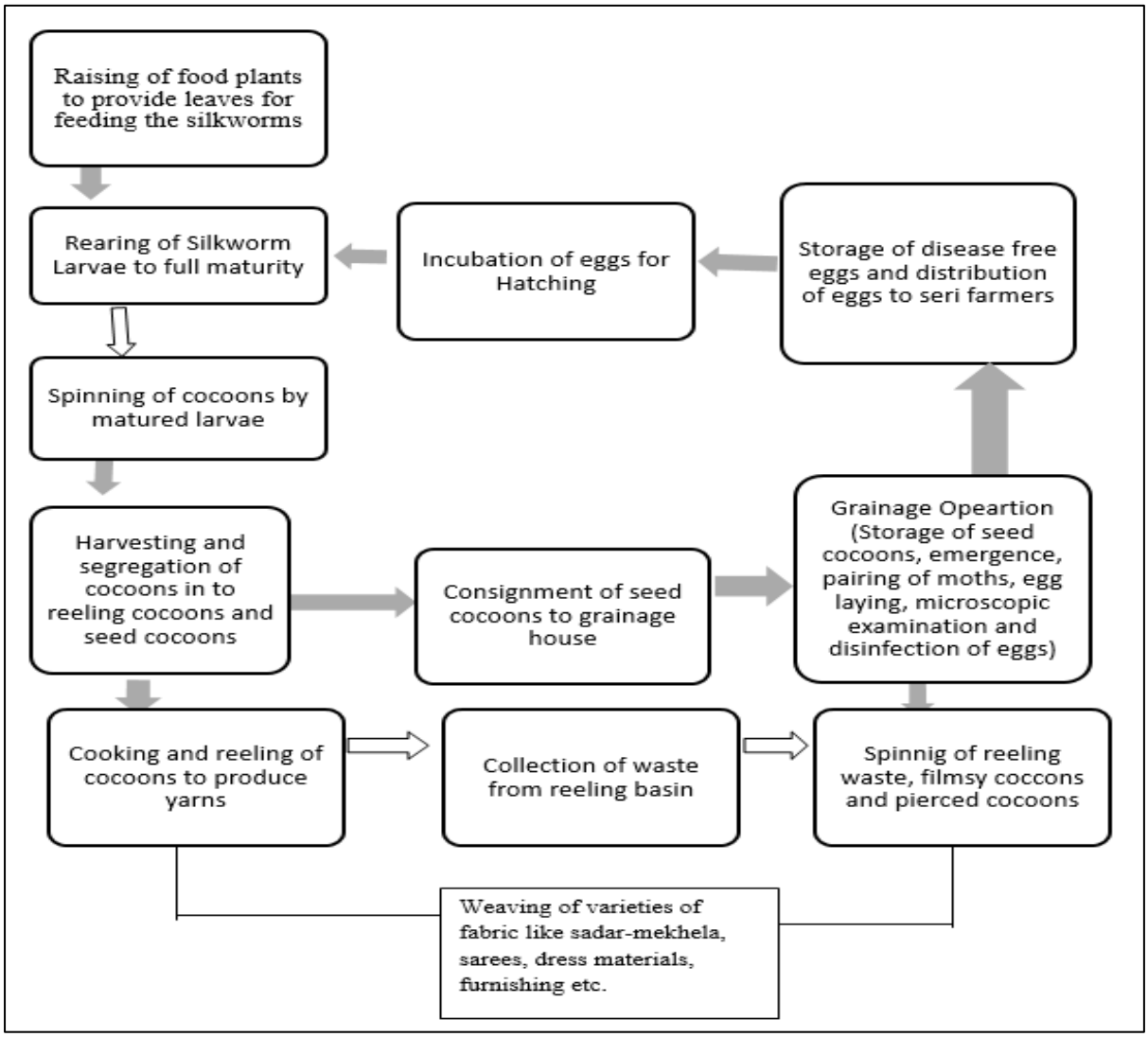
Muga Culture of Assam is an age old Assamese culture and it is believed that Tai-Ahoms introduced the Muga Culture in Assam. Muga-Culture is associated with tradition and custom of Assam. The traditional skills involved in Muga-culture plays a very important role in socio-economic and cultural life of Assamese people. The silkworm is a semi-domesticated, multivoltine and polyphagous insect having 5-6 generations in a year. The silkworm is considered as the ancestral form with the lowest number of chromosomes (2n=30) from which the other species of Antheraea might have been evolved [3]. Muga silkworms can be raised only outdoors which requires traditional techniques and methods for grainage, rearing as well as reeling process. Muga culture is mainly confined in Assam, Meghalaya and in some portion of West Bengal. Muga Silkworm is multivoltine and 5-6 crops are reared in a year. These crops are:

i) Chatua (February- March)
ii) **Jethua** (May- June)
iii) Aherua (June- July)
iv) Bhodia (August- September)
v) **Kotia** (October- November)
vi) Jarua (December- January)

Out of these crops Chatua and Bhodia are Seed crops, Aherua and Jarua are considered as Pre-Seed crops, Jethua and Kotia are the two commercial crops preceded by two pre seed and seed crops.

The muga silk worm (Artheraea assamensis Helfer) is reared largely in Assam besides in some neighbouring States in small quantities. Muga silkworm feeds mainly on *Som* and *Soalu* Leaves and rearing is conducted outdoor on *Som* Plants[4]. The Larvae after maturation crawl down the tree at dusk. Which are then hand-picked and placed in *jali* (Cocoonage) for spinning of cocoons. For continuation of generation seed cocoons are selected and kept in grainage hall for emergence of moth and production of eggs and remaining cocoons are used for reeling purpose. Muga silkworm is multi-voltine and 5-6 crops can be taken up annually.

1.3 Flow Chart of Muga Culture



Source- Dr. Das, P. K . Base paper on: Muga Silk Industry in Assam, The workshop on-Development of muga & Eri silk industries, North Lakhimpur, 2000

1.4 Objectives of the Study

1) To know the present status of Muga culture in Assam
2) To know the profitability and income generated in Muga farming.

1.5 Methodology of the Study

The present study is based on both primary and secondary data. Primary data are collected through a structured schedule and secondary data are collected from various published sources. The study has been carried out in Lakhimpur district, Assam. Lakhimpur district has been selected purposively on the basis of productivity of *Muga* silk. Due to climatic condition and quality of soil the district became the highest *muga* producing district in Assam. The district has 3 sub-divisions- Dhakuakhana, Narayanpur-Bihpuria and North Lakhimpur(Sadar). For the present study Dhakuakhana sub division is selected. Dhakuakhana sub-division primarily covers Dhakuakhana Development Block, Ghilamara and Telahi. Among the 3 blocks Ghilamara block is selected. The block has 118 villages. 5 villages were selected randomly from Ghilamara block for sampling. These are Ghahi gaon, Chiringarah, Balioni, Deolia gaon and Dakhin gaon. Of the households engaged in mugaculture 20% of the households are selected randomly. Thus a sample size of 100 households are selected for the study. The field survey was conducted from July 2025 to February 2026.

1.6 RESULTS AND DISCUSSION

Table No. 1: Status of mugaculture in Assam (2016-17 to 2022-23)

Items	Unit	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Sericulture Villages	Nos.	9935	8726	8726	8642	8640	8627	8722
No. of Families Engaged	Nos.	319405	310582	307877	309530	331857	299936	301176
Area Under Silk worm Food Plants	Hect.	15983	11585	11537	43608	47113.6	44278.5	44412.2
Muga host plant area	Hect.	5931.58	4369	8600	10762.5	12891	12557	12661.6
Muga Cocoons	Lakh Nos.	6480	7865	10496	9865	9533	10511.6	10439.9
Muga Raw Silk	MT.	129.5	156.96	193.22	197.29	240.46	210.495	211.27

Source: NEDFI DataBank 2023-24

From the table it is observed that area under Muga silkworm food plant has been in increasing order, in the year 2016-17 it is 5931.58 hectares, 4369 hectares in the year 2017-18, 8600 in the year 2018-19, 10,762 hectares in the year 2019-20, 12,891 in the year 2020-21, 12,557 hectares in the year 2021-22 and 12,661 hectares in the year 2022-23. There is an increase of 113% in the area under Muga food plant from the year 2016-17 to 2022-23. It is also observed that Muga cocoons produced in the year 2016-17 is 6,480 lakhs, 7,865 lakhs in the year 2017-18, 10,496 in the year 2018-19, 9,865 in the year 2019-20, 9,533 lakhs in the year 2020-21, 10,511.6 lakhs in the year 2021-22 and 10,439.9 in the year 2022-23. There is a significant growth in the number of Muga cocoons from the year 2016-17 to 2022-23.

It is observed that Muga raw silk produced in the year 2016-17 is 129.5 MT, 156.96 MT in the year 2017-18, 193.22 MT in the year 2018-19, 197.29 MT in the year 2019-20, 240.46 MT in the year 2020-21, 210.495 MT in the year 2021-22 and 211.27 MT in the year 2022-23. Although the highest production of Muga raw silk is in the year 2020-21, a significant increase in production of Muga raw silk is observed from the year 2016-17 to 2022-23.

1.7 Economic Prospects of Mugaculture

To study economic prospects of mugaculture a cost-benefit study was conducted in the context of studied sample. The practice of mugaculture is an age-old practice in the region. The host plants (Somoni) is already in plenty locally [5]. Following the literature the cost involved in mugaculture is calculated as a sum of establishment cost of host plants, cost of seed cocoons and imputed cost of labour for grainage, rearing and reeling. Since the village people have carried out Muga practice for many years, the cost of host plants is not considered for the present study. The tools required for Muga farming are made by themselves or locally available.

Table No 2: Table showing cost of seed cocoons, rearing and reeling expenses

Involvement of family/ Hired labour	Cost of seed cocoons (per cocoon)Rs.	No of seed cocoons Purchase (qty.)	Amount required for seed cocoons (Rs.) (A)	Rearing expenses (25% of cocoons produced) (qty)	No of cocoon obtained after production (qty)	Reeling expenses (Rs.) @500 per 1000	Total expenses (A)+(B)

						cocoons (B)	
With family labour	7	1,000	7,000	-	25,000	12,500	19,500
With hired labour	7	1,000	7,000	(25,000x25%) =6250 cocoons	18,750	9,375	16,375

(Source- Field Survey)

From the above table it is observed that with the involvement of family labour the total expenses of farming of 1,000 seed cocoons is Rs.19,500 and the number cocoons obtained after production is 25,000 reeling cocoons approximately as per field survey. With the involvement of hired labour the total expenses of farming of 1,000 seed cocoons is Rs.16,375 and the number of cocoons obtained after production is 18,750 reeling cocoons approximately as per field survey.

Table No 3: Table showing Revenue, Expenses and Profit generated

Involvement of family/hired labour	Reeling Cocoons obtained after production of 1000 seed cocoons	Total expenses for 1,000 seed cocoons (A)	Muga silk extracted from reeling cocoons (in k.g.)	Revenue generated from Muga silk extracted from reeling cocoons @25,000 per k.g.(B)	Profit generated from 1,000 seed cocoons (C) = (B)-(A)
With family labour	25,000	19,500	4.5	1,12,500	93,000
With hired labour	18,750	16,375	3.4	85,000	68,625

(Source- compilation of Field survey)

Personal interview and discussions with the household samples are conducted to derive the data related to cost incurred and returns from Mugaculture. Normally l Kg. of muga raw silk can be obtained from 5000 - 6000 cocoons depending upon the quality compactness and weight of the shell [4]. An average of 5,500 reeling cocoons are required to extract 1 k.g. of Muga silk. The quantity of Muga silk extracted from 25,000 reeling cocoons is 4.5 k.g. and the quantity of Muga silk extracted from 18,750 reeling cocoons is 3.4 k.g. The market price of Muga silk is Rs.25,000 per k.g. From the above table it is observed that the profit generated from 1,000 seed cocoons with the involvement of family labour is Rs.93,000 and with the involvement of hired labour profit generated is Rs.68,625. The cost benefit ratio with the involvement of family labour is 4.77:1 and the cost benefit ratio with involvement of hired labour is 4.19:1.The findings are similar to studies conducted earlier in different study areas (Konwar et. al) [10]

1.8 Contribution of Mugaculture to Household Income

Data pertaining to income of households from different sources was collected. Income generated from agriculture, mugaculture, government employees salary and other income are collected from the sample in the study area. The mean value of income of each sources are taken for the study.

Table No 4- Table showing income earned from different sources

Yearly Income earned from mugaculture	Agriculture	**Mugaculture**	Government employees	Other income
Up to 1,50,000	36,250	**78,750**	10,250	12,500
1,50,001-3,00,000	52,500	**1,17,500**	75,000	16,250
3,00,001-4,50,000	48,000	**1,45,000**	76,000	50,200
Above 4,50,000	83,300	**1,66,667**	1,40,000	1,36,667

(Source – Field survey)

From the table it is observed that the income earned from mugaculture in the range up to 1,50,000 is highest in comparison to the other sources of income. Yearly income range of 1,50,001 to 3,00,000, the highest income earned is from mugaculture. Yearly income range of Rs. 3,00,001-4,50,000, the highest income is generated from mugaculture. Yearly income range above 4,50,000, the highest income is generated from mugaculture. In all the ranges of yearly income, income generated through mugaculture is highest. The data highlights that mugaculture plays a central and economically significant role in household income.

1.7 Findings of the Study

1) Area under Muga silkworm food plant has been in increasing order from the year 2016-17 to 2022-23. There is an increase of 113% in the area under Muga food plant from the year 2016-17 to 2022-23.
2) Muga cocoons produced in the year 2016-17 is 6,480 lakhs, 7,865 lakhs in the year 2017-18, 10,496 in the year 2018-19, 9,865 in the year 2019-20, 9,533 lakhs in the year 2020-21, 10,511.6 lakhs in the year 2021-22 and 10,439.9 in the year 2022-23. There is a significant growth in the number of Muga cocoons from the year 2016-17 to 2022-23.
3) The highest production of Muga raw silk is in the year 2020-21. A significant increase in Muga raw silk is observed from the year 2016-17 to 2022-23.
4) It is observed that Muga farming is a highly profitable farming activity. The cost benefit ratio with the involvement of family labour is 4.77:1 and the cost benefit ratio with involvement of hired labour is 4.19:1
5) Income earned from mugaculture is the highest source of income in comparison to agriculture, government employees salary and other sources.

1.8 CONCLUSIONS

Muga, the golden thread of Assam is an integral part of Assamese culture. The natural golden colour, glorious lustre and durability of muga silk are unique characteristics of muga silk. Travellers from outside Assam are also largely fascinated by the elegance of muga fabric. Since muga culture involve, tree plantation for its food plants, rearing and extraction of silk is considered as one of the environment friendly activity in present day hazard prone industrial pollution. Muga being the rarest and unique natural fibre has huge potential in the international market. Due to many reasons and the increasing pollution the production

of muga silkowrms are highly affected. The mugaculturist believe that within 2 to 3 decades muga will be completely extinct. A collective effort and research works on maximisation of seed cocoons can save the golden thread of Assam.

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