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An Analysis of Families Engaged in Silk Production, Trend of Raw Silk Production and Area under Silkworm Food Plant Cultivation in Assam

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ABSTRACT: Assam is the third leading state of India in silk production by producing three commercial silks, *viz.*, eri, muga and mulberry. A study was undertaken to analyse the growth of sericulture industry of Assam in terms of families engaged in silk production, trend of raw silk production and area under silkworm food plant cultivation in Assam during the period 2013-14 to 2019-20. It was found that the growth of sericulture villages, raw silk production and area under silkworm food plant cultivation during the study period was not stable and not always positive. The highest positive growth of engagement of families (188.18%) was observed in eri culture in the year 2014-15, muga and mulberry silk production was increasing slowly. In the year 2014-15, 2015-16, 2017-18 and 2019-20 area under silkworm food plant cultivation was decreased than the previous year except muga food plant area during 2019-20. Absence of regulated cocoon market, silk exchange centre, price fluctuation, technology adoption and low productivity are the main challenges of sericulture industry of Assam creating problems in growing the industry which has ample scope for job opportunity and sustainable livelihood.

Keywords: Eri, Muga, Mulberry, Food Plant, Family Engaged, Silk Production, Growth.

INTRODUCTION

The economy of Assam is based on agrarian economy and more than 85.90% (Anon., 2020a) of the population is living in the rural areas. According to the census report of 2011-12, the population of BPL (Below Poverty Line) in Assam was 31.98% whereas 33.89% BPL people lived in rural areas and 20.49% in urban areas. Agriculture as a sector still continues to support more than 75% of its population, either directly or indirectly, providing employment and support to more than 50% of its total workforce (Anon., 2018). Out of the total 1,19,696,90 workers in Assam, 26.22% were cultivators, 7.55% were agricultural labourers, 2.02% were engaged in household industries and 36.79% were other workers (Anon., 2021). The scenario of industrial sector of Assam is not satisfactory.

According to Statistical Hand Book, Assam, 2020 total population of Assam is 3,12,055,76; out of which employment in organised sector is 11,081,45; in public sector is 4,791,64 and in private sector is 6,289,81. Total number of registered unemployed is 20,471,95. Unemployment is increasing day by day. Industrial growth rate cannot pace with the growing demand of the employment. New job creation is a crucial task to minimize the unemployment. The strategy for industrial growth in Assam must focus on generating jobs for unemployed youth to ensure regionally balanced, socially equitable and economically inclusive growth. Sericulture, an age-old agriculture based on enterprise of the state may be an answer to this problem because of available manpower and natural resource.

Sericulture industry is an excellent avenue combining both agriculture and industry for providing employment with various entrepreneurial opportunities *viz.*, host plant cultivator, co-operative rearer, silkworm seed producer, farmer-cum-rearer, reeler, twister, weaver, hand spinners of silk waste, traders and different value added products for the rural development.

In developing countries like India, agriculture and agro-based industries play a vital role in the improvement of rural economy (Bukhari and Kour 2019). Sericulture is an extremely labour intensive industry and occupies a pivotal position from the point of providing employment and additional income to weaker sections (Best and Maier, 2007). Sericulture activity brings regular income to the community without any bias of caste, creed, gender, or religion (Kasi, 2013). Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal and Jammu & Kashmir, these five states collectively account for 97% of the total area under mulberry cultivation and 95% of raw silk production in the

country (Anitha and Kanimozhi, 2013). The country has produced 35,820 MT of raw silk during the year 2019-20 and the estimated employment generation under sericulture in the country was 8.7 million persons during 2020-21 compared to 9.4 million persons in 2019-20, indicating a reduction of 7.4% (Anon., 2021a). Realizing the tremendous scope for improving the production and quality of silk through intervention of Geo-spatial tools and web technology, an ambitious project was taken up by Central Silk Board in collaboration with NESAC, State Remote Sensing Application Centres and State Directorates of Sericulture for implementation during 2008-09 to 2013-14 period with an objective of identifying the additional potential areas for development of silkworm food plants for 108 priority districts from 24 States at 1: 50,000 scale in three phases (Anon., 2021b). Although Sericulture is considered as a subsidiary occupation, technological innovation has made it possible to take it up on an intensive scale capable of generating adequate income (Reddy and Phaniraj, 2017).

Sericulture is the only one cash crop in agriculture sector that gives returns within 30 days. Sericulture is practiced in Assam from time immemorial. Most of the people know how to rear silkworms similarly reeling, spinning and weaving. No such sophisticated technology is required for sericulture. It is estimated that sericulture can generate employment @ 11 man-days per kg of mulberry raw silk production (in on-farm and off-farm activities) throughout the year.

Most of the sericulture activities (rearing of eri and mulberry silkworm, seed production, reeling and spinning, weaving) confined inside the house except rearing of muga silkworm is conducted outside of the house i.e. on the plants. It requires less physical energy and manual labour.

Muga silk, the shimmering golden thread is the pride of Assam. It is the first GI registered product of Assam. Muga silk has high demand in world silk market. Moreover, 82.29% of muga silk of India is produced by Assam alone (Anon., 2020c). Eri culture is an inseparable culture of Assamese people. Eri pupa is a delicious dish of most of the tribal people of Assam. Assam is the highest producer of eri silk in the country. Though mulberry culture is also the tradition but very few people are engaged in mulberry silk production. It is an indoor based activity like eri culture. Mulberry plant is considered as '*kalpaviksha*'. All these three commercial silkworm culture has the potential to generate employment in the region. Therefore, present study was undertaken with the following objectives

1. To make an assessment of employment generation in the sericulture sector of Assam.

2. To study the trend of raw silk production in Assam.

3. To study the changing trend of the area under silkworm food plant cultivation in Assam.

MATERIALS AND METHODS

The study was conducted by using descriptive method on the basis of secondary information gathered from the publications of Government agencies *viz*., Directorate of Sericulture, Government of Assam; Annual Report, Central Silk Board, Ministry of Textiles, Government of India and Directorate of Economics and Statistics, Government of Assam. Simple statistical technique was used for the study.

RESULT AND DISCUSSION

Table 1 showed that year wise growth percentage of sericulture villages during the period 2013-14 to 2019-20 was negative except 2015-16 and 2018-19. In the year 2015-16, growth percentage of sericulture villages was stable and during the year 2018-19 growth percentage was positive (1.17%). The highest number of sericulture villages decreased in the year 2017-18. The highest positive growth of engagement of families (188.18%) in eri culture was found during the year 2014-15 whereas the highest negative growth was recorded in the year 2016-17 (-36.22%). It had been also found that from 2015-16 to 2017-18 families associated in eri culture was declining haphazardly. The highest positive growth of families engaged in muga culture was seen in the year 2017-18 (34.80%) and the highest negative growth of families involved in muga culture was recorded in the year 2014-15 (-44.72%). On the other hand, during the year 2017-18 and 2018-19 growth of families engaged in muga culture was recorded positive. It had been seen that growth (%) of families engaged in mulberry culture was highest in the year 2014-15 (109.88%) while during 2015-16 and 2016-17 continuous negative growth was observed. From the year 2017-18 to 2018-19 the trend was found positive but during 2019-20 the trend was found again negative.

Table 1: Sericulture villages and families engaged in sericulture sector of Assam.

Year	Sericulture villages (private sector) (in Nos.)	% growth	Families engaged in Sericulture (in Nos.)					
			Eri	% growth	Muga	% growth	Mulberry	% growth
2013-14	11411	-	191566	-	57966	-	32541	-
2014-15	11281	-1.14	552063	188.18	32045	-44.72	68298	109.88
2015-16	11281	0	425382	-22.95	32632	1.83	38887	-43.06
2016-17	9935	-11.93	271318	-36.22	20541	-37.05	27546	-29.16
2017-18	8726	-12.17	249295	-8.12	27690	34.80	29059	5.49
2018-19	8828	1.17	240939	-3.35	30164	8.93	29905	2.91
2019-20	8642	-2.11	249615	3.60	30710	1.81	29205	-2.34

Source: Statistical Hand Book Assam (from 2014 to 2020)

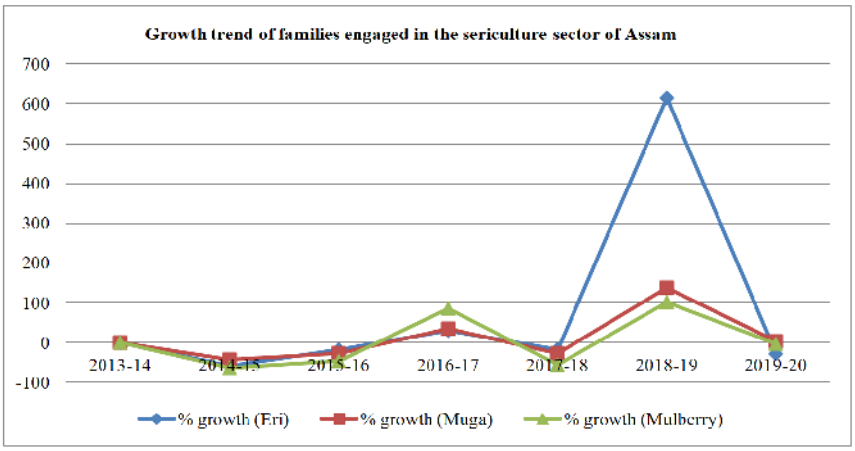

Fig. 1. Families engaged in the sericulture sector of Assam.

Table 2 showed that year wise growth (%) of eri silk production during the period 2013-14 to 2019-20 was positive. The highest growth percentage of eri silk production (28.35%) was noticed in the year 2017-18 but during the year 2015-16 the lowest growth (%) of eri silk production (2.88%) was recorded. After continuous improvement of growth of eri silk production during the year 2016-17 (15.14%) and 2017-18 (28.35%), growth of eri silk production came down during the year 2018-19 (2.56%). It was also found that year wise growth of muga silk production during the period 2014-15 (7.90%), 2015-16 (4.41%), 2017-18 (12.95%) and 2018-19 (22.93%) was positive, but in the year 2016-17, muga silk production was declined (-2.11%). Table 2 clearly indicates that mulberry silk production increased continuously from the year 2014-15 to 2018-19. The highest growth (%) of mulberry silk production was recorded in the year 2016-17 (33.33%) and the lowest (-0.58%) was recorded in the year 2019-20.

Table 2: Trend of raw silk production in Assam.

Year	Trend of raw silk production in Assam (MT)					
	Eri	% growth	Muga	% growth	Mulberry	% Growth
2013-14	2612.70	-	126.04	-	27.00	-
2014-15	3055.00	16.93	136.00	7.90	31.00	14.81
2015-16	3143.00	2.88	142.00	4.41	39.00	25.81
2016-17	3619.00	15.14	139.00	-2.11	52.00	33.33
2017-18	4645.00	28.35	157.00	12.95	59.00	13.46
2018-19	4764.00	2.56	193.00	22.93	69.00	16.95
2019-20	5049.30	5.99	197.90	2.54	68.60	-0.58

Source: Annual report of Central Silk Board (from 2013-14 to 2019-20)

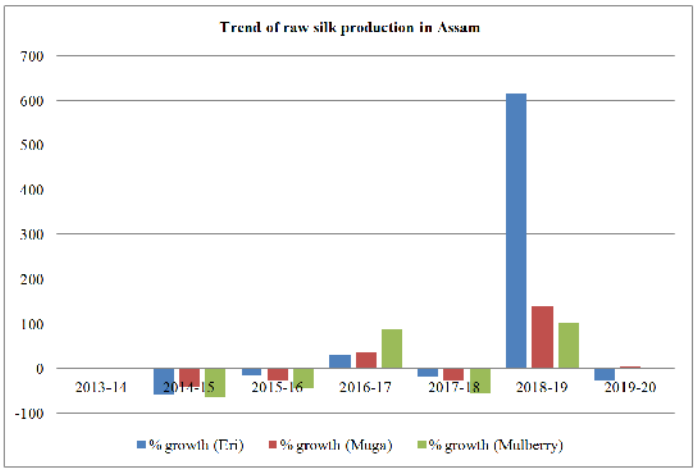

Fig. 2. Growth trend of raw silk production in Assam.

Table 3 reveals that year wise growth of area under silkworm food plant cultivation for eri silkworm in Assam from 2014-15 to 2019-20 was negative except 2016-17 and 2018-19. In the year 2018-19, growth (%) of area under silkworm food plant cultivation for eri silkworm was very high and positive (615.48%). Same trend of very high and positive growth of area under silkworm food plant cultivation was recorded in case of muga (137.82%) and mulberry (102.43%) during the 2018-19. In the year 2014-15, 2015-16 and 2017-18 reduction of area under silkworm food plant cultivation was observed for eri, muga and mulberry respectively.

Table 3: Area under silkworm food plant cultivation in Assam.

Year	Area under silkworm food plant cultivation in Assam (in ha)					
	Eri	% growth	Muga	% growth	Mulberry	% growth
2013-14	15796.00	-	10371	-	7623	-
2014-15	6600.68	-58.21	5994.98	-42.19	2821.32	-62.99
2015-16	5509.89	-16.53	4383.08	-26.89	1541.32	-45.37
2016-17	7176.13	30.24	5931.58	35.33	2875.35	86.55
2017-18	5936.00	-17.28	4368.78	-26.35	1279.97	-55.48
2018-19	42471.01	615.48	10389.88	137.82	2591.05	102.43
2019-20	30319.46	-28.61	10762.49	3.59	2526.34	-2.50

Source: Statistical Hand Book Assam (from 2014 to 2020)

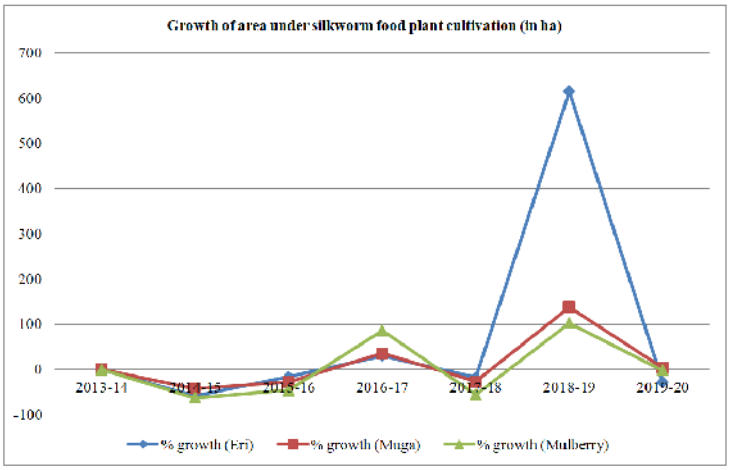

Fig. 3. Area under silkworm food plant cultivation in Assam.

Umesh *et al.*, (2009) demonstrated that the overall growth in production of cocoon and raw silk in India exhibited a decreasing trend with moderate instability however, the overall performance of non-mulberry silk especially eri and muga was encouraging as the growth rates were positive. They also inferred that the analysis of trade competitiveness measures showed that India doesn't possess competitiveness in the production of raw silk. Present study showed the similar results with Kherkatari and Daimari, (2017) who studied the pattern of the growth of raw silk production and employment generation in sericulture in Assam during 1997-98 and 2013-14 and revealed that the growth rates was not smooth and continuous rather these were fluctuating over the years while in terms of growth rate of various sub-components of raw silk production, it was recorded highest in eri (0.14) followed by mulberry (0.09) and muga (0.06) and in terms of growth rate of employment generation, muga activity occupied the highest (0.10) followed by mulberry (0.04) and eri (0.02). Ahmad Bhat and Choure, (2014) in their study of growth and instability in Indian raw silk production and marketing inferred that raw silk production has an increasing trend and raw silk exchanges have direct impact on average raw silk prices, therefore states which have good marketing infrastructure yields good prices to the produce. Trivedi and Sarkar, (2015) did a comparative study on income generation through agriculture crop and sericulture at farmer's level in Murshidabad stated that sericulture is capable of more income generation than other traditional agricultural crops and hence, it can be considered as an essential tool for the development for improving the standard of living of human population at village level. Roy *et al.*, (2012) suggested that area of mulberry cultivation, cocoon market and power looms were powerful factors in changing the level of employment, while the primary survey exposed factors like unitary household structure, income, years of education and numbers of female in the household as the significant factors in accelerating average employment per family.

CONCLUSION

Trend of silk production, growth of area under food plant cultivation and generation of employment through silkworm culture in Assam is not smooth during the study period. Sericulture has the potentiality to generate employment to mass people of Assam. Proper planning and execution is required only. There will be always demand and an assured market for silk yarn and silk fabric in the Indian subcontinent because no one can think any ritual without using the silk. Expansion of host plant area will help the sericulture farmers to rear more number of disease free layings which will lead to increase silk production, more income and employment generation. Establishment of regulated cocoon market and silk exchange centre will help the sericulture farmer to avoid by middlemen. Adoption of new technology by the seri-farmers of the state will increase the production and productivity. There is no shortage of fund to start sericulture. Central government, state government and several banks provide monetary help in every aspect of sericulture activity. It is the demand of the time to motivate the young generation and rural people about the benefit of this cottage industry.

Conflicts of Interest. None.

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