CHAPTER- 6

SUMMARY AND CONCLUSIONS

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Out of eri, muga and mulberry culture, ericulture plays a significant role in rural livelihood and economy of Assam. Kokrajhar District of BTAD, Assam has a prominent role in ericulture wherein a major number of farmers are involved. In Kokrajhar, the production and utilization of eri silk is in upward trend in recent years with an increasing number of area under plantation, DFLs consumption, reeling of cocoon and raw silk production (Directorate of Sericulture, BTC, 2015-16).

This sector, however, remains as a cottage industry and considered as part time venture for livelihood and income generation for eri rearers. Besides other issues, non-availability of sufficient quality leaves in all areas throughout the year has emerged as prime limiting factor for large scale commercialization of ericulture.

Therefore, the present study was initiated to find out the feasibility of tapioca as an alternative food plant for rearing of eri silkworm in Kokrajhar through the analysis of biochemical constituents of leaves and by evaluating the rearing performances, which are very important for the socio-economic development of the people associated with it. Castor was also taken as a standard for the study.

In respect of quality parameters of the leaves of castor and tapioca plants, it was observed that the leaf biochemical compositions vary significantly between the two types of plants as well as among four different seasons. The overall biochemical compositions of castor leaves were found superior than the tapioca leaves. Significantly higher amount of crude protein, lipid, crude fibre and sugar were found in the leaves of castor. The amount of total carbohydrate, phenol and free amino acids were also found higher in castor leaves but the differences were insignificant in many cases. However, moisture percent and tannin were higher in tapioca than castor. Although found to be a little inferior to castor in terms of biochemical constituents, tapioca still possessed the essential qualities of a suitable food plant for eri silkworms.

The rearing performances also revealed that in case of castor fed eri silkworms, the fecundity, larval weight, ERR, cocoon weight (male), cocoon weight (female), shell weight (male), shell weight (female) are highest in spring season and lowest in summer and/or winter season. In case of tapioca fed silkworms, both spring and summer seasons show highest recorded data for the above parameters. However, the lowest values were found mostly in winter season, along with the summer, spring and autumn seasons.

The higher nutritional values and lower anti-nutrient contents (like tannin) in castor could be attributed to the superior economic traits including cocoon yield and silk percentage and found most suitable for ericulture whereas in tapioca the economic traits are recorded least which could be due to poor nutrient contents in leaf.

The relationship between quality parameters of castor leaves exhibited positive correlation with all economic traits except that of larval period which decreased with increase in nutritional content of leaves. Same results are observed in case of tapioca leaves. Sarmah *et al*. (2011) opined that ERR of eri silkworm is influenced by biochemical compositions of leaves. The weight of larvae and cocoons are significantly influenced by nitrogen and crude protein content of the foliage. This is supported by the present report.

The anti-nutrients like, tannin, phenol etc. had negative impact on the economic traits of eri silkworm. The increased level of tannin could cause reduced intake of leaves and digestibility in silkworm as reported by earlier workers (Reed *et al*., 1982). High phenol content effects on feeding during larval stage as reported by Rao *et al.* (2009) and Anjani *et al.* (2010).

In the present study, the castor leaves are found superior than the tapioca leaves. However, in case of some nutrients, there is no significant differences between castor and tapioca leaves and also the cocoon yield and silk percentage, suggesting that tapioca is also a suitable food plant for eri silkworms.

The quality of cocoons and silk yarns from castor and tapioca fed silkworms shows that there is no significant differences. Although there exists some minor differences in physical properties of silk yarns of the two types, there is no effect in net productivity of eri silk and its market value.

The socio-economic study in terms of ericulture in Kokrajhar revealed a scope for improvement in rural productivity of eri silk. It is also found that most of the sericulture households are engaged in post-cocoon activities like reeling, spinning and weaving. Out of which, some families are also using improved reeling and spinning devices. But majority of looms are fly shuttle frame looms without accessories required for improved designs and patterns. A large quantity of eri cocoons are transacted by traders/middleman and sold outside the state. Only a little amount of the cocoon are utilized locally. So there is plenty of opportunity for value addition and employment generation in post-cocoon sector.

However, many new Sericulture R&D technologies have been adopted during last five years in Kokrajhar. “Platform rearing technique” has been introduced among some farmers. “C2 breed” is also introduced in some places. Wooden collapsible split type mountage is popularized by CSB REC Kokrajhar. Same can be used as brushing tray. Systematic plantation of kesseru, borkesseru and castor has been practiced in many villages. Farmers also avail the community production centre, spinning, weaving, knitting, dyeing centre etc. provided by Govt. and private farms. A cocoon bank has been set up to channelize and organize the marketing of eri cocoons. Collection of cocoon, drying of cocoon and also grading of cocoon are systematically done in the cocoon bank. Besides all these, various promotional events like trade fairs, exhibitions are regularly organized by Govt. and private organizations to boost the marketing of clothes and products of eri silk and silkworm.

The study also revealed some requirements of infrastructure and skill development. These includes, introduction of advanced techniques of spinning, knitting, weaving etc. and improved rearing technology like platform mountage etc. Separate rearing

house is also a basic requirement for every farmer to increase their productivity and proper management of eri products.

From the study it is also known that there is suitable scope for product diversification and by-product utilization in eri. Eri silk has diversified fabric products, dyed fabrics as well as blended fabrics. Besides, there is immense scope for food diversification. Different recipes from eri pupa has increasing demand in all the states of NE India. Castor seeds has also good market value. The litter of eri silkworms can be used as manure.

Therefore the study indicates that since tapioca does not have any adverse effect in quality parameters of eri silk fibres, it can suitably be introduced in large scale for ericulture in Kokrajhar District. This will surely boost the net productivity of eri silk yarns and the socio-economic conditions of the eri farmers. This may also have a positive effect on other sectors related to ericulture.

FINAL CONCLUSIONS

With an aim to study the impact on the growth and silk production of eri by feeding on different food plants in different seasons, the present status of eri culture in Kokrajhar District was investigated. The aims and objectives undertaken in this study were as follows-

- To ascertain the nutritional parameters of the castor and tapioca leaves.
- To ascertain quality of eri cocoon and silk yarn in respect of castor and tapioca as food plant.
- To evaluate of the role of eri culture in the socio-economic development of the Bodo people in Kokrajhar District.

Based on these objectives the following final conclusions were made in this study.

- The biochemical compositions of castor and tapioca leaves are similar and there is no significant variation among different seasons.
- The rearing performance on castor and tapioca showed tapioca as a suitable food plant for rearing of eri silkworm for commercial purpose.
- Yarns of eri silk obtained from feeding eri silkworms with tapioca leaves possess similar tensile property next to castor. It indicates that tapioca can potentiality to be utilized as food plant for eri silkworm rearing.
- Tapioca can easily be grown in Kokrajhar and the plantation can easily be maintained by a small family.
- The tubers of tapioca has a good market value for human consumption and the eri farmers get some additional income.
- Eri pupa has a good market value as a food item with high protein.

- Although the farmers are using traditional methods of eri culture in Kokrajhar, some of the farmers have adopted modern techniques of rearing to increase the net productivity.
- Govt. has helped many deserving farmers to build modern and scientific rearing house facilities. Govt. agencies have also helped the farmers in plantation of castor, kesseru, borkesseru and tapioca plants in a scientific way.
- Modernization has also been made functional in post cocoon processes, viz. preservation of cocoons, spinning, weaving, dyeing etc.
- It is expected that the present study will provide authentic information on some important aspects related to rearing and silk production of eri silkworms. The local farmers of Kokrajhar District will be highly benefitted from this report. They will get a proper route to boost their silk productivity as well as marketing avenues of their products and by-products.
- A major share of the rural economy of this State is dependent on eri culture. Thus this finding may be helpful to afford employment generation and sustainable economic development for the people of this State.