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INTEGRATED FARMING SYSTEM–A KEY TO SUSTAINABLE LIVELIHOOD IN TASAR SERICULTURE

Hasansab A. Nadaf[1]*, G. V. Vishaka[1], K. Sathyanarayana[1], M. Chandrashekharaiah[1], M. S. Rathore[1], N. Balaji Chowdary[1], Bommireddy Thirupam Reddy[2] and C. Selvaraj[3]

[1]Basic Tasar Silkworm Seed Organisation (BTSSO), Central Silk Board, Bilaspur, India.
[2]Basic Seed Multiplication and Training Centre (BSMTC), Kharswan, India.
[3]Basic Seed Multiplication and Training Centre (BSMTC), Madhupur, India.
*e-mail : hnadaf@gmail.com

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ABSTRACT : At least eight Sustainable Development Goals (SDGs) for 2030 are being met by sericulture programmes and activities where the rearing of lepidopteran insect *Antheraea mylitta* D. for production of tasar silk is an agro-forestry and cottage based emerging activity for conservation and sustainable utilisation of natural resources. In this paper, the compatibility of tasar sericulture in integrated farming system (IFS) with other enterprises is discussed in terms of elements of sustainability and integration with other agricultural activities through flow diagram. The advantages of IFS for enhancing the income of the tribal tasar farmers are also discussed along with the limitations. Further, in order to harness the full benefits of integrating different enterprises in tasar sericulture, the thrust areas to be addressed are also listed. However, the need to develop region specific IFS modules based on availability of resources and their implementation for accelerated sustainable poverty elimination was emphasized.

Key words : Farm enterprises, farm income, integrated farming system, sustainable livelihood, tasar, Sericulture, tribal, IFS.

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INTRODUCTION

The decrease in agricultural growth rate, productivity, food production, net cultivable area, groundwater table and farm income with the increase in malnutrition, environmental pollution and cost of production and large scale migration of farm labourers necessitates the adoption of integrated farming system (IFS) for reducing the risk due to biotic and abiotic stresses, meeting the increasing need of food, fibre and fuel and increasing the income, employment, standard of living and sustainability.

IFS is based on the concept that "there is no waste, and waste is only a misplaced resource which can become a valuable material for another product" (Edwards *et al,* 1986). The main objective of IFS includes recycling farm waste, reducing nutrient losses, adoption of efficient cropping systems and complementary combination of farm enterprises. Enterprise is the production of single crop or kind of stocks. The combination of enterprises, which depends on the relationship between them helps to achieve maximum profit with minimum investment. The relationship between enterprises may be independent (no direct bearing on each other), complementary (helps each other), competitive (compete each other) and supplementary (do not compete for resources, but increases income). The integrated farming system aims at complementary combination of enterprises in farm.

Tasar Sericulture and sustainable livelihood

At least eight Sustainable Development Goals (SDGs) for 2030: 1. No poverty; 2. Good health and well-being; 5. Gender equality; 8. Decent work and economic growth; 9. Industry, innovation and infrastructure; 12. Responsible consumption and production; 13. Climate action; and 15. Life on land are being met by sericulture programmes and activities (The National Silk Policy, 2020). The rearing of lepidopteran insect *Antheraea mylitta* D. for production of tasar silk is a agro-forestry, cottage and forestry based emerging activity for conservation and sustainable utilisation of natural resources (Dewangan,

populace depending on tasar sericulture for their livelihood. They are the experts in harvesting maximum cocoons per disease free layings reared as they are traditionally practicing it and attach customary values with it. Further, among farmers practicing agriculture/horticulture based crop production, there is lack of awareness on the importance of tasar sericulture. These agriculture/ horticulture farmers upon the integration of tasar sericulture based farming system would enhance their income from tasar cocoons and/or tasar seed production along with reduced cost of cultivation as pests of tasar silkworm may naturally control pests of agricultural/ horticultural crops.

Unlike other textiles, the silk industry's production method entails a combination of on and off-farm activities, analogous to agricultural and animal husbandry, as well as industrial realms. Agriculture is a farm-based industry; hence it is seasonal and time-bound. Animal husbandry activities necessitate specialised skill sets in areas such as insect rearing, handling, and disease prevention, among others, which are ongoing operations. As a result, seri-enterprise necessitates a greater level of strategic planning, implementation, and monitoring (The National Silk Policy, 2020).

Moreover, the continuous efforts of Central Silk Board, concerned state governments and NGOs like TDF, BAIF etc for the past few decades had created the appreciable infrastructures and plantations in the tasar seed producing states for the benefit of tasar farmers. However, in order to sustain and augment the income of these farmers especially during January to July (off season for tasar rearing and grainage), the integration of various agriculture and allied activities which boost farm productivity is required.

FUTURE THRUST

In order to harness the full benefits of integrating different enterprises in tasar sericulture, the thrust areas to address are as follows:

- Encouraging agriculture/horticulture farmers to spare portion of field to maintain economic block plantation of tasar host plants.
- Creation of database on present farming systems being followed throughout the country by tasar sericulture farmers under varying ecological situations.
- Documentation of Indigenous Technical Knowledge (ITK) of IFS in the tasar sericulture farming community and its scientific validation.
- Emphasis to integrate tasar sericulture with other enterprises depending on availability of land, labour and capital, economics of proposed farming system, managerial skills of tasar farmers, soil and climate of selected area and level of utilisation of resources.
- Ecologically stable, environmentally sound and region specific, customised tasar sericulture based integrated farming system modules which are socially acceptable in the block plantations of government farms and their demonstration units is required.
- Testing and refinement of the developed modules according to the farmers' need and requirement as it is a continuous process *i.e.* addition of profitable components and replacement of less profitable components.
- Studies on the sustainability of the developed or identified farming systems, nutrient dynamics of soil, accumulation of carbon and carbon sequestration and recycling of organic resources.
- Need to identify the location specific constraints in adoption of identified integrated farming systems by tasar farmers.
- Developing a good draft policy for planners' consideration in order to promote and raise awareness on a big scale among tasar and other farmers.

CONCLUSION

Tasar sericulture is people-centred, responsive and participatory, multi-level, sustainable, dynamic and conducted in partnership. Presently it is being practiced by the poor and tribal farmers for their livelihood. The integrated farming system aiming at complementary combination of different enterprises in tasar sericulture farming enhances the income of these farmers. The tasar sericulture has many key elements supportive of IFS with added advantages. However, there is need to develop region specific IFS modules based on availability of resources and the implementation of these modules by the agricultural/horticultural farmers and tasar farmers for accelerated sustainable poverty elimination and increasing their income.

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