



HORTICULTURE AND TASAR FLORA: STATUS, SCOPE AND POTENTIAL UTILIZATION

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ABSTRACT : Tasar culture practiced largely by tribal depended hitherto on a host of tasar host plants naturally available in the forest. Changing social fabric on one hand and the need for conservation of tasar flora on the other call for insight and devising focused strategies sustenance of tasar culture is required. In this backdrop, block plantation of Arjun/Asan are taken up at different spacing, of these plantation with 10 5 has given more profit. It is need of the hour that tasar food plants combined with land husbandry and horticultural plants viz. *Terminalia catappa*, *Anacardium occidentale*, *Carissa carandus*, *Zizyphus jujuba*, *Eugenia cuminii*, etc are effective means of development as tasar food plants for expansion of tasar flora. It will provide gainful employment opportunities in rural areas which will check migration of rural folk to urban areas.

Keywords : Horticulture, flora, host plant, silkworm, tasar.

Agriculture has largely been the main sector providing employment and income to large majority of those living in rural areas of India. The major livelihood of its people comes from agriculture sector that can not provide full employment. Hence diversification from agriculture sector to one of the important aspects which needs to be emphasized to achieve the objective of alleviation of rural poverty and check on migration of village folks to cities which are already overloaded with unemployed persons. One of the activities that generate employment at every stage is Horticulture, Apiculture, Lac culture and Sericulture with special reference to horticulture and Tasar culture. The tasar culture a has long heritage in India and the traditional areas have shown that given proper direction and infrastructural support horticulture and tasar culture simultaneously can provide better scope for rural development and economic transformation has been brought wherein an integrated approach has been adopted for the development of horticulture and tasar culture.

The aim of this article is three fold: firstly, it will provide a general overview of tasar culture;

secondly, it will discuss its potential application in horticulture and food symptoms, and thirdly it will high light how some of the horticultural plants are likely to transform growth of economy of poor people along with tasar culture.

TASAR FLORA

Tasar silk production is an excellent example of healthy biological interaction between primary producer (plant) and consumer (silkworm), thus forming an integral part of ideal eco-system. It has often been reported that wherever the industrial civilization has penetrated a zone inhabited by weaker section of the society, the traditional culture and self dependence of the tribal people witnessed a sharp decline. It is under this background that the government of India is giving special attention to the conservation of traditional tribal crafts and forest based industries like tasar. Tropical tasar silkworm *Antheraea mylitta* Drury feeds on a variety of food plants and its polyphagous in nature (Table 1).

However, depending upon acceptability of the foliage and rearing performance, the primary food plants of tasar silkworm are *Terminalia arjuna*, *T. tomentosa*, *Shorea robusta*, among these *T.*

tomentosa and *T. arjuna* are extensively utilized for raising silkworm crop. *Shorea robusta* does not support profitable rearing due to larval mortality, but provides base for collection of the large quantity of nature grown cocoons which are regularly collected from thickly populated Sal trees in different tasar growing states. In view of the

above, specific strategies have been taken up separately for existing tasar flora available in the forest and raised economic tasar food plant in different tasar producing states. Tropical tasar cocoons are a minor forest produce and tasar culture are recognized as a forestry practice of the tribal as per forest conservation act 1980.

Table 1: Important host plants of *Antheraea mylitta* Drury.

Sl.No.	Family	Scientific name	Local name
1.	Apocynaceae	<i>Carissa carandas</i> L.	Karaunda
2.	Anacardiaceae	<i>Semecarpus anacardium</i> L. <i>Anacardium occidentale</i>	Bhelwa Kaju
3.	Caesalpinaceae	<i>Cassia lanceolata</i> L. <i>Bauhinia variegata</i> L.	Kanchan Kachnar
4.	Celastraceae	<i>Celastrus paniculatus</i> Royle	Malkangni
5.	Combretiaceae	<i>Terminalia arjuna</i> Bedd. <i>T. chebula</i> <i>T. belerica</i> Roxb. <i>T. tomentosa</i> W&A <i>T. alata</i> Roth. <i>Anogeissus latifolia</i> Wall <i>T. crenulata</i> Kurz. <i>T. catappa</i> L.	Arjun, Sadar. Harra Bhaira, Behera Asan, Ani, Saja - Dhaura - Jungli badam
6.	<i>Dipterocarpaceae</i>	<i>S. talura</i> Roxb. <i>Shorea robusta</i> Gaertn.	- Sal or Sakhua
7.	Euphorbiaceae	<i>Ricinus communis</i> L.	Castor plant
8.	Lythraceae	<i>Lagerstroemia indica</i> L. <i>L. parviflora</i> Roxb.	Daiyeti, Telinga, China Banskli/Sidha
9.	Malvaceae	<i>Bombax heptaphyllum</i> <i>B. malabaricum</i> DC.	Semul Silk cotton tree
10.	Meliaceae	<i>Cipadessa fruticosa</i> Bl.	Billu
11.	Moraceae	<i>Ficus benjamina</i> L. <i>F. religiosa</i> L. <i>F. retusa</i> L.	Nandruck Aswat, Peepal Kamrup
12.	Lecythidaceae	<i>Careya arborea</i> Roxb. <i>C. sphaerica</i> L.	Kumbi -
13.	Myrtaceae	<i>Eugenia cuminii</i> Druce	Jamun
	Rhamnaceae	<i>Zizyphus jujuba</i> L. <i>Z. mauritiana</i> L.	Ber Ber
15.	Rosaceae	<i>Prunus domestica</i> Pleem.	-
16.	Rhizophoraceae	<i>Rhizophora candelaria</i> DC	-
17.	Rubiaceae	<i>Canthium diecocom</i> Gaertn.	Merrill
18.	Sapindaceae	<i>Dodonaea visosa</i> Jacq. (L)	Sanatta
19.	Sapotaceae	<i>Bassia latifolia</i> Roxb. <i>B. longifolia</i> L.	Mohua -
20.	Verbenaceae	<i>Tectona grandis</i> L.	Sagaun

TASAR SILKWOAM FAUNA

Tasar silkworm is basically wild in nature. However, through research interventions, it has achieved a semi-domesticated status. Distribution of tasar insect, *A. mylitta* reveals that the species was available throughout the Indian peninsula and with gradual depletion of forest cover due to increasing use of land and urbanization; habitat lost its continuity and resulted in geographic isolation. This geographic isolation allowed the populations to continue separately for generations to attain an equilibrium in its genotypic, phenotypic and behavioral characteristics identified with particular ecological niche and food plant association led to consider them as separate unit within the same species and so for 44 ecoraces have been determined and recorded (Suryanarayana and Srivastava, 22). Moreover, many of its ecoraces like Raily, Modal, Laria etc are wild in nature and the tribals only collect the cocoons from the forest. Semi-domesticated ecoraces like Daba and Sukinda are reared on Asan and Arjun by the tribals under their care and supervision. These two ecoraces are

also extensively utilized for seed and commercial rearing.

TASAR CULTURE AND HORTICULTURAL CROPS

Like other agricultural and horticultural crops tasar is labour oriented, self employment generation cottage industry and its economics is not comparable to the income from other agricultural/horticultural cash crops. This is mainly because of the fact that the tasar farmers are landless farmers and depend upon tasar plantation raised in the government sector or plantations available in the forest. Further, tasar culture is practiced as an alternate source of income and it is not a main source of income. Tasar culture is practiced as seasonal activity and in general farmers take up only one or two crops which hardly involves two or three months of labour. The farmers who take up one crop (rearing of 200 disease free layings) in a year can earn up to 20,000/- per annum from sale of cocoons (Srivastava *et al.*, 1).

In order to make it more remunerative and continuance of tasar culture as an eco-friendly

Table 2: Quantitative characters of the cocoons fed on different horticultural crops.

Characters	Food plants				
	<i>Anacardium occidentale</i>	<i>Carissa carandus</i>	<i>Terminalia catappa</i>	<i>Zizyphus jujuba</i>	<i>Eugenia cuminii</i>
Larval weight (g)	14.35 (12.57 to 17.79)	18.80 (15.20 to 0.52)	15.26 (12.57 to 17.79)	19.40 (17.23 to 25.20)	17.25 (15.23 to 20.5)
Cocoon weight (g)	6.14 (3.48-7.09)	8.80 (6.5 to 12.52)	6.23 (4.16 to 6.42)	9.47 (5.57 to 14.93)	7.38 (3.95 to 11.60)
Shell weight (g)	0.65 (0.47 to 0.92)	1.02 (0.82 to 1.62)	0.64 (0.39 to 0.830)	1.08 (0.80 to 2.62)	1.16 (0.64 to 1.90)
Cocoon length (mm)	35.96 (30.6 to 40.9)	38.2 (30.7 to 41.9)	38.25 (30.7 to 43.2)	55.00 (42.0 to 65.0)	37.00 (35.0 to 40.0)
Cocoon breadth (mm)	21.05 (18.4 to 23.3)	21.32 (15.8 to 24.3)	22.38 (18.7 to 26.5)	28.00 (22.0 to 33.0)	28.0 (26.2 to 30.2)
L/B Ratio	1.72 (1.66 to 1.76)	1.70 (1.65 to 1.72)	1.60 (1.63 to 1.69)	2.80 (2.1 to 3.2)	1.30 (1.29 to 2.4)
Peduncle length	3.81 (3.1 to 5.6)	3.40 (2.8 to 4.5)	3.50 (3.0 to 3.8)	3.97 (2.9 to 6.1)	3.20 (3.0 to 4.2)
Silk ratio (%)	10.93	11.60	11.38	11.78	15.82

cottage industry and strengthening of economy, it is important to raise block plantation of tasar food plants. Block plantation of Arjun/Asan are required to be taken up with 10' x 5' spacing combined with horticultural crops which are secondary food plants of tasar silkworm. These food plants along with quantitative traits of cocoons are presented in table 2. Some of the ecoraces viz. KE02 from Kerala and Jalpa of Jharkhand is based on *Anacardium occidentale* (Kaju) and *Zizyphus jujuba* (Ber), respectively.

STRATEGIES FOR EXPANSION

1. Tasar food plants may be grown in waste land under afforestation programme. It has been established that plantation of tasar food plants combined with crop husbandry and horticultural crops are effective means for economic development of farmers. Forest development is having concern for expansion of tasar flora, so steps are required to be taken up in over all coverage under afforestation programme in open forest land.

2. Afforestation programme may be taken up on degraded forests under JFMS (Joint Forest Management Programme) through co-operative societies in collaboration with horticulture, Sericulture and forest departments.

3. Mutual co-operation between horticulture department and State sericulture department, Central Silk Board and NGOs can yield long term benefits like participatory approach conservation of tasar and horticultural plants and social upliftment in the rural areas. The role dedicated and enthusiastic NGOs in the development of horticultural and tasar food plants need not be over emphasized. In this regard the joint forest management and Van Suraksha Samiti become integral part of the component for potential utilization of tasar flora, fauna and horticultural crops.

4. Gestation period of tasar food plants is at least 5 years and farmers has to weight during that

period for undertaking tasar silkworm rearing to make tasar culture more remunerative and to develop economic conditions of the tribal vegetable crop like Labia, French bean, ginger turmeric etc. may be taken up as intercropping.

CONCLUSION

Horticulture and sericulture in general and tasar culture in particular has a special relevance with respect to tribal development. The employment potential with minimum financial investment and no adverse effects in the environment and ecosystem has been recognized in these sectors. Tasar industry has rich resources of food plants which include horticultural plants as well and man power and challenge is to utilize these to bring about a balanced development in keeping with traditions and the way of life of the tribals. Since tasar culture provides gainful employment opportunities in rural area it has helped in checking migration of rural folk to urban areas.

As tasar silkworm rearing is involved only biological components, there are no side effects or hazards of pollution and environmental degradation. From the point of eco-development any afforestation developmental programme should be taken up on the basis of fullest sustainable advantage of localities, physical, biological and cultural resources. In this context the horticulture and tasar culture fit very well with eco-development as it gives edible fruits as food security and tasar gives cocoons without jeopardizing the growth and ecosystem.

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