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Comparative study of economics of mulberry silk production in North Western and Western Zones of Tamil Nadu

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Abstract
An attempt was made to compare the economics of sericulture was carried out in two major sericulture zones in Tamil Nadu such as, Western and North Western zone during 2012-13. Farmers who were regular in the practice of silkworm rearing were only randomly selected and data were collected by personal interview method. In north western zone the total cost of mulberry leaf production accounted for ₹ 92,610.42 /ha/year, whereas in Western zone it was ₹ 1,30,692.20 /ha/year. The return value of cocoon and by-products realized was ₹ 6,62,840.64 and 4,81,123.89 /ha/year in Western and North Western zones respectively. The total cost of cocoon production involved was ₹ 210923.47 /ha/year in North western zone where as, in Western zone, it accounted for ₹ 285687.28/ha/year. The net return from cocoon production for north western zone and western zone was ₹ 270200.41 and ₹ 377153.36 ha/year. The cost to benefit ratio was 1:2.28 and 1:2.32 for north Western and Western zones respectively. Hence, results of present study clearly revealed that sericulture farmers from Western zone of Tamil Nadu earning more profit than North Western zone.

Keywords: Sericulture, Western zone, North western zone, Mulberry, Economics, Production, Cost to benefit ratio

Introduction
Silk is the most elegant textile in the world with unparallel grandeur, natural sheen and inherent affinity for dyes, high absorbance, light weight, soft touch and high durability and known as the "Queen of textiles" the over. India has the unique distinction of being the only country in the world of produces all types of silk. India is the second largest producer and consumer of raw silk and silk fabrics in the world. Sericulture plays an important role in transformation of rural economy as it assures regular employment and periodic returns round the year (Lakshmannan *et al.*, 1998) [8].

With the advent of production technologies for new bivoltine sericulture technologies, the sericulture productivity is in increasing trend. However, there are some significant changes are to be included in the nature, quantity and cost of input used in sericulture in order to maximize the yield and profit. In relation to this, it is very much imperative to know the sericulture economics to take up sericulture and increase their income of sericulture at the farmer's level in various parts of India (Ravindran *et al.*, 1993, Lakshmanan *et al.*, 1996) [12, 9].

Tamil Nadu is one of the progressive states of India with great potential development for mulberry crops. The major districts growing mulberry sericulture are Krishnagiri, Dharmapuri, Salem, Erode, Coimbatore, Tiruppur, Vellore, Namakkal, Dindigul, Tirunelveli and Theni. Especially, mulberry is grown mostly in western zone (Coimbatore, Tiruppur, Erode, Dindigul and Theni) and constitutes 36.41 per cent to the total mulberry area in Tamil Nadu. North western zone (Dharmapuri, Krishnagiri, Salem, Namakkal and Permabalur) constitutes 42.66 per cent to the total mulberry area in Tamil Nadu. In these contexts an attempt was made to compute and compare the economics of silk production while adopting various developed sericulture technologies in the above two zones of Tamil Nadu.

Material and methods
The present study was conducted to compare the economics involved while adopting various sericulture technologies in North Western and Western zones of Tamil Nadu during 2012-13. In total, 100 sericulture farmers of each from both zones were randomly selected, thus, the total sample size of 200 farmers were adopted for the study. In consultation with the officials of the Sericulture Department, a specially prepared questionnaire was used for data collection to have personnel interview with farmers.

A pre-tested schedule was subjected to collect information on cost incurred for different inputs and return including value of by-products. Simple cost accounting method was adopted to compute the cost and return of mulberry leaf production and silkworm rearing in a hectare of area per year. The total cost consists of fixed and variable cost components. In order to arrive the annual fixed cost during the garden establishment and cost of mulberry leaf production, it was divided and accounted for 15 years using net present value method while calculating cost of Returns from cocoons and their by-products were used to compute the gross returns (Balasaraswathi *et al*., 2010) [1].

Using the simple random sampling method, farmers who are holding the separate rearing house were selected for the study. These details have been collected from O/o. Department of Sericulture at District level, Salem. The farmers rearing silkworms in the dwelling house located adjacent to the sample farmers possessing the rearing house were selected for the data collection in order to minimize the variations between the two categories of the farmers in terms of rearing practices and agro-climatic conditions (Kumaresan *et al*., 2011) [6]. The collected data from both were subjected to percentage analyses, to compare the economics of sericulture technologies and cost to benefit ratio (CBR) in both zones.

Results and Discussions

The silkworm rearing is end up with the cocoon production. The summation of two costs together form the cost of production of cocoons. The costs of cocoon production per kg and benefit ratio were arrived subsequently. The capital investment required on fixed items is taken for computation of the fixed cost which is non- recurring in nature.

The present study revealed that the total cost of production involved in mulberry garden in North Western zone and Western zone was ₹ 2,10,923.47 and ₹ 2,85,687.28 respectively. Main reason could be considerably the high cost of inputs. This is inconsonance with the observations of Jayram *et al.* (1996) [4] who pointed out that the high cost on inputs is due to lack of awareness about inputs and reluctance of farmers in accepting the improved practices generated by the research institutes.Whereas, the total expenditure incurred on human labour in above zones was ₹ 11,571.54 and ₹ 15,415.68 per hectare respectively. This would obviously contribute to the higher cost of production in western zone. It is also revealed that the average leaf yield of 32,079.21 kg/ha/yr was recorded with the cost of ₹ 1,30,692.18 in Western zone, whereas in North Western Zone they were 27504.57 kg/ha/yr and ₹ 92610.42 respectively. This higher cost in Northern zone might also be due to comparatively the prevalence of higher transport cost for the mobilization of inputs at various levels of production.

The mean number of DFLs brushed in a year was 2966.10 in Western Zone however, 2939.85 DFLs were brushed in North Western Zone in a year. This directly correlated to the leaf yield and cost of silkworm rearing. In both regions annually five crops/ ha could able to achieve by the farmers. The average cocoon yield of 1959.82 kg registered in Western Zone whereas, the cocoon yield was 1739.56 kg in North Western Zone. Cocoon produced from Western zone (₹ 325.05/ha/year) fetched more price than the North Western Zone (₹ 267.38/ha/year). This obviously reflected in the income generated out of cocoon (₹ 637040.64) in the Western Zone. However, in North Western Zone due to lesser yield of cocoon and comparatively low cost of cocoon resulted in the income generated out of sale of cocoon was ₹ 465123.89. Shukla, 2012 [13] reported that the total cost of cocoon production per ha/year was Rs. 1,05,920.64 (Shukla, 2012) [13]. According to Neelakantsastry (1982) [11], Marihonnaiah (1986) [10] and Kulkarni (1993) [5], human labour and DFLs had positive and significant association with cocoon production.

Thus, gross income from cocoon and by products was ₹ 637040.64 in Western zone whereas in Western Zone it was ₹ 25800.00. This would give higher Cost to benefit ratio of 1:2.32 in western zone of Tamil Nadu against 1:2.28 for North western zone. Shukla (2018) [14] derived a net return of Rs. 52039.32 and benefit cost ratio of 1.49 in sericulture at Udaipur district of Rajasthan. Similarly, Devangan (2018) [3] found a net returns of Rs. 5,300/annum/ acre area and these show sericulture farming provides more returns to the farmers compare to other crops. The higher yield, and profit in the Western zone might be due to presence of more numbers of small and marginal farmers than large scale producers. According to (Kumaresan *et al*., 2008) [7], the small-scale farmers brushed more DFLs/acre/year with considerably more yield than large-scale farmers. This indicated that the small farmers were able to manage the silkworm rearing operations better than the large scale farmers to obtain better yield and quality. According to BeulaPriyadarshini and Vijaya Kumari (2017) [2] for rapid spread of sericulture ensuring better income to the farmers, different approaches with group/community farming, farmers field schools, demonstrations and better access to the markets etc needs to be considered. As women are also involved in several sericulture practices techno economical empowerment of women is also of vital importance.

Table 1: Summary of major economic parameters in North Western and Western Zones of Tamil Nadu (N=100)

S. No.	Particulars	North Western Zone	Western Zone
1.	Total Cost of Production (Rs)	2,10,923.47	2,85,687.28
2.	Average area under mulberry (ha)	1.00	1.00
3.	Average leaf yield (kg/ha/yr)	27504.57	32079.21
4.	Cost of leaf (Rs/ha/yr)	92610.42	130692.18
5.	Cost of leaf (Rs/per/ kg)	3.37	4.07
6.	Average numbers of DFLs brushed (ha/yr)	2939.85	2966.10
7.	Average cocoon yield (kg/ha/yr)	1739.56	1959.82
8.	Average numbers of crops (ha/ yr)	5	5
9.	Average cocoon cost (Rs/ha/yr)	267.38	325.05
10.	**Gross income (ha/yr)**		
	From cocoons (Rs)	465123.89	637040.64
	From by-products (Rs)	16000.00	25800.00
	Total Income (Rs)	481123.89	662840.64
11.	Cost to Benefit ratio (C:B ratio)	1:2.28	1:2.32

Conclusion

In case of the cost of mulberry leaf production in north western zone and western zone per hectare was ₹ 92,610.42 and ₹ 1,30,692.20 in North Western and Western Zone respectively. The gross income benefitted out to be ₹ 4,81,123.89 and ₹ 6,62,840.64 per hectare. The total cost of cocoon production per hectare for north western zone and western zone was ₹ 210923.47 and ₹ 285687.28 respectively. The output/input ratio for North Western zone was 1:2.28 and Western zone was 1:2.32 per hectare respectively. Sericulture is an agro- based enterprise which highly suited for low capital investment. The present study indicates that sericulture has a good potential to generate more income for the farmers. In order to reduce the cost of production, the farmers should be motivated and demonstrated with the adoption of new bivoltine sericulture techniques. More capacity building activities are needed towards the optimum use of inputs, such as fertilizers, pesticides and motivated to use various integrated approaches.

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