

Frugal Tactics in Sericulture Farming: An Evidence from Namakkal District of Tamil Nadu

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Abstract

In India's agriculture landscape, Sericulture is the conscious mass-scale rearing of silk producing organisms to obtain silk that make contribution to both the rural economy and the nation's textile industry. Namakkal district of Tamil Nadu is famous for its sericulture activities which act as a major source of livelihood for many people in the region. The present study aims to shed light on the resource use and cost efficiency pattern of sericulture cultivation in Namakkal district of Tamil Nadu. This analysis will examine factors such as mulberry cultivation, and silkworm rearing while considering both direct and indirect costs that involved in cultivation. For data collection, 60 sericulture farmers are selected randomly and interviewed through a structured questionnaire. It has been found that large farmers get high profit as compared to small and medium farmers. Therefore, sericulture cultivation is highly beneficial to the large farmers.

Keywords: Cost efficiency, Mulberry, Production, Sericulture, Silkworm, etc.

1. Introduction

Agriculture is not confined within production and cultivation of traditional crops, but also practise various other non-farm activities to upgrade their living-standard through provide education to their children, fulfil the basic amenities of life corresponding to the changing world. Sericulture is a farming activity which involves a long chain of production process consist of agriculture and non-agriculture activities. It is an agro-based industry. The word 'sericulture' is derived from the Greek word sericos which means 'silk' and the English word 'culture' originated from 'cultivation'. Sericulture', thus refers to cultivation of silk by rearing silkworms. Therefore, sericulture is an art of rearing silkworm to produce silk and other by-products. The word silk sounds luxury and class. Till today no other fabric can compete with silk with respect to lustre and elegance. Silk is a natural protein fibre, some forms of which can be woven to textiles. Silk is produced by several insects but generally, only the silk of moth caterpillars.

The tiger of Mysore "Tippu Sultan" is the father of the Karnataka silk industry. In 1785 he sent people to Bengal to learn sericulture and to establish the same in his Mysore kingdom. He wanted "Mysore to be the foremost among silk producing nations". The dream of this great ruler eventually came true (*Ball, Philip, 2009*).

There are five major types of silk of commercial importance, obtained from different species of silkworms. These are mulberry, oak tasar & tropical tasar, muga and eri. Except mulberry other silks are non-varieties of silk, known as vanya silks. In India about 97% of the raw mulberry silk is produced in Indian states of Karnataka, Andhra Pradesh, Tamil Nadu and west Bengal. Mysore and North Bangalore, the upcoming site of a US\$20 million “Silk City”, contribute to a majority of silk production (*Deccan Herald*, 2009). In India sericulture industry employees around 9.76 million people in rural and semi-urban areas. The government has allocated 2161.68 crores for three years of 2017-2020 to its central sector scheme ‘silk samagra’ for the development of sericulture in the country.

Tamil Nadu ranked fourth place in the silk production of India. In 1956, sericulture was practiced in limited pockets of Coimbatore and Dharmapuri district in Tamil Nadu, accounted 500 hectares only. During the year 2012-2013, 1184.62 MT of raw silk, have been produced in the state, of which 609.12 MT are close breed silk and 575.50 MT are bivoltine silk. Tamil Nadu continues to occupy the fore-front position in the country in bivoltine silk production and stands first in cocoon productivity with an average of 69.69 Kg per 100 dfls, whereas the national average is 58.20 Kg. Further Tamil Nadu has first position in the production of chawki worms with 27 per cent of laying are distributed as chawki worms to the farmers, which is the highest at national level. In Tamil Nadu, Namakkal district plays a vital role in sericulture, because many people are dependent upon sericulture cultivation for their basic needs. The unique geographical and climatic condition of the district make it an ideal location for sericulture activities by providing a suitable ecosystem for the silkworms to thrive.

2. Objective of the study

✚ To analyse the cost efficiency of sericulture cultivation in Namakkal district.

3. Literature Review

Choudhari, and Jadhav (2020) conducted a study based on the economics of mulberry leaves production in parbhani district. They explain that silk is fibrous protein of animal organ produced by the silkworm for spinning cocoon. The primary data was collected from 60 growers from the study area with the help of multistage sampling technique. The result showed that the estimated gross returns from per hectare mulberry garden was Rs. 263182.5 with cost of cultivation Rs. 130680.20. The output - input ratio obtained was 2.09 whereas per kg cost of cocoon production obtained was 215.82. *Perke and Talekar* (2021) explains the cost and returns of cocoon production in sericulture. They collected primary data from 100 respondents. The study concluded that, the estimated gross return from per hectare mulberry garden was Rs. 263182.5 with cost of cultivation Rs. 130680.20. In regard to cocoon production the gross return from 4.16 batches was Rs. 279442.42 and from one batch it was Rs. 67173.66. Total cost from 4.16 batches was 133507.2, whereas from one batch it was Rs. 32093.08. Net profit obtained was Rs. 145935.21 and Rs. 35080.58 from 4.16 and one batch respectively.

4. Methodology

The study is solely based on primary data. Namakkal district is selected as the sample district of Tamil Nadu on the basis of highest production. 60 respondents belonging to sericulture farming community in Namakkal are selected as sample using random sampling method and interviewed with a structured questionnaire. The farmers were divided into three categories based on their farm size using normal distribution. They are small farmers, medium farmers, and large farmers with a farm size of below

1 acre, 1.1 to 1.75 acres and above 1.75 acres respectively. The selected respondents were collected in person and enquired the information required for the study. The field investigation was carried out during January to April 2023.

5. Results and Discussion

The study focuses on the cost and return analysis of sericulture production which comprises of both mulberry and silkworm production. And, the overall sericulture production of Namakkal district of Tamil Nadu is embodied in it.

Table 1: Cost and Returns of Mulberry Cultivation

(Per Acre)

Sl. No.	Particulars	Farm Size			
		Small	Medium	Large	Overall
A. Variable Cost					
1	Land Preparation	4598.28	4028.40	4000.00	4347.57
2	Seeds	10337.39	9310.46	9135.00	9868.93
3	Human Labour	8398.92	18431.28	13126.26	22553.05
4	Fertilizer	8398.92	6894.38	5487.50	7559.37
5	Growth Booster	1266.44	1089.50	1012.50	1179.50
6	FYM	12560.33	7206.96	6162.50	10101.28
I	Total Variable Cost	45560.27	46961.07	38923.77	55609.70
B. Fixed Cost					
1	Machinery	47593.62	41747.50	19950.00	42153.97
2	Land Tax	63.24	31.70	21.00	48.146
3	Depreciation @ 10%	4759.36	4174.75	1995.00	4215.40
4	Interest on Fixed Capital @ 12%	6289.95	5514.47	2635.92	5570.10
II	Total Fixed Cost	58706.17	51468.42	24601.90	51987.61
I + II	Total Cost	104266.44	98429.49	63525.70	107597.31

Source: Primary Data

Table 1 represents the cost and return analysis of mulberry cultivation. The land preparation for the cultivation includes ploughing and removing stones from the land. The overall average value of land preparation is Rs.4347.57. The mulberry seeds count per acre is 5300 approximately and the overall average cost of seeds is Rs.9868.93. Human labour plays a vital role in mulberry cultivation which includes the activities like cutting the leaves for silkworm, maintenance of the crop etc. The overall average cost for employing human labour is Rs. 22553.05. Mulberry leaves cutting is the continuous process, so it needs fertilizer to grow faster. The overall value for fertilizer, growth booster and farmyard manure (FYM) are Rs.7559.37, Rs.1179.50 and Rs.1011.28 respectively. The fertilizer used in the field are *zincated factamfos*, *sulfate of potash* and *sulphur bentonite and liquid poshanseriboost* which helps the plants to grow faster. High use of pesticide will affect the growth of leaves and it will lead to the death

of worms. Here, the overall average value for growth booster is Rs.1179.50. The overall average value of the total variable costs, total fixed cost, and total cost Rs. 55609.7, Rs. 51987.61, and Rs. 107597.31 respectively. By the implementation of technologies, farmers use advance mechanism to make the work fast. The machineries used for the cultivation are power weeder, water pumps etc. The overall average cost for machinery and interest on fixed capital is Rs. 42153.97 and Rs. 5570.10 respectively. While considering separately the small, medium, and large farmers, the cost of cultivation is low among large farmers as compared to small and medium.

Table 2: Cost and Return Analysis of Silkworm

(Per Annum)

Sl. No.	Particulars	Farm Size			
		Small	Medium	Large	Overall
A. Variable Cost					
1	Worm Cost	49834.97	17092.02	8479.17	34238.03
2	Transport	3323.53	1888.89	1270.83	2619.444
3	Human Labour	30493.55	38783.33	25500.00	56251.84
4	News Paper and Paraffin Cost	4093.28	1458.69	750.00	2857.13
5	Chemical Protection	5794.12	3438.89	2325.00	4625
I	Total Variable Cost	93539.44	62661.82	38325.00	100591.40
B. Fixed Cost					
1	Rearing House	406738.20	283654.9	222500.00	34528.11
2	Machinery	11898.41	10436.87	4987.50	10538.49
3	Depreciation @ 10%	41863.66	29409.17	22748.75	4506.66
II	Total Fixed Cost	460500.30	323500.90	250236.30	344745.83
III	Mulberry Cost (10 Cycle)	6951.096	6561.966	4235.046	5916.036
I+II+III	Total Cost	467451.396	330062.866	254471.346	350661.866

Source: Primary Data

The cost and returns analysis of silkworm production are indicated in table 2. The life span of silkworm is approximately 6 to 8 weeks long. The life cycle of silk moth starts when silk moth lays egg. They need a rearing house to grow a silkworm, farmers must maintain the temperature, humidity, and proper air ventilation. The overall average value of total variable cost and total fixed cost is Rs. 100591.40 and 344745.83 respectively. While the overall average value of worm cost and transport cost is Rs. 34238.03 and Rs. 2619.44 respectively. The farmers could take 9 to 10 batches per annum. The life span of larvae to silk cocoon takes 21 days to harvest. The overall average cost of human labour for the purpose of harvesting, cleaning, feeding is Rs. 56251.84. And the overall average of newspaper and paraffin cost is Rs. 2857.13. There are several diseases that affect the silkworm. So, the farmers are taking some chemical protection to control them which includes *vijetha*, *ankush*, and limestone, *dithane M-45*. The overall average cost for rearing house is Rs.34528.11. It consists of the cost of machineries like exhaust fans, sprayer etc. The overall average price of machinery is Rs. 10538.49. The life span of mulberry plant is 15 years. The overall average mulberry cost for the total life span is Rs. 5916.036. While the total cost is Rs. 350661.866 which was computed by adding the total variable cost, total fixed cost and the cost of mulberry for the life span. The overall average cost for rearing house is Rs.34528.11. It consists of the

cost of machineries like exhaust fans, sprayer etc. The overall average price of machinery is Rs. 10538.49. Therefore, the total cost is Rs. 350661.866 which was computed by adding the total variable cost, total fixed cost, and the cost of mulberry for the life span.

Table 3: Cost and Return Analysis of Sericulture

(Per Annum)

Particulars	Small	Medium	Large	Overall
Price Per Kg	598.42	598.42	598.42	598.42
Total Revenue	482254.71	595092.78	635821.25	536585.26
Quantity Of Cocoon	805.88	994.44	1062.50	896.67
Net Returns	14803.314	265029.914	381349.904	185923.394
Cost Benefit Ratio	1.03	1.80	2.50	1.53

Source: Primary Data

The cost and return analysis of sericulture cultivation which comprises of both mulberry as well as silkworm are shown in table 3. The overall average price per kg. of silk is Rs. 598.42. There is a day-to-day price fluctuation in silk. The overall averages total revenue, total quantity produced and net returns from sericulture farming were Rs. 536585.26, Rs. 896.67 and Rs. 185923.394 respectively. The net return of small farmers is low because they consume limited number of raw materials without any discounted amount, whereas the bulk purchase receives a huge amount as discount as compared to small and medium farmers. While considering cost-benefit ratio, the sericulture farming is highly beneficial to the large farmers. The overall cost benefit ratio of sericulture in the study area is 1.53.

6. Conclusion

The cost efficiency analysis of sericulture farming in Namakkal district highlights the economic significance and potential to the local farmers. The sericulture is the highly profitable farming among large scale farmers. To ensure sustained profitability among small and medium farmers, it is imperative to adopt innovative practices, stay tuned to market dynamics, leverage government support and sustainable measures which include credit facilities, subsidies, awareness and training programmes, easily accessible marketing facilities and so on.

7. Bibliography

1. **Bharathi, D.** (2016). Sericulture industry in India-A source of employment generation. *International Journal of Advanced Engineering Research and Science*, 3(10), 236881.
2. **Bukhari, R., & Kour, H.** (2019). Background, current scenario and future challenges of the indian silk industry. *Int. J. Curr. Microbiol. App. Sci*, 8(5), 2448-2463.
3. **Jalba, H. C.** (2016). Scenario of sericulture industry in Maharashtra State, India. *Journal of Entomology and Zoology Studies*, 4(1), 601-605.
4. **Pandey, C., Das, K. K., & Roy, T. N.** (2010). Economics of muga culture-a case study in Coochbehar district of West Bengal. *Journal of Crop and Weed*, 6(1), 17-21.
5. **Dasari, J. R., Jayaram, H., Somaprakash, D. S., & Sivaprasadd, V.** (2018). Economic analysis of commercial chawki silkworm production in Tumakuru district of Karnataka. *International Journal of Tropical Agriculture*, 36(2), 275-282.

6. **Das, A., Mondal, B., & Chatterjee, H.** (2021). Population Dynamics of Major Insect Pests and Their Predatory Fauna in Mulberry.
7. **Elumalai, UAUB** (2020). An Analysis of Mulberry and Cocoon Production in Traditional Areas of Tamil Nadu, 11, 467-469.
8. **Goswami, C., & Bhattacharya, M.** (2013). Contribution of sericulture to women's income in Assam—a case study in Goalpara district of Assam, India. *International Journal of Scientific and Research Publications*, 3(3), 1-6.
9. **Hosamni, V. H.** (2020). A Review of Constraints and Economics of Sericulture, *International Journals of Chemical Studies*, 8(1), 746-750.
10. **Kumar, G. N., Kumar, G. V., Vijaya, N. L., Reddy, B. S., & Nayaka, G. V.** (2022). An economic analysis of mulberry and cocoon production in north eastern Karnataka. *International Journal of Bio-resource and Stress Management*, 13(11), 1148-1156.
11. **Dewangan, S. K.** (2018). Economics of sericulture—a study of Raigarh District—Chhattisgarh—India. *International Journal for Research in Applied Science and Engineering Technology*, 6(1), 573-579.
12. **Kanta, Shashi.** (2021). Impact of COVID-19 on the sericulture production and profitability of sericulture in Punjab, *international advance research journal in science*, 8(7)
13. **Parmar, Monika.** (2014). Analysis of Sericulture in Himachal Pradesh, *The International Journals of Humanities & Social Studies*, 2(12), 132-140.
14. **Raju, M., Sannappa, B., & Manjunath, K. G.** (2019). Socio Economic Status of Sericulture Farmers under rainfed condition in Chamarajanagar district, Karnataka State. *International Journal Pure Applied Bio science*, 7(2), 574-581.
15. **Rathore, R. A., Sonawane, M. A., & Chandan, R.** (2019). Sericulture: An Economic Boon for Madhya Pradesh (special reference to Burhanpur District).
16. **Ravikumar, Anitha.** (2011). Status of Silk Industry in India, 38, 45-49
17. **Sharma, K., & Kapoor, B.** (2020). Sericulture as a profit-based industry—a review. *Indian Journal of Pure and Applied Biosciences*, 8(4), 550-562.
18. **Ruchira, S., & Sharma, O. P.** (2010). Socio-economic status of mulberry sericulturists of Udaipur, Rajasthan. *Advance Research Journal of Social Science*, 1(2), 107-109.
19. **Sharma, V., Rattan, M., & Chauhan, S. K.** (2019). Economic analysis of silkworm rearing and cocoon production in Bilaspur district of Himachal Pradesh. *Economic Affairs*, 64(3), 589-597.
20. **Savithri, G., Sujathamma, P., & Neeraja, P.** (2013). Indian sericulture industry for sustainable rural economy. *International journal of Economics, commerce and research*, 3(2), 73-78.
21. **Sreedevi, N. P.** (2014). An Micro Enterprise as A Source of Livelihood of the Rural Poor- A Case Study of the Drought Prone Area of Anantapur District of Andhra Pradesh, 3 (2), 16-20.
22. **Talekar, C. T.** (2021). A Study on Cost and Returns of Cocoon Production in Sericulture, *The Pharama Innovation Journal*. 10 (1), 209-211.
23. **Talekar, C. T.** (2020). Cost and Returns of Cocoon Production in Parbhani District, *International Journal OF Current Microbiology and Applied Science*, (7), 780-786
24. **Elumalai, D., Uma, K., & Balaji, P.** (2020). Towards Studies on Current Scenario in Export and Import of Silk Goods in India. *Asian Journal of Agricultural Extension, Economics & Sociology*, 38(7), 9-15.