Original Research Article

Costs and Returns of Cocoon Production in Parbhani District of Maharashtra State

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A B S T R A C T

Keywords

Sericulture, Mulberry, Cocoon production, Output-input ratio, Farmers

The present study was conducted to assess economics of Cocoon production in Parbhani district. Sericulture is an agro-industry, the end product of which is silk. Silk is fibrous protein of animal organ produced by the silkworm for spinning a cocoon. Sericulture is a labour intensive agro-industry in all its phases, viz. food-plant cultivation, silkworm rearing, silk reeling and other off-farm activities such as twisting, dyeing, weaving and printing. The present study was attempted to study the socio-economic characteristics of sericulture farmers and to workout cost and returns in Cocoon production. Multistage sampling design was adopted in the selection of district, tehsils, villages and sericulture farmers. Parbhani district was purposively selected on the basis of availability of area under sericulture production. Two tehsils of Parbhani district was selected namely, Purna and Manwat. From each selected tehsil, two villages were selected. The primary data was collected for sixty growers from the study area. For analyzing the data in the present study the analytical techniques such as tabular analysis and application of cost concepts namely variable cost and fixed cost were adopted. The result showed that the gross return from per hectare mulberry garden estimated 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 calculated was 133507.2 on the other hand 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. The output - input ratio obtained was 2.09 whereas per kg cost of cocoon production obtained was 215.82.

Introduction

Word sericulture is derived from the Greek 'Sericos' meaning silk and English 'Culture' meaning rearing. Sericulture is an agro-industry, the end product of which is silk. Silk is fibrous protein of animal organ produced by the silkworm for spinning a cocoon. Silk has natural sheen and inherent affinity for dyes, light weight, soft touch and high in durability. Because of these unique characteristics silk is termed as "Queen of Textiles". India is the only country in the world to produce all the five known commercial silks, viz.1) Mulberry (*Bombyx mori*) 2) Tasar (*Antheraea paphia*) a)Tropical Tasar b) Oak Tasar 3) Eri (*Philomsomia ricini*) 4) Muga(*Antheraea assama*). India is second largest producer of raw silk in the world next to china. The raw silk production of India was 35261 MT in 2018-19. The raw

silk production of Maharashtra was 2538.557 MT in 2018-19 and in Parbhani it was 44.687 MT in 2018-19. India was the largest importer of raw silk and largest consumer of the silk in the word. Sericulture is basically an agro based rural industry which includes both farm and industry.

This facilitates opportunities for millions and meant for its high employment potential, low capital requirement with higher return. By considering all these things of industry with its on-form and off-farm activities it becomes the point of attraction for all the policy makers and the planners to recognize the industry, as the source of socioeconomic development of economy of India. Cultivation of mulberry plants is called as Moriculture. Mulberry sericulture involves the cultivation of mulberry to produce leaf, rearing of silkworm to convert leaf to cocoon, reeling of the cocoon to obtain silk yarn and weaving to convert yarn to fabrics. Mulberry sericulture is mainly practiced in five states namely; Karnataka, Andhra Pradesh, Assam and Bodoland, West Bengal, Jharkhand and Tamil Nadu are major silk producing states in the country. Sericulture includes many small works such as cutting of leaves from plants, providing food materials to silkworm larva, handling of larva etc. and carefully handling is needed for such works because larva is very sensitive and small in size. These works can be properly done by women. Thus ultimately this facilitates great opportunities for the women also.

Materials and Methods

Multistage sampling design was adopted in selection of district, Tehsils, villages and sericulture growers. Parbhani district was purposively selected on the basis of availability of area under Sericulture production. On the basis of area under sericulture production, two tehsils of

Parbhani district was selected namely, Purna and Manwat for the present study. Total sample size was 60 growers was selected. Cross sectional data were collected with the help of well-structured, pretested schedule by personal interview method. The data were collected during the year 2019-2020. Analytical techniques were used to achieve the socio-economic characteristics of sericulture farmers with the help of tabular analysis techniques. Worked out cost and returns in cocoon production was achieved by application of cost concepts namely variable cost and fixed cost.

Results and Discussions

Socio economic characteristics of sericulture growers like age of sericulture farmers, level of education, size of family, land holding, area of mulberry etc. were estimated and presented in the Table 1. It could be seen from the table that average age of mulberry growers estimated was 40.28 which states that the experienced person were engaged in the mulberry cultivation. Age is characteristics which directly or indirectly influencing the factors like, technical knowledge, skill, knowledge of adoption etc.

Education is another important factor which helps in changing the attitude of sericulture farmers through adoption of sericulture enterprise. Results revealed that the level of education of the sericulture farmers obtained was 2.48 i.e. the educational level of selected farmers was above the higher secondary school. In order to measure the educational level scoring method was adopted.

Size of family is an important socioeconomic status that indicates the number of family members engaged in the sericulture business. It is evident from the table that the average size of family of the sericulture growers was 6.71 which showed that there were 6 to 7

numbers of family members. Land holding is another important socioeconomic status that states about the level of production of selected sericulture farmers and affects the farmer's economy directly. It was inferred that the average land holding of selected farmers was 3.10 ha that indicated the selected sericulture growers were categorized as medium farmers.

Out of the total land holding the area under mulberry cultivation was 0.65 ha. The average number of livestock animal that were available on farm was 2.85. On an average 4.16 batches of cocoon production were taken by the selected farmers in a year. Investment on commonly used asset was Rs.31705.15. The level of occupation was 1.03 scores. It was observed that most of the sericulture farmers were engaged in agriculture along with sericulture.

Cropping pattern of sericulture producer

Cropping pattern is another important factor which indicates farmer's economic condition. Simply, cropping pattern the production of area under various crops at a point of time. The cropping pattern of selected sericulture farmers was calculated and presented in Table 2. The result revealed that the major area under cultivation was under *kharif* crops followed by *rabi*.

The gross cropped area was 5.96 hectares. The total area under *kharif* crops was 2.44 ha. The area under *rabi* crops was 1.71 ha, and 0.64 ha area was under *summer* crops. It was also estimated that the area under soybean was 0.92 ha that was 25.25 per cent grown as predominant crop in *kharif* season. Out of the *rabi* crop proportionate area under gram was highest as 0.66 ha (12.36 per cent). In *summer* season the area under groundnut observed was 1.64 per cent.

In regard to annual crop, mulberry and

sugarcane crop was cultivated on 0.65 ha and 0.52 ha respectively in the study area. The net sown area was 3.06 ha with the cropping intensity 194.77 per cent on the selected sericulture farm.

Use of annual physical inputs and outputs in cocoon production

On an average 4.62 batches were taken by the selected sericulture growers were observed in the study area. Per batch annual physical inputs and outputs include in sericulture production were estimated and presented in Table 3. It could be seen from the table that selected sericulture growers include use of hired human labour, family labour, disease free layings, mulberry leaves, disinfecting material, and electricity for rearing annual cocoon batch.

Use of hired human labour worked out to 6.44 Man days and use of family labour 22.33 man days per batch. The total disease free layings used was 161.66 per batch and amount of mulberry leaves used was 37.2 qt. The total disinfecting material used was 53.16 kg which include use of bleaching powder 7.9 kg, lime powder 32.33 kg and vijetha 12.93 kg. The total amount of electricity used for rearing one batch calculated was 108.84 el. unit. In regard to returns generated from per batch of cocoon the total cocoon production was 148.7 kg and incase of silkworm manure it was 12.93 kg.

Cost and returns of cocoon production

Per batch as well as for 4.16 batches annual cost and returns of cocoon production was estimated and presented in the Table 4. The total cost incurred for 4.16 batches was Rs. 133507.2 and for 1 batch it was Rs. 32093.08. From Table 4 it was observed that per batch the highest cost incurred by mulberry leaves was Rs. 7441.66 followed by family human labour it was Rs. 6700. Thus

the highest proportionate share of expenditure contributed by the mulberry leaves followed by family human labour with 23.18 per cent and 20.87 per cent respectively. The proportionate expenditure on hired human labour, disease free layings, and disinfecting material was Rs. 1932.5, Rs.1616.66, Rs. 1548.33 for one batch. The cost incurred by electricity and miscellaneous was worked out to Rs. 598.62, Rs. 4041.66 for 1 batch. It inferred that the proportionate expenditure on variable cost was more than 80 per cent i.e. 84.07 per cent. The share of expenditure on fixed cost was 15.92 per cent which indicate that long term investment was very small as compare to current investment.

In regards to returns generated from cocoon production it could be seen from the Table 4 that per batch per annum the total income generation from main produce i.e. cocoon was found to be Rs. 66915 and from by produce i.e. silkworm manure it was Rs. 258.66 and for 4.16 batches income generation from cocoon was Rs. 278366.4 and from silkworm manure Rs. 1076.026. The net returns estimated from one batch were Rs. 35080.58 and for 4.16 batches it was Rs. 145935.21 with benefit-cost ratio 2.09. Per kg cost of cocoon production calculated was Rs. 215.82.

In conclusions, the sericulture growers were middles aged with high school level. The total land holding possessed about 3.10 ha. The average size of family of the sericulture growers was 6.71. Net profit obtained from Cocoon production was Rs. 145935.21. Per kg cost of cocoon production was Rs. 215.82.

Table.1 Socio economic characteristics of sericulture producer

Sr. No.	Particular	Unit	Mean/Score
1.	Age of farmer	year	40.28
2.	Education level in five Quantum score	score	2.48
3.	Occupational level	score	1.03
4.	Family size	no	6.71
5.	Land holding	ha	3.10
6.	Mulberry area	ha	0.65
7.	Livestock position	no	2.85
8.	No of batches taken in a year	no	4.16
9.	Investment on commonly Used assets	Rs	31705.15

Table.2 Cropping pattern of sericulture grower (ha/farm)

Particular	Area(ha)	Per cent
Kharif		
Soybean	0.92	25.25
Cotton	0.72	13.91
Turmeric	0.07	1.85
Udid	0.06	0.61
Tur	0.36	1.13
Mug	0.31	3.40
Sub total	**2.44**	
Rabi		
Gram	0.66	12.36
Wheat	0.45	7.52
Rabi Jowar	0.60	7.42
Sub total	**1.71**	
Summer		
Groundnut	0.64	1.64
Sub total	**0.64**	
Annual		
Mulberry	0.65	91.81
Sugarcane	0.52	2.16
Sub total	**1.17**	
Gross cropped area	**5.96**	**100**
Net sown area	3.06	----
Cropping intensity (%)	----	194.77

Table.3 Use of annual physical inputs and outputs in cocoon production

Particular	Physical unit	Unit/4.16 batches	Unit/batch
Input			
1. Hired human labour	man day	26.79	6.44
2. Family labour	man day	92.89	22.33
3. Disease free laying	No	672.51	161.66
4. mulberry leaves	Qt	154.75	37.2
5. Disinfecting material	Kg		
(a) Bleaching powder	Kg	32.86	7.9
(b) Lime powder	Kg	134.49	32.33
(c) Vijetha	Kg	53.78	12.93
9. Electricity	el. Unit	452.77	108.84
OUTPUT			
1. Main produce A(cocoons)	Kg	618.59	148.7
2. By produce (silkworm manure)	Kg	53.78	12.93

Table.4 Costs and returns in cocoon production

Particular	Amount Rs/4.16 batches	Amount Rs/batch	Per cent
Costs			
1. Hired human labour	8039.2	1932.5	6.02
2. Family labour	27872	6700	20.87
3. Disease free laying	6725.306	1616.66	5.04
4. Mulberry leaves	30957.31	7441.66	23.18
5. Disinfecting material	6441.05	1548.33	4.82
6. Electricity	2490.25	598.62	1.86
7. Miscellaneous	16813.31	4041.66	12.59
8. Interest on working capital @13%	12914.01	3104.33	9.67
9. Variable cost ($\sum$item 1 to8)	112252.44	26983.76	84.07
10. Depreciation an assets @10%	9661.267	2322.42	7.23
11. Interest on fixed capital @12%	11593.5	2786.9	8.68
12. Fixed cost ($\sum$item 10 to 11)	21254.77	5109.32	15.92
13. Total cost ($\sum$ item 9 and 12)	133507.2	32093.08	100
RETURNS			
14. Main produce (cocoon)	278366.4	66915	100
15. By produce (silkworm manure)	1076.026	258.66	0.39
16. Gross return	279442.42	67173.66	100
17. Net profit (GR-TC)	145935.21	35080.58	
18. Output input ratio (GR/TC)	2.09	2.09	
19. Per kg cost of cocoons	215.82	215.82	

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