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Costs and returns of cocoon production in sericulture

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Abstract

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 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, three 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 technique i.e. 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.

Keywords: Sericulture, agro-industry, mulberry, cocoon production, output-input ratio, farmers

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 (*Philomsonia 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 world. 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-farm 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.

Material and methods

Sampling Design

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 were 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 technique was used to worked out cost and returns in cocoon production was achieved by application of cost concepts namely variable cost and fixed cost.

Result and discussion

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.

Table 1: Use of annual physical inputs and outputs in cocoon production

S. No	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

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.

Table 2: Costs and returns in cocoon production

S. No	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 (Σ item 1 to 8)	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 (Σ item 10 to 11)	21254.77	5109.32	15.92
13.	Total cost (Σ 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	

Conclusion

Study shows that net profit obtained from Cocoon production was Rs. 145935.21 and per kg cost of cocoon production was Rs. 215.82.

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