

Economics of rain-fed sericulture - A study in Udaipur district of Rajasthan, India

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Abstract

Sericulture is a labour intensive agro-based rural industry, which provides a periodical income throughout the year. In perspective of this, it is very much imperative to know the sericulture economics in order to motivate new farmers to take up sericulture and increase their income. Therefore, a study was conducted with the help of personal interview of 70 rain-fed sericulture farmers in Udaipur district of Rajasthan, India. The study concluded that in garden establishment highest share of cost was associated with human labour (INR 14,400.00) followed by that for FYM (INR 2418.75). Similarly human labour (51.93%) accounted for highest element of cost in leaf production activities too owing to high labour wages and shortage of manpower. Labour (25.33%) was second major cost component next to mulberry leaf (38.64%) in silk cocoon production. The average yield of silk cocoon obtained was 1289.04 kg/ha per year. The net return obtained was INR 52039.32 and benefit cost ratio was 1.49.

Keywords: Sericulture; Economics; Mulberry; Cocoon.

Introduction

Sericulture plays a vital role in rural development, as it integrates well with the farming systems and has the potential to generate attractive income throughout the year. It needs low capital and provides year round employment (Hanumappa and Erappa, 1985). India stands second in raw silk production after China. Mulberry sericulture is practiced in India in 1,91,893 ha with annual production of 16525 MT. India exported silk goods worth minimum US\$ 737.76 in year 2006-07 (DGCIS, 2007). With the advent of new bivoltine sericulture technologies, the sericulture productivity is changing fast with an upward trend. At the same time, there is change in nature, quantity and cost of input required. In view of this, it is very much imperative to know the sericulture economics and it is highly essential to motivate the new farmers to take up sericulture and increase their income. Some studies were earlier attempted to find out the economic prospects of sericulture at the farmer's level in various part of India

(Economic survey of sericulture, 1989, Ravindran *et al.*, 1993, Lakshmanan *et al.*, 1996). Therefore, the present study aimed at following objectives:

- To find out the cost of establishment of mulberry garden in Udaipur district.
- To find out the cost associated with mulberry leaf production in Udaipur district.
- To work out cost and returns from a unit area under mulberry cultivation and silkworm rearing.

Research Methodology

The present research study was conducted in Udaipur district of Rajasthan during 2007-08. Two tehsils namely; Mavli and Jhadol of Udaipur district were selected purposively because of having maximum number of sericulture adopters. The list of villages along with the name of adopters including year of adoption of sericulture in selected tehsils was obtained from the voluntary institute Rajasthan Vidyapeeth working specially on sericulture in these two tehsils.

Table 1. Cost (INR per ha) of establishment of mulberry garden in Udaipur district (N=70)

Sl. No.	Variables	Unit	Physical quantity	Cost	% share
1.	Human labour	Man days	180	14400.00	53.64
2.	Animal power	Animal days	4.27	1115.75	4.15
3.	Machine power	Hours	6.75	1738.12	6.47
4.	Farm yard manure	Tones	18.0	2418.75	9.01
5.	Chemical fertilizers	Kg.	227.7	1650.82	6.14
6.	Irrigation	INR	--	2418.75	9.01
7.	Cuttings and saplings	INR	--	877.5	3.26
8.	Land tax	INR	--	236.25	0.88
9.	Interest on working capital @ 8% p.a.	INR	--	1988.47	7.40
	Total	--	--	26844.41	100.00

From the list of sericulture adopters of the selected village 70 adopters (35 from each tehsil) engaged in sericulture since last 2-3 years, were selected randomly for the purpose of personal interview. A pre-tested schedule was administered to collect information on cost incurred for different inputs and return including value of by-products. Simple cost accounting method was employed to work out cost and return profile of mulberry leaf production and silkworm rearing per hectare per year. The total cost consists of fixed and variable cost components. The total cost of garden establishment was divided and accounted for 15 years to arrive at the share of fixed costs per annum using net present value method while calculating cost of mulberry leaf production. Gross returns were calculated using returns from cocoons and byproducts.

Results and Discussion

The cost of establishment of mulberry garden in Udaipur district is presented in Table 1. The cost items considered for garden establishment were human labour, animal power, machine power, farm yard

manure (FYM), planting material, irrigation and interest on total investment. The highest share of the cost associated with garden establishment was incurred for human labour (INR 14,400.00) followed by that for FYM and irrigation (INR 2418.75).

The data presented in Table 2 revealed that cost matrix on production of mulberry leaf (per ha/year). The total cost consists of fixed and variable cost components. The total cost of garden establishment was divided and accounted for 15 years to arrive at the share of fixed cost per annum. The total variable cost is of different inputs applied viz., human labour, animal labour, FYM, chemical fertilizers, irrigation and interest on working capital. It is interesting to record that about 66.97 per cent (INR 30600.00) of total cost was incurred for human labour in leaf production activities. The higher labour cost incurred was due to the higher wages of labour and shortage of manpower. The cost incurred in chemical fertilizers was 7.72 per cent (INR 3758.06) of total cost whereas in FYM it was 6.65 per cent (INR 3240.00) of the total cost. The cost of labour, chemical fertilizers and FYM put together accounted for about 81.34 per cent of the total production cost. Jayram *et al.* (1996) 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.

The cost of silk cocoon production per ha/ year in Udaipur district is shown in Table 3. Labour was the major cost component next to mulberry leaf production,

Table 2. Cost (INR per ha) of mulberry leaf production in Udaipur district (N=70)

Sl. No.	Variables	Physical quantity	Cost	% share in total cost
1.	Operational cost			
	1.1 Human labour (Man days)	382.5	30600.00	66.97
	1.2 Animal labour (animal days)	4.52	1174.5	2.41
	1.3 Farm yard manure (Tons)	18.00	3240.00	6.65
	1.4 Chemical fertilizers (Kg.)	518.35	3758.06	7.72
	1.5 Irrigation (INR)	--	3292.94	6.76
	1.6 Land tax (INR)	--	236.25	0.48
	1.7 Interest on working capital @ 8% p.a.	--	3384.14	6.95
	Operational cost	--	45685.89	93.89
2.	Fixed cost (share of establishment of mulberry garden per ha)	--	2969.57	6.10
3.	Total (1+ 2)	--	48655.46	100.00

which amounts to INR 26,835.34. The cost of silkworm seed was INR 7,023.46. Depreciation cost on rearing house and rearing equipment, which was INR 16,030.26. The total cost of cocoon production per ha/year worked out to INR 1,05,920.64. Neelakantsastry (1982), Marihonnaiah (1986) and Kulkarni (1993) identified that human labour had positive and significant association with cocoon production.

Table 3. Cost and return (INR/ha/year) structure from cocoon production (N=70)

Sl. No.	Variables	Cost	Share of total cost (%)
I	Fixed cost		
	1. Depreciation on rearing house and equipment	16030.26	15.13
	2. Interest on fixed capital @ 8 p.a.	1388.97	1.31
	Total fixed cost (I)	17419.23	16.44
II	Operational cost		
	1. Human labour	26835.34	25.33
	2. Disease free larvae including chawkie change	7023.46	6.63
	3. Materials	8607.46	8.12
	4. Marketing	1575.33	1.49
	5. Interest on working capital @ 8% p.a.	3523.32	3.32
	6. Mulberry leaf	40936.5	38.64
	Total Operational Cost (II)	88501.41	83.55
III	Return		
	1. Gross return	157959.96	--
	2. Total cost (I+II)	105920.64	--
	3. Net return	52039.32	--

Table 4 presents the details of earning of the sample farmers of two tehsils of Udaipur district from cocoon production. The respondents brushed silkworm seed (2475 dfls/ha/year). The production was lower because of the drought prevailing from 2002, water source such as open well and tube wells are become dry. Hence, the brushing capacity has felt down. Due to that the farmers are either forced to cut short the brushing quantity or to stop rearing during summer months. The average yield obtained by farmers was 1289.04 Kg./ha/year. The returns from sale of cocoon were INR 142117.47. The income generated from by-products was INR 15842.49. The net return per ha/year was INR 52039.32. The

benefit cost ratio was worked out to be 1.49. Table 4 summarizes the major economic events.

Table 4. Summary of major economic events (N=70)

Sl. No.	Particulars	Units	Value
1.	Average area under mulberry	Hectare	0.57
2.	Leaf yield (Ha/year)	Kg.	34047.45
3.	Cost of leaf (Ha/year)	INR	48655.46
4.	Cost of leaf/kg.	INR	1.11
5.	Average number of dfls brushed (peryear)	No.	2475
6.	Cocoon yield (Ha/year)	Kg.	1289.04
7.	Average no. of crop (/year)	No.	4
8.	Cocoon cost (Ha/year)	INR	105920.64
9.	Gross income (Ha/year)	--	--
	--From cocoon (A)	INR	142117.47
	--From the by-products (B)	INR	15842.49
	Total (A+B)	INR	157959.96
10.	Average cocoon price (Rate/Kg.)	INR	110.25
11.	Benefit Cost ratio	--	1.49

Conclusion

The present study draws the following implications for the perspective development of sericulture in long run in the study regions. The study indicates that sericulture has a good potential to generate attractive income for the farmers. It is more labour intensive and has low capital requirement and serve a good option for small farmers to gain meaningful employment and income throughout the year. In order to reduce the cost of production, the farmers should be motivated and demonstrated with the adoption of new bivoltine sericulture techniques. The sericulturists should be educated about the optimum use of inputs such as fertilizers, pesticides and motivated to use

INM/IPM/IDM approaches besides water conservation techniques. To encourage bivoltine sericulture, scope for minimum support price (MSP) for commercial bivoltine cocoon should be looked into.

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