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An economic analysis of lac: A case study of Radha self-help group of Kanker district

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Abstract

Lac is a resinous protective secretion from of the lac insect. This secretion has great commercial value. So, lac insects are cultivated and lac is collected from the host plants. Lac is the gift of nature to mankind and is the only known commercial resin of animal origin. The lac insects yield resin, lac dye and lac wax. Application of these products has been updating with time. Lac still finds extensive use in Ayurveda and Siddha systems of medicine. Lac has the unique properties of being eco-friendly, biodegradable and self-sustainable. Moreover, it is a natural material and thus currently it has assumed special importance. Lac is the resinous secretion of a number of species of lac insects, of which the most commonly cultivated is *Kerri lacca*, *lassiferalacca* etc. cultivation begins when a farmer gets a stick that contains eggs ready to hatch and ties it to the tree to be infested. Thousands of lac insects colonize the branches of the host trees and secrete the resinous pigment. The harvested stick lac is crushed and sieved to remove impurities. The sieved material is then repeatedly washed to remove insect parts and other material. The resulting product is known as seedlac. From the field survey it was observed that 54.54 per cent of the members belonged to the age of 35-40 years, and 36.36 per cent respondents were illiterate in Radha Self-Help Group. The total production of lac 377kg/acre for first year and 707kg/acre for second year and average production was 542kg/acre. The total net return of lac production was obtained by Radha SHG was Rs. 66810.97/acre for first year, Rs. 147318.96/acre for second year and Rs.103744.97/acre was average gross return. And the Input/output ratio was 1:2.36 for first year, 1:3.30 for second year and 1:2.84 average, similarly the benefit-cost ratio of SHGs was 1:1.36 for first year, 1:2.30 for second year and 1:1.84 was average. Disposable pattern of lac is done by Radha self-help group is, processing unit, 45.11 percent, wholesalers' 26.03 percent, lac.

Keywords: cultivated, commercial, material, pigment, field survey, total net return, Input/output ratio, average gross return, benefit-cost ratio, disposable pattern

1. Introduction

The birth place of Self-Help Groups is Bangladesh named as "Grameen Bank of Bangladesh" that was instituted in the year 1975 by Mohammed Yunus. This was formed primarily for the benefits of rural poor to have access to avail long among themselves. The bank keeps the savings of the poor's and started lend the same to those who are need at a reasonable rate of interest which started to perform similar to a micro enterprise. Through which several thousands of poor and the marginalized population in Bangladesh had begun to build their lives, families and to the society through Self-Help Groups. After having witnessed success of Self-Help Groups concept, it spread across the world and have been implemented more than 52 developed nations (Kennedy and Kalpana, 2014).

Lac still finds extensive use in Ayurveda and Siddha systems of medicine. Lac has the unique properties of being eco-friendly, biodegradable and self-sustainable. Moreover, it is a natural material and thus currently it has assumed special importance. Since lac insects are cultured on host trees which are growing primarily in wasteland areas, promotion of lac and its culture can help in eco-system development with reasonably high economic returns. It also acts as a source of livelihood for tribal and poor sub-forest areas as well as rainfed farmers. Lac is the only known commercial resin of animal origin. It is the hardened resin secreted by tiny lac insects belonging to a bug family. The lac insects yield resin, lac dye and lac wax. With increasing universal environment awareness, the importance of lac has assumed special relevance in the present age, being eco-friendly, biodegradable and self-sustaining natural material.

Lac due to unique combination of properties, lac finds a wide variety of application in manufacturing of lac bangles, glazed paper, printing and waterproofing inks, dental plates,

optical frame; also used for finishing different commercial products such as playing cards, oil cloth and also used for preserving archaeological and zoological specimen; in the electrical industry used as coating of insulator, coating spark plugs, cement of sockets of electrical lamps, anti-tracking insulating; in pharmaceutical industry used in coating tablets, micro-encapsulation of vitamins and coating of medicines

2. Materials and Methods

Chhattisgarh state consist 28 districts, out of which one district from Chhattisgarh namely Kanker district to be selected purposively for the present study.

2.1 Primary Data

Primary data were collected from the Radha SHG through a personal interview with the help of pre-tested well-prepared interview schedules covering various aspects to answer the objectives of this study. The primary data recorded regarding form assets, fixed and variable cost of lac production, operation wise labor utilization, total quantity sold, price of lac, agency to whom sold, place of sell, and expenditure incurred during the processing and marketing.

2.2 Analysis of Data

The information collected from the Radha SHG's were edited for adequacies and accuracies and cross-examination before they were subjected to tabular analysis. The primary data were classified and tabulated in the light of the stated objectives of the study and analyzed as per the suitable statistics and economic tools as follows.

2.2.1 Cost of cultivation

Cost of cultivation = Total Fixed Cost + Total Variable Cost

(a) Fixed cost

Fixed costs are remaining constant and do not vary with the level of production. To calculate the fixed cost of production, various cost components are taken into consideration.

(b) Variable cost

It includes the cost of brood lac, cost of insecticide, cost of fertilizers, cost of water cost of labor, and miscellaneous cost.

2.2.2 Profitability Concept

(a) Gross Income

It is defined as the total value of the main product
Gross Income = Physical Production*Price/qt.

(b) Net Income

It is defined as the gross income minus total cost

Net Income = Gross Income – Total cost

(c) Input-Output Ratio

Input-Output Ratio = Gross income/Total Cost

(d) Benefit-Cost Ratio

Benefit – Cost Ratio = Net Income/Total cost

(e) Variable Cost Ratio

VC Ratio = Variable Cost- Net sale

3. Result and Discussion

3.1 To examine the cost and returns of lac

Economics analysis of lac cultivation on *semialata* plants in one acre of land area and its further detailed information's are presented in different tables.

Item wise expenditure of lac production was calculated and is presented in Table 1. For first year, Table 2 for second year and Table 3 for average. It reveals that total variable cost of lac production income of Radha self-help group was Rs. 36783.03/acre in first year, Rs. 62,375.98/acre in second year and Rs. 50079.50/acre was the average variable cost.

The total fixed cost of lac production of the Radha self-help group was Rs.11986/acre in first year and interest on fixed capital was Rs.1198.6/acre in second year and Rs. 6586.30/acre was the average fixed cost.

The total cost is defined as the sum of Total Variable cost and Total Fixed cost, which was Rs.48769.03/acre in first year, Rs. 63906.04/acre in second year and overall Rs. 56337.53/acre was average total cost.

The total production of lac 377kg/acre for first year and 707kg/acre for second year and average production was 542kg/acre. The gross income is the amount that a business earns from the sale of goods and services. The gross income was Rs.115,580.00/acre for first year, Rs. 211225.00/acre for second year and overall Rs.160082.50/acre was average gross income. The total net income is the amount remaining after subtracting all costs and expenses from the revenue. Net income Rs. 66810.97/acre in first year, Rs. 147318.96/acre in second year and Rs. 103744.97/acre was average net return.

The Input/output ratio was 1:2.36/acre of first year, 1:3.30/acre of second year and 1:2.84 was average, similarly the benefit-cost ratio of SHGs was 1:1.36/acre for first year, 1:2.30/acre for second year and 1:1.84/acre was average.

The Variable-cost (VC) ratio was 0.31 for first year, 0.42 for second year and 0.48 was average. Variable-cost percent was 31%, 42% for first and second year and 48% was average variable-cost ratio of both years.

Table 1: The cost and returns of 1st Year lac production on Semialata in one acre of land

S. No.	Work/Activities	Expenditure (Rs.)	Percentage (%)
A. Variable Costs			
1.	Fertilizers and Manure	4600.00	12.50
2.	Nylon netandpesticides	2184.5	5.93
3.	Brood lac	12000.00	32.62
4.	Labour cost	13000.00	35.34
5.	Irrigation Charges	2940.00	7.99
6.	Miscellaneous expenditure	2058.53	5.59
	Total Variable Cost	36783.03	100
B. Fixed Costs			
1.	Plantation raising and Field preparation	2770.00	23.11
2	Farm Implements	9216.00	76.88
	Total Fixed Cost	11986.00	100
	Total Cost A+ B	48,769.03	(74.42+24.57=100)

Table 2: Cost, Return and Value of lac for first year

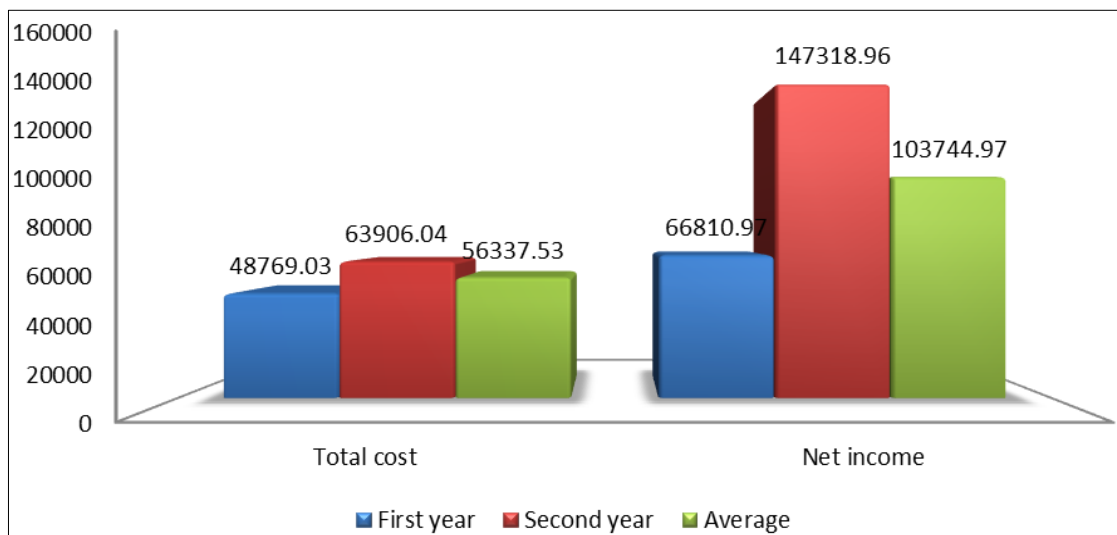
S. No.	Produce	Quantity(kg)	Amount (Rs.)
1	Stick lac 317kg @ 340/kg Including funki 60kg @ 130/kg	377kg	115,580.00
	Total sale Value		115,580.00
S. No.	Particulars	Amount(Rs/Acre)	
1	Gross Income	115,580.00	
2	Net Income	66,810.97	
3	Input-Output Ratio	1:2.36	
4	B:C Ratio	1:1.36	
5	Variable Cost (VC) Ratio	0.31	
6	Variable Cost Percentage	31	

Table 3: The cost and returns of 2nd Year lac production on Semialatain one acre of land

S. No.	Work/Activities	Expenditure (Rs.)	Percentage (%)
A. Variable Costs			
1.	Fertilizers and Manure	6900.00	11.06
2.	Nylon rolls and pesticides	2565.00	4.11
3.	Brood lac	24000.00	38.47
4.	Labor cost	23400.00	37.51
5	Electricity charge	2976.00	4.77
6	Miscellaneous expenditure	2534.98	4.06
	Total variable Cost	62375.98	100
B. Fixed Costs			
4.	Interest on fixed capital	1198.6	100
	Total Fixed cost	1198.6	100
	Total Cost A+ B	63,906.04	(97.60+1.87=100)

Table 4: Cost, Return and Value of lac for Second year

S. No.	Produce	Quantity(kg)	Amount (Rs.)
1	Stick lac 630 kg @ 320/kg including funki 77 kg @ 125	707kg	2,11,225.00
	Total		2,11,225.00
S. No.	Particulars	Amount(Rs/Acre)	
1	Gross Income	2,11,225.00	
2	Net Income	1,47,318.96	
3	Input/ Output	1:3.30	
4	B:C Ratio	1:2.30	
5	Variable cost (VC) ratio	0.42	



4. Conclusion

- The findings of the study showed that just majority of the respondents were middle aged to young with respect to their age. Younger farmers are more enthusiastic to learn more and adopt new ideas and practices. So, there is an opportunity to increase the adoption of recommended lac production technology among young groups.
- Lac production is a better option to increase family

income and reduce poverty of marginal farmers, especially in arid and semi-arid regions.

- Lac cultivation, it needs less inputs, less care than other crops and it gives higher returns.

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