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Cost and returns of henna in Pali district of Rajasthan

Ganga, G. Lal and P.L. Saran*
Department of Agricultural Economics, S.K.N. College of Agriculture (RAU), Jobner-303 329

Abstract

The present investigation was carried out in Sojat tehsil of Pali district in Rajasthan to study the cost of cultivation .A sample of 50 henna cultivators were selected for detailed study. The study relates to the agriculture year 2003-2004. Study of cost of cultivation revealed that the average total coast of cultivation of henna was estimated at Rs. 29978.00 ha^{-1} with Rs. 21922.00 ha-1 as establishment cost and Rs. 8055.00 ha^{-1} as maintenance cost. In establishment cost henna seedlings and transplanting were the single largest cost items of operational cost in all the size groups of farms. Under maintenance cost, cost of rental value of owned land was the prime component of the fixed cost. The per hectare return over maintenance cost from henna cultivation on an average was estimated at Rs. 6155.00 for the life span of one year. The average net return over total cost of henna cultivation was worked out to be negative (Rs.15808.00 ha^{-1}). The overall cost of production of henna was Rs. 28.71 kg^{-1}.

Key words: *Henna, production, economics*

Introduction

Henna (*Lawsonia inermis* L.) is a white or pink flowered perennial shrub belonging to family lythraceae and popularly known as mehndi. It is grown as a hedge plant through out India, as a commercial dye crop. It is cultivated mainly in arid and semi-arid tract of Rajasthan, Punjab, Gujarat and Madhya Pradesh. Among different states, Rajasthan is the major henna producing state of the country with the production of 19377 tonnes. In Rajasthan, Sojat tehsil of Pali district is the major henna belt covering around 96 per cent of the total area in the state. The cultivation of henna started in a village Saiwat, of Sojat teshil on commercial scale and number of peasants of the tract took to the cultivation of this crop on a commercial scale. However due to higher investment on manpower and cost of cultivation of henna farmers are shifting over other crops. So, an attempt was made to analyze the costs of henna as compare to other arable crops of the area.

Materials and methods

The present investigation was carried out in Pali district (Sojat tehsil) of Rajasthan during the year 2003-04 to study the cost of cultivation of henna. A sample of 50 henna cultivators were selected for detailed study. Primary data were collected with the help of schedules, which were prepared specially for the purpose, interviewing the respondents, personally collected the data and complete information about size of holding, resource inventory, land utilization, expenditure on variable inputs and crop budget for henna. Cost of marketing, market charges, price received etc., were collected. For analysis of data following analysis procedures were followed.

$$\text{Depreciation} = \frac{\text{Purchase price of asset} - \text{Junk value}}{\text{Number of expected useful years of life}}$$

After calculating total annual depreciation of the farm, the depreciation for a particular crop was worked out. This was done as follows:

$$\text{Depreciation for crop 'X'} = \frac{\text{Total annual depreciation}}{\text{Total cropped area}} \times \text{Area under crop 'X'}$$

Since the structure of cost for the cultivation of henna is quite different to the traditional crop farming, the Establishment Cost and Maintenance (Fixed and Variable) cost concepts are devised.

$$\text{Cost of production} = \frac{\text{cost of cultivation/unit-Value of product/unit area}}{\text{Quantity of main product produced per unit area}}$$

In case of henna crop the value of by-product was considered as zero.

*Corresponding author's E-mail : saranpl@rediffmail.com

Returns

i) Gross Returns (GR): Gross return was obtained as GR = QP x PP

Where, GR = Gross Return
QP = Quantity of Produce
PP = Price of Produce

ii) Net Return: It is the residue after deducting all cost items i.e. total costs from the gross returns.

iii) Return over maintenance cost = Gross return – Total maintenance cost

For the present analysis, present value of future cash flow has been worked out by discounting the estimated returns and costs at 9 per cent rate of interest, the rate of borrowing money from the financial institution in the study area.

Results and discussion

Data presented in Table 1 reveal that, on an average, the total cost per hectare for establishing henna crop was Rs. 21922.00. Total establishment cost was estimated to be Rs. 20882.00 ha^{-1} are on small, Rs. 21737.00 ha^{-1} on semi-medium, Rs. 23574.00 ha^{-1}, per hectare on medium and Rs. 24626.00 ha^{-1}. Thus, the total cost of establishment of henna crop was highest on large farms followed by medium, semi-medium and small farmers. Of the total establishment cost, operational cost accounted for Rs. 12394.00 ha^{-1} (56.54 %). Remaining Rs. 9528.00 ha^{-1} (43.46%) of total establishment cost was the fixed cost. Component wise, the cost of seedling and transplanting was highest (22.43% of the total establishment cost) followed by land preparation (10.13 %), weeding and hoeing (9.53%), interest on working capital (7.14%) manures and fertilizers (3.95%), and plant protection measures (3.36%). Among different group of farmers, the share of seedling and transplanting cost in the total establishment cost was 23.83, 22.25, 20.90 and 19.77 per cent on small, semi-medium, medium and large farmers, respectively indicating decreasing share with the increase in the size of holding. Land preparation cost which stood second in order worked out to be 10.75, 9.96, 9.29 and 9.62 per cent on small, semi-medium, medium and large farmers, respectively, with an overall average of 10.13 per cent. It was highest (Rs. 2370.00 ha^{-1}) on large farms and lowest

Table 1: Establishment cost* of henna on sample farms in Sojat tehsil of Pali district

(Rs./ha^{-1})

S. No.	Particulars	Farm size Small	Semi-medium	Medium	Large	Overall
A.	**Operational cost**	2245	2165	2190	2370	2221
1.	Land preparation	(10.75)	(9.96)	(9.29)	(9.62)	(10.13)
2.	Seedlings and transplanting	4977 (23.83)	4836 (22.25)	4925 (20.90)	4869 (19.77)	4917 (22.43)
3.	Manures and fertilizers	667 (3.19)	975 (4.49)	1050 (4.55)	1120 (4.45)	865 (3.95)
4.	Weeding and hoeing	2034 (9.74)	2068 (9.51)	2185 (9.27)	2250 (9.14)	2089 (9.53)
5.	Plant protection measures	573 (2.74)	834 (3.84)	850 (3.61)	1020 (4.14)	737 (3.36)
6.	Interest on working capital	1549 (7.42)	1524 (7.02)	1619 (6.87)	1697 (6.89)	1565 (7.14)
Total operational cost (A)		12045 (57.68)	12402 (57.06)	12819 (54.38)	13326 (54.11)	12394 (56.54)
B.	**Fixed cost**					
7.	Interest on fixed capital	833 (3.99)	1043 (4.80)	1272 (5.40)	1352 (5.50)	1017 (4.64)
8.	Depreciation	1269 (6.08)	1719 (7.91)	1767 (7.50)	2034 (8.26)	1553 (7.08)
9.	Land revenue	15.0 (0.07)	18.0 (0.08)	21 (0.09)	24.0 (0.10)	18.0 (0.08)
10.	Rental value of owned land	6720 (32.18)	6555 (30.15)	7695 (32.64)	7890 (32.03)	6940 (31.66)
Total fixed cost (B)		8837 (42.32)	9335 (42.94)	10755 (45.62)	11300 (45.89)	9528 (43.46)
Total establishment cost (A + B)		20882 (100.00)	21737 (100.00)	23574 (100.00)	24626 (100.00)	21922 (100.00)

Note: Figures in parentheses are the percentage of total establishment cost

* Discounted

(Rs. 2165.00 ha^{-1}) on semi-medium farms. Expenditure on weeding and hoeing was another important component, which accounted 9.74, 9.51, 9.27 and 9.14 per cent on small, semi-medium, medium and large farms. Manures and fertilizers contributed 3.19, 4.49, 4.45, and 4.55 per cent to the total cost on small, semi-medium, medium and large farms, respectively. Expenditure on plant protection measures was worked out to be 2.74, 3.84, 3.61 and 4.14 per cent on small, semi-medium, medium and large farms, respectively of the total establishment cost. Interest on working capital accounted 7.42, 7.02, 6.87 and 6.89 per cent on small, semi-medium, medium and large farms, respectively of the total establishment cost. Rental value of owned land contributed maximum (31.66 %) share in the total fixed cost of establishing the henna crop followed by depreciation (7.08%), interest on fixed capital (4.64%) and land revenue (0.08%). Similar costs pattern were reported by Chand *et al.*, 2002 for henna cultivation.

It is revealed from the Table 2 that, on an average the total cost per hectare for maintenance of henna crop was estimated to be Rs. 8055.00. Under maintenance cost, total operational and fixed costs were worked out to be Rs.4899.00 (60.82% of total maintenance cost) and Rs. 3156.00 ha^{-1} (39.18% of maintenance cost), respectively. Total maintenance cost was estimated to be Rs. 7374.00 ha^{-1} on small, Rs. 8250.00 ha^{-1} on semi-medium, Rs. 8849.00 on medium and Rs. 9285.00 ha^{-1} on large farms. Thus the total cost of maintenance was highest on large farms followed by medium, semi-medium and small.

Component wise, the cost of rental value of owned land was the highest (30.19% of the maintenance cost) followed by harvesting (27.79%), weeding and hoeing (18.62%). Among different groups of farms the share of harvesting cost in the total maintenance cost was 28.50, 27.86, 26.88 and 26.51 per cent on small, semi-medium, medium and large farms, respectively, indicating increasing share in the decreasing size of holding. Weeding and hoeing cost worked out to be 19.03, 18.59, 18.26 and 17.78 per cent of the total maintenance cost on small, semi-medium, medium and large farms, respectively with an overall average of 18.62 per cent. It was highest (Rs. 1651.00 ha^{-1}) on large farms and lowest (Rs. 1403.00 ha^{-1}) on small farms.

Expenditure on manures and fertilizers was accounted to be 3.68, 4.52, 5.37 and 5.72 per cent of the total maintenance cost on the small, semi-medium, medium and large farms with an overall average of 4.46 per cent. Cost of

Table 2. Maintenance cost* of henna on sample farms in Sojat tehsil of Pali district

(Rs./ha^{-1})

S. No.	Particulars	Farm size				
		Small	Semi-medium	Medium	Large	Overall
A.	**Operational cost**					
1.	Weeding and hoeing	1403	1534	1616	1615	1500
		(19.03)	(18.59)	(18.26)	(17.78)	(18.62)
2.	Manures and	271	373	475	531	359
	fertilizers	(3.68)	(4.52)	(5.37)	(5.72)	(4.46)
3.	Plant protection	175	209	212	248	198
	measures	(2.37)	(2.53)	(2.40)	(2.67)	(2.46)
4.	Harvesting	2102	2298	2379	2461	2239
		(28.50)	(27.86)	(26.88)	(26.51)	(27.79)
5.	Transportation	192	202	198	210	198
		(2.60)	(2.45)	(2.24)	(2.26)	(2.46)
6.	Interest on	373	416	439	459	405
	working capital	(5.06)	(5.04)	(4.96)	(4.94)	(5.03)
Total operational cost (A)		4516	5032	5319	5560	4899
		(61.24)	(60.99)	(60.11)	(59.88)	(60.82)
B.	**Fixed cost**					
7.	Interest on	216	270	330	351	262
	fixed capital	(2.93)	(3.27)	(3.73)	(3.78)	(3.25)
8.	Depreciation	367	497	553	588	457
		(4.98)	(6.03)	(6.25)	(6.33)	(5.68)
9.	Land revenue	4.0	5.0	5.0	6.0	5.0
		(0.05)	(0.06)	(0.05)	(0.07)	(0.06)
10.	Rental value of	2271	2446	2642	2780	2432
	owned land	(30.80)	(29.65)	(29.86)	(29.94)	(30.19)
Total fixed cost (B)		2858	3218	3530	3725	3156
		(38.76)	(39.01)	(39.89)	(40.12)	(39.18)
Total maintenance cost		7374	8250	8849	9285	8055
(A + B)		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

Note: Figures in parentheses are the percentage of total maintenance cost

* Discounted

transportation accounted to be 2.60, 2.45, 2.24 and 2.26 per cent of the total maintenance cost on small, semi-medium, medium and large farms with an overall average of 2.46 per cent. The expenditure on plant protection measures and interest on working capital is worked out to be 2.37, 2.53, 2.40 and 2.67 per cent of the total maintenance cost, on small, semi-medium, medium and large farms and interest on working capital was 5.06, 5.04, 4.96 and 4.94 per cent of the total maintenance cost on small, semi-medium, medium and large farms with an overall average of 5.03, per cent. Rental value of owned land contributed maximum (30.19%) share in the total fixed cost of maintenance of henna crop followed by depreciation (5.68%), interest on fixed capital (3.25%) and land revenue (0.06%). Maintenance cost was reported by Rao *et al.*, 1993 for jasmine cultivation.

The total cost was calculated to be Rs. 29978.00 ha^{-1} of which operational cost accounted for Rs. 17293.00 ha^{-1} (57.69 per cent of total cost) and fixed cost accounted for Rs. 12685.00 ha^{-1} (42.31% of total cost).On the basis of farm size the total cost worked out to be Rs. 28256.00, 29987.00, 32423.00 and 33911.00 ha^{-1} on small, semi-medium, medium and large farms, respectively which is given inTable3.

The costs and returns from henna crop on sample farms have been given in Table 4. The total cost of cultivation of henna was Rs. 29978.00 ha^{-1}, of which establishment cost accounted of Rs. 21922.00 ha^{-1}. The share of maintenance cost in the total cost of cultivation was Rs 8055.00 ha^{-1}. The share of establishment cost was highest on large farm i.e. Rs 24626.00 ha^{-1} followed by medium Rs. 23574.00 ha^{-1} ,

Table 3. Total cost* of henna on sample farms in Sojat tehsil of Pali district

(Rs./ha^{-1})

S. No.	Particulars	Farm size				
		Small	Semi-medium	Medium	Large	Overall
A.	**Operational cost**					
1.	Land preparation	2245	2165	2190	2370	2221
		(7.95)	(7.22)	(6.75)	(6.99)	(7.41)
2.	Seedlings and transplanting	4977	4836	4925	4869	4917
		(17.61)	(16.13)	(15.19)	(14.36)	(16.40)
3.	Manures and fertilizers	938	1348	1525	1651	1224
		(3.32)	(4.50)	(4.70)	(4.87)	(4.88)
4.	Weeding and hoeing	3437	3602	3801	3901	3589
		(12.16)	(12.01)	(11.72)	(11.50)	(11.97)
5.	Plant protection measures	748	1043	1062	1268	935
		(2.65)	(3.48)	(3.28)	(3.74)	(3.13)
6.	Harvesting	2102	2298	2379	2461	2239
		(7.44)	(7.66)	(7.34)	(7.26)	(7.47)
7.	Transportation	192	202	198	210	198
		(0.68)	(0.67)	(0.61)	(0.62)	(0.66)
8.	Interest on working capital	1922	1940	2058	2156	1971
		(6.80)	(6.47)	(6.35)	(6.36)	(6.57)
Total operational cost (A)		16561	17434	18138	18886	17293
		(58.61)	(58.14)	(55.94)	(55.70)	(57.69)
B.	**Fixed cost**					
9.	Interest on fixed capital	1049	1313	1602	1703	1280
		(3.71)	(4.38)	(4.94)	(5.02)	(4.27)
10.	Depreciation	1636	2216	2320	2622	2012
		(5.79)	(7.39)	(7.16)	(7.73)	(6.71)
11.	Land revenue	19.0	23.0	26.0	30.0	22.0
		(0.07)	(0.08)	(0.08)	(0.09)	(0.07)
12.	Rental value of owned land	8991	9001	10337	10670	9371
		(31.82)	(30.01)	(31.88)	(31.46)	(31.26)
Total fixed cost (B)		11695	12553	14285	15025	12685
		(41.39)	(41.86)	(44.06)	(44.30)	(42.31)
Total cost (A + B)		28256	29987	32423	33911	29978
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

Note: Figures in parentheses are the percentage of total of each column* Discounted

Table4. Costs and returns* of henna on sample farms in Sojat tehsil of Pali district

(Rs./ha^{-1})

S. No.	Particulars	Farm size				Overall
		Small	Semi-medium	Medium	Large	
1.	Cost of cultivation	28256	29987	32423	33911	29978
a.	Establishment cost	20882	21737	23574	24626	21922
b.	Maintenance cost	7374	8250	8849	9285	8055
2.	Yield (kg/ha)	1150	1030	970	860	1058
3.	Gross Return	15155	13773	13347	12094	14170
4.	Return over maintenance cost	7781	5523	4498	2809	6115
5.	Net return over total cost	-13101	-16214	-19076	-21817	-15808
6.	Cost of production (Rs./kg^{-1})	24.57	29.11	33.42	39.43	28.71

* Discounted

semi-medium Rs. 2137.00 ha^{-1} and Rs. 20882.00 ha^{-1} on small farms. The share of maintenance cost was highest on large farms i.e. Rs. 9285.00 ha^{-1} followed by medium Rs. 8849.00 ha^{-1}, semi-medium Rs. 8250.00 ha^{-1} and Rs. 7374.00 ha^{-1} on small farms. The average yield per hectare was estimated to be 1058 kg ha^{-1}. It was highest on small farms i.e. 1150 kg ha^{-1} followed by semi-medium (1030 kg ha^{-1}), medium (970 kg ha^{-1}) and large farms (860 kg ha^{-1}). The aggregate gross return was estimated to be Rs. 14170.00 ha^{-1}. Its magnitude was highest on small farms (Rs. 15155.00 ha^{-1}) followed by semi-medium (Rs. 13773.00 ha^{-1}), medium (Rs. 13347.00 ha^{-1}) and Rs 12094.00 ha^{-1} on large farms. The estimated average returns over maintenance cost were Rs. 6115.00 ha^{-1} of which highest share of small farms (Rs. 7781.00 ha^{-1}) followed by semi-medium (Rs. 5523.00 ha^{-1}), medium (Rs. 4498.00 ha^{-1}) and Rs. 2809.00 ha^{-1}on large farms. The total net return over total cost of cultivation was negative (i.e. Rs. –15808.00 ha^{-1}). Out of which highest on small farms (Rs. –13101.00 ha^{-1}) followed by semi-medium (Rs. -16214.00 ha^{-1}), medium (Rs. –19076.00 ha^{-1}) and large (Rs. –21817.00 ha^{-1}) farms.

The average cost of production was Rs. 28.71 kg^{-1}, which is highest on large farms (Rs. 39.43/kg) followed by medium (Rs. 33.42/ kg), semi-medium (Rs. 29.11/ kg) and Rs. 24.57 kg^{-1} on small farms. The total cost of establishing a henna crop was estimated to be Rs 21922.00 ha^{-1} as regards the various component of the cost. The cost of rental value of owned land formed the single largest cost item with 31.66% share in the total establishment cost. The overall maintenance cost ha^{-1} for henna crop was estimated to be Rs 8055.00. Component wise, rental value of owned land and cost of harvesting was having the highest share (30.19 and 27.79%), respectively in total maintenance cost. The average total cost (establishment plus maintenance) of cultivation of henna crop was estimated at Rs 29978.00 ha^{-1}. The total cost of cultivation was found to be highest (Rs 33911.00 ha^{-1}) on large farms and lowest (Rs 28256.00 ha^{-1}) on small farms. The return over maintenance cost from henna on an average was found to be Rs 6155.00 ha^{-1}. The net return over total cost of cultivation was estimated as negative (Rs –15808.00 ha^{-1}). The average cost of production in study area was estimated to be Rs 28.71 kg^{-1}. Such type of costs and returns were also reported by Raju and Rao, 1995 for Agricultural Commodities.

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