Economics of turmeric production in Sangli district of Maharashtra

U.S. MANE, R.B. CHANGULE, B.B. MANE, P.L. KOLEKAR AND S.H. GHARGE

ABSTRACT

Investigation was carried out during the year 2009-2010. Multistage sampling design was adopted for the selection of district, tehsil, villages and cultivators. In all 60 cultivators were selected for present study with equal distribution in small, medium and large groups. The techniques like mean, percentage, ratio and cost concept of Cost-A, Cost-B and Cost-C were used to analyze the data. The results revealed that use of hired human labour was more than family human labour in turmeric production. The use of hired human labour, bullock labour and machine labour, increased with an increase in farm size. Whereas, the use of seed, FYM, nitrogen, phosphorus, potash, family human labour decreased with an increase in farm size. Per hectare net profit was Rs.352053.97 in small farm followed by Rs.344388.94 and Rs. 333662.36 on medium and large farm, respectively. The output-input ratio was 2.23 on small farm followed by that of 2.21 and 2.18 on medium and large farm, respectively. Per quintal cost of production in turmeric was Rs.1475.75 on small farm followed by Rs.1485.46 and Rs.1501.09 on medium and large farm, respectively.

See end of the article for authors' affiliations

Correspondence to :
U.S. MANE
Department of Agricultural Economics College of Agriculture, LATUR (M.S.) INDIA

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INTRODUCTION

Turmeric (*Curcuma longa* L.) is the dried underground rhizome, belongs to the family 'Zingiberaceae'. Turmeric is native of India and China. The word turmeric is derived from the French word '*Terre-Merite*' meaning merit of the earth. The genus name *Curcuma* is probably derived from the Persian word '*Kurkum*', a name also applied to saffron. Turmeric is called as 'Yellow gold', 'Indian Saffron' and "the golden spice of life". Major turmeric growing states are Andhra Pradesh, Tamil Nadu, Orissa, Karnataka, Assam and Maharashtra. Andhra Pradesh ranks first in area and production followed by Tamil Nadu in India. Maharashtra state ranks sixth in area under turmeric cultivation. The increase demand may lead to increase in prices of turmeric and the farmers may be benefited. The need was felt to answer some queries such as costs, returns and profitability. Keeping in view the above aspects, the present study was undertaken.

Key words : Turmeric, Net profit, Cost-C, Gross returns

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METHODOLOGY

Multistage sampling design was adopted in selection of district, tehsil, villages and turmeric growers. In first stage, Sangli district was purposively selected because of it is known as turmeric city and sugar belt of India, availability of more area under turmeric production in the district. In second stage, Palus tehsil of Sangli district was selected on the basis of highest area under sole crop of turmeric cultivation. In third stage, from selected tehsil ten villages namely, Palus, Bhilawadi, Vasgade, Nagrale, Pundi, Suryagaon, Nagthane, Ankalkhop, Burali and Dhangaon were selected on the basis of highest area under turmeric cultivation. At fourth stage separate list of turmeric growers were taken from each village. From the list, turmeric growers were divided in to three groups on the basis of area under the turmeric crop *i.e.* small size (=0.40 ha), medium size (>0.40 to < 0.80 ha) and large size (>0.80 ha). From each size group, two turmeric growers were selected randomly, thus making a total of six turmeric growers from each village. In short, from ten villages, 20 small, 20 medium and 20 large turmeric growers were selected for present study. The cross sectional data were collected from sixty growers by personal interview method with the help of pretested schedule for the year 2009-

2010. The cost concepts *viz.*, Cost-A, Cost-B and Cost-C were used to analyze the data in present investigation. Cost-A included items of cost like hired human labour, bullock labour, fertilizer, manures, insecticide, irrigation, land revenue and taxes, interest on working capital, depreciation on implements and machinery. Then Cost-B consisted with Cost-A + rental value of land, interest on fixed capital. Cost-C included Cost-B + imputed value of family human labour. Evaluation of cost items was as follows. Human labour was measured in man days. One man day consisted with 8 hours. Labour cost was evaluated at the rate of Rs.125 per day for male and Rs.75 per day for female. The female labour was converted in to man days by multiplying to number of female with 0.60. Bullock labour was charged at the rate of Rs. 300 per day for one pair of bullocks. Machine labour in case of owned machine was evaluated as per the hired charge prevailed in the village and in case of hired machine as per the actual amount paid was Rs.300 per hour. Rate prevailing in the market for nitrogen, phosphorus and potash was Rs.10.87, Rs.23.75 and Rs.7.00 per kg, respectively. One cartload of manure was considering as five quintals and its prevailing price was Rs.650 per tonne.

RESULTS AND ANALYSIS

The findings obtained from the present study are presented below:

Physical inputs and outputs in turmeric production:

Per hectare physical inputs and outputs of turmeric production were calculated and are presented in Table 1. The use of hired human labour was 136.81 man days on large farm followed by 127.91 man days on medium farm and 112.53 man days on small farm. It inferred that, as farm size increased, use of hired human labour also increased, it means it shows the positive relationship among size groups and hired human labour. On an overall level, use of hired human labour was found to be 125.75 man days. On the contrary, use of family human labour was higher as 99.66 man days on small farm while that was 94.12 man days and 72.95 man days on medium and large farm, respectively. It implied that, as farm size increased, the use of family human labour decreased, it means there is an inverse relationship between size groups and family human labour. At overall level, the use of family human labour was 88.91 man days. Thus, the use of hired human labour was more than family human labour in turmeric production because, in the production of turmeric earthing up and digging operation are necessary to carry out at time hence require more hired human labour. Use of bullock labour and machine labour was increased with increase in farm size. At overall level, the use of bullock labour and machine labour was 14.93 pair days and 9.95 hours, respectively. The use of rhizomes was highest as 30.42 quintals in small group followed by 29.58 quintals and 28.95 quintals in medium and large group, respectively.

Table 1: Per hectare physical inputs and outputs of turmeric production (unit/ha)

Sr. No.	Particulars	Unit	Turmeric farm			
			Small	Medium	Large	Overall
	Input					
1.	Hired human labour	Man day	112.53	127.91	136.81	125.75
2.	Bullock labour	Pair day	14.60	14.85	15.34	14.93
3.	Machine labour	hour	9.45	10.09	10.30	9.95
4.	Rhizome	q	30.42	29.58	28.95	29.65
5.	Manure					
	– FYM	tonne	39.75	36.50	32.55	36.27
	– Cake	kg	866.67	1025	1360	1083.89
6.	Fertilizer					
	– Nitrogen	kg	136.17	130.92	128.00	131.70
	– Phosphorus	kg	108.67	107.92	105.00	107.20
	– Potash	kg	100.00	91.67	87.10	92.92
7.	Family human labour	Man day	99.66	94.12	72.95	88.91
	Output					
1.	Fresh fingers	q	163.34	162.68	160.80	162.27
2.	Fresh mother sets	q	31.36	29.28	27.26	29.30
3.	Total fresh harvested hizomes	q	194.70	191.96	188.06	191.57
4.	Processed fingers	q	40.83	40.67	40.20	40.57

Use of rhizomes was decreased with increase in farm size. In overall level, the use of rhizomes was 29.65 quintals. At overall level, the use of nitrogen, phosphorus and potash was 131.70, 107.20 and 92.92 kg, respectively. The use of manures was more as 39.75 tonne in small farm followed by 36.50 tonne and 32.55 tonne on medium and large farm, respectively. At overall level, the use of manures was 36.27 tonne. Use of cake was increased with increase in farm size, on an overall level, it was 1083.89 kg.

It was also observed from Table 1, the yield obtained from fresh fingers and fresh mother sets was highest as 194.70 quintals on small farm followed by 191.96 quintals and 188.06 quintals on medium and large farm, respectively. At overall level, yield was 191.57 quintals. Yield obtained after processing of fresh finger was highest as 40.83 quintals on small farm followed by 40.67 quintals and 40.20 quintals on medium and large farm, respectively. At overall level it was 40.57 quintals. Yield of small group was highest because, they used higher quantity of manures and fertilizers, they carried out all operations at time hence growth of rhizomes was proper then ultimately increased the yield. Similar results were observed by Swami (2004) in regards to use of rhizomes.

Cost of cultivation of turmeric production:

Per hectare itemwise expenditure in turmeric production was estimated and is presented in Table 2. The result revealed that, Cost-C was highest as Rs.287328.93 on small farm followed by Rs.285149.26 on medium farm and Rs.282294.52 on large farm. In overall level, Cost-C was found to be Rs.284934.83. It was clear that per hectare Cost-C decreased with an increase in farm size. Among the various items of expenditure, the proportionate share of rental value of land was predominant as 37.06 per cent on small farm followed by 36.76 per cent and 36.33 per cent on medium and large farm, respectively. At overall level it was 36.72 per cent. The proportionate share of rental value of land was predominant because of higher yield and prices of turmeric. On the contrary, share of rhizomes was decreased with increase in farm size and in overall level, it was 30.08 per cent. In consideration, the share of irrigation charge at overall level was 3.56 per cent. The share of hired human labour increased with the increase in the farm size and at overall level, it was 5.52 per cent. Share of family human labour decreased with increase in farm size and in overall level, it was 3.90 per cent. It inferred that, turmeric grower was depending on hired human labour as compared to family labour. Proportionate expenditure on fertilizer, bullock labour and machine labour was 1.62 per cent, 1.57 per cent and 1.05 per cent, respectively. The results are in conformity with the results obtained by Swami (2004) in regards to Cost-A, Cost-B and Cost-C.

Table 2 : Per hectare itemwise expenditure in turmeric production (Rs./ha)

Sr. No.	Particulars	Turmeric farm			
		Small	Medium	Large	Overall
1.	Hired human labour	14066.25 (4.90)	15988.75 (5.61)	17101.25 (6.06)	15718.75 (5.52)
2.	Bullock labour	4380.00 (1.52)	4455.00 (1.56)	4602.00 (1.63)	4479.00 (1.57)
3.	Machine labour	2835.00 (0.99)	3027.00 (1.06)	3090.00 (1.10)	2985.00 (1.05)
4.	Rhizomes	87933.87 (30.60)	85505.72 (29.99)	83684.61 (29.64)	85708.07 (30.08)
5.	Manures	28437.51 (9.90)	26800 (9.40)	25237.5 (8.94)	26827.17 (9.42)
6.	Fertilizers	4761.08 (1.66)	4627.89 (1.62)	4494.81 (1.59)	4628.02 (1.62)
7.	Irrigation	9900 (3.44)	10100 (3.54)	10415 (3.69)	10138.33 (3.56)
8.	Plant protection	2001.49 (0.70)	1451.43 (0.51)	1988.09 (0.70)	1813.67 (0.63)
9.	Land revenue	79.25 (0.03)	91.23 (0.03)	104.46 (0.04)	91.65 (0.03)
10.	Interest on working capital	11322.26 (3.94)	11150.11 (3.91)	11052.63 (3.92)	11175.24 (3.92)
11.	Depreciation on capital asset	836.75 (0.29)	958.81 (0.34)	1532.41 (0.54)	1109.32 (0.39)
12.	Cost-A (Σ item 1 to 11)	166553.46 (57.97)	164155.94 (57.57)	163302.76 (57.85)	164674.22 (57.79)
13.	Rental value of land	106484.57 (37.06)	104831.80 (36.76)	102555.02 (36.33)	104630.89 (36.72)
14.	Interest on fixed capital	1833.40 (0.63)	4396.52 (1.54)	7317.99 (2.59)	4515.97 (1.59)
15.	Cost-B (Σ item 12 to 14)	274871.43 (95.66)	273384.26 (95.87)	273175.77 (96.77)	273821.08 (96.10)
16.	Family human labour	12457.50 (4.34)	11765.00 (4.13)	9118.75 (3.23)	11113.75 (3.90)
17.	Cost-C (Σ item 15 to 16)	287328.93 (100.00)	285149.26 (100.00)	282294.52 (100.00)	284934.83 (100.00)

Table 3 : Per hectare profitability of turmeric production (Rs./ha)

Sr. No.	Particulars	Turmeric farm			
		Small	Medium	Large	Overall
1.	Returns from processed fingers	521782.90	519738.20	513731.88	518460.26
2.	Returns from fresh mother sets	117600.00	109800.00	102225.00	109875.00
3.	Gross returns (item 1+2)	639382.90	629538.20	615956.88	628335.26
4.	Cost-A	166553.46	164155.94	163302.76	164674.22
5.	Cost-B	274871.43	273384.26	273175.77	273821.08
6.	Cost-C	287328.93	285149.26	282294.52	284934.83
7.	Farm business income (Gross return minus Cost-A)	472829.44	465382.26	452654.12	463661.04
8.	Family labour income (Gross return minus Cost-B)	364511.47	356153.94	342781.11	354514.18
9.	Net profit (Gross return minus Cost-C)	352053.97	344388.94	333662.36	343400.43
10.	Output–input ratio (Gross return divided by Cost-C)	2.23	2.21	2.18	2.21
11.	Per quintal cost of production (Cost-C divided by total fresh harvested rhizome)	1475.75	1485.46	1501.09	1487.37

Profitability of turmeric production:

Per hectare profitability in turmeric production on different farms was calculated and presented in Table 3. The results revealed that, return from processed fingers was highest as Rs.521782.90 on small farm followed by Rs.519738.20 and Rs.513731.88 on medium and large farm, respectively. At overall level, it was Rs.518460.26 In regard to returns from fresh mother sets, it was highest as Rs.117600 on small farm followed by Rs. 109800 and Rs.102225 on medium and large farm, respectively. At overall level, it was Rs.109875. Thus, gross return on small farm was Rs.639382.90 followed by Rs. 629538.20 on medium farm and Rs.615956.88 on large farm. In overall, gross return was Rs.628335.26. Farm business income, family labour income and net profit were highest in small farm followed by medium and large farm, respectively. In overall level, farm business income was Rs.463661.04 while family labour income was Rs.354514.18 and net profit was Rs.343400.43. Output input ratio was highest as 2.23 on small farm followed by 2.21 and 2.18 on medium and large farm, respectively. At overall level output input ratio was 2.21. It implied that, when 1 rupee spent on turmeric production, it would lead to give the returns of Rs.2.21 which indicated, the efficiency of use of capital in turmeric production. Per quintal cost of production of turmeric was minimum on small farm compared to medium and large farm and at overall level it was Rs.1487.37.

It inferred that, cost minimization was higher on small farm. Similar results were observed by Phulpagar (1998)and Kerutagi *et al.* (2000) with respect to output-input ratio.

Conclusion:

It is concluded that output-input ratio of turmeric was 2.21 which showed that turmeric crop was found to be profitable venture in Sangli district.

Authors' affiliations:
R.B. CHANGULE, B.B. MANE, P.L. KOLEKAR AND S.H. GHARGE, Department of Agricultural Economics, College of Agriculture, LATUR (M.S.) INDIA

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