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ORIGINAL ARTICLE

Cost of Cultivation of Turmeric in Sangli district of Maharashtra

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ABSTRACT
Present study was done to estimate cost of cultivation of turmeric in Sangli district of Maharashtra state. Multistage sampling design was used. From Sangali district, six villages from Miraj and Palus tehsil were selected randomly. Data were analysed with the help of statistical tools like mean, average, percentage and ratio etc.The information pertaining to the objective was collected from 60 samples of turmeric growers from selected villages. Data relating to agricultural year 2015-16 were collected and analysed with the help of statistical tools like mean, average, percentage and ratio etc.The results showed that per hectare cost-A with regard to turmeric cultivation was Rs. 167905.68 while cost-B was, Rs. 291440.55 and cost-C was Rs. 309138.55. It was found that, gross return was Rs. 739170.00. It was clear that farm business income, family labour income and net profit were Rs. 571264.32, Rs. 447729.45 and Rs. 430031.45 respectively in turmeric production. Output input ratio was found to be 2.39.
Key words: *Cost, Cultivation, Returns, Turmeric, Sangli.*

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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 world 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'. It is one of the most essential spice used as an important ingredient in culinary all over the world. The plant is an herbaceous perennial, 60-90 cm high with short stem and tufted leaf. It is tropical herb and can grow on different type of soils. For turmeric the soils such as light black, red soils, sandy loam to clay loams are preferred and requires a temperature within range of 20-30o C with an annual rainfall of 1500 mm. Turmeric gets ready for harvest within 7-9 month after planting. Harvested green rhizomes are boiled in water, which are then spread out on a clean floor and allowed to dry in the sun for about 10-15 days [3, 4].

Turmeric cultivation does occurs in India, China, Indonesia, Iran, Sri Lanka, Peru and Pakistan. India is leading country in the spices scenario and enjoy monopoly in the spices production because of suitable climatic condition. India is known as "Home of Spices" and "Spice bowl of the world ". India is largest producer, consumer and exporter of turmeric in the world. Turmeric is grown only in 6% of the total area under spices and condiments in India. India is the largest producer and exporter of turmeric in the world and accounts for 80% world's total production and 60 % of world export.Turmeric production in India has shown a fluctuating trend in last five years. It was 43000tones in 2011-12, and increased to 65000 tones in 2012-13. Again decreased to 37000 tones in 2013-14 and then increased to 70000 tones in 2014-15. The annual turmeric production was 48500 tones in 2015-16 .Hence price of turmeric is not fixed and tend to fluctuate year by year [6].

Maharashtra state in India ranks sixth in area under turmeric cultivation. The area under crop was 11000 hectare with a production of 45000 tonnes and productivity of 4.09 tonnes/hectare during 2015-16. In Maharashtra Sangli, Satara, Hingoli, Nanded, Parbhani are the major turmeric growing districts. It is one of the major crop in Sangli district. In Sangali the area under turmeric is 1500 hectares, where as production and productivity is 13000 tonnes and 8.6 tonnes/hectare, respectively in 2015-16.

MATERIAL AND METHODS

In the present study multistage sampling design was used for selection of district, tehsils, villages and the turmeric growers from the study area. In first stage, Sangli district was selected purposively because turmeric is grown on large scale in the district. In second stage, two tehsils *viz*. Miraj and Palus were selected randomly. In Third stage, from each tehsil three villages were selected randomly. At the last stage, from each selected villages ten turmeric growers were selected randomly. Thus, from six villages, 60 turmeric growers were selected for the present study. Required data were collected by personal interview method with the help of specially designed pre tested schedules for the agricultural year 2015-16. The objectives of the study were completed by applying simple statistical tools like means, averages, percentage, ratio etc. with the help of simple tabular analysis. In present study the cost of cultivation was worked out by using the cost concept of cost-A, cost-B and cost-C were used. Cost-A includes the items of cost like hired human labour, bullock labour, machine labour, seed, manure, fertilizer, plant protection, irrigation, land revenue, incidental expenditure, interest on working capital and depreciation on commonly used assets. Then, cost-B consists of cost-A plus rental value of land and interest on fixed capital. Cost-C includes cost-B plus imputed value of family human labour.

RESULTS AND DISCUSSION

Present investigation was carried out to study the cost of cultivation of turmeric in Sangli district.

Costs, Returns and Profitability of Turmeric Cultivation

Per hectare utilization of physical input and output in cultivation of turmeric were worked out and presented in Table 1.

Table 1. Per hectare physical input and output of turmeric production

Particular	Unit	Turmeric
INPUT		
1. Hired human labour	Man days	147.25
2. Bullock labour	Pair days	15.21
3. Machine labour	Hrs.	10.02
4. Rhizome	qt	27.60
5. Manure	qt	35.28
6. Nitrogen	kg	185.68
7. Phosphorus	kg	86.15
8. Potash	kg	87.88
9. Irrigation	No	30.04
10. Family human labour	Man days	88.49
OUTPUT		
1. Fresh fingers	**qt**	**158.91**
2. Fresh mother sets	**qt**	**29.58**

Use of per hectare physical input *viz*., hired human labour, family human labour, bullock labour, machine labour, rhizome, nitrogen, phosphorus, potash and plant protection chemicals was found to be at par on farms. In cultivation of turmeric 147.25 man days of hired human labour, 88.49 man days of family human labour, 15.21 pair days of bullock labour, 10.02 hours of machine labour, 27.60 quintals of rhizomes, 35.28 quintals of manure, 185.68 kg of nitrogen, 86.15 kg of phosphorus and 87.88 kg of potash were utilized.With respect to the output it is observed that yield of Turmeric was 158.91 quintal from fresh fingers and 29.58 quintal from fresh mother sets in turmeric farm. Similar results were found by Kerutagi *et al*., [1] and Ghumatkar [5].

Per hectare cost of cultivation of turmeric was calculated and is presented in table 2. Per hectare cost of cultivation (cost-c) of turmeric was Rs.309138.55. The share of cost-A and cost-B in cost-C was 54.31 per cent and 94.27 per cent, respectively.

Profitability of turmeric production was worked out and is presented in table 3.Farm business income, family labour income and net profit was found Rs.571264.32, Rs.447729.45 and Rs.430031.45, respectively. It referred that, turmeric cultivation was more profitable [2].

Table 2. Per hectare cost of cultivation of turmeric (Rs/ha)

Particular	Turmeric farm	Per cent
1. Hired human labour	29450.00	(9.53)
2. Bullock pair	7605.00	(2.46)
3. Machine labour	4008.00	(1.30)
4. Rhizome	82800.00	(26.78)
5. Fertilizer	8266.93	(2.67)
6. Manure	5292.00	(1.71)
7. Plant protection	2869.36	(0.93)
8. Irrigation	7510.00	(2.43)
9. Land revenue	120.31	(0.04)
10. Incidental expenditure	280.85	(0.09)
11. Interest on working capital @ 13%	19284.89	(6.24)
12. Depreciation on capital assets	418.34	(0.13)
12. Cost-A(∑ item 1 to 12)	167905.68	(54.31)
13. Rental value of land	123074.69	(39.81)
14. Interest on fixed capita @ 11 %	460.18	(0.15)
15. Cost-B(∑ item 12 to 14)	291440.55	(94.27)
16. Family labour	17698.00	(5.73)
17. Cost-C (∑ item 15 to 16)	309138.55	(100)

(Figures in parenthesis are the percentage to the Cost-C)

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

Particular	Turmeric farm
1. Returns from fresh fingers	635640.00
2. Returns from fresh mother sets	103530.00
3. Gross return (Item 1+2)	739170.00
4. Cost-A	167905.68
5. Cost-B	291440.55
6. Cost-C	309138.55
7. Farm business income (Gross return minus Cost-A)	571264.32
8. Family labour income (Gross return minus Cost-B)	447729.45
9. Net profit (Gross return minus Cost-C)	430031.45
10. Output-Input ratio (Gross return divided by Cost-C)	2.39
11. Per quintal cost of production	1640.08

It was clear that; Output-Input ratio was 2.39 in turmeric farm. It implied that, when 1 rupee spent on turmeric production it would lead to give the returns of Rs. 2.39 in turmeric cultivation. Per quintal cost of production of turmeric was Rs. 1640.08.

CONCLUSION

From the above study it was concluded thatper hectare cost of cultivation of turmeric was Rs.309138.55. The share of cost-A and cost-B in cost-C was 54.31 per cent and 94.27 per cent, respectively. Gross return was Rs.739170 and farm business income, family labour income and net profit were Rs.571264.32, Rs.447729.45 and Rs.430031, respectively. Per quintal cost of production of turmeric was Rs.1640.08.Output–input ratio was 2.39 in turmeric farm. It is suggested that agricultural universities should arrange training at village level for turmeric growers to understand the balanced and judicious use of their scare input like manures and costly input like fertilizers. Cooperative society should provide seed, fertilizer and pesticides at cheaper rate.

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