COST OF CULTIVATION AND DISPOSAL PATTERN OF TOMATO IN RAIPUR DISTRICT OF CHHATTISGARH, INDIA

Vinod Kumar*, A. K. Koshta[1] and V. K. Choudhary[1]

Department of Agri-Business and Rural Management, I. G. K. V., Raipur - 492 012 (C.G.), India.
[1]Department of Agricultural Economics, I. G. K. V., Raipur - 492 012 (C.G.), India.

Abstract

Tomato is rich source of vitamins A, C, Potassium, Minerals and Fibbers. Tomatoes are used in the preparation of soup, salad, pickles, ketchup, puree and sauces and also consumed as a vegetable in many other ways. In Chhattisgarh, total production of tomato is the 7.622 lakh tonnes from an area of 47.97 thousand ha (Anonymous, 2012-13). The major tomato producing districts are Raipur, Durg, Bastar, Balod and Jashpur. Thirty farmers were selected purposively from four villages *i.e.* Raveli, Girhola, Borid and Pirda. Five wholesalers and ten retailers were also selected for the fulfillment of the objectives. The primary data were collected for year 2014-15. On an average cost of cultivation per hectare of tomato was found to be 29233.17 Rs. The average cost of production per quintal of tomato was worked out to be Rs. 219.68. The input-output ratio of tomato was found to be 1:3.87 at sample farms. Overall, marketable surplus of tomato was noticed to be 93.08, per cent. Among three marketing channels prevailed in the study area, channel-II was registered the maximum share to the total disposal pattern and found to be 37.01 per cent followed by channel-I (34.23%) and channel-III (28.76%).

Key words : Cost of cultivation of tomato, disposable pattern of tomato.

Introduction

Tomato is one of the most important protective food crops of India. It is grown in 8.796 lakh ha area with 182.266 lakh tonnes production. The major tomato producing States in India are Bihar, Karnataka, Odisha, Andhra Pradesh, Maharashtra, Madhya Pradesh, Chhattisgarh, and West Bengal. Tomato is rich source of vitamins A, C, Potassium, Minerals and Fibbers. Tomatoes are used in the preparation of soup, salad, pickles, ketchup, puree, and sauces and also consumed as a vegetable in many other ways.

In Chhattisgarh, total production of tomato is the 7.622 lakh tonnes from an area of about 47.97 thousand ha (Anonymous, 2012-13). The major tomato producing districts are Raipur, Durg, Bastar, Balod and Jaspur.

Material and Methods

The study was confined to Raipur district of Chhattisgarh state because tomato was grown in both *Kharif* & *Rabi* seasons. Out of four block of the district, Arang and Abhanpur block was selected randomly. The

***Author for correspondence* : Email: vinodbhuarya@gmail.com

list of tomato growers was obtained from O/o the National Horticulture Mission, Raipur. From the list of 179 tomato growers 17 per cent tomato growers were considered and proportionate to their percentages as per the farm size of holdings. Therefore 30 tomato growers were looking to the responses for the study. This comprised of 9 tomato growers for marginal farms, 9 for small farms, 7 for medium farms and 5 for large farms, respectively. The simple averages and percentage statistical tools were applied to analyze the data and report the results/ outcomes of the study.

Input output ratio = Gross income / Total cost.

Benefit-cost = Net income / Total cost.

Results and Discussion

Cost of cultivation of tomato

The cost of cultivation of tomato of sampled farms is worked out in Rs/ha and presented in table 1. It reveals that overall cost of cultivation of tomato crop was Rs/ha 29233.17 and share of material input cost was found to be Rs. 9725.78, which shared to 33.21 per cent to the total cost. The large contribution have been observed in

Table 1 : Cost of cultivation of tomato on different sample farmer

(Rs/ha)

S. no.	Particulars	Farm Size				
		Marginal	**Small**	**Medium**	**Large**	**Overall**
1.	Family human labour	12500.15 (46.66)	12230.76 (42.42)	7565.21 (25.43)	4758.62 (15.07)	9263.68 (32.39)
2.	Hired human labour	3461.53 (12.92)	4846.15 (16.81)	11217.39 (37.70)	14465.51 (45.82)	8497.64 (28.31)
	Sub Total	15961.68 (59.57)	17076.91 (59.23)	18782.6 (63.14)	19224.13 (60.90)	17761.33 (60.71)
1	Seed cost	2192.3 (8.18)	2423.07 (8.40)	2500 (8.40)	2603.44 (8.24)	2429.70 (8.30)
2	Manure & Fertilizer	4971.53 (18.55)	5248.84 (18.20)	5320.69 (17.88)	5993.47 (18.98)	5383.63 (18.40)
3	Plant protection	692.3 (2.58)	692.45 (2.40)	695.65 (2.33)	827.58 (2.63)	726.99 (2.48)
4	Irrigation charges	642.2 (2.39)	1284.4 (4.46)	1383.2 (4.65)	1432.6 (4.53)	1185.6 (4.01)
	Sub total	8498.33 (31.72)	9648.76 (33.47)	9899.54 (33.27)	10856.51 (34.39)	9725.78 (33.21)
3	Bullock labour	1800 (6.73)	1384.61 (4.81)	173.91 (0.60)	206.89 (0.68)	891.35 (3.22)
4	Machine power	307.69 (1.17)	461.53 (1.61)	551.72 (1.87)	869.56 (2.77)	547.62 (1.82)
9	Land revenue	12 (0.04)	12 (0.04)	12 (0.04)	12 (0.03)	12 (0.03)
10	Interest on working capital @3% 211.01	245.11 (0.78)	327.63 (0.85)	395.98 (1.10)	294.93 (1.25)	(0.99)
	Total input cost	26790.71 (100)	28828.92 (100)	29747.4 (100)	31565.65 (100)	29233.17 (100)

Note: Figures in the parenthesis are percentage to total input cost of tomato.

Table 2 : Per hectare yield, value of output and cost of production per quintal of tomato (In ha).

S. no.	Particulars	Farm size				
		Marginal	**Small**	**Medium**	**Large**	**Overall**
1.	Input cost (Rs)	26790.71	28828.92	29747.4	31565.65	29233.172
2.	Yield (qt)	120.76	130.46	135.56	145.82	127.156
3.	Value of Production (Rs)	84532	91322	94892	102074	93205
4.	Cost of production (Rs/qt)	221.85	220.97	219.44	216.47	219.68

Note: Figures in parentheses indicate percentage to total respondents.

human labour use with Rs 17761.33 and shared of 60.71 per cent to the total cost. The power use in the form of bullock pairs and machine power was contributed the minimum share to the total cost of cultivation of tomato, which shared 3.22 and 1.82 percent. Among the materials input cost manure and fertilizer a shared the maximum (18.40%), seed a shared 8.30, irrigation shared 4.01 and minimum in plant protection shared 2.48 percent. The most impotent cost was involved in labour use, hired labour use required more for tomato and found to be Rs./ha 8497.64. The input value of family labour use was noticed to be Rs./ha 9263.68. Across the farm size of holdings,

Table 3 : Cost and return of tomato under different sample farms.

(Rs/qt)

S. no.	Particulars	Farm size				
		Marginal	**Small**	**Medium**	**Large**	**Overall**
1	Input cost	26790.71	28828.92	29747.4	31565.65	29233.17
2	Output Value	84532	91322	94892	102074	93205
3	Net income	57741.29	62493.08	65144.6	70508.35	63971.18
4	Family labour income(Rs./qt)	56544.242	60947.919	56639.406	57693.586	57956.28
5	Input output cost	1:3.15	1:3.168	1:3.190	1:3.23	1:3.87
6	B:C	1:2.15	1:2.16	1:2.19	1:2.23	1:2.87

Table 4 : Break-up of total cost, cost concept wise income over different cost in tomato.

(Rs/qt)

S. no.	Particular	Marginal	Small	Medium	Large	Overall
A	**Break-up cost**					
A	cost A	15675.15	18059.7	25885.9	31979.44	22900.05
B	CostA1	15675.15	18059.7	25885.9	31979.44	22900.05
C	Cost B	27987.75	30374.08	38252.594	44380.414	35248.71
D	Cost C	40487.9	42604.84	45817.8	49139.03	44512.39
B	**Income over different cost**					
A	Income over cost A	68856.85	73262.3	69006.1	70094.56	70304.95
B	Income over cost A1	68856.85	73262.3	69006.1	70094.56	70304.95
C	Income over cost B	56544.25	60947.92	56639.41	57693.59	57956.29
D	Income over cost C	44044.1	48717.16	49074.2	52934.97	48692.61

Table 5: Marketable surplus of tomato of sampled households (Quintal).

S. no.	Particular	Marginal	Small	Medium	Large	Overall
1	Quantity Production(Qt)	120.76(100)	123.46(100)	129.56(100)	134.82(100)	127.15(100)
2	Wage payment to labour	10(8.29)	5(4.06)	7.39(5.70)	5.17(3.84)	6.86(5.42)
3	Consumption	3.46(2.86)	1.73(1.40)	1.52(1.16)	0.86(0.64)	1.89(1.50)
4	Retained for Seed	0(0.00)	0(0.00)	0(0.00)	0(0.00)	0(0.00)
5	Maketable Surplus	107.3(88.85)	116.73(94.54)	120.65(93.12)	128.79(95.52)	118.36(93.08)

Note: Figures in parenthesis indicate percentage to total quantity produced.

the total cost of cultivation of tomato was ranging from Rs./ha 26790.71 to Rs./ha 31565.65. Major cost on labour use involved in tomato ranging from Rs./ha 15961.68 to Rs./ha 19224.13 The materials input cost have been next to the labour use cost, which was ranging from Rs./ha 8498.33 to Rs./ha 10856.51.

Yield, value of output and cost of production per quintal

The yield, value of output per hectare and cost of production per quintal of tomato on the sampled farms have been worked out in table 2. This indicates that the average yield per hectare of tomato was 127.15 quintals of the sampled farms.

Average cost of production of tomato was worked out in Rs/q and found to be Rs. 219.68 irrespective to the farm size. While it was the maximum under marginal farms (Rs. 221.85) followed by small farms (Rs. 220.97), medium farms (Rs. 219.44) and large farms (Rs. 216.47). It is interesting to note that marginal and small farms earned more on per rupee investment. It was due to better management of farm and crop by marginal and small farms than that of large farms. The average value of output per hectare came to Rs. 93205. The higher value of output on large farms was associated with the higher expenditure incurred on modern farm inputs.

Table 6 : Disposal pattern of Tomato (Quintal).

S. no.	Farm Size	Marketing channel			
		Channel I	Channel II	Channel III	Total quantity sold
1	Marginal	54.32 (50.62)	20.31 (18.92)	32.67 (30.44)	107.30 (100)
2	Small	46.85 (40.13)	37.41 (32.04)	32.47 (27.81)	116.73 (100)
3	Medium	26.64 (22.08)	53.74 (44.54)	40.27 (34.37)	120.65 (100)
4	Large	34.27 (26.60)	63.75 (49.49)	30.77 (23.89)	128.79 (100)
5	Overall	40.52 (34.23)	43.80 (37.01)	34.05 (28.76)	118.36 (100)

Note: Figures in parentheses indicate percentage to total quantity sold.

Profitability in tomato cultivation

The net income, input-output ratio and benefit: cost ratio was worked out in Rs/ha by farm size of holding and presented in table 3. It revealed that irrespective to the farms size, the net income earned by farmers was Rs/ha 63971.18. The input-output ratio was found to be 1:3.87 and benefit of Rs 2.87 in per rupee investment on tomato cultivation. The net income earned by farmers was found to be increasing with farm size of holding and ranging from Rs. 57741.29 to Rs. 70508.35 of marginal to large farm size of holdings. The similar pattern of input-output and B: C ratio had also been noticed with respect to farm size of holding.

Cost and returns on the basis of cost concept

The Cost and returns on the basis of cost concept in the production of tomato have been presented in the table 4. It portrays that, on an average cost-A, cost-B and cost-C were worked out to Rs. 22900.05, 35248.71 and Rs. 44512.39, per hectare, respectively on the sample farms. It is noted that rupees 12000 were considered as imputed rental value of owned land for each crop season. The incomes over different costs were also worked out. The average income over cost-A, cost-B and cost-C were calculated as Rs. 70304.95, Rs. 57956.29 and Rs. 48692.61 per hectare, respectively.

Disposable pattern of tomato

This is the actual quantity of a commodity that is available to the farmers after meeting his seed requirement, family requirement, kind payment as wages, and payments to others to whom he pays for their services. The marketable surplus is worked out and shown in Table 5. It revealed that 127.15 q/ha of tomato was produced at the sample farms, irrespective to the farm size of holdings. Nearly, 93.08 per cent of tomato was available for marketable surplus. However quantity used for wage payment and quantity used for home consumption was found to be 5.42 and 1.89 per cent, respectively.

The disposal pattern of tomato is depicted in tables 5 & 6. It reveals that overall, total quantity of tomato produced was 127.15 q/ha. From total quantity of produced tomato 1.89 q/ha was used for home consumption and 6.86 q/ha use for payment of labour wages. Among the different categories of farm, the proportion of total consumption was the maximum in case of marginal size farm (2.86%) followed by small (1.40%), medium (1.52%) and large size farm (0.86%). The total quantity sold in market all there channels was 118.36 q/ha. The share of channel-I was 34.23 per cent; channel-II was 37.01 per cent and from channel-III was 28.76 per cent. It indicates that producers were sell their produce to the maximum through channel-II in comparison to channel-I and channel-II.

Conclusion

On an average the cost of cultivation per hectare of tomato was calculated Rs. 26790.71, Rs. 28828.92, Rs. 29747.4 and Rs. 31565.65 respectively marginal, small, medium and large farm. On an average the input-output ratio of tomato came to 1:3.87 respectively on the sample farms. On an average the B:C ratio of tomato came to 1:2.87 respectively on the sample farms. The incomes over different costs were also worked out. The average income over cost-A, cost-B and cost-C were calculated as Rs. 70304.95, Rs. 57956.29 and Rs. 48692.61 per hectare, respectively. On an average marketable surplus in tomato was worked out 118.36 per cent, respectively to total production. Most of the growers sold their about 37.01 per cent produce through channel II.

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