



Research Paper

Economics production of vegetables in Belgaum district in Karnataka

■ SAMEER LOKAPUR AND G.N. KULKARNI

See end of the paper for authors' affiliations

Correspondence to :

SAMEER LOKAPUR

Department of
Agricultural Economics,
College of Agriculture,
University of Agricultural
Sciences, DHARWAD
(KARNATAKA) INDIA
Email: econsameer@gmail.com

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ABSTRACT : The study aimed to analyze cost and returns structure of major vegetables in the Belgaum district which has high concentration of area under vegetables. The multi-stage random sampling procedure was adopted to choose the 120 sample farmers. The study revealed that the average per hectare utilization of human labour was the highest in case of potato farms (78.77 man days) followed by onion farmers (70.25 man days), tomato farmers (66.37 man days) and green chilli farmers (48.13 man days). The total cost incurred by farmers on potato cultivation was high cost (Rs. 47299.86/ha) as compared to onion (Rs. 31240.2/ha), green chilli (Rs. 25797.37/ha), and tomato (Rs. 27532.42/ha). The high cost in potato was attributed high seed rate. The gross returns was also highest in case of potato (Rs.130410.60/ha) followed by onion (Rs.124518.60/ha), tomato (Rs.64969.70/ha), and chilli (Rs.55250.00/ha). The net returns were highest in case of onion (Rs.93278.43/ha) and lowest in case of green chilli (Rs.29452.63/ha). The study indicated that cultivation of vegetables was found to be profitable as indicated by net returns and high B:C ratios.

KEY WORDS : Production and economics, Vegetables, Seed rate, Human labour

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INTRODUCTION

India stands as the largest producer of vegetables in the world after China, it contributes over 13 per cent to the worlds vegetable production and occupies the first position in the production of cauliflowers, second position in onion and third in cabbage production. More than 40 kinds of vegetables from different groups such as the solanaceous, cucurbitaceous leguminous, cruciferous, root and leafy are grown in tropical, subtropical and temperate regions. Tomatoes, onion, brinjal, potato, cabbage, cauliflower, okra and peas are among the most important grown vegetables. Vegetables in India are mostly consumed as fresh, cooked and in preserved forms. The daily meal of a common man without vegetables is incomplete. The vegetable business provides an excellent opportunity for producers and consumers alike to diversify their business and to meet their tastes, respectively. Karnataka stands 6th place in vegetable cultivation with an area of 4.48 lakh ha and production

of 77.25 lakh tones. Belgaum district in the state stands second in production of vegetables crops after Kolar district with a production of 7.18 metric tonnes and cultivated in area of 0.36 lakh ha.

It is not enough just to produce a vegetable; it must be produced efficiently. The demand for fruits and vegetables is steadily increasing over the years. This trend may lead to gradual reduction in food grain exports. India has the unique distinction of being able to grow almost all fruits and vegetables under diverse production conditions. However, export-oriented production is still at the planning stage and most Indian producers are yet to adopt world standards of quality (Maini *et al.*, 2000). It is necessary to improve the marketing system to accelerate development for two reasons: firstly, if additional produce does not fetch additional revenue in the market, it may work as a disincentive to increase production; secondly, if the market does not supply consumers with produce at reasonable prices and at the time and place needed, then

increased production has no meaning in the welfare of the society. Increased production results in a greater percentage increase in the marketable surplus, accompanied by an increase in demand from the urban population this makes production of vegetables more profitable. As a link between producer and consumer, marketing plays a very crucial role, not only in stimulating production and consumption but also increasing the rate of economic development. In the light of above facts the investigation aims to analyze the economics of vegetables production and their profitability.

MATERIALS AND METHODS

The multi-stage random sampling procedure was adopted to choose the sample farmers. In the first stage, Belgaum district was selected based on the highest vegetable area and production. Four major vegetable crops having highest area under production were selected in the district. In second stage, two taluks namely, Savadatti and Belgaum with highest area under vegetables were selected. From these taluks, four major vegetables having highest area were identified namely, onion, potato, chilli and tomato. Thirty sample farmers for each vegetable were selected from three selected villages.

The primary data on socio-economic characteristics, input

utilization, productivity and cost and returns of selected major vegetables were collected from sample farmers using pre-tested schedule. The data pertained to the cropping year 2012-13. The data were summarized with the aid of statistical tools like averages, percentages etc. and budgeting technique was employed for the analysis of costs and returns (Snedecor and Cochran, 1994).

RESULTS AND DATA ANALYSIS

The analysis (Table 1) on the input utilization pattern, cost and returns structures were analyzed for major vegetables in the district and inputs used per hectare in major vegetables cultivation in the study area revealed that the average per hectare utilization of human labour was the highest in case of potato farms (78.77 man days) followed by onion farmers (70.25 man days), tomato farmers (66.37 man days) and green chilli farmers (48.13 man days) because most of the operations such as harvesting/picking, weeding were human labour intensive. Most of the vegetable growing farmers used bullock labour as against use of tractor labour because of the predominance of bullock labour ownership availability in the study area by farmers. The machine labour used in onion and potato cultivation was almost at par (2.26 hours/ha) and (2.28 hours/

Table 1 : Input use pattern and output obtained for major vegetables

Sr. No	Particulars	Units	Onion	Potato	Green chilli	Tomato
1.	Seeds		8.58 kg	9.42 q	1.63 kgs	73.23 g
2.	Human labour	Man days	70.25	78.77	48.13	66.37
3.	Bullock labour	Pair days	5.23	3.44	4.67	3.87
4.	Machine labour	Hours	2.26	2.28	1.48	1.34
5.	Organic manure	Tonnes	3.34	4.42	2.18	1.24
6.	Fertilisers	Kg.	186.4	242.21	207.7	229.8
7.	PPCs	Rs.	675.47	3856.67	704.8	619.14
8.	Total output	Qtls	92.24	103.67	29.7	54.14

Table 2 : Operation wise labour utilization pattern in vegetable cultivation by farmers

Sr. No	Particulars	Onion farmer			Potato farmer			Green chilli farmer			Tomato farmer		
		HL	BL	ML	HL	BL	ML	HL	BL	ML	HL	BL	ML
1.	Ploughing	1.73	1.68	1.02	1.62	1.45	1.12	1.43	1.49	0.41	2.31	1.01	0.25
2.	Loading, transportation and spreading organic manure	10.28	2.03	1.24	9.62	0.94	1.16	6.72	1.16	1.07	5.16	0.68	1.09
3.	Seed bed preparation	1.12			4.19			2.19			3.17		
4.	Sowing	7.38	1.52		8.64	0.52		6.78	0.95		6.21	0.96	
5.	Fertiliser application	3.72			5.79			4.09			3.78		
6.	Weeding	12.96			8.16			8.82			13.68		
7.	Inter cultivation	-			1.6	0.53		1.86	1.07		2.13	1.22	
8.	PPC application	2.72			6.43			1.62			5.19		
9.	Harvesting	30.34			32.72			14.62			24.74		
	Total	70.25	5.23	2.26	78.77	3.44	2.28	48.13	4.67	1.48	66.37	3.87	1.34

HL-Human Labour (man days)

BL-Bullock Labour (pair days)

ML- Machine Labour (hours)

ha), respectively. In case of green chilli (1.48 hours/ha) and tomato (1.34 hours/ha) machine labour used was relatively less. This may be attributable to accomplishment of quick work and time constraint to cover larger area. Farmers in the study area used less quantity of organic manures, among the various vegetable farms. The quantity of organic manure applied per hectare was highest in case of potato farmers (4.42 tonnes) followed by onion farms (3.34 tonnes), green chilli farms (2.18 tonnes) and tomato farms (1.24 tonnes) which indicated practice of organic manure application for vegetables for better crops performance. The average PPC used for all vegetables together in different vegetable farms was less at Rs. 1464.02. The study conducted by Puran Mal *et al.* (2010) indicated that the Bt. cotton farmers used less of PPCs by nearly 26 per cent when compared to non-Bt. cotton farmers. Hence, results of the present study are in conformity with the above mentioned study.

The results presented in Table 2 showed that on an average the human labour utilization in major vegetable cultivation, revealed that among the various operations, harvesting and weeding operations consumed higher proportion of human labour as the weeding operation in vegetables was carried out

for at least 2-3 times during the cropping period. The entire crop cannot be harvested at one stretch and the picking of the green chilli and tomato has to be carried out regularly at suitable intervals. Spread of picking operation over several weeks and higher vegetables output requires considerable amount of human labour as three are after labour intensive. Sowing was the next major operation, where the labour requirement for sowing/transplanting of different vegetables ranged from 6.00 to 9.00 man days/ha, which consumed substantial amount of human labour. This was mainly because hand dibbling at short spacing requires more labour after such operations carried out by using labour in case of vegetable cultivation.

The results revealed that among the three categories of farmers the total cost incurred by farmers, on potato cultivation was high (Rs. 47299.86/ha) as compared to onion (Rs. 31240.2/ha), green chilli (Rs. 25797.37/ha) and tomato (Rs. 27532.42/ha). This may be attributed to the fact that potato crop requires high seed rate and there by high cost. Besides this farmers also applied more fertilizers and plant protection chemicals for pest and disease control over other vegetable crops.

The cost of human labour, fertilizer, seeds and bullock labour were the items of costs with major share in the variable

		(Rs. /ha)							
Sr. No.	Particulars	Onion	Per cent	Potato	Per cent	Chilli	Per cent	Tomato	Per cent
I.	Variable cost								
1.	Human labour	8781.25	28.11	9846.25	20.82	7941.67	30.78	8295.83	30.13
2.	Bullock labour	2412.67	7.72	1205.07	2.55	1635.10	6.34	1546.67	5.62
3.	Machine labour	1273.33	4.08	912.12	1.93	592.00	2.29	536.67	1.95
4.	Seeds	3476.25	11.13	14126.58	29.87	886.36	3.44	1830.81	6.65
5.	Organic manure	1156.83	3.70	1766.67	3.74	756.62	2.93	866.16	3.15
6.	Fertilisers	3670.11	11.75	4633.67	9.80	4031.44	15.63	4446.21	16.15
7.	PPC	675.47	2.16	3856.67	8.15	704.80	2.73	619.19	2.25
8.	Interest on working capital@8%	1715.67	5.49	2907.76	6.15	1323.84	5.13	1451.32	5.27
	Sub total(I)	23161.58	74.14	39254.79	82.99	17871.83	69.28	19592.86	71.16
II.	Fixed cost								
1.	Rental value of land	6500.00	20.81	6500.00	13.74	6500.00	25.20	6500.00	23.61
2.	Land revenue	30.00	0.10	30.00	0.06	30.00	0.12	30.00	0.11
3.	Depreciation	748.04	2.39	717.81	1.52	610.13	2.37	622.75	2.26
4.	Interest on fixed capital@11%	800.58	2.56	797.26	1.69	785.41	3.04	786.80	2.86
	Sub total (II)	8078.62	25.86	8045.07	17.01	7925.54	30.72	7939.55	28.84
	Total cost of cultivation (I+II)	31240.20	100	47299.86	100	25797.37	100	27532.42	100

Sr. No.	Particulars	Onion	Potato	Green chilli	Tomato
1.	Total cost of cultivation	31240.2	47299.86	25797.37	27532.42
2.	Gross returns including by products(Rs./ha)	124518.6	130410.6	55250	64969.7
3.	Total net return(Rs./ha)	93278.43	83110.74	29452.63	37437.28
4.	Cost of production (Rs./q)	338.68	456.25	868.60	508.54
5.	Gross return(Rs./q)	1349.94	1257.94	1860.27	1200.03
6.	Net return (Rs./q)	1011.26	801.69	991.67	691.49
7.	B:C Ratio	3.99	2.76	2.14	2.36
8.	Yield(q/ha)	92.24	103.67	29.7	54.14

cultivation, because most of the operations like harvesting/picking, spraying and weeding are human labour intensive operations and the other operations like harrowing and inter-cultivation were bullock labour intensive. The distribution pattern of operational costs for various inputs revealed that cost of human labour was the highest in case of potato farms i.e. Rs.9846.25/ha, compared to onion (Rs. 8781.25/ha), tomato (Rs. 8295.83/ha) and green chilli farms (Rs.7941.67/ha). Whereas, bullock labour cost was the highest in the case of onion (Rs.2412.67/ha) followed by green chilli (Rs.1635.10/ha), tomato (Rs.1546.67/ha) and potato (Rs.1205.07/ha). The cost of machine labour was lowest in tomato (Rs.536.67/ha) and it was seen high in onion crop (Rs.1273.33/ha). The cost of seeds was the lowest in green chilli crop (Rs. 886.36 /ha) where as it was highest in the case of potato (Rs.14126.58/ha) followed by onion (Rs.3476.25/ha) and tomato (Rs.1830.81). The availability of organic manure was the main problem in the study area, the cost of organic manure was the highest in potato crop (Rs.1766.67/ha) compared to onion (Rs. 1156.83/ha), tomato (Rs.866.16/ha) and green chilli (Rs.756.62/ha). Whereas, the expenditure on fertilizers was observed highest in potato (Rs.4633.67/ha) followed by tomato (Rs.4446.21/ha), green chilli (Rs.4031.44/ha) and onion (Rs.3670.11/ha), The average fertilizer consumption in potato farms was high Rs. 4633.67/ha, as potato crop response well with the chemical fertilizer. It was also noticed that expenditure on pesticide was seen highest in potato (Rs.3856.67/ha) while it was very less in green chilli (Rs.704.80/ha), onion (Rs.675.47/ha) and tomato (Rs.619.19/ha). Therefore it could be asserted that there was a high variability in the cost of cultivation of different vegetables due to varied input requirement and profitability levels (Table 3).

Among the four major vegetable crops, the total cost incurred in case of potato crop was the highest at Rs.47299.86/ha as compared to onion, tomato and green chilli (Rs.31240.20/ha, Rs.27532.42/ha and Rs.25797.37/ha, respectively). Irrespective of items of costs, human labour and rental value of the land were the major items of costs.

Analysis of gross returns (Table 4) obtained per hectare in potato crop was highest (Rs.130410.6/ha) as compared to onion (Rs.124518.6/ha), tomato (Rs. 64969.7/ha) and green chilli (Rs.55250/ha). The net returns, was seen highest in case of onion (Rs. 93278.43/ha) as compared to potato (Rs.83110.74/ha), tomato (Rs.37437.28/ha) and green chilli (Rs.29452.63/ha). Similar findings were made by Atteri and Chand (1997) and Verma (2002).

The gross returns per quintal was found to be highest in green chilli (Rs. 1860.27 /q) due to better price followed by onion (Rs. 1349.94 /q), potato (Rs. 1257.94 /q) and tomato (Rs.1200.03 /q). However net returns per quintal was found to be more in case of onion (1011.26) followed by green green chilli (Rs. 991.67 /q) and potato (Rs. 801.69 /q). The average

yield was more in case of potato (103.67q/ha) followed by onion (92.24 q/ha). The B:C ratio per rupee invested in vegetable production was highest in case of onion (3.99) and this was followed by potato crop(2.76), tomato (2.36) and green green chilli (2.14). The magnitude of returns realized by farmers for major vegetables namely, potato, onion, green chilli, and tomato and the higher B:C ratios clearly indicated that cultivation of vegetables in the district was found to be highly profitable and offered increasing scope for expansion of area under vegetables in the district at the aggregate level. These results are in conformity with Verma (2002) where vegetable cultivation was seen profitable. Supporting findings were made by Aaker and Day (1980), Dixit *et al.* (2000), Radha and Prasad (2001) and Varmudy (2001).

Authors' affiliations:

G.N. KULKARNI, Department of Agricultural Economics, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

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