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Economics of *Salad* Vegetables in Western Maharashtra

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ABSTRACT: *Vegetables play an important role in the development of our country by improving the economic and social status of the farmers. Vegetables constitute an important component of balanced diet for human. Being short-duration, vegetable crops allow enough scope for increasing the intensity of cropping. Of the various salad vegetables grown, carrot, radish and beat are the important ones. Today, in order to keep pace with the demand for nutrient vegetables resulting from rapid growth of population, there is wide scope for vegetable cultivation. Moreover, ample studies are carried out for the other vegetable crops, but no research studies or hardly few such studies can be traced. The data on relevant aspects of study were collected by personal interviews with the help of specially designed schedules. Data pertained to the year 2012-2013.*

The study of these salad vegetables revealed that: (i) for the per 0.10 hectare, the cost 'A' was Rs. 6214.49, for beet and Rs. 11445.14 for carrot, The cost 'C' was Rs. 16296.89 and Rs. 23063.81 for beet and carrot, respectively, (ii) the input-output ratios at the cost 'C' level were 1.84 and 1.45 for beet and carrot, respectively, implying thereby, it is profitable to go for cultivation of these salad vegetables, (iii) the per quintal marketing cost incurred for beet and carrot was Rs. 358.97 and Rs. 264.90, respectively. The major items of marketing cost of these salad vegetables were commission charges, transportation charges and packaging charges.

The cultivation of salad vegetables is a profitable; however, these vegetables production is a labour intensive and involves high expenditure on account of major inputs. To meet the pity needs or day to day expenses of small or marginal farmers, cultivation of such salad vegetables need to be popularized as they fetch good returns to the cultivators in short periods and with less capital.

Vegetables play an important role in the development of our country by improving the economic and social status of the farmers. Vegetables constitute an important component of balanced diet for human. Vegetables have many important functions in peoples' everyday life. It has of course, considerable nutritional benefit but in addition to this, it has historical, social and economic importance too. Being short duration, vegetable crops allow enough scope for increasing the intensity of cropping. More than fifty kinds of vegetables from different groups such as solanaceous, cucurbitaceous, leguminous, cruciferous, tubers, bulbs-root, leafy, salad vegetables etc. are grown in tropical, sub-tropical and temperate regions of the country. Of the various salad vegetables grown, carrot, radish and beat are the important salad vegetables. The carrot is widely known as a vegetable that is easy to grow, delicious and highly nutritious. Both adults and children like carrots because of its crunchy texture and sweet taste. It is a rich source of many nutrients such as proteins, carbohydrates, vitamins, iron, etc. Carrot prevent heart diseases, prevent cancer, aids in diabetes, improves eye vision, reduce risk of stroke, also good source of fibres and healthy glowing skin. Beet reduces bad cholesterol; protect the heart from potential heart attacks. Today, in order to keep pace with the demand for nutrient vegetables resulting from rapid growth of population, there is wide scope for vegetable cultivation. Moreover, ample studies are carried out for the other vegetable crops, but no research studies or hardly few such studies are available or traced. In view, the present study carries a weighage. Therefore, the present study was attempted for to know the resource use and cost structure in production, cost of marketing and profitability and the problems in cultivation and marketing of selected salad vegetables.

METHODOLOGY

The present study was carried out in the tahsils of Ahmednagar and Pune district of Western Maharashtra regionviz; Rahuri, Sangamner and Junnar being the largest producer of vegetables. The salad vegetables selected for the study are (i) Beet and (ii) Carrot. The data of carrot and beet were collected from 12 samples

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of beet and 14 samples of carrot cultivators. The data on relevant aspects of study were collected by personal interviews with the help of specially designed schedules. Data pertained to the year 2012-2013. The collected data were further compiled and analysed keeping in view the objectives of the study.

RESULTS AND DISCUSSION

Land use pattern of the sample cultivators

The land use pattern of the sample cultivators is presented in Table 1. Average land holding of the sample cultivators growing the salad vegetables viz; beet and carrot was 0.55 and 0.46 ha., respectively. The gross cropped area of these sample cultivators was 1.16 and 0.67 ha., respectively.

Table 1
Average land use pattern and area under the Salad vegetables

Sr. No.	Particulars	Beet (N = 18)	Carrot (N = 19)
1.	Total holdings (ha.)	0.55	0.46
2.	Permanent fallow (ha.)	0.01	0.02
3.	Net sown area (ha.)	0.54 (46.55)	0.44 (65.67)
	a) Irrigated area (ha.)	0.40 (34.48)	0.20 (29.85)
	b) Unirrigated area (ha.)	0.14 (12.07)	0.24 (35.82)
4.	**Gross cropped area(CGA)** (ha.)	**1.16 (100)**	**0.67 (100)**
5.	Cropping intensity (per cent)	214.81	152.27
6.	Area under salad vegetables (ha.)	0.16	0.13
7.	Percentage of salad vegetables in the gross cropped area	13.79	19.40

(Figures in parentheses indicate the percentages to the gross cropped area)

The average area under the salad vegetable viz; beet and carrot was 0.16 and 0.13 ha , respectively and the proportionate share in the GCA was 13.79 and 19.40 per cent. This indicates that, carrot constituted highest share.

Inputs use in the cultivation of Salad vegetables

For the cultivation of any crop/vegetables, the inputs/ resources utilized have prime importance for better yield. As the salad vegetables are grown by the sample farmers on very small area therefore, the analysis is carried out and presented by converting into 0.10 ha area. The information of input used by the sample cultivators for cultivation of the salad vegetables is presented in Table 2.

The total human labour utilization in the cultivation of beet was 20 mandays comprising 12 male and 8 female labours. The use of bullock was one pair days and the machine power use was just 6 hours. The application of manure was to the extent of 6.00 quintals. In the fertilizers application, the use of nitrogen, phosphorous, potash component was 32 Kg, 23 kg, and 6.50 kg, respectively. The charges on account of plant protection amounted to Rs. 382.50 and the irrigation charges as Rs. 338.80.

Table 2
Input use in the production of beet and carrot (Per 0.10 ha.)

Sr. No.	Particulars	Beet (N = 12)	Carrot (N = 14)
1.	Family labour (Mandays)		
	a) Male	11.00	6.21
	b) Female	8.00	19.87
2.	Hired labour (Mandays)		
	c) Male	1.00	0
	d) Female	-	24
	Total labour (Mandays)		
	a) Male	12.00	6.21
	b) Female	8.00	40.87
3.	Bullock labour (Pair days)	1.00	3
4.	Machinery (Hrs.)	6.00	3
5.	Seed (kg)	0.600	1.50
6.	Manure (q.)	6.00	0
7.	Fertilizers (Kg)		
	N	32.00	9.20
	P	23.00	0
	K	6.50	0
8.	Plant Protection Charges (Rs.)	382.50	0
9.	Irrigation Charges (Rs.)	338.80	310.15
10.	Yield (q) obtained	16.19	21.66

In the cultivation of carrot the total human labour use was observed to be 47.08 mandays comprising 6.21male and 40.87 female labours. The use of bullocks was 3 pair days and the machine power use was 3 hrs. There was no manure utilization for carrot cultivation. In fertilizers, there was only nitrogen application for carrot which was 9.20 kg. The irrigation charges amounted to Rs. 310.15 and there was no plant protection charge for carrot.

Cost of cultivation: Beet and Carrot

For per 0.10 hectare costs of cultivation of beet and carrot were worked out and the figure of the same are given in Table 3.

The cost 'A', cost 'B' and cost 'C' for beet per 0.10 ha. area are estimated to Rs. 6214.49, Rs. 11380.05 and Rs. 16280.05, respectively. Of the total cost (i.e. cost 'C'), the share of working capital observed to be 36.36 per cent while, cost 'A' observed to be 38.17 per cent whereas, the share of Cost 'B' was 69.90 per cent. Of the major items of cost, the direct costs viz; human labour, fertilizer, manure, bullock labour and seed were having their shares as 31.94, 8.26, 7.37, 7.37 and 5.53 per cent, respectively. The share of other items of costs, i.e. plant protection and irrigation was 2.35 and 2.08 per cent, respectively. The per 0.10 hectare output obtained of the beet by the sample cultivators was 16.19 quintals and the gross income realized from the yield was Rs. 29951.50

Table 3
Cost of cultivation of beet and carrot

(Per 0.10 ha.)

Sr. No.	Cost item	Beet (N = 12) Qty.	Beet (N = 12) Value (Rs.)	Beet (N = 12) %	Carrot (N = 14) Qty.	Carrot (N = 14) Value (Rs.)	Carrot (N = 14) %
1.	Hired Human labour						
	a. Male	1	300.00	1.84	–	–	–
	b. Female	–	–	–	24	4800.00	20.83
2.	Bullock labour (pair days)	1	1200.00	7.37	3	3600.00	15.62
3.	Machine power (days)	6	120.00	0.74	3	1200.00	5.21
4.	Seed (Kg)	0.60	900.00	5.53	1.50	750.00	3.25
5.	Manures (q)	6	1200.00	7.37	–	–	0
6.	Fertilizers (Kg)						
	N	32.00	1344.78	8.26	9.20	192.28	0.83
	P	23.00			–		
	K	6.50			–		
7.	Irrigation Charges	–	338.80	2.08	–	310.15	1.35
8.	Plant protection charges	–	382.50	2.35	–	–	0
9.	Incidental charges	–	78.02	0.48	–	76.60	0.33
10.	Repair on farm implements	–	55.83	0.34	–	60.64	0.26
	Working capital	–	**5919.93**	**36.36**	–	**10989.67**	**47.68**
11.	Interest on Working Capital (@ 6% per annum)	–	177.60	1.09	–	329.69	1.43
12.	Depreciation on farm implements	–	100.12	0.61	–	110.38	0.48
13.	Land revenue and other taxes	–	16.84	0.11	–	15.40	0.07
	Cost 'A'	–	**6214.49**	**38.17**	–	**11445.14**	**49.66**
14.	Rental value of land	–	4975.08	30.56	–	5580.60	24.21
15.	Interest on Fixed Capital	–	190.48	1.17	–	186.17	0.81
	Cost 'B'	–	**11380.05**	**69.90**	–	**17211.91**	**74.68**
16.	Family labour						
	a. Male	11	3300	20.27	6.21	1863	8.08
	b. Female	8	1600	9.83	19.87	3974	17.24
	Cost 'C'		**16280.05**	**100.00**		**23048.91**	**100.00**
17.	**Output** (q)	16.19	**29951.50**	–	21.66	**33576.00**	
18.	**Per quintal cost**	–	**1005.56**	–	–	**1064.12**	

In the case of carrot cultivation, the per 0.10 hectare the Cost 'A' amounted to Rs. 11445.14, cost 'B' Rs. 17211.91 and the cost 'C' estimated was Rs. 23048.91. In cost 'C', the proportion of working capital, cost 'A' and cost 'B' was 47.68, 49.66 and 74.68 per cent. The share of major inputs viz; human labour, bullock labour and machine in the total cost i.e., in cost 'C' was 46.15, 15.62 and 5.21 per cent, respectively. The seed and irrigation costs were respectively having 3.25 and 1.35 per cent shares in the total cost.

The per 0.10 hectare output obtained of the carrot by the sample cultivators was 21.66 quintals and the gross income realized from the yield was Rs. 33,576.00

Profitability

After estimation of the various costs involved in the production of salad vegetables under study, the profitability at various costs levels were worked out and the information of the same is presented in Table 4.

The per 0.10 hectare yield obtained of beet was 16.19 quintals and the gross returns realized were Rs. 29,951.50. The per 0.10 hectare profit at cost 'A' thus, obtained was Rs. 23737.01 and it was Rs. 18571.45 at cost 'B'. The profit at cost 'C' level turned out to be Rs. 13671.45. The input-output ratios at costs 'A', 'B', and 'C' turned out to 4.82, 2.63 and 1.84, respectively.

Table 4
Costs and returns of selected salad vegetables

(Per 0.10 ha.)

Sr. No.	Particulars	Unit	Beet (N = 12)	Carrot (N = 14)
1.	Cost			
	i) Cost 'A'	Rs.	6214.49	11445.14
	ii) Cost 'B'	Rs.	11380.05	17211.91
	iii) Cost 'C'	Rs.	16280.05	23048.91
2	**Gross income**	Rs.	**29951.50**	**33573.00**
3	Profit at			
	i) Cost 'A'	Rs.	23737.01	22127.86
	ii) Cost 'B'	Rs.	18571.45	16361.09
	iii) Cost 'C'	Rs.	13671.45	10524.09
4	Production	q.	16.19	21.66
5	B:C ratio at			
	i) Cost 'A'		4.82	2.93
	ii) Cost 'B'		2.63	1.95
	iii) Cost 'C'		1.84	1.45

The per 0.10 hectare output of the carrot obtained by the sample cultivators was 21.66 quintals. The gross returns thereby realized by these cultivators amounted to Rs. 33573.00. The profits at cost 'A' and Cost 'B' were Rs. 22127.86 and Rs. 16361.09, in order. At cost 'C' level, it was Rs. 10524.09. The input-output ratios at cost 'A', 'B' and 'C' level turned out to 2.93, 1.95 and 1.45, respectively. From the foregoing discussion, it is concluded that the salad vegetables viz: beet and carrot are profitable. These vegetables requires short duration that why farmers can get income within short period of time.

Marketing cost

The various costs involved in the marketing of beet and carrot were estimated and the details presented in Table 5.

Table 5
Cost of marketing of beet and carrot

(Rs./quintal)

Sr. No.	Item of marketing cost	Beet (N = 12) Local Market	Beet (N = 12) Distant Market (Pune, Mumbai)	Carrot (N = 14)
1.	Packaging charges	60.00 (100)	60.00 (16.71)	60.00 (22.65)
2.	Transportation (Loading-unloading charges)	0.00	160.25 (44.64)	55.45 (20.93)
3.	Commission charges	0.00	100.50 (28.00)	132.00 (49.83)
4.	Weighing charges	0.00	14.69 (4.09)	12.00 (4.53)
5.	Levi /Market fee	0.00	17.70 (4.93)	5.45 (2.06)
6	Other charges	0.00	5.83 (1.63)	-
7	**Total cost of marketing**	**60.00(100)**	**358. 97(100.00)**	**264. 90(100)**
8	Gross price received	1600	1975.00	1550.00
9	Net price received	1540	1616.03	1285.10
10	Per qt. Cost of cultivation	1005.56	1005.56	1064.12
11	**Per qt.net returns (Rs.)**	**534.44**	**610.47**	**220.98**
12	**Returns per 0.10 ha.**	**8652.58**	**9883.50**	**4786.43**

For the per quintal, marketing costs incurred for the beet were Rs. 60 for local market and Rs. 358.97 for distant market (Pune and Mumbai market). In this cost of marketing, the major items were transport charges and commission charges. The per quintal net returns realized for beet for 0.10 ha. area were Rs. 534.440 in local market and Rs. 610.47 for distant market. While for carrot, the per quintal net returns realized for 0.10 ha. area were Rs. 220.98.

Problems in the cultivation and marketing of selected salad vegetables

The important problems faced by the cultivators in the cultivation and marketing of selected salad vegetables viz; beet and carrot were studied and the information is presented in Table 6.

Table 6
Problems in cultivation and marketing of selected salad vegetables

Sr. No.	Particulars	Beet(N =12) Number	Beet(N =12) Per cent	Carrot(N = 14) Number	Carrot(N = 14) Per cent
I	***Problems in Cultivation***				
1	Shortage of labour	12	100.00	13	92.86
2	Irregular supply of electricity	7	58.33	8	57.14
3	High wage rates	9	75.00	09	64.28
4	High seed cost	10	83.33	7	50.00
5	High cost of pesticides	3	25.00	0	0
6	Shortage of fertilizers	3	25.00	5	35.71
II	***Problems in Marketing***				
1	High cost of transport	5	41.66	8	57.14
2	High commission charges	8	66.67	9	64.29
3	Instability in prices	12	100.00	12	85.71

In the case of cultivation, majority of the cultivators reported that shortage of labour was the major constraint and followed by high rate of labours are the important problems. In addition to these, high costs of plant protection chemicals and shortage of fertilizers were also reported by the cultivators.

In the marketing of these salad vegetables, the cultivators opined that the high instability in prices and high commission charges are the important problems. The high transport cost of these vegetables was also stated by majority of the farmers.

CONCLUSIONS

1) The average land holding of the sample cultivator is in the range of to 0.55 ha. and 0.46 ha. The average area under the beet and carrot was 0.16 and 0.13 ha.

2) The per 0.10 hectare cost 'A' was Rs. 6214.49, Rs. 11445.14 for beet and carrot respectively. The cost 'C' was Rs. 16296.89 and Rs. 23063.81 for beet and carrot, respectively.

3) The input-output ratios at the cost 'C' level were 1.84 and 1.45 for beet and carrot, respectively, implying thereby, it is profitable to go for cultivation of these salad vegetables.

4) The per quintal marketing cost incurred for beet and carrot was Rs. 358.97 and Rs. 264.90, respectively. The major items of marketing cost of these salad vegetables were commission charges, transportation charges and packaging charges.

5) The cent per cent cultivators (i.e. all the sample cultivators) opined the problems of labour

shortage and high wage rate and other problems viz, high costs of plant protection chemicals, seed material and shortage of fertilizers in the case of cultivation, whereas high instability in prices, high commission charges and high cost of transportation are the important problems in the case of marketing.

The cultivation of salad vegetables is a profitable; however, these vegetables production is a labour intensive and involves high expenditure on account of major inputs.

SUGGESTION

To meet the pity needs or day to day expenses of small or marginal farmers, cultivation of such salad vegetables need to be popularized as they fetch good returns to the cultivators in short periods and with less capital investment.