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## Economics of production of garlic in Buldhana district

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#### Abstract

The present study was conducted to analyze the Economics of Production of Garlic in Buldhana district using by cost concepts with measurement and evaluation of different Cost elements and gross and net returns for the 90 sample of farmers data during 2018-19. Economics of garlic production, average yield of garlic was 58.77 qtl, 70.59 qtl, 74.59 qtl per hectare for small, medium and large farmers respectively. The average gross return obtained Rs. 352684.05, Rs. 423629.64 and 447700.36 for small, medium and large farmers respectively. And overall, it was Rs. 408149.77. The overall return at cost 'A<sub>1</sub>', cost 'B<sub>1</sub>', cost 'B<sub>2</sub>', cost 'C<sub>1</sub>', cost 'C<sub>2</sub>' and cost 'C<sub>3</sub>' were Rs. 342268.78 Rs.335680.69 Rs. 307146.44 Rs.325295.19 Rs. 296760.89 Rs. 285622.06 respectively. The input output ratio which is indicated that garlic registered a good input output ratio 4.02 means this is profitable.

**Keywords:** Cost concepts, small medium and large farmer, gross return and input output ratio

#### Introduction

Garlic (*Allium sativum*) belong to the family Alliaceae. It is second most widely used among cultivated Alliums after onion (*Allium cepa*) garlic is used as condiments and rich in protein, phosphorus, potassium, calcium magnesium and carbohydrates. Garlic has been widely used as a key medicine due to its immense medicinal properties of garlic could cure as many as 62 ailments including leishmaniasis, dog bites and tumours according to medicinal experts. It reduces the cholesterol in blood. Major garlic growing states in India are M.P., Gujarat, Orissa, Rajasthan, Uttar Pradesh, Maharashtra, Karnataka, Bihar, Punjab, Andhra Pradesh, Haryana, Jammu and Kashmir, Tamil Nadu. The total annual area in the country with under garlic is estimated to be about 138.22 thousand Hectares and annual production is estimated to be around 694.22 thousand tones in 2003-2004. The total export earnings have been Rs. 5.6 crored in 2004-05.

The total area and production under garlic in Maharashtra is about 2500 Hectares in 2003-04. In Buldhana, it is planted in September October and harvested in April-May. There is considerable fluctuation in its price from year to year and season to season due to supply and demand parameters. Its price is generally low during January February. Thereafter, this increases and generally remains higher during September October. Sometimes, farmers harvest crop very early for better price. Early harvesting results in poor quality bulb which cannot be stored for longer time. Farmers do not store garlic bulbs on large scale because due to storage, shrinkage losses occurred due to high temperature and water loss. So, they sell their produce in glut season on unremunerative prices. Profitability of this enterprise like any other depends as much upon efficient marketing as upon efficient production. The producer does not have sufficient incentives for more production unless they are assured of satisfactory returns from the sale of the produce. Garlic plays an important role in supplying raw material to agro-base industries. Among the various agriculture commodities which have market and export potential from India spices occupies a place of pride. Among various spices garlic is one of the most important crop and as a result India is the largest producer consumer and exporter of garlic in the world market. Major objective of the study are as follows,

1. To estimate cost and returns of garlic.

#### Hypothesis

1. Garlic is profitable crop.

#### Material and methods

##### Selection of area

Buldhana district of Vidarbha region was selected as district having maximum area under

garlic cultivation. Buldhana and Chikhali were purposively selected on the basis of acreage under garlic growers. Three villages from each Tehsil and 15 farmers from each village were selected for the present study.

### Selection of Sample

**Table 1:** Distribution of farmers according to Tehsil

Sr. No.	Name of village	No of dry garlic growers	Name of Tehsil
1	Shirpur	15	Buldhana
2	Ajispur	15	
3	Kolvad	15	
4	Karvand	15	Chikhali
5	Amdapur	15	
6	Takarkhed	15	
	Total	90	

### Collection of data

The data was collected for the year 2018-19 of rabbi season through personal interviews of the farmers. The survey method was followed for data collection. Input utilization, cost of cultivation and returns was collected from the selected growers.

### Analysis of data

Simple tabular analysis was used to accomplish the objectives of the present study. The collected data was analysed by standard cost concepts.

### To estimate cost and returns of garlic

#### (I) Cost concept

The standard cost concepts i.e. cost A1, A2, Cost B1, B2 and Cost C1, C2, C3 was used in present study.

Cost A1: All actual expenses in cash and kind incurred in production by the producer. The following items are included in cost A1

- Value of hired human labour (HL).
- Value of hired bullock labour (BL).
- Value of owned bullock labour.
- Value of owned machine labour (ML).
- Hired machinery charges.
- Value of seed (both farm produced and purchased).
- Value of insecticides and pesticides.
- Value of manure (owned and purchase).
- Value of fertilizers.

Cost A2: A1+ Rent paid for leased-in land.

Cost B1: Cost A1 + interest value of owned fixed capital assets (excluding land).

Cost B2: Cost B1 + Rental value of owned land (net of land revenue) and rent paid for leased-in land.

Cost C1: Cost B1 + Imputed value of family labour.

Cost C2: Cost B2 + Imputed value of family labour.

Cost C3: Cost C2 + 10 percent of Cost C2

Measurement and Evaluation of different Cost Elements

#### 1. Hired human labour

It includes hired human labour used on the farm. The value of hired human labour was evaluated at the hiring wage rates prevailing in the locality from time to time.

#### 2. Family human labour

The general wage rates' prevailing in the villages (While

performing various operations) was considered for assessing the wages or family male and female labour.

#### 3. Bullock labour

Higher and owned bullock labour cost was estimated at actual rate paid for hiring of bullocks labour in the local market from time to time.

#### 4. Seed

The actual cost paid for purchasing of seed from market was taken into account for evaluation.

#### 5. Manures

The cost of farm yard manure produce on the farm was estimated at prevailing rates in the village. In case purchased farm yard manure the actual price paid was taken into account.

#### 6. Fertilizer

The actual price for fertilizer was taken into account.

#### 7. Implement and machinery charges

The actual charges paid for the use of machinery and implements were taken into account.

#### 8. Plant protection

Actual cost of purchase for insecticides and pesticides was taken into account.

#### 9. Irrigation charges

Irrigation charges were calculated at the rate of charges actually paid by the cultivator regarding electricity, repairs of machinery and labour charges paid for the irrigation operation.

#### 10. Land revenue

It includes actual land revenue and other cesses paid by the farmers for area under crop.

#### 11. Depreciation and Repairing charges

It includes depreciation charges and repairing charges of implements and machineries.

The depreciation charges on implements, machines and farm building was worked out by straight-line method. In case of repairs to implement the actual cost incurred was taken into account.

Deprecation= Present value– Junk value (10%) Remaining life

#### 12. Interest on working capital

The interest on working capital was worked out @ 6% per annum on cost excluding land revenue and depreciation for the entire life period of crop.

#### 13. Rental value of land

Rental value of land = 1/6th of gross value of produce – land Revenue

#### 14. Interest on fixed capital

Interest on fixed capital was charged @ 10% per annum for the crop period under consideration on total cost of fixed capital owned by cultivator excluding land value and calculated by apportioning it over GCA (Gross cropped area).

## 15. Gross and net return

- 1) Gross return – Gross return of the farmers under the present study was estimated from returns obtained from sale of main produce and by produce.
- 2) Net returns – Net returns was computed at different costs i.e. Cost A1, Cost A2, Cost B1, Cost B2, Cost C1, Cost C2 and Cost C3 by deducting respective costs from the gross returns.

Net income at A1 = Gross returns - Cost 'A1'

Net income at A2 = Gross returns - Cost 'A2'

Net income at B1 = Gross returns - Cost 'B1'

Net income at B2 = Gross returns - Cost 'B2'

Net income at C1 = Gross returns - Cost 'C1'

Net income at C2 = Gross returns - Cost 'C2'

Net income at C3 = Gross returns - Cost 'C3'

## 16. Benefit - Cost Ratio Analysis

It is a ratio between the value of gross output and the cost of cultivation at different cost concepts. The probability of crop production cannot be justified completely unless benefit cost ratio were worked out. This is the ratio which represents returns obtained per rupee of investment. It was worked out by dividing gross return by the total cost. It was calculated at cost A1, cost A2, cost B1, cost B2, cost C1, cost C2 and cost C3 as:

$$\text{Benefit-cost ratio at cost 'A1'} = \frac{\text{Gross Income}}{\text{Cost 'A1'}}$$

$$\text{Benefit-cost ratio at cost 'A2'} = \frac{\text{Gross Income}}{\text{Cost 'A2'}}$$

$$\text{Benefit-cost ratio at cost 'B1'} = \frac{\text{Gross Income}}{\text{Cost 'B1'}}$$

$$\text{Benefit-cost ratio at cost 'B2'} = \frac{\text{Gross Income}}{\text{Cost 'B2'}}$$

$$\text{Benefit-cost ratio at cost 'C1'} = \frac{\text{Gross Income}}{\text{Cost 'C1'}}$$

$$\text{Benefit-cost ratio at cost 'C2'} = \frac{\text{Gross Income}}{\text{Cost 'C2'}}$$

$$\text{Benefit-cost ratio at cost 'C3'} = \frac{\text{Gross Income}}{\text{Cost 'C3'}}$$

## Results and Discussion

### Economics of production of garlic

#### 1. Per hectare average input utilization for garlic production

To obtain highest yield it is necessary to make optimum use of inputs such as seed, manures, fertilizers, human labour, bullock labour etc. The information regarding per hectare input utilization for garlic by selected farmers of different size group is presented in Table 5.6.

The hired male and female labour utilization on small, medium and large size group was 20.59, 21.48, 22.47 days and 83.10, 97.22, 99.47 and at overall level were worked out to be 21.51 and 93.23 respectively. The utilization of bullock

labour per hectare for garlic on selected farmers was 12.64, 14.14 and 13.94 pair days for small all, medium and large size group respectively. The overall level was estimated at 13.57 pair days. From this, it was revealed that, in case of small farmers, bullock labour was used comparatively less than large and medium farmer Rs.

**Table 2:** Per hectare input utilization pattern of selected farmers

Sr. No.	Particulars	Unit	Small	Medium	Large	Overall
1	<b>Hired human labour</b>					
a)	Male	Days	20.59	21.48	22.47	21.51
b)	Female	Days	83.10	97.12	99.47	93.23
2	Bullock Labour	Pair days	12.64	14.14	13.94	13.57
3	Machinery	HRs.	4.91	5.98	7.76	6.05
4	Manure	qtl.	7.45	11.59	12.10	10.38
5	Irrigation	no.	10.55	15.53	18.42	14.83
6	<b>Fertilizers</b>					
	N	Kg	70.14	70.37	71.42	71.64
	P	Kg	59.83	66.13	67.24	64.40
	K	Kg	51.41	45.91	43.85	47.06
7	Seed	Kg	450.12	485.36	666.66	467.38
8	<b>Family human labour</b>					
	a) Male	Days	25.60	28.72	28.94	27.25
	b) Female	Days	25.29	24.36	25.52	25.06

The utilization of machinery (Hr Rs.) per hectare was 4.91, 5.98 and 7.76 hrs for small, medium and large size group respectively and the overall level was 6.05 hr Rs. It was revealed that, small farmer's use of machinery was comparatively less than small and large farmer Rs.

The per hectare manure utilization for small, medium and large size group was 7.45, 11.59 and 12.10 quintals respectively and the overall level quantity of manure applied by selected holdings was worked out to 10.38 qtls.

In case of irrigation showed that the number of average irrigations given by small, medium and large size farmers was 10.55, 15.53 and 18.42 respectively.

The application of fertilizers per hectare in terms of N.P.K in case of small size group was 70.14 kg, 59.83 kg and 51.41 kg, respectively. In case of medium and large size group, N.P.K utilization levels were 70.37 kg, 66.13 kg, 45.91 kg and 71.42 kg, 67.24 kg, 43.85 kg, respectively. The overall level of N.P.K applied per hectare was worked out to be 70.37 kg, 64.40 kg and 47.06 kg, respectively. From the above it is seen that, the application of N.P.K increases with the increase in the size of holding.

The quantity of seed used increased with the increased size of holding. It was highest in medium size group i.e., 485.36 kg/ha followed by small and large group i.e., 450.12 kg/ha and 666.66 kg/ha respectively. The overall level use of seed was 467.38 kg/ha.

The family male and female labour utilization on small, medium and large size group was 25.60, 28.72, 28.94 and 25.29, 24.36, 25.52 days respectively and at overall level was worked out to be 27.75 days and 25.06 days.

#### 2. Per hectare cost of cultivation of garlic

To workout gross returns at various cost concepts, to workout Benefit-Cost ratio and to workout net returns over various cost it is necessary to workout cost of cultivation of garlic. The per hectare average cost incurred on the production of garlic for small, medium and large group has been worked out and is presented in Table 2(a), Table 2(b), Table 2(c) and Table 2(d).

**Table 2(a):** Per hectare cost of cultivation of garlic for small farmers

Sr. No.	Item	Unit		Input/ ha.	Cost/ Unit of input (Rs)	Total Cost per ha. (Rs)	% to Cost 'C <sub>3</sub> '
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	20.59	200.02	4118.46	3.25
		Female		83.10	150.00	12465.15	9.84
2	Bullock Labour		(Pair days)	12.64	500.32	6324.04	4.99
3	Machine charges		Hours	4.91	300.60	1475.95	1.16
4	Seed		Kgs	450.12	60.00	27007.00	21.31
5	Manures		QTLS.	7.45	516.80	3850.17	3.03
6	Fertilizer	N	Kg.	60.14	22.73	1594.28	1.25
		P	Kg.	59.83	24.00	1436.14	1.13
		K	Kg.	51.41	22.00	1131.02	0.89
7	Irrigation charges	(Rs.)				3167.24	2.50
8	Bio-fertilizers	(Rs.)				0.00	0.00
9	Insecticide	(Rs.)				3084.40	2.43
10	Incidental charges	(Rs.)				91.63	0.07
11	Repairing Charges	(Rs.)				616.86	0.48
12	Insurance Premium	(Rs.)				0.00	0.00
13	Growth Regulator	(Rs.)				0.00	0.00
14	Weedicide	(Rs.)				0.00	0.00
15	Working Cap. (1 to 14)	(Rs.)				66362.34	52.38
16	Intrest on working Capital@6%					3981.74	3.14
17	Depreciation	(Rs.)				634.82	0.50
18	Land Revenue	(Rs.)				63.93	0.05
19	COST "A1" (Items 15 to 18)	(Rs.)				71042.83	56.38
20	Rental Value Leased in land					0.00	0.00
21	COST "A2" (Items 19 to 20)					71042.83	56.38
22	Int. on Fix.Cap. @ 10%					7104.28	5.60
23	COST "B1" (Items 19 + 22)					78147.11	61.69
24	Rental Value of Land	(Rs.)				27497.03	21.70
25	COST "B2" (Items 23 to 24)					105644.14	83.39
26	Family Human Labour	Male	Days	28.60	200.4	5721.25	4.51
		Female	Days	25.29	150.04	3794.42	2.99
27	Cost " C1 " (Items 23+26)	(Rs.)				87662.78	69.20
28	Cost " C2 " (Items 25+26)	(Rs.)				115159.81	90.90
29	10% Cost C2*					11515.98	9.09
30	Cost " C3 " (Items 28+29)					126675.79	100.00
31	Yield per hectare	(qt)		58.77	6001.09	352684.05	
32	Per quintal cost of Prod.	(Rs.)				2155.44	

It is revealed that from the table 2(a) that the per hectare cost of production at cost 'A<sub>1</sub>', cost 'A<sub>2</sub>', cost 'B<sub>1</sub>', cost 'B<sub>2</sub>', cost 'C<sub>1</sub>', cost 'C<sub>2</sub>' and cost 'C<sub>3</sub>' were Rs. 71042.83, Rs. 71042.83, Rs. 78147.11, Rs. 105644.14, Rs. 87662.78, Rs 115159.81, and 126675.79 Rs respectively. The major share of cost of cultivation goes towards In cost 'A<sub>1</sub>' (56.08 percent) In cost A<sub>1</sub> share of seed was 21.31 percent, hired human labour 14.83

percent, bullock labour 4.99 percent, manure 3.03 percent, fertilizer 3.27 percent indicating that, all the above inputs are cash inputs for which farmers required to pay immediately from his pocket. The per hectare yield obtained by small farmers was 58.77 quintals with gross return of Rs. 352684.05 In case of small size group the per quintal cost of production was Rs.2155.44.

**Table 2(b):** Per hectare cost of cultivation of garlic for medium farmers

Sr. No.	Item	Unit		Input/ ha.	Cost/ Unit of input (Rs)	Total Cost per ha. (Rs)	% to Cost 'C <sub>3</sub> '
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	21.48	200.09	4297.87	2.93
		Female	Days	97.12	150.01	14569.14	9.95
2	Bullock Labour		(Pair days)	14.14	500.32	7074.46	4.83
3	Machine charges		Hours	5.98	300.47	1796.80	1.22
4	Seed		Kgs	485.36	65.00	31548.4	21.54
5	Manures		QTLS.	11.59	595.71	6904.25	4.71
6	Fertilizer	N	Kg.	70.37	22.30	1569.25	1.07
		P	Kg.	66.13	24.00	1587.34	1.08
		K	Kg.	45.91	22.00	1010.02	0.68
7	Irrigation charges	(Rs.)				4569.57	3.12
8	Bio-fertilizers	(Rs.)				0.00	0.00
9	Insecticide	(Rs.)				3997.07	2.73
10	Incidental charges	(Rs.)				112.23	0.07
11	Repairing Charges	(Rs.)				639.18	0.43

12	Insurance Premium	(Rs.)				0.00	0.00
13	Growth Regulator	(Rs.)				0.00	0.00
14	Weedicide	(Rs.)				0.00	0.00
15	Working Capital (1 to 14)	(Rs.)				79675.58	54.42
16	Interest on working Capital @ 6%					4780.53	3.26
17	Depreciation	(Rs.)				678.40	0.46
18	Land Revenue	(Rs.)				65.42	0.04
19	COST "A1" (Items 15 to 18)	(Rs.)				85199.93	58.19
20	Rental Value Leased in land					0.00	0.00
21	COST "A2" (Items 19 to 20)					85199.93	58.19
22	Int. on Fix.Cap. @ 10%					8519.99	5.81
23	COST "B1" (Items 19 + 22)					93719.92	64.01
24	Rental Value of Land	(Rs.)				29970.04	20.47
25	COST "B2" (Items 23 to 24)					123689.96	84.48
26	Family Human Labour	Male	Days	28.72	200.02	5744.68	3.92
		Female	Days	24.36	150.01	3654.36	2.49
27	Cost " C1 " (Items 23+26)	(Rs.)				103118.96	70.43
28	Cost " C2 " (Items 25+26)	(Rs.)				133089.00	90.90
29	10% Cost C2*					13308.09	9.09
30	Cost " C3 " (Items 28+29)					146397.90	100.00
31	Yield per hectare	(Rs.)		70.59	6001.27	423629.64	
32	Per quintal cost of Prod.	(Rs.)				2073.91	

It is revealed that from the table 2(b) that the per hectare cost of production at cost 'A<sub>1</sub>', cost 'A<sub>2</sub>', cost 'B<sub>1</sub>', cost 'B<sub>2</sub>', cost 'C<sub>1</sub>', cost 'C<sub>2</sub>', cost 'C<sub>3</sub>' were Rs. 85199.93, Rs 85199.93, Rs. 93719.92, Rs. 123689.96, Rs. 103118.96, and Rs.133089 Rs Rs 146397.9 respectively. The major share of cost of cultivation goes towards in cost 'A<sub>1</sub>' (58.19 percent) In cost A<sub>1</sub> share of seed was 21.54 percent, hired human labour 12.88

percent, bullock labour 4.83 percent, manure 4.71 percent, fertilizer 3.02 percent, indicating that, all the above inputs are cash inputs for which farmers required to pay immediately from his pocket. The per hectare yield obtained by medium farmers was 70.59 quintals. With Gross return Rs.423629.64 The per hectare cost obtained by small farmers was Rs. 2073.91 per quintals.

**Table 2(c): Per hectare cost of cultivation of garlic for large farmers**

Sr. No.	Item	Unit		Input/ ha.	Cost/ Unit of input (Rs)	Total Cost per ha. (Rs)	% to Cost 'C <sub>3</sub> '
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	22.97	200.18	4598.24	2.70
		Female	Days	99.47	150.01	14921.05	8.78
2	Bullock Labour		(Pair days)	13.94	500.26	6973.68	4.10
3	Machine charges		Hours	7.76	300.12	2328.94	1.37
4	Seed		Kgs	666.66	70.00	46666.2	27.46
5	Manures		QTLS.	12.10	569.81	6894.73	4.05
6	Fertilizer	N	Kg.	71.42	22.02	1572.66	0.92
		P	Kg.	67.24	24.00	1613.83	0.94
		K	Kg.	43.85	22.00	964.70	0.56
7	Irrigation charges	(Rs.)				5526.31	3.25
8	Bio-fertilizers	(Rs.)				0.00	0.00
9	Insecticide	(Rs.)				3777.62	2.22
10	Incidental charges	(Rs.)				117.10	0.06
11	Repairing Charges	(Rs.)				233.42	0.13
12	Insurance Premium	(Rs.)				0.00	0.00
13	Growth Regulator	(Rs.)				0.00	0.00
14	Weedicide	(Rs.)				0.00	0.00
15	Working Capital (1to14)	(Rs.)				96188.48	56.61
16	Interest on working Capital @ 6%					5771.30	3.39
17	Depreciation	(Rs.)				683.94	0.40
18	Land Revenue	(Rs.)				68.42	0.04
19	COST "A1" (Items 15to18)	(Rs.)				102712.14	60.45
20	Rental Value Leased in land					0.00	0.00
21	COST "A2" (Items 19 to 20)					102712.14	60.45
22	Int. on Fix.Cap. @ 10%					10271.21	6.04
23	COST "B1" (Items 19 + 22)					112983.35	66.49
24	Rental Value of Land	(Rs.)				31861.37	18.75
25	COST "B2" (Items 23 to 24)					144844.72	85.24
26	Family Human Labour	Male	Days	28.94	200.05	5789.47	3.40
		Female	Days	25.52	150.04	3828.94	2.25
27	Cost " C1 " (Items 23+26)	(Rs.)				122601.76	72.15
28	Cost " C2 " (Items 25+26)	(Rs.)				154463.13	90.90

29	10% Cost C2*					15446.31	9.09
30	Cost " C3 " (Items 28+29)					169909.44	100.00
31	Yield per hectare	(Rs.)		74.59	6002.15	447700.36	
32	Per quintal cost of Prod.	(Rs.)				2277.91	

It is revealed that from the table 2 (c) that the per hectare cost of production at cost 'A<sub>1</sub>', cost 'A<sub>2</sub>', cost 'B<sub>1</sub>', cost 'B<sub>2</sub>', cost 'C<sub>1</sub>', cost 'C<sub>2</sub>', cost 'C<sub>3</sub>' were 102712.14, Rs. 102712.14, Rs. 112983.35, Rs. 144844.72, Rs. 122601.76 Rs. 154463.13 and Rs. 169909.44 respectively The major share of cost of cultivation goes towards In cost 'A<sub>1</sub>' (60.45 percent) In cost A<sub>1</sub> share of seed was 27.46 percent, hired human labour 11.48

percent, bullock labour 4.10 percent, manure 4.05 percent, fertilizer 2.42 percent indicating that, all the above inputs are cash inputs for which farmers required to pay immediately from his pocket. The per hectare yield obtained by large farmers was 74.59 quintals with Gross return 447700.36 The per hectare cost obtained by large farmers was Rs 2277.91 per quintals.

**Table 2 (d):** Per hectare cost of cultivation of garlic for overall

Sr. No	Item	Unit		Input/ ha.	Cost/ Unit of input (Rs)	Total Cost per ha. (Rs)	% to Cost 'C <sub>3</sub> '
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	20.62	200.02	4124.44	3.36
		Female	Days	87.21	150.00	1381.66	1.12
2	Bullock Labour		(Pair days)	13.94	497.77	6938.88	5.66
3	Machine charges		Hours	5.23	300.19	1570.00	1.28
4	Seed		Kgs	467.38	65.00	30379.7	24.79
5	Manures		QTLS.	10.88	522.88	5688.88	4.64
6	Fertilizer	N	Kg.	71.64	22.30	1597.57	1.30
		P	Kg.	64.40	24.00	1545.06	1.26
		K	Kg.	47.06	22.00	1035.25	0.84
7	Irrigation charges	(Rs.)				4110.00	3.35
8	Bio-fertilizers	(Rs.)				0.00	0.00
9	Insecticide	(Rs.)				2549.81	2.08
10	Incidental charges	(Rs.)				93.28	0.07
11	Repairing Charges	(Rs.)				491.23	0.40
12	Insurance Premium	(Rs.)				0.00	0.00
13	Growth Regulator	(Rs.)				0.00	0.00
14	Weedicide	(Rs.)				0.00	0.00
15	Working Capital (1to14)	(Rs.)				61506.3	50.19
16	Int.on working Capital @ 6%					3690.37	3.01
17	Depreciation	(Rs.)				622.28	0.50
18	Land Revenue	(Rs.)				62.04	0.05
19	COST "A1" (Items 15to18)	(Rs.)				65880.99	53.76
20	Rental Value Leased in land					0.00	0.00
21	COST "A2" (Items 19to20)					65880.99	53.76
22	Int. on Fix.Cap. @ 10%					6588.09	5.37
23	COST "B1" (Items 19 + 22)					72469.08	59.14
24	Rental Value of Land	(Rs.)				28534.25	23.28
25	COST "B2" (Items 23to24)					101003.33	82.43
26	Family Human Labour	Male	Days	32.18	200.04	6437.17	5.25
		Female	Days	26.32	150.01	3948.33	3.22
27	Cost " C1 " (Items 23+26)	(Rs.)				82854.58	67.62
28	Cost " C2 " (Items 25+26)	(Rs.)				111388.83	90.90
29	10% Cost C2*					11138.88	9.09
30	Cost " C3 " (Items 28+29)					122527.71	100.00
31	Yield per hectare	(Rs.)		68.01	6001.32	408149.77	
32	Per quintal cost of Prod.	(Rs.)				1801.61	

It is revealed that from the table 2 (d) that the per hectare cost of production at cost 'A<sub>1</sub>', cost 'A<sub>2</sub>', cost 'B<sub>1</sub>', cost 'B<sub>2</sub>', cost 'C<sub>1</sub>', cost 'C<sub>2</sub>', cost 'C<sub>3</sub>' were Rs. 65880.99, Rs.65880.99, Rs. 72469.08, Rs. 101003.33, Rs. 82854.58, Rs.111388.83, and Rs.122527.71. respectively. The major share of cost of cultivation goes towards in cost 'A<sub>1</sub>' (53.79 percent) In cost A<sub>1</sub> share of seed was 24.77 percent, hired human labour 4.48 percent, bullock labour 5.65 percent, manure 4.63 percent, fertilizer 3.46 percent indicating that, all the above inputs are cash inputs for which farmers required to pay immediately from his pocket. The per hectare yield obtained by overall farmers was 68.01quintals with gross return of Rs. 408149.77.

The per hectare cost obtained by overall farmers was Rs. 1801.61 per quintals.

### 3. Per hectare cost and returns from garlic

The per hectare cost and return of garlic was worked out and presented in table 3. And it indicates that at overall average gross return workout to Rs. 408149.77. This means garlic crop appeared to be good from monitory benefits. The lowest input output ratio at cost 'C' was 2.78 recorded in small group and the lowest input output ratio at cost 'C' was 2.63 recorded in large size group. At overall input output ratio at cost 'C' was 3.33.

**Table 3:** Per hectare cost and returns from garlic (Rs. /ha)

Sr. No.	Particulars	Small	Medium	Large	Overall
1	Value of Main Produce	352684.05	423629.64	447700.36	408149.77
2	Gross Return	352684.05	423629.64	447700.36	408149.77
3	<b>Cost of Cultivation at</b>				
	Cost "A1"	71042.83	85199.93	102712.14	65880.99
	Cost "A2"	71042.83	85199.93	102712.14	65880.99
	Cost "B1"	78147.11	93719.92	112983.35	72469.08
	Cost "B2"	105644.14	123689.96	144844.72	101003.33
	Cost "C1"	87662.78	103118.96	122601.76	82854.58
	Cost "C2"	115159.81	133089.00	154463.13	111388.88
	Cost "C3*"	126675.79	146397.9	169909.44	122527.71
4	<b>Return at</b>				
	Cost "A1"	281641.22	338429.71	344988.22	342268.78
	Cost "A2"	281641.22	338429.71	344988.22	342268.78
	COST."B1"	274536.94	329909.72	334717.01	335680.69
	Cost "B2"	247039.91	299939.68	302855.64	307146.44
	Cost "C1"	265021.27	320510.68	325098.6	325295.19
	Cost "C2"	237524.24	290540.64	293237.23	296760.89
	Cost "C3"	226008.26	277231.74	277790.92	285622.06
5	<b>Output input ratio at</b>				
	Cost "A1"	4.96	4.97	4.35	6.19
	Cost "A2"	4.96	4.97	4.35	6.19
	Cost "B1"	4.51	4.52	3.96	5.63
	Cost "B2"	3.33	3.42	3.09	4.04
	Cost "C1"	4.02	4.10	3.65	4.92
	Cost "C2"	3.06	3.18	2.89	3.66
	Cost "C3"	2.78	2.89	2.63	3.33

The input output ratio which is an indicator of economic efficiency in crop production for the crop and other discussion indicated that garlic registered a good input output ratio 4.02 means this is profitable.

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### Conclusions

1. Garlic cultivation was found labour intensive.
2. Per hectare cost of cultivation of garlic at cost 'C<sub>3</sub>' was highest in the large size group i.e. (169909.44 Rs/ha) followed by medium size group (146397.9 Rs/ha) and small size group (126675.79 Rs/ ha) respectively.
3. Benefit cost ratio of garlic at cost 'C<sub>3</sub>' was higher in medium size group i.e. (2.89), followed by small size group (2.78) and large size group (2.63).

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