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## Production of rose in Akola district of Maharashtra

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**Abstract**

The study was conducted in Akola District, Maharashtra during the period Jan. 2019 to Dec. 2019. The purpose of the study is to find out profitability in terms of cost and return from Rose cultivation in Akola District, Maharashtra. The key objectives were to analyze the cost and return structure of Rose cultivation and to identify the major constraints faced by the farmers in Rose production. From each tahasil three villages selected purposively i.e., total fifteen villages were selected. From each village six farmers were selected randomly. Overall, ninety Rose cultivators were selected for the present study. It was observed that the total cost estimated for the year was i.e., Rs. 535696.20, for Rose. The overall level gross returns were Rs. 1076745.99. Net return from flower production was accounted to be Rs. 541049.80 for Rose. The total input- output ratio for year profit at cost 'C' was 2.01 for Rose. The major problems faced by rose growers while shortage of water for irrigation, low rate of flower in the market and high wage rate problems, technical knowledge about pest and diseases and its control, Labour problems, high cost of fertilizer and plant protection etc.

**Keywords:** flower, cost, cost of cultivation, benefit-cost ratio, returns and profit

**Introduction**

Rose has ever been the world's most favourite and unchallenged queen of flowers is undoubtedly one of the most beautiful nature's creations. Rose is symbol of adoration, innocence and love. In India from time of immemorial, the commercial venture is of a recent phenomenon. Roses are recognized as both traditional and modern flowers in India. According to statistics indicated in the Handbook on Horticulture Statistics 2014, the total area under flower crops in 2012-13 was 232.70 thousand hectares. Total area under floriculture in India is second largest in the world and only next to China. Production of flowers was estimated to be 1729.2 MT of loose flowers and 76731.9 million (numbers) of cut flowers in 2012-13. Fresh and Dried cut flowers dominate floriculture exports from India. Maharashtra is also a leading state in flower production and the area under floriculture in Maharashtra during year 2017-18 is 5485 ha with production of loose flowers 29,080 MT and cut flowers 56,990 MT. Area of Rose in Maharashtra 1.56 Area (In '000' Hectare). Production of Rose in Maharashtra is 2.88 (Loose Flowers In '000 MT), and 27.77 (Cut Flowers In '000 MT). According to National Horticulture Database published by National Horticulture Board, In India area under floriculture during year 2017-2018 is 3,24,000 ha with production of 27,85,000 MT of flower was estimated to be 1962 MT of loose flowers and 823 MT of cut flowers.

**Data and Methodology**

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

**Cost A1:** All variable cost excluding family labour cost and including depreciation.

**Cost A2:** Cost A<sub>1</sub>+ Rent paid for leased-in land.

**Cost B1:** Cost A<sub>1</sub> + interest value of owned fixed capital assets (excluding land).

**Cost B2:** Cost B<sub>1</sub> + Rental value of owned land (net of land revenue) and rent paid for leased-in land.

**Cost C1:** Cost B<sub>1</sub> + imputed value of family labour.

**Cost C2:** Cost B<sub>2</sub> + Imputed value of family labour.

**Cost C3:** Cost C<sub>2</sub> + marketing costs and transportation report.

**Gross and net returns**

**Gross returns**  
Gross return of the farmers under the present study was estimated from returns obtained from sale of main produce.

**Net returns**

Net returns were 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.

**Benefit-cost ratio**

Benefit – cost ratio at different costs =  $\frac{\text{Gross Income}}{\text{Corresponding different Costs}}$

**Result and Discussion**

From the table 1 it is revealed that, number of the selected farmer was 90 out of which 50 farmers belongs to small holding, 29 farmers belong to medium and 11 farmers to large size holding with average size of holding 1.58, 3.14 and 5.72 hectare respectively.

**Table 1:** Average size of holding of selected farmers (ha)

Sr. No.	Size of holding	No. of farmer selected	Average size of holdings
1	Small (less than 2 ha.)	50 (53.33)	1.58
2	Medium (2.01 to 4.00 ha.)	29 (32.22)	3.14
3	Large (4.01 & above)	11 (14.44)	5.72
	Overall	90 (100.00)	3.48

(Figures in parentheses indicate percentage to the total farmers)

**Cost of cultivation of selected rose growers**

The cost of cultivation is helpful for crop planning therefore in order to know the cost and profitability, the cost of cultivation of Rose for small, medium and large farmer was workout.

**Table 2:** Per hectare cost of cultivation of rose for small farmer

Sr. No.	Items	Unit		Input/ha.	Cost / Unit of input	Total Cost Per Ha.	% to Cost "C <sub>3</sub> "
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	75.18	250.15	18806.28	4.68
		Female	Days	109.12	170.06	18556.95	4.62
	Subtotal					37363.23	9.30
2	Bullock Labour		(Pair days)	35.09	600.24	21062.42	5.24
3	Machine charges		Hours	13.04	600.00	7824.00	1.95
4	Manures		Qtls.	18.13	500.07	9066.27	2.26
5	Fertilizer	N	Kg.	251.66	21.24	5345.26	1.33
		P	Kg.	148.55	30.00	4456.50	1.11
		K	Kg.	123.12	23.00	2831.76	0.70
	Subtotal					12633.52	3.15
6	Irrigation charges	(Rs.)				15125.49	3.77
7	Insecticide (Plant Protection)	(Rs.)				18205.11	4.53
8	Incidental charges	(Rs.)				235.02	0.06
9	Repairing Charges	(Rs.)				310.00	0.08
10	Working Capital (1 to 10)	(Rs.)				121825.05	30.33
11	Interest on working Capital					15837.26	3.94
12	Amortization cost					29062.51	7.23
13	Depreciation	(Rs.)				236.71	0.06
14	Land Revenue	(Rs.)				170.20	0.04
15	COST "A" (Items 11 to 14)	(Rs.)				167131.73	41.61
16	Rental Value Leased in land					0.00	0.00
17	COST "A2" (Items 15 to 16)					167131.73	41.61
18	Int. on Fix. Cap. @ 10%					12013.23	2.99
19	COST "B1" (Items 15+ 18)					179144.96	44.60
20	Rental Value of Land	(Rs.)				137782.77	34.30
21	COST "B2" (Items 19 to 20)					316927.73	78.90
22	Family Human Labour	Male	Days	81.01	300.03	24305.43	6.05
		Female	Days	119.63	200.14	23942.75	5.96
	Subtotal					48248.18	12.01
23	Cost " C1 " (Items 19+22)	(Rs.)				227393.13	56.61
24	Cost " C2 " (Items 21+22)	(Rs.)				365175.91	90.91
25	Cost " C2* " (Items 24)					365175.91	90.91
26	10% Cost C2*					36517.59	9.09
27	Cost " C3 " (Items 25+ 26)					401693.50	100.00
28	Main Produce	(Rs.)	No.	428869.35	1.93	827717.85	
29	Per Flower cost of Prod.	(Rs.)				0.85	

Table 2 revealed that at small farmer, the per hectare cost of cultivation of Rose was Rs. 401693.50. Among the different items of expenditure, the rental value of land accounted highest share of the total cost i.e., 34.30 percent followed by

family labour, hired labour, irrigation and amortization cost which contributes 12.01, 9.30, 3.77 and 7.23 per cent of the total cost, respectively. The per hectare yield was 428869.35 cut flowers.

**Table 3:** Per hectare cost of cultivation of Rose for Medium farmers

Sr. No.	Item	Unit		Input/ha.	Cost / Unit of input	Total Cost Per Ha.	% to Cost "C <sub>3</sub> "
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	81.45	250.69	20418.70	4.61
		Female	Days	120.44	170.36	20518.16	4.63
	Subtotal					40936.85	8.92
2	Bullock Labour		(Pair days)	32.30	600.39	19392.60	4.22
3	Machine charges		Hours	17.05	600.79	10243.47	2.23
4	Manures		Qtls.	19.62	500.72	9824.13	2.22
5	Fertilizer	N	Kg.	256.56	20.96	5377.50	1.21
		P	Kg.	153.13	30.13	4613.81	1.04
		K	Kg.	125.07	23.56	2946.65	0.67
	Subtotal					12937.95	2.82
6	Irrigation charges	(Rs.)				17747.26	4.01
7	Insecticide (Plant Protection)	(Rs.)				20145.06	4.55
8	Incidental charges	(Rs.)				246.00	0.06
9	Repairing Charges	(Rs.)				450.36	0.10
10	Working Capital (1 to 10)	(Rs.)				131923.69	29.78
11	Interest on working Capital					17150.08	3.87
12	Amortization cost					28450.47	6.42
13	Depreciation	(Rs.)				382.88	0.09
14	Land Revenue	(Rs.)				178.89	0.04
15	COST "A" (Items 11 to 14)	(Rs.)				178086.01	40.20
16	Rental Value Leased in land					0.00	0.00
17	COST "A2" (Items 15 to 16)					178086.01	40.20
18	Int. on Fix. Cap. @ 10%					4156.23	0.94
19	COST "B1" (Items 15 + 18)					182242.24	41.14
20	Rental Value of Land	(Rs.)				168940.34	38.14
21	COST "B2" (Items 19 to 20)					351182.58	79.28
22	Family Human Labour	Male	Days	89.33	300.27	26823.12	6.06
		Female	Days	123.17	200.36	24678.34	5.57
	Subtotal					51501.46	11.62
23	Cost " C1 " (Items 19+22)	(Rs.)				233743.70	52.77
24	Cost " C2 " (Items 21+22)	(Rs.)				402684.04	90.91
25	Cost " C2* " (Items 24)					402684.04	90.91
26	10% Cost C2*					40268.40	9.09
27	Cost " C3 " (Items 25+ 26)					442952.45	100.00
28	Main Produce	(Rs.)	No.	455029.32	2.23	1014715.38	
29	Per flower cost of Prod.	(Rs.)				0.92	

It is seen from the table 3 that, the per hectare cost of cultivation of Rose was Rs. 442952.45 was incurred in the cultivation of Rose as a cost C<sub>3</sub> by the cultivators. The major share of cost among different cost item were found in rental value of own land which is 38.14 per cent to the total cost of

cultivation followed family human labour of 11.62, hired human labour 8.92, irrigation 4.01, amortization cost 6.42 per cent, plant protection 4.55 per cent, fertilizer 2.82 per cent and manures 2.22 per cent. The per hectare yield was 455029.32 cut flowers.

**Table 4:** Per hectare cost of cultivation of Rose for Large farmers

Sr. No.	Items	Unit		Input/ha.	Cost / Unit of input	Total Cost Per Ha.	% to Cost "C <sub>3</sub> "
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	92.64	250.89	23242.45	3.78
		Female	Days	126.16	170.69	21534.25	3.50
	Subtotal					44776.70	7.27
2	Bullock Labour		(Pair days)	30.15	600.61	18108.39	2.94
3	Machine charges		Hours	22.06	600.86	13254.97	2.15
4	Manures		Qtls.	21.09	500.45	10554.49	1.71
5	Fertilizer	N	Kg.	263.03	20.97	5515.74	0.90
		P	Kg.	161.04	30.85	4968.08	0.81
		K	Kg.	127.40	23.76	3027.02	0.49
	Subtotal					13510.85	2.20
6	Irrigation charges	(Rs.)				18308.27	2.97
7	Insecticide (Plant Protection)	(Rs.)				22376.11	3.64
8	Incidental charges	(Rs.)				288.36	0.05
9	Repairing Charges	(Rs.)				489.36	0.08
10	Working Capital (1 to 10)	(Rs.)				141667.50	23.02
11	Interest on working Capital					18416.78	2.99
12	Amortization cost					29166.44	5.01
13	Depreciation	(Rs.)				392.04	0.07
14	Land Revenue	(Rs.)				182.14	0.03

15	COST "A" (Items 11 to 14)	(Rs.)				189824.89	32.60
16	Rental Value Leased in land					0.00	0.00
17	COST "A2" (Items 15 to 16)					189824.89	32.60
18	Int. on Fix. Cap. @ 10%					46895.11	8.05
19	COST "B1" (Items 15 + 18)					236720.00	40.66
20	Rental Value of Land	(Rs.)				236816.00	40.67
21	COST "B2" (Items 19 to 20)					473536.00	81.33
22	Family Human Labour	Male	Days	95.11	300.74	28603.38	4.91
		Female	Days	135.32	200.63	27149.25	4.66
	Subtotal					55752.63	9.58
23	Cost "C1" (Items 19+22)	(Rs.)				292472.64	50.23
24	Cost "C2" (Items 21+22)	(Rs.)				529288.64	90.91
25	Cost " C2* " (Items 24)					529288.64	90.91
26	10% Cost C2*					52928.86	9.09
27	Cost " C3 " (Items 25+ 26)					582217.50	100.00
28	Main Produce	(Rs.)	No.	502469.56	2.83	1421988.85	
29	Per flower cost of Prod.	(Rs.)				1.05	

The table 4 revealed the per hectare cost of cultivation of Rose was Rs. 582217.50. In the cultivation of rose the major item of cost were rental value of land, hired human labour, family labour, irrigation, amortization cost, plant protection

and fertilizer which accounted 40.67, 7.27, 9.58, 2.97, 5.01, 3.64 and 2.20 per cent share to total cost respectively. The per hectare yield was 502469.56 cut flowers.

**Table 5:** Per hectare cost of cultivation of Rose for Overall farmers

Sr. No.	Item	Unit	Input/ha.	Cost / Unit of input	Total Cost Per Ha.	% to Cost "C <sub>3</sub> "	
1	2	3	4	5	6	7	
1	Hired Human Labour	Male	Days	83.09	250.58	20822.48	3.81
		Female	Days	118.57	170.37	20203.12	3.69
	Sub Total				41025.59	7.50	
2	Bullock Labour	(Pair days)	32.51	600.41	19521.14	3.57	
3	Machine charges	Hours	17.38	600.55	10440.81	1.91	
4	Manures	Qtls.	19.61	500.41	9814.96	1.80	
5	Fertilizer	N	Kg.	257.08	21.06	5412.83	0.99
		P	Kg.	154.24	30.33	4679.46	0.86
		K	Kg.	125.20	23.44	2935.14	0.54
	Sub Total				13027.44	2.38	
6	Irrigation charges	(Rs.)			17060.34	3.12	
7	Insecticide (Plant Protection)	(Rs.)			20242.09	3.70	
8	Incidental charges	(Rs.)			256.46	0.05	
9	Repairing Charges	(Rs.)			416.57	0.08	
10	Working Capital (1 to 10)	(Rs.)			185858.45	33.99	
11	Interest on working Capital				17695.35	3.24	
12	Amortization cost				28893.14	5.39	
13	Depreciation	(Rs.)			337.21	0.06	
14	Land Revenue	(Rs.)			177.08	0.03	
15	COST "A" (Items 11 to14)	(Rs.)			232961.22	43.49	
16	Rental Value Leased in land				0.00	0.00	
17	COST "A2" (Items 15 to16)				232961.22	43.49	
18	Int. on Fix. Cap. @ 10%				21021.52	3.92	
19	COST "B1" (Items 15 + 18)				253982.75	47.41	
20	Rental Value of Land	(Rs.)			181179.71	33.82	
21	COST "B2" (Items 19 to20)				435162.45	81.23	
22	Family Human Labour	Male	Days	88.48	300.35	26577.31	4.96
		Female	Days	126.04	200.38	25256.78	4.71
	Sub Total				51834.09	9.68	
23	Cost " C1 " (Items 19+22)	(Rs.)			305816.84	57.09	
24	Cost " C2 " (Items 21+22)	(Rs.)			486996.54	90.91	
25	Cost " C2* " (Items 24)				486996.54	90.91	
26	10% Cost C2*				48699.65	9.09	
27	Cost " C3 " (Items 25+ 26)				535696.20	100.00	
28	Main Produce	(Rs.)	No.	462122.74	2.33	1076745.99	
29	Per flower cost of Prod.	(Rs.)				0.94	

It is revealed from the table 5 that per hectare cost of cultivation of rose at overall level was Rs. 535696.20 It is also observed from the table that cost A<sub>1</sub> and cost A<sub>2</sub> are same among all the farm categories because none of the

respondents was found cultivating lease in land. On an average Cost A<sub>1</sub>, A<sub>2</sub> and Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub>, and cost C<sub>2</sub> was found Rs.232961.22, 232961.22, 253982.75, 435162.45, 305816.84 and 486996.54 respectively. The

average per hectare yield of rose crop was 462122.74 cut flowers.

### Per hectare cost and returns from Rose

It is seen from the table 6 that per hectare production of Rose for small, medium and large farmer was 428869.35, 455029.32 and 502469.56 flowers/ha, respectively. The gross returns from Rose were Rs. 8,27,717.85, Rs.10,14,715.38 and Rs. 14,21,988.85 for small, medium and large group. The overall level gross returns were Rs.10,76,745.99. Whereas the cost of cultivation of these groups have been estimated to be

Rs. 4,01,693.50 Rs.4,59,034.32 and Rs. 5,82,217.50 respectively, the overall cost required for cultivation of rose was Rs. 5,35,696.20. The per hectare net returns at cost  $C_3$  obtained by the grower was Rs. 4,26,024.35 5,55,681.06 and 8,39,771.35 for small, medium and large group of growers and 5,41,049.80 for overall level. Efficiency of investment in the cultivation of rose was judged by calculating benefit-cost ratio. The benefit-cost ratio at Cost  $C_3$  for small, medium and large group of growers was 2.06, 2.21 and 2.44 respectively. The overall ratio was 2.01.

**Table 6:** Per hectare cost and returns from Rose (Rs/ha)

Sr. No.	Particulars	Small	Medium	Large	Overall
1	Value of Main Produce	827717.85	1014715.38	1421988.85	1076745.99
2	Gross Return	827717.85	1014715.38	1421988.85	1076745.99
3	Cost of Cultivation at				
	Cost "A1"	167131.73	192705.90	189824.89	232961.22
	Cost "A2"	167131.73	192705.90	189824.89	232961.22
	Cost "B1"	179144.96	196862.13	236720.00	253982.75
	Cost "B2"	316927.73	365802.47	473536.00	435162.45
	Cost "C1"	227393.13	248363.59	292472.64	305816.84
	Cost "C2"	365175.91	417303.93	529288.64	486996.54
	Cost "C2*"	365175.91	417303.93	529288.64	486996.54
	Cost "C3*"	401693.50	459034.32	582217.50	535696.20
4	Return at				
	Cost "A1"	660586.12	822009.49	1232163.96	843784.77
	Cost "A2"	660586.12	822009.49	1232163.96	843784.77
	Cost "B1"	648572.89	817853.26	1185268.85	822763.25
	Cost "B2"	510790.12	648912.91	948452.85	641583.54
	Cost "C1"	600324.71	766351.79	1129516.22	770929.16
	Cost "C2"	462541.94	597411.45	892700.22	589749.45
	Cost "C2*"	462541.94	597411.45	892700.22	589749.45
	Cost "C3*"	426024.35	555681.06	839771.35	541049.80
5	Output input ratio at				
	Cost "A1"	4.95	5.27	7.49	4.62
	Cost "A2"	4.95	5.27	7.49	4.62
	Cost "B1"	4.62	5.15	6.01	4.24
	Cost "B2"	2.61	2.77	3.00	2.47
	Cost "C1"	3.64	4.09	4.86	3.52
	Cost "C2"	2.27	2.43	2.69	2.21
	Cost "C2*"	2.27	2.43	2.69	2.21
	Cost "C3*"	2.06	2.21	2.44	2.01

### Conclusions

Per hectare cost of cultivation of rose at cost " $C_3$ " was highest in the large farmers i.e. Rs. 5,82,217.50 followed by medium farmer Rs. 4,42,952.45 and small farmer Rs. 4,01,693.50 and at overall level Rs. 5,35,696.20. The average yield and gross returns per hectare increased with the increase in size of farms. The benefit cost ratio of rose cultivation at cost ' $C_3$ ' was higher in large farmer i.e., 2.44, followed by medium farmer i.e., 2.21 and small farmer i.e., 2.06 and at overall level i.e., 2.01. From this it can be conclude that cultivation of rose was economically benefited.

### References

- Amarnath JS, Tamil Vendhan K. An Economic Analysis of Cut Flower Marketing in Tamil Nadu. *Economic Affairs* 2017;62(4):621-631.
- Baishya D. A Case Study of Tuberose Cultivation in Jorhat District of Assam. *Imperial Journal of Interdisciplinary Research*. *Imperial Journal of Interdisciplinary Research* 2016;2(10):750.
- Bera J, Majumder M. Economics of Tuberose Cultivation and its Marketing - A Case Study in Purba Medinipur District of West Bengal. *Vidyasagar University Journal of Economics* 2013; 17:161-168.
- Dhulgude VG, Deshmukh JM, Londhe SM. Constraints and Suggestion as Perceived by the Respondents in Gerbera Cultivation. *Journal of Pharmacognosy and Phytochemistry* 2018;7(4):3073-3074.
- Kamble AJ. Economic analysis of production and marketing of rose. M.Sc. (Agri.) thesis (Unpublished) MPKV, Rahuri 2008.
- Kolambkar RA. Studied Economics of production and marketing of marigold in Kolhapur and Sangli district. M.Sc. (Agri.) thesis (Unpublished) MPKV, Rahuri 2016.
- Manjhi P, Meshram M, Choudhary S, Swarnakar VK. Study on Adoption Behaviour of Flower Growers and their Level of Economic Inspiration under NHM in Indore District. *International Journal of Environmental & Agriculture Research* 2(7):38-41.