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## To study the cost, returns and profitability of rose production in Satara district, Maharashtra

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**Abstract :** To study the cost, returns and profitability of rose production, the Satara district was selected purposively, as there are many more growers for open field cultivation and has added advantages of nearness to Pune metropolitan region. Satara and Koregaon tahsils of Satara district were selected purposively for this study because these tahsils have 79 per cent of area under rose. From the selected Satara and Koregaon tahsils, ten villages were selected on the basis of area proportion of each tahsil. Five sample cultivators were selected randomly from each village. Thus, final sample consists of 50 rose growers. Most of the rose of this track are marketed in local market like Satara, Nagthane and Koregaon. The study was conducted for the year 2006-2007 by personal interviews. Per hectare human labours required for rose garden were 1914. Per hectare input utilization was 1.90 lakh. It was observed that, per hectare cost of harvesting and packaging is highest. It is because of labour requirement and cost of transportation. Per hectare cost of cultivation of rose was worked out to Rs.2,94,791. Among the various items of cost, maximum cost was incurred on family labour (30.41%), followed by rental value (21.50%). Cultivation of rose was profitable at all the levels of cost. Per hectare yield of rose was 2,24,166. The gross value received was Rs. 380242. Benefit: cost ratio was 1:1.29.

**Key words :** Rose production, Cost, Profitability

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Rose is known as flower of friendship and king of flower. It is associated with mankind since time immemorial. In India, several species of wild rose are mostly grown in the Himalayan ranges. The Mughal Samrat Babar introduced the Persian or Damask rose (*Rosa damascena*) in India during 1526. The scented rose (*Rose barbouniana*) was introduced in 1840 during the British rule. These two species of rose are scented and are cultivated in India to a large extent.

Rose, botanically identified as *Rosa* spp., is indigenous to Europe and is widely distributed in Europe. Also, disseminated in the Middle East countries, especially Iran, Afghanistan and Turkey. It is also grown in Bulgaria, Russia, Egypt, France, Morocco and India. There are several varieties of rose classified according to colour, size, type, use etc. The following varieties as per colour are Light pink- confidence, Navneet, Pink- First prize, Pink Peace, Surekha, Red / crimson -Gladiator, Red masterpiece, Lavender- Blue moon, Lady x. Multicolours- Candy strips, Sultana. The varieties as per the types are

Bush First prize, Superstar, Tree rose Hybrid Tea, Floribunda, Rambler and Climber-Casino, Golden shower, Crimson Glory. Hedges- Edges: - Queen, Magic. Cutflowers- Superstar, Gladiator, Arjun, Pot plants - Cinderella. The varieties as per use are Oil- *Rosa damascena*, Gulkand-*Rosa damascena*, *Rosa chinensis*.

Rose has become a part and parcel of the life. It is connected with all phases of life of the human beings. Rose are grown on a large scale for cutflowers and on small scale for planting shrubs, bushes, standard rose, climbers ramblers, edges, rockeries in the garden and pot plants for decorating the houses. There is a considerable demand for loose flowers for making garlands, bouquets and floral decoration. Rose is a perennial erect shrub with beautiful sweet – scented flowers valued for worship, making garlands and preparation of rose oil, rose water, rose *attar* and rose otto. Rose oil is one of the oldest and most valuable perfumery raw materials. It imparts characteristic fragrant top notes to perfumes. The extracted absolute adds lasting notes. A mixture of distilled

oil and extracted absolute combines the advantages of both the products. Also vitamin C, A, B<sub>2</sub>, K and E are extracted from rose. Bulgarian rose oil is being used for flavouring certain types of tobacco, particularly snuff and chewing tobacco and in number of fruit flavours. Limited quantities of otto are employed in flavouring soft drinks and alcoholic liquors. Rose water has been valued for use in making syrups and medicinal preparation from ancient time. At marriages and other social functions rose water is sprinkled on the guests. Rose jam of unani medicine is used as a mild laxative and tonic. With the availability of cheap or synthetic substitutes like geraniol, the use of rose for perfumery purpose has declined.

Since from 1990, due to polyhouse technology of cut flower production was seen and well known to all interested and enthusiastic farmers of Satara district. Also, many farmers have adopted it. Hence, Satara floriculture industry has been shifting from traditional flowers to cut flowers. However, till today comparative data about input use, costs, returns, profitability, marketing practices followed and constrains experienced in production and marketing of rose in Satara district have not been collected. Therefore, the present study of cost, returns and profitability of rose production in Satara district was undertaken.

## RESEARCH METHODS

The study was conducted in Satara district. Satara and Koregaon tahsils of Satara districts were selected purposively for having 79 per cent of area under rose cultivation. From the selected Satara and Koregaon tahsils, list of villages having area under rose cultivation was collected from taluka agricultural officer of each tahsil. In all, villages were selected on the basis of area proportion of each tahsil. The villages selected from Satara tahsil were Borgaon, Apshinge (Military), Ninam and Padali (Ninam) and Angapur. While the villages selected from Koregaon tahsil were Koregaon, Rahimatpur, Bobadewadi, Kirawali, Nandgiri, Apshinge, Raddulabad and Kumathe. Sample cultivators were selected randomly from each village and final sample consisted of 50 rose growers. The data collection was done with the help of pre-tested schedules based on the objectives of this study in the first instance. The owners were personally interviewed to ensure accuracy and comprehension. The respondents were enlightened about the purpose of the study, data collection and practical utility of the study. The data were collected for the agricultural year *i.e.* 2005-06. The work of data collection was carried out during the month of January 2007. The data were analyzed with the help of tabular analysis, mathematical tools like

averages, percentages, ratios etc. for working out cost, returns and profitability.

## RESEARCH FINDINGS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarised under following heads:

### Cost of cultivation:

One of the objectives of the present research project was to estimate the cost of cultivation of rose grown in the region in open field condition. The estimated average cost of cultivation is indicated in Table 1

Operation	Values	Percentage
Hired human labour	9300	3.15
Fertilizer	24568	8.33
Plant protection	16854	5.72
FYM	3076.4	1.04
Planting material	35422	12.02
Irrigation	7055.4	2.39
Depreciation	10985	3.73
Land revenue and tax	65	0.02
Interest on working capital	13952	4.73
Cost A	121277	41.13
Interest on fixed capital	20500	6.96
Rental Value of land	63374	21.50
Cost B	205151	69.59
Family Labour	89640	30.41
Cost C	294791	100

Cost 'A' was 121277, which included several important items like hired human labour, fertilizers, plant protection, farm yard manure, planting material, irrigation, depreciation, land revenue and taxes and interest on working capital etc. This shared 3.15 per cent, 8.33 per cent, 5.72 per cent, 1.04 per cent, 12.02 per cent, 2.39 per cent, 3.73 per cent, 0.02 per cent, 4.37 per cent, respectively. In the total cost of cultivation, the expenditure on 'family labour' was maximum of about 30.41 per cent followed by the item 'rental value' of land (21.50%).

Cost 'B' occurred was Rs. 20, 5151 per ha. It comprised of two components *viz.*, rental value of land Rs. 63,374 (21.50%) and interest on fixed capital Rs. 20,500 (6.95%), in addition to cost 'A'.

The cost 'C' or total cost includes the cost 'B' and imputed value of family labour Rs. 89,640 (30.41%).

### Profitability of rose production:

The profitability of rose production had worked out and the same is indicated in Table 2.

It is seen from Table 2 that, cultivation of rose was profitable at all the levels of cost. Per hectare yield of rose was 2,24,166. The gross value received was Rs. 3,80,242 per ha.

**Table 2 : Per hectare profitability of rose production**

Sr. No.	Particulars	Cost (Rs.)
1.	Cost A	121277
2.	Cost B	205151
3.	Cost C	294791
4.	Yield (Numbers)	224166
5.	Gross value (Rs.)	380242
6.	Profit at (Rs.)	
	Cost A	258965
	Cost B	175091
	Cost C	85451
7.	Cost per flower	1.31
8.	Benefit: Cost ratio	1:1.29

The profit obtained from rose production was Rs. 2,58,965 Rs. 1,75,091, and Rs. 85,451 at cost A, cost B, cost C level, respectively. The benefit: cost realized was about 1:1.29.

### Production function analysis of rose production:

The production function *i.e.* 'Cobb-Douglas' type was estimated for this. The results of the same are presented in Table 3.

It is observed from Table 3 that, the elasticity coefficient for area ( $X_1$ ) and labour ( $X_2$ ) were positive and significant at 1 per cent level of significant. The elasticity coefficients for plant protection ( $X_4$ ) and farm

**Table 3 : Elasticity coefficient of Cobb-Douglas production function**

Sr. No.	Particulars	Values
1.	Intercept	3.641855 (5.109007)
2.	Area ( $X_1$ )	0.854334** (0.194632)
3.	Labour ( $X_2$ )	0.765522** (0.346074)
4.	Fertilizer ( $X_3$ )	-0.19804 (0.113999)
5.	Plant protection ( $X_4$ )	0.16053 (0.143936)
6.	Farm yard manure ( $X_5$ )	0.048273 (0.198379)
7.	Planting material ( $X_6$ )	-0.02707 (0.264392)
8.	$R^2$	0.83
9.	Returns to scale ( $\sum b_i$ )	1.60
10.	'F' value	16.82

(Figures in parenthesis indicate the standard error of respective coefficients) \*\* Indicate significant at 1 % level

yard manure ( $X_5$ ) were positive but non-significant. The elasticity coefficient for fertilizers ( $X_3$ ) and planting material ( $X_6$ ) were found to be negative and non significant.

From the Table 3 it is further observed that, the coefficient of multiple determination ( $R^2$ ) was significant and which was highly significant by F value (16.82). The variation explained in the yield by all the independent variables was 88.73 per cent in rose production. Regarding returns to the scale, it increasing returns to the scale was observed.

### Conclusion:

Per hectare cost of cultivation of rose was worked out to Rs.2,94,791. Among the various items of cost maximum cost was incurred on family labour (30.41%), followed by rental value (21.50%), planting material (12.02%), fertilizer (8.33%), plant protection (5.72%), human labour (3.15%), irrigation (2.39%), FYM application (1.04%) which 84.56 per cent in the total cost. Cultivation of rose flowers was profitable at all the levels of cost. Per hectare yield of rose flowers was 2,24,166. The gross value received was Rs. 3,80,242 with benefit: cost ratio was 1:1.29.

Result of Cobb-Douglas production function revealed that, the elasticity coefficient for area ( $X_1$ ) and labour ( $X_2$ ) were positive and significant at 1 per cent level of significant. The elasticity coefficients for plant protection ( $X_4$ ) and farmyard manure ( $X_5$ ) were positive but non-significant. The elasticity coefficients for fertilizer ( $X_3$ ) and planting material ( $X_6$ ) were found to be negative and non-significant. The coefficient of multiple determination ( $R^2$ ) was significant which was highly significant by F value (16.82). The variation explained in the yield by all the independent variables was 88.73 per cent in rose production. Increasing returns to the scale was observed in rose production. Investigations were also carried out regarding economics of rose cultivation and its marketing in Sonapat district of Haryana state by Goyal (1999) and an economics analysis of marketing of rose in West Bengal by Murah and Maiti (2002).

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