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Cost-benefit analysis of Asiatic lily cv. Tressor under shade net conditions of coastal Andhra Pradesh

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Abstract
An experiment was conducted to evaluate the economic viability of Asiatic lily cv. Tressor during *rabi* season of 2016-17 at College of Horticulture, Dr. Y.S.R. Horticultural University, Venkataramannagudem, West Godavari district, Andhra Pradesh. Among the different treatment combinations, combination of S_3N_3 (30 cm x 15 cm + 200 kg ha^{-1}) recorded maximum gross income and high net returns followed by S_2N_3 (25 cm x 15 cm + 200 kg ha^{-1}) where as S_1N_1 (15 cm x 15 cm + 100 kg ha^{-1}) recorded low gross income and net returns from one hectare. High benefit cost ratio was recorded in the combination of S_3N_3 (30 cm x 15 cm + 200 kg ha^{-1}). The low benefit cost ratio was recorded in the combination of S_1N_1 (15 cm x 15 cm + 100 kg ha^{-1}).

Keywords: asiatic lily, benefit cost ratio, shade net

Introduction
Lilium is one of the important bulbous flowers, belongs to liliaceae family and is commercially grown in India for cut flowers. Recently, this crop has become popular in many states of India. Lilies are wonderful ornamental plants with varied uses, grown in border, beds, pots and are excellent cut flowers of magnificent appearance & beautiful colors. In India, lilium is being commercially cultivated in different parts such as, The Nilgiris (Cooner, Kothagiri and Ooty) in an area of around 40 acres (1,60,000 sq.m), Kodaikanal, Shevroy Hills (Yercad), Kalvarayan Hills (Karumanthurai), Hosur, Himachal Pradesh *i.e.* under Shimla and Kullu condition, North Eastern States and Jammu and Kashmir *etc.*
The farmers are always interested in maximizing their profit and not merely production. Therefore, there is necessity to know the variation in the yield and economic returns in the available treatment combinations, relating with different environmental circumstances.

Materials and Methods
The present investigation was conducted at College of Horticulture, Dr. Y.S.R Horticultural University, Venkataramannagudem during 2016-2017. Which is located at 16˚ 63’ 120” N latitude and 81˚ 27’ 568” E longitude and 34m above MSL. It experiences hot humid summer and mild winters. The experimental soil was red sandy loam with good drainage and moderate water holding capacity with sand 70% of sand, silt 20% and clay 10%. The soil pH is 6.32 and E.C. is 0.18 dS m^{-1}. The experiment was conducted in a factorial randomized block design involving three levels of spacing *i.e.* S_1 (15 cm x 15 cm), S_2 (25 cm x 15 cm) and S_3 (30 cm x 15 cm) and three levels of nitrogen *viz.* N_1 (100 kg ha^{-1}), N_2 (150 kg ha^{-1}) and N_3 (200 kg ha^{-1}). Each of these factors were composed at three levels involving totally 9 treatment combinations.
Bulbs of Asiatic lily cv. Tressor with uniform size were used for the experiment. The net size of plot was 3.0 m x 0.6 m, accommodating 40, 24 and 20 plants as per treatments. The field was brought to the fine tilth by ploughing and harrowing. Well decomposed farm yard manure at the rate of 100 kg ha^{-1} was applied at the time of land preparation. The fertilizers *viz*., Urea, Single Super Phosphate and Muriate of Potash were taken as the sources of N, P_2O_5 and K_2O respectively. Entire dose of phosphorus and potassium was given basally and half of the nitrogen at different graded levels are applied before planting and remaining dose of nitrogen applied as top dressing at 30 and 45 days after planting to the respective plots. Bulbs of Asiatic lily cv. Tressor were selected treatment wise and planted in the beds on 20th October, 2016. The various observations on vegetative growth, floral, vase life and bulb parameters were

recorded on five plants randomly selected from net plot area and tagged. The data collected for all the characters studied were subjected to statistical analysis by adopting 'Analysis of Variance' (ANOVA) technique for factorial randomized block design as suggested by Panse and Sukhatme (1967) [1].

The different treatment combination of Asiatic lily under study were judged on the basis of yield performance and to assess the effectiveness of each individual treatment, the relative economics of each treatment was worked out in terms of benefit cost ratio. The gross realization in terms of rupees per hectare was worked out on the basis of the yield of each treatment and the prevailing price of the produce in the market. The cost of cultivation of Asiatic lily was calculated considering the quantity inputs and input services utilized their and market prices. The total costs were deducted from the gross income to obtain net income.

$$\text{B: C ratio} = \frac{\text{Gross returns (Rs. ha}^{-1}\text{)}}{\text{Total costs (Rs ha}^{-1}\text{)}}$$

Results and Discussion

The results obtained from the investigation are presented in table 1 and 2. To workout gross returns, input-output ratio, net returns over various costs, it is necessary to workout cost of cultivation of Asiatic lily cv. Tressor under shade net condition (table 1). Among the different treatment combinations of Asiatic lily, combination of S_3N_3 (30 cm x 15 cm + 200 kg ha^{-1}) recorded highest gross returns (Rs 1,48,82,045). The treatment combination of S_1N_1 (15 cm x 15 cm + 100 kg ha^{-1}) recorded the lowest gross returns (Rs 78,32,000) where as among the treatment combinations, S_3N_3 (30 cm x 15 cm + 200 kg ha^{-1}) recorded highest net returns (Rs 1,21,86,583) and S_1N_1 (15 cm x 15 cm + 100 kg ha^{-1}) recorded lowest net returns (Rs 27,98,337). The economic analysis resulted in higher B: C ratio for treatment combination of S_3N_3 (5.52) followed by S_3N_2 (4.66). The lower B: C ratio was obtained with S_1N_1 (1.55). Similar findings reported by Patel *et al*. (2006) [2] in tuberose.

The differences observed in the total cost of cultivation of Asiatic lily cv. Tressor under shade net condition per hectare for various combinations of spacing and nitrogen levels are presented in table 1.

Economic analysis of different treatment combinations of Asiatic lily cv. Tressor under shade net condition is presented in Table 2.

Table 1: Cost of cultivation of Asiatic lily cv. Tressor under shade net conditions among different treatment combinations (Figures indicate Rupees per ha)

Particulars	15 x 15 cm + 100 kg N ha^{-1} (T_1)	15 x 15 cm + 150 kg N ha^{-1} (T_2)	15 x 15 cm + 200 kg N ha^{-1} (T_3)	25 x 15 cm + 100 kg N ha^{-1} (T_4)	25 x 15 cm + 150 kg N ha^{-1} (T_5)	25 x 15 cm + 200 kg N ha^{-1} (T_6)	30 x 15 cm + 100 kg N ha^{-1} (T_7)	30 x 15 cm + 150 kg N ha^{-1} (T_8)	30 x 15 cm + 200 kg N ha^{-1} (T_9)
A. Variable Costs									
	A. LABOUR								
1) Ploughing	4000	4000	4000	4000	4000	4000	4000	4000	4000
2) Sterilization of soil	2000	2000	2000	2000	2000	2000	2000	2000	2000
3) Land and bed preparation	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
4) Application of fertilizers	7500	7500	7500	7500	7500	7500	7500	7500	7500
5) Planting	6000	6000	6000	4500	4500	4500	4200	4200	4200
6) Staking	15,000	15,000	15,000	9000	9000	9000	8250	8250	8250
7) Irrigation (need based)	8000	8000	8000	8000	8000	8000	8000	8000	8000
8) Weeding	9000	9000	9000	9000	9000	9000	9000	9000	9000
9) Application of plant protection chemicals	5000	5000	5000	5000	5000	5000	5000	5000	5000
10) Harvesting	2500	2750	3000	3500	3750	4000	4000	4250	4500
11) Transportation and marketing	2000	2250	2500	3000	3250	3500	3500	3750	4000
12) Miscellaneous	3000	3000	3000	3000	3000	3000	3000	3000	3000
Sub Total	1,24,000	1,24,500	1,25,000	1,18,500	1,19,000	1,19,500	1,18,450	1,18,950	1,19,450

Particulars	15 x 15 cm + 100 kg N ha^{-1} (T_1)	15 x 15 cm + 150 kg N ha^{-1} (T_2)	15 x 15 cm + 200 kg N ha^{-1} (T_3)	25 x 15 cm + 100 kg N ha^{-1} (T_4)	25 x 15 cm + 150 kg N ha^{-1} (T_5)	25 x 15 cm + 200 kg N ha^{-1} (T_6)	30 x 15 cm + 100 kg N ha^{-1} (T_7)	30 x 15 cm +150 kg N ha^{-1} (T_8)	30 x 15 cm + 200 kg N ha^{-1} (T_9)
B. INPUTS									
1) Cost of bulbs	44,44,440	44,44,440	44,44,440	26,66,660	26,66,660	26,66,660	22,22,220	22,22,220	22,22,220
2) Staking	3,33,333	3,33,333	3,33,333	2,44,444	2,44,444	2,44,444	2,22,222	2,22,222	2,22,222
3) Manure or compost	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
4) Fertilizers									
a) Urea @ ₹. 5.96 per kg	1192	1788	2384	1192	1788	2384	1192	1788	2384
b) Single super phosphate @ ₹. 6.96 per kg	12,180	12,180	12,180	12,180	12,180	12,180	12,180	12,180	12,180
c) Murate of potash @ ₹. 11.16 per kg	3683	3683	3683	3683	3683	3683	3683	3683	3683
d) Neem cake @ ₹. 13.36 per kg	13,361	13,361	13,361	13,361	13,361	13,361	13,361	13,361	13,361
e) Coco peat @ ₹. 35.76 per kg	71,514	71,154	71,154	71,154	71,154	71,154	71,154	71,154	71,154
5) Plant protection chemicals	1000	1000	1000	1000	1000	1000	1000	1000	1000
6) Irrigation charges	4000	4000	4000	4000	4000	4000	4000	4000	4000
Sub total	48,94,703	48,94,703	48,94,703	30,27,674	30,27,674	30,27,674	25,61,012	25,61,012	25,61,012
Fixed Costs									
1) Interest on fixed capital	9000	9000	9000	9000	9000	9000	9000	9000	9000
2) Depreciation	6000	6000	6000	6000	6000	6000	6000	6000	6000
Sub Total	15000	15000	15000	15000	15000	15000	15000	15000	15000
Total cost (A+B+C)	50,33,703	50,34,203	50,34,703	31,61,174	31,61,674	31,62,174	26,94,462	26,94,962	26,95,462

Table 2: Benefit-cost ratio for cultivation of Asiatic lily cv. Tressor under shade net conditions affected by spacing, nitrogen levels and their interactions

Treatment combinations	Flower yield (lakh number ha^{-1})	Bulb yield (kg ha^{-1})	Marketable surplus of Lilium flowers (lakh number ha^{-1})	Marketable surplus of Lilum bulbs (kg ha^{-1})	Gross returns (returns from flower + bulb) (Lakh Rs ha^{-1})	Cost of cultivation (Lakh Rs ha^{-1})	Net returns (Lakh Rs ha^{-1})	B:C ratio
15 x 15 cm + 100 kg N ha^{-1} (T_1)	2.25	4944	2.12	4647	78.32	50.33	27.98	1.55
15 x 15 cm + 150 kg N ha^{-1} (T_2)	2.50	6778	2.35	6371	98.96	50.34	49.13	1.96
15 x 15 cm + 200 kg N ha^{-1} (T_3)	2.83	8667	2.66	8147	121.41	50.35	71.06	2.41
25 x 15 cm + 100 kg N ha^{-1} (T_4)	2.77	5333	2.61	5013	89.29	31.61	57.68	2.82
25 x 15 cm + 150 kg N ha^{-1} (T_5)	3.25	7389	3.06	6946	115.41	31.62	83.78	3.65
25 x 15 cm + 200 kg N ha^{-1} (T_6)	3.66	9278	3.44	8721	138.91	31.62	107.27	4.39
30 x 15 cm + 100 kg N ha^{-1} (T_7)	3.12	6111	2.94	5744	101.56	26.94	74.62	3.76
30 x 15 cm +150 kg N ha^{-1} (T_8)	3.50	8111	3.29	7624	125.59	26.95	100.73	4.66
30 x 15 cm + 200 kg N ha^{-1} (T_9)	3.92	9944	3.69	9347	148.82	26.95	121.86	5.52

Note: Labour wages @ Rs 200/- per day for men and Rs 150/- for women Market price of cut lilium flowering shoot/spike = Rs 15.0 /- Market price of lilium bulb = Rs 1000/- per kg Gross returns = Returns from Spikes + Returns from bulbs

Conclusion

As the objective of any farmer is to realize maximum profits from the crop cultivated, the study indicated that farmers can choose their profitable treatment combination of spacing and nitrogen *viz*., S_3N_3 as they had recorded highest gross returns, net returns and benefit - cost ratio among all treatment combination the studied.

References

1. Panse VG, Sukhatme BV. Statistical methods for agricultural workers. ICAR publication, New Delhi, 1967, 100-161.
2. Patel MM, Parmar PB, Parmar BR. Effect of nitrogen, phosphorus and spacing on growth and flowering in tuberose (*Polianthes tuberosa* L.) cultivar Single. Journal of Ornamental Horticulture. 2006; 9(4):286-289.