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Impact of Fertilization on the Profitability and Yield Of Statice (*Limonium sinuatum* L.) Cut Flower Production under Ratoon Cropping System

Nomita Laishram[1]*, Pooja R[1], Arvinder Singh[1], Sarabdeep Kour[2], R.K. Pandey[1] and Rakesh Sharma[3]

[1]Division of Floriculture and Landscaping, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, Chatha-180009, India.
[2]Division of Soil Science and Agricultural Chemistry, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, Chatha-180009, India.
[3]Division of Agricultural Extension Education, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, Chatha-180009, India.

ABSTRACT

Annual statice (Limonium Sinuatum L.) can produce two harvests of the quality crop in one cropping season with proper nutrition management. The effect of fertilization on yield and profitability of statice ratoon system has not been reported yet. Hence, the present study addresses the impact of fertilization on increased production potential and profitability of statice ratoon system. Results of the experiment reveal that the overall cost of cultivation as well as the economics of statice flower production under the ratoon cropping system was significantly influenced by fertilizer management in the main crop. An increase in dose of NPK (Nitrogen, Phosphorous, Potassium) fertilizer increases the yield and quality of main as well as ratoon crop. The stem length and number of marketable flowers in ratoon crops increase with optimum dose of fertilizer application. The increase in yield and quality of ratoon crop ultimately lead to an increase in net income. Maximum net returns (₹ 6066612.17) and benefit-cost ratio (14.60:1) per hectare area were obtained from the same treatment while lowest (10.60:1) was observed with 100:75:50 kg/ha NPK. Hence, a fertilizer dose of 150:125:75 kg/ha NPK may be adopted to produce the maximum yield of quality cut flower stem of statice under ratoon cropping system which will result in getting maximum returns.

Keywords: *Benefit Cost ratio, Cost of cultivation, Gross income, NPK fertilizers, Profitability, Statice cultivation*

INTRODUCTION

Statice (*Limonium sinuatum* L.) is one of the most popular cut flower crop grown all over the world. Statice flower production is of particular importance since the blooms can be utilized as fresh flowers as well as dried flowers. The more delicate varieties are just as beneficial as gypsophila for use as filler flowers in floral arrangements (Grieve *et al*., 2005). It is one of the top ten selling flowers at the Dutch flower auction house Aalsmeer. Israel, Kenya, and Zimbabwe account for around 60% of the supply in the Netherlands auctions. In 1993, 58.2 million stems of perennial statice were produced and sold in the Netherlands, then in 1994 the number rose to 73.4 million stems; and in 1995, the production was reduced to 61.5 million stems (Anonymous, 1997).

Ratooning can be successfully practiced in Statice crops in which a second crop can be harvested in the same cropping season. In the ratoon crop, the basal buds of the stem grow shortly after cutting of the main crop (Wilson, 2011). It is practiced in some important horticultural crops like brinjal, chilli, okra, tuberose etc. However, information regarding the ratooning of statice crop is not available. Normally the duration of a ratoon crop is much shorter than direct seeded crop (Al-Taweel *et al*., 2020), providing higher resource use efficiency per unit time and per unit area (Santos *et al*., 2003). One of the several advantages of ratooning is operations like land preparation and planting for the second crop are eliminated (Gerik *et al.,* 1988). The yield and quality of the ratoon crop is however not at par with the main crop. This can be improved with proper nutrient management during the main cropping season. It has been reported that in most cases, surplus nitrogen was found in the soil after meeting the demand of the main crop (He *et al*., 2016). Very limited information is available about the effect of fertilization on the quality of statice in general and ratoon crops in particular. Hence, it becomes imperative to develop an optimum nutrient dose for the cultivation of statice which will ensure efficient nutrient uptake and improve the quality of produce in the main crop as well as in the ratoon crop. So, the present study was undertaken to determine the optimum nutrient supply for regulating yield and ultimately the profitability of statice (*Limonium sinuatum* L.) cut flower production under a ratoon cropping system.

MATERIAL AND METHOD

Experimental Setup

A field experiment was conducted during the year 2022 – 2023 in the research farm of the Division of Floriculture and Landscaping, SKUAST-Jammu, India. The experimental farm is situated at an elevation of 296 meters above mean sea level (MSL) and at a latitude of 33º55′ North and longitude of 74º58′ East. The place experiences hot dry summer, a hot and humid rainy season and cold winter months, the maximum temperature goes up to 45°C during summers (May to June) and the minimum temperature falls to 1°C during winters.

*Corresponding Author: ***Nomita Laishram***

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Before the initiation of the experiment, the soil physico-chemical analysis of the experimental plot recorded an EC of 0.32 dS m^{-1}, 0.36 % Organic carbon content, 230.84 kg ha^{-1} available N, 26.70 kg ha^{-1} available P_2O_5 and 220.70 kg ha^{-1} available K_2O.

The experiment was laid out in a Randomized Block Design with three replications. The treatments comprise of 100 :100 :100 kg/ha NPK (T_1); 100:75:50 kg/ha NPK (T_2); 100:50:25 kg/ha NPK (T_3); 150:125:75 kg/ha NPK (T_4); 150:75:50 kg/ha NPK (T_5); 150N :50 P :25K kg/ha NPK (T_6); 200:125:75 kg/ha NPK (T_7); 200:75:50 kg/ha NPK (T_8); 200:50:25 kg/ha NPK (T_9); 250:125:75 kg/ha NPK (T_{10}); 250:75:50 kg/ha NPK (T_{11}); 250:50P:25 kg/ha NPK (T_{12}).

The seeds of statice (*Limonium sinuatum* L.) cv. QIS White were sown in nursery beds during October month. Seedlings after attaining a fully developed four leaf stage were transplanted in the experimental plots at a spacing of 30 cm x 30 cm. Full dose of phosphorus, potassium and half dose of nitrogen were given as basal application. The remaining half dose of nitrogen was applied 45 days after transplanting. Urea, single super phosphate (SSP) and muriate of potash (MOP) were used to supply the elements of nitrogen, phosphorus, and potassium respectively. Five plants from each plot were randomly selected and tagged for recording flower yield parameters. After harvesting of the main crop, no fertilizer was applied to the ratoon crop. For taking the ratoon crop, plants were maintained by providing proper irrigation.

Economic Analysis

The grades given by the Society of American Florist was followed for grading the cut flower stem where cut stems measuring ≥70 cm were graded as A- grade and cut stem length measuring 60 cm to 70 cm were graded as B- grade. The yield of flowers were calculated for one hectare area and thereafter the economics of the individual treatment was calculated based on the total cost of cultivation and gross income. The expenditures both recurring and non-recurring incurred during the cropping period were computed by taking into consideration the various inputs, viz; cost of seedling, labour cost for land preparation, nursery raising, fertilizer application, weeding, harvesting, and handling etc. with labour charges taken as Rs. 400 per manday. For calculating the gross monetary return, sale price of the flower have been taken as ₹ 2 per stem for A grade flowers and ₹ 1 per stem for B grade flowers. Gross monetary returns (Rs./ha) was worked out for different treatments as:

Gross Income = flower yield/hectare x sale price of the flower

Net Income = Gross Income – Cost of cultivation

$$\text{B: C Ratio} = \frac{\text{Net Income}}{\text{Cost of Cultivation}}$$

Data analysis

The data pertaining to flower yield and quality parameters of statice were analyzed using analysis of variance (ANOVA) to test the significance in the data recorded. The means were compared with least significant difference test at 5% probability where ANOVA indicated significant difference (Gomez and Gomez, 1985) [8]. The analysis was conducted using SPSS analytical package (SPSS, version 19.0).

RESULTS AND DISCUSSION

The crop may not be harvested as expected if the optimum nutrient requirement of the plant is not supplied. Successful cut flower cultivation depends on a balanced usage of all the major elements. Additionally, the high-dose application of these nutritional components immediately raises production costs, which eventually lowers net return on farming. Also increasing dose of chemical fertilizers may pose harmful effects on the environment. Further, the acceptance of any cultivation practices by farmers largely depends on the comparative economics of the practice and feasibility of adoption and the effect on yield and quality as well.

The growth and development of statice are favorably influenced by the balanced administration of nitrogen, phosphorus and potassium at a certain suggested amount. If an optimum dose of nutrient is provided, plant exhibit full expression of genetic potential, yield and quality for a long period. Further, the application of optimum dose of nutrient also lead to an increase in quality flower production of ratoon crop which resulted in additional income over and above the main crop.

Flower quality and yield analysis

The yield and quality data pertaining to statice cut flower production under the influence of different nutrient management treatments in ratoon cropping system are appended in Table 1 and 2. The findings revealed that fertilizer application of 100: 50: 25 Kg/ha NPK showed earliest days (140.30 days) taken for cut flower harvest in the main crop. However, a number of days taken from the main crop harvest to ratoon crop harvest remain unaffected with the application of different fertilizer doses. Highest number of cut flower stems per plant in main crop as well as ratoon crop (20.13 and 17. 20 respectively) was obtained with the application of 150: 125: 75 Kg/ha NPK. Aslam *et al*. (2016) were of the opinion that the days to blossom appearance changed inversely with increasing nitrogen and potash dosages. It has also been reported that potassium accelerates the pace of photosynthesis and mobilises sucrose to the shoots, both of which have a favorable impact on the onset of flowering (Rolaniya *et al*., 2017). The application of 150:125:75 kg/ha NPK recorded significantly highest flower quality parameters like cut flower stem length, number of flower bunches per spike and fresh weight of spike in main crop as well as ratoon crop. Nitrogen, phosphorous, and potassium are primary nutrients required by the plants for their proper growth and development. Growth and development is negatively affected by the deficiency of any of these nutrients during their life cycle. The increase in cut flower stem length may be due to more availability of nutrients to plants. An increase in phosphorus from 50 to 125 kg/ha has increased the flower yield parameters of statice. Phosphorous increases cell division, root growth and flowering. Phosphorous is found in plant parts having high metabolism and rapid cell division; therefore, plays a role in the storage and transfer of energy released during photosynthesis and its deficiency delay maturity (Savoy, 1999). Increased doses of NPK are directly linked with a continuous supply of essential nutrients throughout the growth period which resulted in better flower quality. Similar results were also reported by Islam *et al*. (2017). In contrary, low nitrogen fertilization was reported to result in satisfactory cut flower output, demonstrating that nitrogen is not a limiting issue in statice plants (Eghball and Power, 1999). In the present investigation, it was observed that a further increase in nitrogen dose from 150 kg/ha to 200 kg/ha reduces the number of cut flower stem in main crop. Earlier studies also reported that once the optimum requirement is met, further increase in nitrogen may not be beneficial to the plant (Arora, and Khanna, 1986). An integrated nutrient management approach was reported for enhanced flower yield of statice (Gayithri *et al.,* 2004).

It was also pointed out that application of controlled-release fertilizers (Osmocote), 6g/ plant resulted in significantly higher growth and flowering parameters (Nishchay *et al*., 2021). Application of phosphorous between 30 and 46 mg/L, produced a maximum number of stems and the total weight of flower in statice (Verlinden and McDonald, 2007).

The flower yield and quality traits of the main crop were higher than those of the ratoon crop. Under suitable environmental conditions and appropriate cultivation practices, the yield potential of ratoon crop could be fully exploited (Al-Taweel *et al*., 2020). Afzal *et al.* (2012) further suggested that a higher level of N application was needed to prevent production differences between main and ratoon crops of sorghum. In the present study, with proper fertilizer application, the yield gap between main and ratoon crops narrowed.

Results also indicate that 100:100:100 kg/ha NPK applied at the main crop was almost adequate for the ratoon crop regrowth, development and production. However, the yield and flower quality of ratoon crop increase with an increase in fertilizer dose to a certain extent along with assured irrigation. Excessive application of fertilizer might have reduced nutrient use efficiency. Earlier it was also suggested that a good crop stand in the main crop is essential in producing a good ratoon crop (Turner and Jund, 1993). N fertilizer applied immediately after main crop harvest had a more evident and positive influence on ratoon crop yield than N applied before harvest (Turner and McIlrath, 1988). There are also reports on a significant correlation between main crop yield and ratoon crop yield (Dou *et al*., 2016).

Cut flowers grades on the basis of stem length

During the course of investigations, it was observed that higher numbers of A-grade flowers were produced in main crop as compared to that of ratoon crop (Table 3). However, different doses of fertilizer does not have a significant effect on the production of A-grade cut stems in main crop as well as ratoon crop individually.

Treatment comprising of 250:75:50 kg/ha NPK proved superior in recording maximum B-Grade flowers based on stem length (5.18%) in main crop while treatment 100:50:25 kg/ha NPK recorded maximum percentage of B-grade flowers (14.64 %) in ratoon crops. The lowest percent B-grade cut stems (1.69 %) in main crop were recorded with 200:75:50 kg/ha NPK whereas in ratoon crop lowest percent B-grade flowers (10.32%) in ratoon crop were recorded with the treatment of 150:125:75 kg/ha NPK. It is well-known fact that the chemical fertilizers could enhance plant growth due to the role of nitrogen in nucleic acids and protein synthesis, phosphorous act as energy compound (ATP and ADP) (Helgi and Rolfe, 2005) and potassium is an activator of many enzymes that are essential for photosynthesis and respiration and it also activates enzymes needed to form starch and proteins (Bhandal and Malik, 1988). A higher percentage of top grade flowers in carnation crop was reported with fertigation of Terraktiv-S (NPK, 14:10:14) (Lindemann and Schwenker, 1972). Medina (1992) also observed higher percentage of weak and short stems under nitrogen deficiency incarnation. An increased percentage of grade 1 flowers with water soluble fertilizer (1:0.25:0.9 NPK) fertigation was reported by Kowalczyk *et al*. (1992).

Economic analysis

The economics under various treatments are worked out on the basis of yield under each treatment. The cost incurred in the establishment and maintenance of statice crop in 1 hectare area is presented in Table 6. The total cost was calculated for each fertilizer module and the total returns were calculated based on the yield of the cut flowers and the prevailing rate of flowers for particular grade.

The economic analysis of different treatments revealed that among all the treatments, the highest gross expenditure of ₹ 416010.50 per ha was incurred in 250:125:75 kg/ha NPK and the lowest of ₹ 412186.00 per ha with 100:50:25 kg/ha NPK. The highest gross returns in monetary terms (₹ 6482089.67 per ha) was recorded with 150:125:75 kg/ha NPK followed by ₹ 5786562.98 ha^{-1} in treatment 250:125:75 kg/ha NPK. Lowest gross return of ₹ 4793366.56 was recorded in 100:75:50 kg/ha NPK. The highest net income of ₹ 6066612.17 ha^{-1} was recorded with treatment of 150:125:75 kg/ha NPK followed by ₹ 5370552.48 in 250:125:75 kg/ha NPK, whereas lowest net income of ₹ 4380030.56 was recorded in 100:75:50 kg/ha NPK. Treatment comprising of 150:125:75 kg/ha NPK gave maximum benefit-cost ratio of 14.60:1 followed by 12.91:1 with application of 250:125:75 kg/ha NPK.

The economic value of a crop is determined by its yield and quality. This increase in monetary return may be attributed to higher yield and improved quality of flowers both in main as well as ratoon crop which fetches more price in the market. The variation in net returns and cost: benefit ratio might be due to the difference in yield, price of flowers and other fertilizer inputs. Similar findings have also been reported by Laishram *et al.* (2016) in chrysanthemum and Singh *et al.* (2016) in carnation.

Verma *et al.* (Verma *et al*., 2012) stated that treatment of Azospirillum, PSB, vermicompost and 50% RDF resulted in maximum returns and benefit-cost ratio (6.04:1) in chrysanthemum cv. Raja. Dalal *et al.* (Dalal *et al*., 2009), Gharge *et al.* (2009), Usman and Ashfaq (2013) and Momin *et al.* (2015) also reported similar findings concerning the suitability of fertilizers in increasing profitability for different ornamental crops.

CONCLUSION

The present study showed encouraging results concerning higher economic return for statice cultivation. Proper management of fertilizer resulted in improved quality and yield of statice flowers in main as well as ratoon crop. It can be concluded that farmers can get an average net income ranging from ₹ 4380030.56 with fertilizer application of 100:75:50 kg/ha NPK to ₹ 6066612.17 with fertilizer application of 150:125:75 kg/ha NPK from one hectare area from statice cut flower cultivation under Jammu conditions.

Table 1. Effect of fertilization on days to flower harvest and cut flower yield in main and ratoon crops of statice (Limonium sinuatum L.)

Treatments (Kg/ha)	Days taken from transplanting to main crop harvest	Days taken from main crop harvest to ratoon crop harvest	No. of cut flower stems per plant	
			Main crop	Ratoon crop
T_1=100:100:100 kg/ha NPK	145.93	45.42	18.20	13.73
T_2=100:75:50 kg/ha NPK	147.73	43.25	16.33	11.67
T_3=100:50:25 kg/ha NPK	140.80	42.13	17.13	11.50
T_4=150:125:75 kg/ha NPK	146.93	42.63	20.13	17.20
T_5=150:75:50 kg/ha NPK	148.33	41.70	15.13	14.97
T_6=150:50:25 kg/ha NPK	149.80	40.23	17.33	12.87
T_7=200:125:75 kg/ha NPK	150.07	39.93	19.93	13.57
T_8=200:75:50 kg/ha NPK	157.07	40.80	17.87	13.13
T_9= 200:50:25 kg/ha NPK	153.93	40.47	17.87	13.50
T_{10}=250:125:75 kg/ha NPK	147.07	38.53	19.87	13.73
T_{11}=250:75:50 kg/ha NPK	148.40	40.27	18.60	12.90
T_{12}=250:50:25 kg/ha NPK	148.47	40.70	18.93	13.07
SE ± (m)	1.74	1.67	0.58	0.65
$CD_{0.05}$	5.12	NS	5.54	1.91

Table 2. Effect of fertilization on quality parameters of cut flower stems in main and ratoon crop in statice (Limonium sinuatum L.)

Treatments (Kg/ha)	Spike length (cm)		No. of flower bunches/spike		Fresh weight of flower spike (g)	
	Main crop	Ratoon crop	Main crop	Ratoon crop	Main crop	Ratoon crop
T_1=100:100:100 kg/ha NPK	72.47	73.54	42.67	37.07	33.60	30.56
T_2=100:75:50 kg/ha NPK	72.73	69.32	39.07	36.87	29.07	27.46
T_3=100:50:25 kg/ha NPK	70.60	68.84	39.87	36.67	26.93	22.70
T_4=150:125:75 kg/ha NPK	83.53	72.19	44.27	38.33	52.33	34.36
T_5=150:75:50 kg/ha NPK	74.07	74.66	38.93	39.07	28.93	26.70
T_6=150:50:25 kg/ha NPK	77.33	70.54	39.73	35.00	24.00	22.54
T_7=200:125:75 kg/ha NPK	80.93	69.66	37.67	35.67	45.73	38.33
T_8=200:75:50 kg/ha NPK	75.73	70.19	37.07	33.27	36.80	29.07
T_9= 200:50:25 kg/ha NPK	77.67	69.84	34.33	30.33	32.73	26.60
T_{10}=250:125:75 kg/ha NPK	76.40	68.06	44.00	37.87	37.13	30.91
T_{11}=250:75:50 kg/ha NPK	73.87	66.47	36.87	32.07	33.13	28.26
T_{12}=250:50:25 kg/ha NPK	74.27	67.22	37.93	34.67	36.27	24.13
SE ± (m)	1.58	0.69	1.57	1.49	1.659	1.35
$CD_{0.05}$	4.67	2.05	4.63	4.42	4.897	3.98

Table 3. Effect of fertilization on production of A-Grade (%) and B-Grade (%) flowers in main and ratoon crop of statice (Limonium sinuatum L.)

Treatments	A-Grade (%) flowers		B-Grade (%) flowers	
	Main crop	Ratoon crop	Main crop	Ratoon crop
T_1=100:100:100 kg/ha NPK	96.86 (9.891)	87.53 (9.402)	3.42 (2.102)	12.13 (3.622)
T_2=100:75:50 kg/ha NPK	97.08 (9.902)	86.54 (9.350)	2.94 (1.984)	13.20 (3.768)
T_3=100:50:25 kg/ha NPK	97.91 (9.945)	85.68 (9.300)	2.06 (1.749)	14.64 (3.953)
T_4=150:125:75 kg/ha NPK	98.02 (9.950)	90.81 (9.577)	2.22 (1.794)	10.32 (3.362)
T_5=150:75:50 kg/ha NPK	97.31 (9.914)	87.82 (9.424)	2.62 (1.902)	12.46 (3.667)
T_6=150:50:25 kg/ha NPK	96.74 (9.885)	85.95 (9.320)	3.15 (2.037)	14.26 (3.903)
T_7=200:125:75 kg/ha NPK	97.33 (9.915)	88.41 (9.454)	3.24 (2.058)	11.29 (3.502)
T_8=200:75:50 kg/ha NPK	98.69 (9.984)	88.32 (9.449)	1.69 (1.639)	11.80 (3.575)
T_9= 200:50:25 kg/ha NPK	97.34 (9.915)	85.21 (9.281)	2.58 (1.892)	14.09 (3.883)
T_{10}=250:125:75 kg/ha NPK	96.07 (9.849)	89.98 (9.537)	3.96 (2.226)	10.38 (3.371)
T_{11}=250:75:50 kg/ha NPK	94.48 (9.768)	88.64 (9.459)	5.18 (2.486)	11.54 (3.538)
T_{12}=250:50:25 kg/ha NPK	96.73 (9.884)	87.72 (9.417)	3.07 (2.017)	12.07 (3.613)
SE ± (m)	0.120	0.210	0.030	0.088
$CD_{0.05}$	N/A	N/A	0.089	0.261

**Figures in the parenthesis are the square root transformations of the percent values*

Table 4. Effect of fertilization on yield component in main and ratoon crop of statice (Limonium sinuatum L.)

Treatments (Kg/ha)	Total yield per hectare		Yield of A-grade cut flower stems per ha		Yield of B-grade cut flower stems per ha	
	Main crop	Ratoon crop	Main crop	Ratoon crop	Main crop	Ratoon crop
T_1=100:100:100 kg/ha NPK	1617779.80	1220445.97	1566981.51	1068256.36	55328.07	148040.1
T_2=100:75:50 kg/ha NPK	1451557.37	1037334.63	1409171.89	897709.39	42675.79	136928.2
T_3=100:50:25 kg/ha NPK	1522668.57	1022223.50	1490844.80	875841.09	31366.97	149653.5
T_4=150:125:75 kg/ha NPK	1789335.57	1528890.80	1753906.73	1388385.74	39723.25	157781.5
T_5=150:75:50 kg/ha NPK	1344890.57	1330668.33	1308713.01	1168592.93	35236.13	165801.3
T_6=150:50:25 kg/ha NPK	1540446.37	1144001.43	1490227.82	983269.23	48524.06	163134.6
T_7=200:125:75 kg/ha NPK	1771557.77	1206223.73	1724257.18	1066422.40	57398.47	136182.7
T_8=200:75:50 kg/ha NPK	1588446.43	1167112.57	1567637.78	1030793.82	26844.74	137719.3
T_9= 200:50:25 kg/ha NPK	1588446.43	1200001.50	1546193.75	1022521.28	40981.92	169080.2
T_{10}=250:125:75 kg/ha NPK	1766224.43	1220445.97	1696811.81	1098157.28	69942.49	126682.3
T_{11}=250:75:50 kg/ha NPK	1653335.40	1146668.10	1562071.29	1016406.60	85642.77	132325.5
T_{12}=250:50:25 kg/ha NPK	1682668.77	1161779.23	1627645.50	1019112.74	51657.93	140226.8

Table 5. Effect of fertilization on gross income obtain from cut flower stems in main and ratoon crop of statice (Limonium sinuatum L.)

Treatments (Kg/ha)	Gross income from A-grade cut flower stems per ha		Gross income from B-grade cut flower stems per ha		Gross total income (A grade + B grade)	
	Main crop	Ratoon crop	Main crop	Ratoon crop	Main crop	Ratoon crop
T_1=100:100:100 kg/ha NPK	3133963.03	2136512.72	55328.07	148040.10	3189291.10	2284552.82
T_2=100:75:50 kg/ha NPK	2818343.79	1795418.78	42675.79	136928.20	2861019.58	1932346.98
T_3=100:50:25 kg/ha NPK	2981689.59	1751682.19	31366.97	149653.50	3013056.56	1901335.69
T_4=150:125:75 kg/ha NPK	3507813.45	2776771.47	39723.25	157781.50	3547536.70	2934552.97
T_5=150:75:50 kg/ha NPK	2617426.03	2337185.85	35236.13	165801.30	2652662.16	2502987.15
T_6=150:50:25 kg/ha NPK	2980455.64	1966538.46	48524.06	163134.60	3028979.70	2129673.06
T_7=200:125:75 kg/ha NPK	3448514.36	2132844.80	57398.47	136182.70	3505912.83	2269027.50
T_8=200:75:50 kg/ha NPK	3135275.56	2061587.64	26844.74	137719.30	3162120.30	2199306.94
T_9= 200:50:25 kg/ha NPK	3092387.51	2045042.56	40981.92	169080.20	3133369.43	2214122.76
T_{10}=250:125:75 kg/ha NPK	3393623.62	2196314.57	69942.49	126682.30	3463566.11	2322996.87
T_{11}=250:75:50 kg/ha NPK	3124142.57	2032813.21	85642.77	132325.50	3209785.34	2165138.71
T_{12}=250:50:25 kg/ha NPK	3255291.00	2038225.48	51657.93	140226.80	3306948.93	2178452.28

Table 6. Input cost for statice cultivation in 1 hectare area (net cultivated area is taken as 8000 m^2)

Particulars	Quantity	Total cost (in ₹)
Land preparation		
a. Ploughing	-	₹ 6,000
b. Levelling and bed preparation	50 mandays	₹ 20,000
Nursery raising and transplanting	50 mandays	₹ 20,000
Intercultural operations		
a. Fertilizer application	10 mandays	₹ 4,000
b. Weeding and hoeing	60 mandays	₹ 24,000
c. Irrigation	40 mandays	₹ 16,000
Harvesting and assembling	80 mandays	₹ 32,000
Statice seedlings	88,889 seedling	₹ 1,77,778
Inorganic fertilizers		
a. Urea	₹ 5.33/kg	
b. DAP	₹ 29/kg	
c. MOP	₹ 17/kg	
Organic fertilizers FYM	₹ 5/kg	₹ 50,000
Land lease		₹ 60,000
Total input cost		₹ 4,09,778

Table 7. Effect of fertilization on benefit cost ratio (BCR) of statice (Limonium sinuatum L.)

Treatments	Input Cost (₹)	Gross Income (Main crop + Ratoon crop) (₹)	Net Income (₹)	BCR
T_1=100:100:100 kg/ha NPK	414911.00	5473843.92	5058932.92	12.19:1
T_2=100:75:50 kg/ha NPK	413336.00	4793366.56	4380030.56	10.60:1
T_3=100:50:25 kg/ha NPK	412186.00	4914392.25	4502206.25	10.92:1
T_4=150:125:75 kg/ha NPK	415477.50	6482089.67	6066612.17	14.60:1
T_5=150:75:50 kg/ha NPK	413602.50	5155649.31	4742046.81	11.47:1
T_6=150:50:25 kg/ha NPK	412452.50	5158652.76	4746200.26	11.51:1
T_7=200:125:75 kg/ha NPK	415744.00	5774940.33	5359196.33	12.89:1
T_8=200:75:50 kg/ha NPK	413869.00	5361427.24	4947558.24	11.95:1
T_9= 200:50:25 kg/ha NPK	412719.00	5347492.19	4934773.19	11.96:1
T_{10}=250:125:75 kg/ha NPK	416010.50	5786562.98	5370552.48	12.91:1
T_{11}=250:75:50 kg/ha NPK	414135.50	5374924.05	4960788.55	11.98:1
T_{12}=250:50:25 kg/ha NPK	412985.50	5485401.21	5072415.71	12.28:1

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