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Yield and quality of gerbera influenced by nitrogen and phosphorus levels under polyhouse conditions

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ABSTRACT

An experiment entitled "Yield and Quality of gerbera as influenced by nitrogen and phosphorus levels was carried out from February, 2004 to August, 2004 at Floriculture Unit, University Department of Horticulture, Dr. Panjabrao Deshmukh krishi Vidyapeeth. The results indicated that, significantly maximum flowers per plant and per sq.m, flower stalk length, flower stalk thickness and number of flowers of grade I were recorded under the higher levels of nitrogen and phosphorus (10 N + 15 g P_2O_5/m^2). Maximum flower diameter was obtained under the application of 10 g N/m² along with 12.5 P_2O_5/m^2 . Whereas, maximum flowers of grade II and more vase life were reported under level of nitrogen and higher level of phosphorus (5 g N + 15 g P_2O_5/m^2).

Key words: Gerbera, Nitrogen, Phosphorus, Polyhouse.

INTRODUCTION

Now a days, Gerbera (*Gerbera jamesonii* H. Bolus) has come up as a new potential flower crop for protected cultivation. It is one of the most popular cut flowers in the world and according to the global trends in floriculture, it occupies fourth place among cut flowers (Sujatha *et al.* 2002). In Maharashtra total area under protected cultivation of gerbera was 29.12 ha with the production of 360 lakh flower. The success of gerbera crop grown under the controlled conditions, depends upon many factors and optimum fertilization is one of the most important factor need to be considered for obtaining quality produce. In this regard, preferably nitrogen and phosphorus has been found very effective in gerbera. Hence, to decide suitable dose of nitrogen and phosphorus present investigation was carried out.

MATERIALS AND METHODS

An experiment was carried out at Floriculture Unit, University Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth Akola, on yield and quality of gerbera as influenced by nitrogen and phosphorus levels during February to August, 2004. The experiment was laid out in Factorial Complete Randomized Design (FRD) with three replications. The treatments consist of four levels of nitrogen (0, 5, 7.5 and 10 g N/m²) and four levels of phosphorus (0, 5, 10 and 15 g P_2O_5 / m²). Red soil, well rotten FYM and sand (2:1:1) were mixed thoroughly. The whole mixture was then sterilized with formalin (0.2%) by covering with polythene sheet for 48 hrs. Raised beds of 3 m length, 1 m breadth and 0.40 m height were prepared. Two months hardened tissue culture gerbera plants of variety Estoril were planted on beds at a distance of 30x30 cm on 26th February, 2004. The observations were recorded on yield and quality attributes and presented in Table 1.

RESULTS AND DISCUSSION

Yield

The data presented in Table 1 indicated that, significantly

Table 1: Yield and quality of gerbera as influenced by nitrogen and phosphorus levels

Treatments	Flower yield		Flower stalk	Flower	Flower stalk	Grades		Vase life	
	Per plant	Per	length (cm)	diameter	thickness	*Grade I	*Grade II	*Grade III	(days)
	•	sq.m.		(cm)	(cm)				
$T_1 - N_0 P_0$ (0 g N + 0 g P ₂ O ₅ /sq.m)	3.68	33.12	43.37	5.81	0.37	0.41	0.53	2.74	5.54
$T_2 - N_0P_1$ (0 g N + 5 g P ₂ O ₅ /sq.m)	4.08	36.72	45.16	6.64	0.49	1.02	0.57	2.49	6.23
$T_3 - N_0P_2$ (0 g N + 10 g P ₂ O ₅ /sq.m)	4.42	39.78	45.86	6.81	0.53	1.59	0.72	2.11	6.77
$T_4 - N_0P_3 (0 \text{ g N} + 15 \text{ g } P_2O_5/\text{sq.m})$	4.86	43.78	49.63	7.31	0.58	1.93	0.91	2.02	7.42
$T_5 - N_1P_0$ (5 g N + 0 g P ₂ O ₅ /sq.m)	5.14	46.26	52.17	6.92	0.43	2.29	0.94	1.91	6.59
$T_6 - N_1P_1$ (5 g N + 5 g $P_2O_5/sq.m$)	5.39	48.51	53.27	7.44	0.54	2.43	1.29	1.67	10.47
$T_7 - N_1P_2$ (5 g N + 10 g P ₂ O ₅ /sq.m)	5.92	53.28	52.65	7.74	0.61	3.17	1.62	1.13	11.15
T ₈ – N ₁ P ₃ (5 g N + 15 g P ₂ O ₅ /sq.m)	6.28	56.52	55.26	8.09	0.67	4.46	0.91	0.91	11.83
$T_9 - N_2P_0$ (10 g N + 0 g P ₂ O ₅ /sq.m)	6.75	60.75	57.14	8.42	0.62	4.82	0.59	1.41	7.37
$T_{10} - N_2P_1$ (10 g N + 5 g P ₂ O ₅ /sq.m)	6.92	62.28	57.43	9.50	0.71	5.10	0.84	1.34	9.31
$T_{11} - N_2 P_2 (10 \text{ g N} + 10 \text{ g } P_2 O_5/\text{sq.m})$	7.21	64.89	59.82	9.79	0.74	5.91	0.62	0.97	10.27
$T_{12} - N_2 P_3 (10 \text{ g N} + 15 \text{ g } P_2 O_5/\text{sq.m})$	7.54	67.89	58.11	9.19	0.77	6.33	0.65	0.68	10.62
$T_{13} - N_3 P_0 (15 \text{ g N} + 0 \text{ g } P_2 O_5/\text{sq.m})$	7.13	64.17	61.72	8.30	0.68	5.51	0.55	0.63	8.37
$T_{14} - N_3P_1$ (15 g N + 5 g P ₂ O ₅ /sq.m)	7.86	70.74	62.58	10.10	0.76	6.67	0.59	1.07	8.65
$T_{15} - N_3P_2$ (15 g N + 10 g P ₂ O ₅ /sq.m)	8.36	75.24	64.28	11.87	0.81	6.81	0.92	0.70	9.13
$T_{16} - N_3P_3 (15 \text{ g N} + 15 \text{ g P}_2O_5/\text{sq.m})$	8.91	80.19	62.21	10.28	0.89	7.03	1.47	0.56	9.68
'F' test	Sig.	Sig.	Sig.	Sig.	NS	Sig.	Sig.	Sig.	Sig.
SE (m) <u>+</u>	0.087	0.785	0.0127	0.0178	0.030	0.080	0.054	0.065	0.031
CD at 5% level	0.250	2.210	0.0367	0.0513		0.230	0.160	0.185	0.088

Grade I : Stalk length > 50 cm, diameter of flower 10 cm and above

Grade II : Stalk length 30-49.9 cm, diameter of flower 8-9.9 cm

Grade III : Stalk length < 30 cm, diameter of flower < 8.0 cm