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Effect of Organic and Inorganic Source of NPK on Flower Parameters of Gladiolus (*Gladiolus grandiflorus*) cv Jester

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Abstract A field experiment was conducted during 2014-15 *rabi* season. The experiment was laid out in randomized block design with 12 treatments in three replications on different level of inorganic and organic fertilizers (RDF 75%, 50%, 25%) with different source results revealed that early days to first spike initiation (53.93 days), days for opening of first florets (70.00), maximum diameter of the florets (9.38 cm), highest length of spikes (93.31 cm), maximum number of florets per spike (20.60), first floret durability (9.53 days), highest number of spike per plant (2.73), was found in the treatment T_{11} (75% RDF+25% Vermicompost) under Allahabad agro climatic conditions.

Keywords Maximum diameter, Vermicompost, Organic fertilizers.

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Introduction

Gladiolus (*Gladiolus grandiflorus*) is a perennial bulbous flowering plants belongs to the family Iridaceae. It's distributed in Mediterranean Europe, Asia, Tropical Africa and South Africa. The center of diversity of the genus is located in the Cape Floristic Region. Gladiolus, popularly called sword lily, takes its name from the Latin word Gladiolus because of sword shaped leaves. It is one of the most important ornamentals for cut flower trade in India and abroad. Among the different cut flowers, gladiolus stands at 4th place in the international trade, after rose, carnation and chrysanthemum. The yield and quality of flowers and corms can be improved by adopting integrated nutrient management practices which include the judicious and combined use of organic, inorganic [1]. It is one of the major cut flowers in national and international markets and it is grown commercially to an extent of 1,500 ha in India. It is mainly cultivated in Karnataka, West Bengal, Maharashtra, Punjab, Haryana, Uttar Pradesh, Tamil Nadu, Jammu and Kashmir., Uttarakhand, Delhi, Sikkim and Himachal Pradesh. It is widely used in flower arrangement, bouquets, bunches, baskets and indoor decorations. Gladiolus has gained much importance as it is the Queen of bulbous flowers [2]. Integrated application of inorganic fertilizers, organic manures and biological sources of nutrients is

an efficient way for improving the fertility, productivity and physical conditions of the soil. The success of gladiolus cultivation depends upon many factors like soil fertility, irrigation, planting time, planting density, plant protection measures, plant growth regulators and some chemicals, these may play major role towards increasing production and quality of gladiolus. They are cost effective, inexpensive and eco-friendly source of nutrient, do not require non-renewable source of energy during their production was recorded in organic and inorganic fertilizers on growth, flowering and quality of gladiolus (*Gladiolus grandiflorus*) cv. White prosperity was reported different organic manure (cattle manure, chicken manure, sewage sludge and compost) and NPK slow release fertilizer on the vegetative growth, flowering and chemical composition of gladiolus (*Gladiolus grandiflorus*) cultivars Eurovision, Novolux, Peter Pears and Rose Supreme was reported Application of N (up to 400kg/ha) and P (up to 200 kg/ha) increased floret size and number of florets per spike. Application of 75% RDF + FYM 10 t ha^{-1} recorded better in days to sprouting, number of sprouts, number of leaves $plant^{-1}$, girth of plant base, width of leaf, height of the plant, days to spike emergence, diameter of corm, weight $corm^{-1}$, total corm weights $plot^{-1}$ and number of corms $plant^{-1}$.

Materials and Methods

The research work was carried out the under Allahabad agro climatic conditions at the experimental field of the department of Horticulture, Allahabad School of Agriculture, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Deemed to be University, (formerly known as Allahabad Agricultural Institute AAI-DU) during the year 2014-2015. Experiment Design was RBD, three replication, 12 treatments, planting spacing 30 × 30 (cm) and plot size 1.5 ×1.5 m. T_0 control, T_1 25% RDF, T_2 25% RDF + 75% FYM, T_3 25% RDF + 75% Vermicompost, T_4 25% RDF + 75% Poultry manure, T_5 50% RDF, T_6 50% RDF + 50% FYM, T_7 50% RDF + 50% Vermicompost, T_8 50% RDF + 50% Poultry manure, T_9 75% RDF, T_{10} 75% RDF + 25% FYM, T_{11} 75% RDF + 25% Vermicompost, T_{12} 75% RDF + 25% Poultry manure.

Results and Discussion

Among the different treatments studied with respect of early spike initiation (53.93) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (55.87, 75% RDF + 25% poultry manure) and maximum days to spike initiation was ob-

Table 1. Effect of organic and inorganic source of NPK on flower parameters of Gladiolus (*Gladiolus grandiflorus*) cv Jester.

Treatments	Day to spike initiation	Days for opening of 1st florets	Diameter of the florets (cm)	Length of spikes (cm)	Number of florets per spike	1st floret durability (days)	No. of spike per plant
Control	73.13	89.93	7.03	75.32	9.33	6.73	1.07
25% RDF	69.53	87.07	7.38	78.20	10.60	7.67	1.27
25% RDF + 75% FYM	66.00	82.80	7.74	81.73	12.13	8.27	1.67
25% RDF + 75% Vermicompost	63.07	80.40	8.11	84.37	13.53	8.67	1.80
25% RDF + 75% Poulty manure	65.20	82.13	7.83	82.32	12.47	8.47	1.73
50% RDF	66.80	85.00	7.63	80.46	11.53	8.20	1.53
50% RDF + 50% FYM	61.07	77.73	8.31	86.37	14.87	8.80	2.00
50% RDF + 50% Vermicompost	58.40	75.00	8.74	89.37	16.13	9.13	2.53
50% RDF + 50% Poultry manure	59.93	77.07	8.43	87.37	15.13	8.93	2.13
75% RDF	61.07	78.87	8.26	85.32	14.07	8.73	1.87
75% RDF + 25% FYM	56.87	74.67	8.83	91.73	17.07	9.20	2.47
75% RDF + 25% Vermicompost	53.93	70.00	9.38	93.31	20.60	9.53	2.73
75% RDF + 25% Poultry manure	55.87	72.80	9.07	92.25	18.07	9.27	2.60
F-test	S	S	S	S	S	S	S
SEd ±	0.75	0.31	0.15	0.25	0.36	0.11	0.10
CD (5%)	1.54	0.63	0.31	0.52	0.75	0.24	0.20

served with T_0 (73.13, control). Similar findings were reported Mohanty et al. [3] in marigold. The minimum days for opening of first florets (70.00) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (72.80, 75% RDF + 25% poultry manure) and maximum days for opening of first florets was observed with T_0 (89.93, control). Similar findings were reported Chaudhary et al. [4] in Gladiolus.

The maximum diameter of the florets (9.38 cm) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (9.07 cm, 75% RDF + 25% poultry manure) and minimum diameter of the florets was observed with T_0 (7.03 cm, control). The maximum Length of Spike (93.31, cm) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (92.25 cm, 75% RDF + 25% poultry manure) and minimum Length of Spike (cm) was observed with T_0 (75.32 cm, Control).

The maximum number of florets per spike (20.60) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (18.07, 75% RDF + 25% poultry manure) and minimum number of florets per spike was observed with T_0 (9.33, control). The maximum first floret durability (9.53, days) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (9.27, 75% RDF + 25% poultry manure) and minimum first floret durability (days) was observed with T_0 (6.73, control). The maximum number of spike per plant (2.73) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (2.60, 75% RDF + 25% poultry manure) and minimum number of spike per plant was observed with T_0 (1.07, control).

Conclusion

The present investigation concluded that with application of T_{11} (75% RDF + 25% Vermicompost) superior over all the treatments in terms of all flower parameters.

References

1. Singh PV, Kumar V, Kumar R (2006) Effect of organic maures and inorganic fertilizers on flowering of gladiolus cv American Beauty. Nat Symp on ornamental bulbous crops. 5-6 Dec, 2006. SVBPU Ag & T, Modipuram, Meerut (UP) pp 110—111.
2. Ramachandrudu, Thangam M (2009) Production technology of gladiolus in Goa. Tech Bull No.20.
3. Mohanty Anita, Mohanty CR, Mohapatra PK (2013) Studies on the response of Integrated Nutrient Management on growth and yield of marigold (*Tagetes erecta* L). Res J Agric Sci 4 : 383—385.
4. Chaudhary Narendra, Krishan Swaroop, Janakiram T, Biswas DR, Singh Geeta (2013) Effect of Integrated nutrient management on vegetative growth and flowering characters of gladiolus. Ind J Hort 70 : 156—159.