Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2017; 6(5): 1004-1006
Received: 10-07-2017
Accepted: 11-08-2017

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Effect of organic and Inorganic source of N.P.K on growth and yield parameters of gladiolus *(Gladiolus grandiflorus*) cv. Jester.

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Abstract
A field experiment was conducted at Department of Horticulture, Sam Higginbottom Institute of Agriculture, Technology and Science, Allahabad, India 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 maximum plant height (104.39cm), number of leaves (8.53), Number of shoots per corm (2.73), Number of spike per plant (2.73), Number of spike per hectare (150706.47), Number of corm per plant (3.53) Number of corrn per hectare (246861.40) and also recorded benefit cost ratio(2.35:1) was treatment T_{11}(75% RDF + 25% Vermicompost) under Allahabad agro climatic conditions.

Keywords: Maximum plant height, Number of leaves, Number of shoots per corm.

1. 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 centre of diversity of the genus is located in the Cape Floristic Region. Gladiolus, popularly called sword lily, takes its name from the Latin word Gladius 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 (Singh *et al*., 2006) [11]**.** 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 (Ramach and rudu and Thangam, 2009) [9]. 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 etc., 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. Gangadharan and Gopinath (2000) [4] was recorded in organic and inorganic fertilizers on growth, flowering and quality of gladiolus (*Gladiolus grandiflorus*) cv. White prosperity. Atta-Alla *et al.* (2003) [1] 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. Sharma *et al.* (2003) [10] was reported Application of N (up to 400 kg/ha) and P (up to 200 kg/ha) increased floret size and number of florets per spike. Saurabhjha *et al.* (2012) [8] was reported application 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 treatment, 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, T3
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, T10 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 plant height. The highest plant height was recorded in T_{11} (104.39 cm, 75% RDF + 25% Vermicompost) followed by T_{12} (100.18 cm, 75% RDF + 25% poultry manure) and the minimum was recorded T_0 (79.22cm).Similar results have also been recorded by Gaur *et al.* (2006) [5] in Gladiolus.
The highest number of leaves per plant was recorded in T_{11} (8.53, 75% RDF + 25% Vermicompost) followed by T_{12} (8.20, 75% RDF + 25% poultry manure) and the minimum was recorded T_0 (5.93).Similar results have also been recorded by Chaitra *et al*.(2007) in China aster.
The maximum number of shoots 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 shoots per plant was observed with T_0 (1.07, 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).
The maximum number of spike per hectare (150706.47) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (143028.93, 75% RDF + 25% poultry manure) and minimum number of spike per hectare was observed with T_0 (109230.93, control).Similar findings are reported by Nagaraju *et al.* (2007), Pooja *et al.* (2012) [7]. The maximum number of corms per plant (3.53) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (3.33, 75% RDF + 25% poultry manure) and minimum number of corms per plant was observed with T_0 (1.13, control).Similar findings are reported by Gangadharam *et al*. (2000) **[4]** in Gladiolus, Barman *et al.* (2005) [2] in Gladiolus.
The maximum Number of corms per hectare (246861.40) was observed with treatment T_{11} (75% RDF + 25% Vermicompost) followed by T_{12} (227939.20, 75% RDF + 25% poultry manure) and Number of corms per hectare was observed with T_0 (130868.93, control).Similar findings are reported by Gangadharam *et al*. (2000) [4] in Gladiolus, Barman *et al.* (2005) [2] in Gladiolus.

Table 1: Effect of Organic and Inorganic source of N.P.K on growth and yield parameters of Gladiolus *(Gladiolus grandiflorus*) cv. Jester

Treatments	Plant height (cm)	Number of leaves per plant	No. of shoots per plant	No. of spike per plant	No. of spike per hectare	No. of corm per plant	No. of corm per hectare
Control	79.22	5.93	1.07	1.07	109230.93	1.13	130868.93
25% RDF	85.32	6.73	1.27	1.27	116782.27	1.40	161682.73
25% RDF + 75% FYM	88.20	7.00	1.67	1.67	117058.60	1.80	176859.40
25% RDF + 75% Vermicompost	91.73	7.53	1.80	1.80	121292.67	2.27	197181.93
25% RDF + 75% Poultry manure	90.46	7.20	1.73	1.73	118623.40	2.00	185329.40
50% RDF	87.37	6.93	1.53	1.53	115891.60	2.53	175391.67
50% RDF + 50% FYM	94.37	7.73	2.00	2.00	126022.67	2.67	207232.00
50% RDF + 50% Vermicompost	97.31	8.00	2.53	2.53	133832.93	3.00	213696.20
50% RDF + 50% Poultry manure	95.40	7.80	2.13	2.13	127785.80	2.87	207813.27
75% RDF	93.31	7.67	1.87	1.87	123510.73	2.47	205176.33
75% RDF + 25% FYM	99.03	8.13	2.47	2.47	137782.80	3.13	216605.53
75% RDF + 25% Vermicompost	104.39	8.53	2.73	2.73	150706.47	3.53	246861.40
75% RDF + 25% Poultry manure	100.18	8.20	2.60	2.60	143028.93	3.33	227939.20
F- test	S	S	S	S	S	S	S
S.Ed ±	0.30	0.14	0.10	0.10	492.36	0.12	3782.41
CD (5%)	0.61	0.28	0.20	0.20	1016.19	0.25	7806.52

Conclusion

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

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