

Effect of N, P, K on Some Flower Quality and Corm Yield Characteristics of Gladiolus

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The experiment was conducted to see the effect of N, P, K, in combinations, on the yield corms and length of the spikes for gladiolus. The nitrogen in combination with K gave best results for the yield of corms. The combination of N,P,K did not respond significantly compared with nitrogen with or without potassium combination. Statistically all the treatments of N,P and K in different combinations were non-significant for the spike length.

Key words: gladiolus, NPK, flower quality, corms yield, physical characteristics, Pakistan

Glaiolde Bazı Çiçek Kalite ve Korm Verim Özelliklerine N,P,K'nın Etkisi

Deneme, N,P,K ve kombinasyonlarının gladiol (*Gladiolus alatus*)'un başak uzunluğu ve korm verimine etkisini saptamak amacıyla kurulmuştur. K ile birlikte azot korm verimi için en iyi sonucu vermiştir. N,P,K kombinasyonu, nitrojenin potasyumlu veya potasyumsuz kombinasyonu ile karşılaştırıldığında önemli bir sonuç vermemiştir. Değişik kombinasyonlardaki N,P ve K'un tüm uygulamalarının başak uzunluğu üzerinde istatistiki açıdan önemli etkisi bulunmamıştır.

Anahtar kelimeler: Glaiol, NPK, çiçek, kalite, korm verim, fiziksel özellikler, Pakistan

Introduction

Gladiolus (*Gladiolus alatus*) belongs to the family Iridaceae. Gladiolus is a corm developed from the base of the sheath foliage. Initiation of the flower bud takes place about four weeks after growth and flower stems are developed in the axils of previous season's inner leaves. Gladiolus has been grown as a cut bloom very widely on the continent of Europe, particularly Holland, Italy and Southern France. Intermittent protection with plastic tunnels, glasshouses or even elevated frames is practiced widely where the weather pattern dictates.

For successful cultivation of Gladiolus, pH should be around 7 enriched with phosphorus and potash. Singh et al. (1990), found a marked improvement in corm production when Nitrogen was applied at 40 g/mxm or P₂O₅ at 20 g/mxm but the combined N + P application had no significant effect on corm yield.

Cirrito (1976) in his 3x3 factorial fertilizer trial on the soils very poor in P and K found that the size of the flower will also depend upon the cultivars whereas Sidhu and Arora (1989), found that the Nitrogen has significant effect on the flower health in different cultivars

Keeping such information in view, the present research was aimed to ascertain the bulb multiplication of Gladiolus and its consequent effect on the health and quality of flower as influenced by various dozes of N,P,K under mild temperate environmental condition so that the commercial ornamental plant growers could get the handsome profit from their yields.

Materials and Method

The present research studies was carried out to envisage the effect of different combinations of fertilizer treatment on gladiolus corms at Horticultural Research area in the open field Floriculture and Landscaping Institute, Rawalpindi District, Pakistan.

The gladiolus corms numbering 200 of variety "High Style" were planted on well prepared land on both sides of the planting beds during the month of October. The recommended dose of well rotten farmyard manure was applied two months ahead of sowing during preparation of land for various 20 combinations.

Ten corms were taken per treatment per repeat. Bed to bed distance was 60cm and each corm was planted at 30cm distance on both sides of bed alternatively in each plot.

Results and Discussion

The gladiolus variety namely *High Style* included in this study and excluding the control, four treatments were used to see their effect on spike length and yield of corms of plants.

The maximum spike length (89.7cm) was observed in plants, treated with N and K (T3) followed by (79.8cm) in T1 (N,P,K) and T2 (N,P). T1 and T2 despite significant difference in treatment combination had not responded differently (Table I). Both of these treatments, however, showed some variation in the results for the character of spike length. The minimum spike length was resulted with control (74.7cm) which was statistically nearer to those values observed with T4 (79.2cm) and to some extent 79.8cm (T1 & T2) respectively.

The results regarding the yield depicted out identical pattern with those of spike length. The minimum yield of corms (16.83) were noticed in control treatment followed by N,P,K (T1) treatment (19.50) and N,P (T2) treatment (20.00) (Table I). The ascending values of TO, T1 and T2 were statistically similar. They were, however, significantly lower than those values resulted by N,K or N treatments (T3 and T4). N,K resulted the maximum yield (38.75) in T3 where as N resulted (28.75) in T4, (Table I). Both of these values were also statistically collected from these results reveals that the soils on which the plants were growing had not seriously deficient in P & K elements. As a

Treatments were assigned according to randomized complete block design (RCBD) and these treatments along with their respective doses are given as follows:

TO	No fertilizer application (control)
T1	N,P,K (155 +232 +77.5 g)
T2	N,P (155 + 232 g)
T3	N,K (155 + 77.5 g)
T4	N (155 g)

The parameters under studies were, (a) length of the flower spike/plant and (b) number of corms / plant. The data collected were fed to an IBM AT compatible computer, and by using MSTAT-C package the analysis of variance was applied. The means were compared by employing DMR test.

different from each other. The combination of N,K in T3 indicates that both these fertilizers are most appropriate for their utilization during corm multiplication. Similar results were given by various research workers, Borrelli (1984), observed that by increasing the supply of nitrogen, the number of flowering shoots corms and cormels were improved, similarly Deswal et al. (1983) observed that plants receiving the higher nitrogen rates were tallest (31.6 cm) and produced the greatest number of florets/spikes (4.9) and corms/plant (19.5).

It is well established that N is one of the major essential elements, which regulates the cell or tissue functions of the plant being essential part of the nucleic acid, mitochondria and cytoplasmic contents of the cells. Nitrogen has a strong control on vegetative and reproductive stages of the plants. These results indicate that wherever nitrogen, whether or not in combination with P or K or both, was added into the soil had showed increase in the spike length and the yield of the bulbs (Korkut et al., 1997). Minimum spike length and yield in controlled plants lead to suggest that the soils on which the experiment was carried out were probably deficient in nitrogen. Another observation that has been general conclusion, therefore, it can be stated that such growing field should be added with nitrogen at regular intervals for the

improvement of plant growth and health as well as to have satisfactory yields of various plant organs. This experiment can be extended for further study by making more combinations of N,P,K with more quantity of fertilizers.

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Table 1. Influence of N P K on some quality characteristics of gladiolus

Parameter	Treatment				
	T0	T1	T2	T3	T4
Spike length (cm)	74.7	79.8	79.8	89.7	79.2
Number of Corms	16.83 c	19.50c	20.00 c	38.75a	28.75b

Note: Means followed by the same letter in a row do not differ significantly at probability less than 0.5 according to DMR test

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