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Review Article

Performance of Growth Parameters on Level of Growth Substance and Plant Densities of Gladiolus (*Gladiolus grandifloras* L.) cv. Snow Princess - A Review

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ABSTRACT

The results of the experiment showed use of gibberellic acid and plant spacing's has been significantly. Highly influence on the most parameters such as height of plant, number of leaves plant^{-1} and number of branches plant^{-1} was the significant on higher amount of gibberellic acid and wider spacing's.

Keywords: *Gladiolus, Snow princess, Growth parameters, GA_3 & Plant densities.*

INTRODUCTION

Gladiolus is a popular flowering plant grown all over the world, from South Africa to West Asia. The name gladiolus was derived from the Latin word gladioli, because of its sword-like leaves. It is popularly known as sword lily. It was introduced for the cultivation at the end of the 16th century, Parthasarathy and Nagaraju, (1999). The modern hybrids is botanically known as *Gladiolus grandifloras* belonging to family Iridaceae. Gladiolus spikes are most popular in flower arrangements and for preparing attractive bouquets. The magnificent above inflorescence with various colours have made it attractive for use in herbaceous borders, beddings, rockeries, pots and for cut flower. Due to its immense potential as ornamental crop and utter dearth of plant material of such elite species for commercial cultivation, need was felt to recuperate our production technologies for better qualitative as well as quantitative traits.

REVIEW OF LITERATURE

Performance of growth parameters

Patil et al. (1995) conducted the effect of different spacing and corm sizes on the flower and corm production of gladiolus. They found that corm size and spacing had no significant effect on floret size, number florets per spike or size of corms produced. However, no. of spikes, number of corms and cormels production per plot were significantly affected by both factors.

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Increasing with planting density and corm size at planting. The largest corms yielded 58.68 spikes, 56.67 corms and 722.85 cormels per plot. Compared with 34.13 spikes, 33.96 corms and 437.48 cormels plot^{-1} for the smallest corms.

Ogale et al. (2000) studied that flowering could induce the miniscule cat-8 corms of gladiolus var. Happy End with the help of PGRs.

Bijmol and Singh (2001) experiment of gladiolus cv. Red beauty four spacing (15x30, 20x30, 25x30 cm) was resulted in maximum number of leaves plant^{-1} (12.30), length of longest leaf (51.21cm), width of scape (1.24 cm), diameter of corm (5.59 cm), and weight of corm (89.29 g/plant), However, spacing failed to exert any significant effect on days to sprouting, percentage of sprouting, width of longest leaf, number and weight of cormel per plant, average weight of corm and cormel yield ha^{-1}.

Sudhakar et al. (2012) result revealed that growth regulators application significantly influenced the growth and yield in gladiolus. The maximum number of floret/spike length (cm) and flower length (cm) were obtained with GA_3 @ 100ppm as compared to rest of the treatments. Whereas CCC @ 500ppm was found the best in terms of corm and cormels production.

Level of growth substances (GA_3) and plant densities

Mukhopadhyaya et al. (1986) noticed that the corms of gladiolus soaked for 24 hrs. in dark in GA_3 (10ppm) advanced sprouting by few days.

Roy and Chaudhary (1989) conducted that application of GA_3 (100ppm) at a planting density of 33 corms m^{-2} increased plant height and length of spike of gladiolus hybrid cv. Psittacinus.

Suh et al. (1990) observed the process of corm formation in gladiolus. Corms were treated with growth regulator viz., 200ppm GA_3 for 6 hrs. before planting. In all cultivars, GA_3 treatment increased the weight of corms produced. They also noticed that with the use of large corms, formation of good quality corms was promoted.

Arora et al. (1992) observed that GA_3 at 100 mg l^{-1} accelerated sprouting of cormel by 4.67, 3.13 and 4.80 days in Aldebaran, Pusa Suhagini and Mayur, respectively.

Singh et al. (1994) observed that GA_3 at 75ppm increased plant height and number of leaves as compared to other treatments.

Mollah et al. (1995) reported that large sized cormels (7.0 0.2 g) with widest spacing (15 x 15 cm) product the maximum length of spike (36.34 cm), longest rachis (11.90 cm), maximum plant height (56.60 cm) maximum percentage of flowering plant (54.60) heavier corm (31 g) and highest number of cormels (21.87) plant^{-1}.

De et al. (1996) study the effect of sucrose salts and organic acids on the post harvest life and quality of pulsed (20% sucrose for 16 hrs.) gladiolus spikes cv. High Style. Sucrose (4%) + 8 HQC (250ppm) was found most beneficial for improving post harvest life and quality of cut gladiolus spikes.

Pal and Choudhury (1998) reported that gladiolus corms were soaked for 24 hrs. In 20ppm GA_3 gave the greatest spike length (91.0 cm) as compared to control.

Prakash et al. (1991) investigated the effect of GA_3 on the floral parameters of gladiolus. Ten gladiolus cultivars were treated with 0, 100 and 150ppm GA_3 and effect on flower parameters, *viz.*, time of flowering, inflorescence length, spike length, floret length and no. of florets spike^{-1} were studies. GA_3 treatment at 150ppm GA_3 in cv. Friendship product the longest inflorescences and spike with the highest number of florets spike^{-1}.

Dhenkeny et al. (2000) conducted to maximum vase life of 200ppm $AgNo_3$ and sucrose with citric acid solution was found to be higher (10.33 days) than control (6.33).

Dutta et al. (2001) An experiment to determine the effect of gibberellic acid (GA_3) treatment on the corm germination of 10 gladiolus hybrids. Corms of each hybrid were de-husked and cleaned prior to soaking in GA_3 solution at 100, 150 and 200ppm and water for 24 hrs. GA_3 @ 200ppm significantly increased the percentage of corm germination and reduced the no. of days required for

germination compared with other and control treatments. Corm germination values of 62.8 and 64.4% 66.5 were obtained with GA_3 at 100, 150 and 200ppm, respectively.

Muraya et al. (2002) conducted that foliar application of 100ppm GA_3 at 45 days after corms planting resulted in a greater no. of spikes plant^{-1}, increased number of florets spike^{-1} (16.7) and size of second florets (10.8 cm).

Raja et al. (2002) observed that treatment with 400 mgl^{-1} ethephon significantly reduced the dormancy period in gladiolus by 17.5 days as compared to control.

Gaur et al. (2003) investigated the effect of GA_3 and IAA, both applied at 25, 50, 100 or 200ppm on the growth, flowering and corm production of gladiolus. High GA_3 and low IAA concentrations improved plant height, no. of leaves, thickness of width of shoots; promoted earliness in spikes, emergence, colour break in the first and flowering; increased the length of spikes, number of florets spike^{-1}, size of floret and longevity of spikes; and increased the vase life of cut flowers and the number, weight and diameter of corms and cormels. The highest values for all parameters were recorded with GA_3 at 200ppm.

Vijay Kumar et al. (2005) treated uniform size of corms in aqueous solution of GA_3 (50,100 and 500ppm) for 24 hrs. And found that GA_3 significantly influenced the sprouting of corms.

Nag et al. (2018) experiment comprised of three spacings viz., 30x15cm, 30x20 cm and 30x25 cm had significantly. Increase on the most parameters such as height of plant, corms plant^{-1} and weight of corms per plant was the higher yield on wider spacings 30x25 cm.

CONCLUSION

From the present study, it can be concluded that the treatment combination of large bulb size (10cm in different diameter) along bulb treated with GA_3 @100ppm is best suited to grow gladiolus is open field condition and protected condition to achieve good growth, profuse flowering and bulb yield.

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