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## Effect of different planting time on corm production on five cultivars of gladiolus (*Gladiolus grandiflorus* L.)

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### Abstract

The present study investigated that the effect of three date of planting date 5<sup>th</sup> October, 20<sup>th</sup> October, 5<sup>th</sup> November and cultivars Nova Lux, White Prosperity, Rose Supreme, American Beauty and Big Time Supreme effect on *Gladiolus grandiflorus* L. characters like number of daughter corm, weight of corm, number of cormlets per plant and size of corm. The average number of daughter corm per plant was recorded under second planting date on 20<sup>th</sup> October 2.59 while American Beauty was given better result 2.77. Size of daughter corm was recorded under 5<sup>th</sup> November (69.27 mm) and American Beauty was recorded best result (74.88 mm). Weight of corm per plant was recorded under 5<sup>th</sup> November (24.07) American Beauty were observed best result (24.99). Number of cormlets per plant was recorded under 5<sup>th</sup> November (49.05) White Prosperity was observed (65.23) cormlets per plant. Among all five varieties American Beauty had the best result recorded. As far as corms and cormlets characters were found on 5<sup>th</sup> November planting date in case of weight of corm, size of daughter corm and number of cormlets per plant.

**Keywords:** Planting, *Gladiolus grandiflorus*, corms, cormlets

### Introduction

Gladiolus is a flower of glamour and perfection which is known as the queen of bulbous flowers due to its flower spikes with florets of massive form, brilliant colors, attractive shapes, varying size and excellent shelf life. The modern hybrids are botanically known as *Gladiolus grandiflorus* belonging to the family Iridaceae. Gladiolus is grown as flower bed in gardens and used in floral arrangements for interior decoration as well as making high quality bouquets (Bose *et al.*, 2003) [3]. Gladiolus are grown an area of 9.37 thousand hectare with a production of 707 million spikes in India (NHB, 2013). The major gladiolus growing areas are Kalimpong (West Bengal), New Delhi, Srinagar (Jammu and Kashmir) and Nainital (Uttar Pradesh). Date of planting plays an important role in regulating growth and quality of gladiolus (Khan *et al.*, 2008) [5]. Vegetative growth and quality of gladiolus is improved by proper planting times which also satisfies the consumer's demands (Zubair *et al.*, 2006) [11]. The Planting schedule of gladiolus varies because of differences in photoperiods, temperatures and light intensity and relative humidity. Maximum spikes per plant were obtained from April to May plantings while highest number of corms per plant in tuberosa was obtained from March and April plantings (Mubhopadhyay and Banker, 1981). Akpınar and Bulut (2011) [2] reported that the planting time 20<sup>th</sup> June was found to be the most suitable plantation time when considered sprouting and spiking time and White Prosperity is the best varieties. Talia and Traversa (1986) [10] mentioned that better size gladiolus corms were obtained from February and March plantings. Growth and yield of gladiolus, like other plants, depend on proper planting time. The present study investigated that the best planting time of different gladiolus cultivar under environmental conditions.

### Materials and methods

The experiment was carried out. during winter season of 2016-17 at the Research Farm of the Department of Horticulture, Allahabad School of Agriculture Sam Higginbottom University of Agriculture Technology and Sciences, Allahabad (UP.).

The experimental material comprised of 5 gladiolus genotypes *viz.* Nova Lux (V<sub>1</sub>), White Prosperity (V<sub>2</sub>), Rose Supreme (V<sub>3</sub>), American Beauty (V<sub>4</sub>) and Big Time Supreme (V<sub>5</sub>)

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planted under three different planting times i.e. 5<sup>th</sup> October (D<sub>1</sub>), 20<sup>th</sup> October (D<sub>2</sub>), and 5<sup>th</sup> November (D<sub>3</sub>) 2017. The genotypes were sown as Factorial Randomized Block Design (FRBD) with fifteen treatments and three replications. The treatments are Nova Lux + 5<sup>th</sup> October, Nova Lux + 20<sup>th</sup> October, Nova Lux + 5<sup>th</sup> November, White Prosperity + 5<sup>th</sup> October, White Prosperity + 20<sup>th</sup> October, White Prosperity + 5<sup>th</sup> November, Rose Supreme + 5<sup>th</sup> October, Rose Supreme + 20<sup>th</sup> October, Rose Supreme + 5<sup>th</sup> November, American Beauty + 5<sup>th</sup> October, American Beauty + 20<sup>th</sup> October, American Beauty + 5<sup>th</sup> November, Big Time Supreme + 5<sup>th</sup> October, Big Time supreme + 20<sup>th</sup> October and Big time supreme + 5<sup>th</sup> November. Corms were planted at spacing of 30 x 20 cm and standard package were followed to raise the crop. The data were recorded number of daughter corm per plant, size of daughter corm, weight of corm per plant and number of cormlets per plant.

### Results and discussion

The experimental data were analyzed statistically. Mean tables are briefed for interpreting the results regarding corms and cormlets characters of *Gladiolus grandiflorus*.

#### Number of daughter corm per plant

The average number of daughter corm per plant was recorded in each treatment due to effect of planting dates which is summarized in Table 1. The average number of corm per plant was recorded on 5<sup>th</sup> October planting date that the maximum number of corm per plant were found in V<sub>4</sub> as 1.88 and minimum number of corm per plant were found in V<sub>1</sub> as 1.22. Second planting date of 20<sup>th</sup> October that the maximum number of corm per plant was recorded was found i.e. in V<sub>4</sub> as 3.50 and minimum numbers of corm per plant were found in V<sub>2</sub> as 2.38. Third planting on 5<sup>th</sup> November that the maximum number of corm per plant was recorded in V<sub>4</sub> as 3.00 and the minimum number of corm per plant was observed in V<sub>3</sub> as 1.33. The maximum number of corms 2.59 was observed under 20<sup>th</sup> October planting date. Followed by 5<sup>th</sup> November and minimum 1.66 was observed under 5<sup>th</sup> October planting date. Among all varieties in American Beauty was observed 2.77 maximum corms per plant and minimum corms per plant 1.64 Nova Lux was observed. Similar results found by Saleem *et al.*, (2012) in *gladiolus*.

#### Size of daughter corm

The average corm size (mm) was recorded in each treatment due to effect of planting dates, which is summarized in Table 1. The average corm size was recorded on 5<sup>th</sup> October planting date that the maximum corm size were found in V<sub>4</sub> as 72.75. and minimum size of corm were found in V<sub>1</sub> as 64.04 mm. Second planting date of 20<sup>th</sup> October that the maximum corm size was recorded was found in V<sub>4</sub> as 75.66 mm. And minimum corm size were found in V<sub>1</sub> as 64.16 mm. Third planting on 5<sup>th</sup> November that the maximum of corm per plant was recorded in V<sub>4</sub> as 76.23 mm. And the minimum weight of corm per plant was observed in V<sub>1</sub> as 64.25 mm. The maximum size of corm (69.27 mm) was observed under 5<sup>th</sup> November planting. Followed by 67.95 mm size was recorded under second planting date on 20<sup>th</sup> October. Among all Varieties American Beauty had maximum size of corm (74.88 mm) which might be due to healthy plants production at that time which ultimately accumulated more photosynthates, the sink of which was downward and the result was the maximum increase in cormels size. Nova Lux had minimum size of floret (64.15mm) was recorded. Similar results found by Ahmad *et al.*, (2011)<sup>[1]</sup>, Ko *et al.*, (1995) and Dod *et al.*, (1989)<sup>[4]</sup> in *gladiolus*.

#### Weight of the corm per plant (gm)

The average weight of the corm per plant was recorded in each treatment due to effect of planting dates, which is summarized in Table 1. The average weight of corm per plant was recorded on 5<sup>th</sup> October planting date that the maximum weights of corm per plant were found in V<sub>2</sub> as 24.71 gm and minimum weight of corm per plant were found in V<sub>1</sub> as 20.65 gm. Second planting date of 20<sup>th</sup> October that the maximum weight of corm per plant was recorded was found in V<sub>4</sub> as 25.83 gm. And minimum weight of corm per plant were found in V<sub>5</sub> as 22.05 gm. Third planting on 5<sup>th</sup> November that the maximum weight of corm per plant was recorded in V<sub>1</sub> as 25.15 gm. And the minimum weight of corm per plant was observed in V<sub>5</sub> as 22.53. The maximum weight of corm 24.07 gm was observed under 5<sup>th</sup> November planting followed by 20 October and minimum 23.06 gm was observed under 5<sup>th</sup> October planting date. Among all varieties American Beauty were found maximum weight of corm 24.99 gm and minimum weight was observed in Big Time Supreme variety. Similar results found by Ahmad *et al.*, (2011)<sup>[1]</sup> in *gladiolus*.

**Table 1:** Effect of different planting date on different cultivar on corm and cormel parameters

Varieties (V)	Number of daughter corm per plant				Size of daughter corm (mm)			Weight of the corm per plant (gm)				
	Different planting date (D)			Mean (V)	Different planting date (D)			Mean (V)	Different planting date (D)			Mean (V)
	5 <sup>th</sup> October	20 <sup>th</sup> October	5 <sup>th</sup> November		5 <sup>th</sup> October	20 <sup>th</sup> October	5 <sup>th</sup> November		5 <sup>th</sup> October	20 <sup>th</sup> October	5 <sup>th</sup> November	
V <sub>1</sub>	1.22	2.38	1.33	1.64	64.04	64.16	64.25	64.15	20.65	24.30	25.15	23.36
V <sub>2</sub>	1.77	2.24	1.38	1.80	64.12	65.76	68.19	66.02	24.71	23.17	24.33	24.07
V <sub>3</sub>	1.65	2.41	1.66	1.90	65.99	66.80	67.87	66.89	22.82	24.64	23.41	23.62
V <sub>4</sub>	1.83	3.50	3.00	2.77	72.75	75.66	76.23	74.88	24.22	25.83	24.92	24.99
V <sub>5</sub>	1.83	2.42	1.70	1.98	64.68	67.38	69.83	67.29	22.92	22.05	22.53	22.50
Mean (D)	1.66	2.59	1.81		66.31	67.95	69.27		23.06	23.99	24.07	
C.D. at 5% Varieties -0.29 Planting Date -0.22 Interaction (V X D) -0.50					C.D. at 5% Varieties -1.09 Planting Date -0.84 Interaction (V X D) -1.89				C.D. at 5% Varieties -0.69 Planting Date -0.53 Interaction (V X D) -1.20			

#### Number of cormlets per plant

The average number of cormlets per plant was recorded in each treatment due to effect of planting dates, which is summarized in Table 2. The average number of cormlets per

plant was recorded on 5<sup>th</sup> October planting date that the maximum numbers of cormlets per plant were found at T4 i.e. in V<sub>2</sub> as 61.53 and minimum numbers of cormlets per plant were found in V<sub>1</sub> as 30.95. Second planting date of 20<sup>th</sup>

October that the maximum number of cormlets per plant was recorded was found in V<sub>2</sub> as 62.86. And minimum number of cormlets per plant was found in V<sub>4</sub> as 33.23. Third planting on 5<sup>th</sup> November that the maximum number of cormlets per plant was recorded in V<sub>2</sub> as 71.30 And the minimum number of cormlets per plant was observed in V<sub>4</sub> as 34.00. The maximum number of cormlets 49.05 was observed under 5<sup>th</sup> November planting. Followed by minimum 42.00 was observed under 5 October planting date. Among all Varieties White Prosperity had counted maximum number of cormlets 65.23 and American Beauty had minimum number of cormlets 32.82 was recorded. Similar findings reported by Saini *et al.*, (1988) [8] and Saleem *et al.*, (2012) in gladiolus.

**Table 2:** Effect of different planting date on different cultivars on corm and cormlets parameters of gladiolus

Varieties (V)	Number of cormlets per plant			Mean (V)
	Different planting date (D)			
	5 <sup>th</sup> October	20 <sup>th</sup> October	5 <sup>th</sup> November	
V <sub>1</sub>	30.95	35.56	37.95	34.82
V <sub>2</sub>	61.53	62.86	71.30	65.23
V <sub>3</sub>	44.78	43.98	49.77	46.18
V <sub>4</sub>	31.23	33.23	34.00	32.82
V <sub>5</sub>	41.50	45.28	52.23	46.34
Mean (D)	42.00	44.18	49.05	

C.D. at 5%

Varieties -2.20

Planting Date -1.70

Interaction (V X D) -3.81

### Conclusions

As far as corms and cormlets were concerned 20<sup>th</sup> October planting significantly enhanced the number of corms per plant whereas 5<sup>th</sup> November planting in case of weight of corm, size of daughter corm and cormlets per plant. Among all five varieties American Beauty had the best result in corm parameters.

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