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**Prerana J Jagtap**  
M.Sc. Scholar, Department of  
Floriculture and Landscape  
Architecture, College of  
Horticulture, Dapoli,  
Maharashtra, India

**Mandar H Khanvilkar**  
Assistant Professor, Department  
of Horticulture, Directorate of  
Extension Education, DBSKKV,  
Dapoli, Ratnagiri, Maharashtra,  
India

**Mahesh M Kulkarni**  
Assistant Professor, Department  
of Fruit Science, College of  
Horticulture, Dapoli, Ratnagiri,  
Maharashtra, India

**Nitesh V Dalvi**  
Assistant Professor, Department  
of Floriculture and Landscape  
Architecture, College of  
Horticulture, Dapoli,  
Maharashtra, India

**Arun V Mane**  
Deputy Director of Research  
(Seed), DBSKKV, Dapoli,  
Maharashtra, India

**Meghana R Navalgi**  
M.Sc. Scholar, Department of  
Floriculture and Landscape  
Architecture, College of  
Horticulture, Dapoli,  
Maharashtra, India

**Corresponding Author:**  
**Prerana J Jagtap**  
M.Sc. Scholar, Department of  
Floriculture and Landscape  
Architecture, College of  
Horticulture, Dapoli,  
Maharashtra, India

## Effect of corm size on growth and yield parameters in gladiolus (*Gladiolus grandiflorus* L.) cv. white prosperity

**Prerana J Jagtap, Mandar H Khanvilkar, Mahesh M Kulkarni, Nitesh V Dalvi, Arun V Mane and Meghana R Navalgi**

### Abstract

An experiment entitled “Effect of corm size on growth and yield parameters in gladiolus (*Gladiolus grandiflorus* L.) cv. White Prosperity” was conducted during *Rabi-Summer* season of the year 2022-23 at College of Horticulture, Dapoli, Dist. Ratnagiri, (Maharashtra state). The experiment was laid out in Randomized Block Design with four replications and five treatments *i.e.*, T<sub>1</sub>-Below 10 g, T<sub>2</sub>-11-20 g, T<sub>3</sub>-21-30 g, T<sub>4</sub>-31-40 g and T<sub>5</sub>-41-50 g. The results revealed that minimum number of days required for first sprouting (7.65) and 50 percent sprouting of corms (11.60), highest plant height (143.75 cm), leaf area (81.63 cm<sup>2</sup>), minimum days to first spike emergence (65.10), days to 50 percent spike emergence (71.03), maximum number of spikes per hectare (1.74 lacs), number of corms per hectare (1.70 lacs) and number of cormels per hectare (31.73 lacs) were recorded in treatment T<sub>5</sub>-41-50 g. Thus, it could be observed from the results that, the corm size 41-50 g of gladiolus cv. White prosperity was found to give higher yield in respect of number of spikes, corms and cormels produced per plant.

**Keywords:** Corm, gladiolus, sprouting, corm, *Gladiolus grandiflorus* L.

### 1. Introduction

Flowers are one God’s most beautiful creations, which might be formed to unfold smile and happiness, because of their fragrant scent and delightful appearance. Flowers play a significant role in our lives; they were used for generations to express the thoughts and emotions that words can’t absolutely explain. Flowers stand for strength, love, purity, regard, consciousness, generosity and beauty. The rich use of various floral species in celebrations, ceremonies and as offering to the lord in temples is a testament to India’s long standing history and culture. Wedding, worship ceremonies, non-secular services and social celebrations are all occasions where flowers are used. Additionally, keeping ecological stability and lowering pollution inside ecosystem depend on producing beautiful flora and plant life. According to well-known proverb, flowers and people are connected from delivery to death. Flowers are grown for their elegant design in bouquets, gardens, and landscapes. Gladiolus is rated fourth in worldwide trade, third in India’s cut flower output and sixth in loose flower production (Nath *et al.*, 2020)<sup>[8]</sup>. Gladiolus is a popular flower crop cultivated commercially in states such as Madhya Pradesh, Karnataka, Gujarat, Andhra Pradesh, Haryana, West Bengal, Maharashtra, Tamil Nadu and Sikkim. Gladiolus flower cultivation generates six times the profit of rice production. Due to its magnificent inflorescence and high economic value, the bulbous ornamental gladiolus is becoming more and more popular throughout the world.

The growth, development, production and quality of flowers and propagules are all influenced by size of corm. There is direct relation between corm size, flower production, and corm and cormel yield (Ogale *et al.*, 1995)<sup>[9]</sup>. In order to standardise traditional propagation techniques and increase corm and cormel production, it is imperative to determine the ideal corm size based on weight. Commercial cultivation of gladiolus is becoming more popular, with large scale production practiced mostly during the winter season. The size of the corm affects the plant’s vegetative and reproductive attributes (Bose *et al.*, 2003)<sup>[2]</sup>. The current experiment was conducted to examine the variance among the grades of gladiolus cultivar based on size of corms by weight in order to boost the production of flowers, corms and cormels in Konkan region and meet the demands of flower enthusiasts.

## 2. Materials and Methods

The present investigation entitled "Effect of corm size on growth and yield parameters in gladiolus (*Gladiolus grandiflorus* L.) cv. White Prosperity" was conducted at College of Horticulture, Dapoli, during *Rabi-Summer* 2022-23. The experiment was laid out in a Randomized Block Design with five treatments viz., T<sub>1</sub>-Below 10 g, T<sub>2</sub>-11-20 g, T<sub>3</sub>-21-30 g, T<sub>4</sub>-31-40 g and T<sub>5</sub>-41-50 g and four replications. Five plants were selected thoroughly and tagged in each replication in all treatments for the purpose of recording observations on floral parameters. The mean value of the five selected plants in each treatment was taken to represent a particular character. The crop was protected from various pests and diseases, but no insecticides were used during the flowering period. Recommended agronomical package of practices were followed for raising good plot. *Gladiolus grandiflorus* L. cv. White Prosperity; growth/vegetative parameters viz., days required for first sprouting of corm, days required for 50 percent sprouting of corm, plant height, leaf area, days to first spike emergence, days to 50 percent spike emergence and yield parameters viz., number of spikes per hectare, number of corms per hectare and number of cormels per hectare, were recorded separately for each treatment. The generated data was subjected to statistical analysis method as suggested by Panse and Sukhatme (1995)<sup>[10]</sup>.

## 3. Results and Discussion

From the presented data in Table 1, it is revealed that as the size of corm increases both vegetative and yield parameters showed the better results.

### 3.1 Vegetative parameters

The effect of corm size on vegetative parameters in gladiolus cv. White Prosperity was observed and the analysed data on mean values for these yield parameters were recorded and presented in Table 1. Minimum number of days (7.65) required for first sprouting and days required for 50 percent sprouting of corms (11.60) were recorded in treatment T<sub>5</sub>- 41-50 g, whereas maximum number of days (9.48) required for first sprouting and days required for 50 percent sprouting of corms (14.60) were recorded in the treatment T<sub>1</sub>- Below 10 g. Large sized corms of gladiolus sprouted early, which may be

because they contain more stored food components than small sized corms. This could lead to early sprouting by utilising the stored food that is accessible for early sprouting. The results are in conformity with the findings of Gupta *et al.* (2013)<sup>[5]</sup> and Rajesh and Rao (2016)<sup>[11]</sup>. Similarly, the treatment T<sub>5</sub> recorded remarkably maximum plant height (143.75 cm) and minimum plant height (78.20 cm) was observed in treatment T<sub>1</sub>. Large sized corms are said to have produced the tallest plants; this may be because they adequately give nutrients to freshly emerging plants. These results are in well accordance with the findings of Narayan *et al.* (2013)<sup>[7]</sup>, Sarkar *et al.* (2014)<sup>[12]</sup>, Deepashree *et al.* (2019)<sup>[3]</sup> and Methela *et al.* (2019)<sup>[6]</sup>. Maximum leaf area (81.63 cm<sup>2</sup>) was recorded in treatment T<sub>5</sub> and minimum leaf area (52.30 cm<sup>2</sup>) was recorded in treatment T<sub>1</sub>. Similar result was noted by Rajesh and Rao (2016)<sup>[11]</sup>. The minimum days required for spike emergence (65.10) and 50 percent spike emergence (71.03) was observed in treatment T<sub>5</sub> and maximum number of days required for spike emergence (77.47) which was significantly at par with treatment T<sub>2</sub> (74.40) and 50 percent spike emergence (84.44 days) was observed in treatment T<sub>5</sub>. These results are in accordance with the findings of Bhande *et al.* (2015)<sup>[1]</sup>, Ferdousi *et al.* (2018)<sup>[4]</sup> and Methela *et al.* (2019)<sup>[6]</sup>.

### 3.2 Yield parameters

The effect of corm size on yield parameters in gladiolus cv. White Prosperity was observed and the analysed data on mean values for these yield parameters were recorded and presented in Table 1. The maximum number of spikes per hectare (1.74 lacs) were observed in treatment T<sub>5</sub> which was statistically at par with treatment T<sub>4</sub> (1.66 lacs) while minimum number of spikes per hectare (0.85 lacs) were observed in treatment T<sub>1</sub>. Similarly, the maximum number of corms per hectare (1.70 lacs) were observed in treatment T<sub>5</sub> which was statistically at par with treatment T<sub>4</sub> (1.57 lacs) and minimum number of corms per hectare (0.85 lacs) were observed in treatment T<sub>1</sub>. The differences in number of corms might be due to different corm size planted. These results are comparable with the findings of Deepashree *et al.* (2019)<sup>[3]</sup>. The maximum number of cormels per hectare (31.73 lacs) were observed in treatment T<sub>5</sub> which was statistically at par with treatment T<sub>4</sub> (29.42 lacs) and minimum number of cormels per hectare (22.79 lacs) were observed in treatment T<sub>1</sub>.

**Table 1:** Effect of corm size on growth and yield parameters in gladiolus (*Gladiolus grandiflorus* L.) cv. White Prosperity

Sr. No.	Treatment Details	Days to first sprouting	Days to 50% sprouting	Plant height (cm)	Leaf area (cm <sup>2</sup> )	Days to first spike emergence	Days for 50% spike emergence	Number of spikes/hectare (lacs)	Number of corms/hectare (lacs)	Number of cormels/hectare (lacs)
T <sub>1</sub>	Below 10 g	9.48	14.60	78.20	52.30	77.47	84.44	0.85	0.85	22.79
T <sub>2</sub>	11-20 g	9.00	13.65	104.73	59.19	74.40	79.43	1.06	1.11	24.35
T <sub>3</sub>	21-30 g	8.45	12.95	118.60	66.15	71.58	77.35	1.36	1.40	27.14
T <sub>4</sub>	31-40 g	8.00	12.05	127.70	73.98	67.73	74.38	1.66	1.57	29.42
T <sub>5</sub>	41-50 g	7.65	11.60	143.75	81.63	65.10	71.03	1.74	1.70	31.73
	Range	7.65 - 9.45	11.60 - 14.60	78.20 - 143.75	52.30 - 81.63	65.10 - 77.47	71.03 - 84.44	0.85 - 1.74	0.85 - 1.70	22.79 - 31.73
	S.Em ±	0.12	0.19	0.64	1.40	1.11	0.88	0.09	0.07	0.82
	CD at 5%	0.39	0.59	1.99	4.34	3.44	2.72	0.28	0.22	2.54

## 4. Conclusion

On the basis of current study, it can be concluded that, the positive relationship occurs between the large sized corms (41-50 g) and vegetative, reproductive growth parameters of gladiolus cv. White Prosperity. Large sized corms initially helps the plants for growth and development by supplying

stored nutrients from corms and gave better results in all the characters and produced higher amount of corms and cormels. The results reported from the present investigation are suggestive and need to be studied further for appropriate recommendations.

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