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Effect of Corm Size on Flowering Parameters in Gladiolus (Gladiolus Grandiflorus L.) cv. White Prosperity

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Abstract: ***An experiment entitled "Effect of corm size on flowering 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_1- Below 10 g, T_2- 11-20 g, T_3- 21-30 g, T_4- 31-40 g and T_5- 41-50 g. The results revealed that minimum number of days required for first spike emergence (65.10) and 50 per cent spike emergence (71.03), the highest spike length (72.36 cm), rachis length (51.17 cm), interfloret length (4.75 cm) and diameter of floret (8.11 cm) and maximum number of florets per spike (13.00), duration of flowering (11.95 days) and vase life (5.55 days) were recorded in treatment T_5- 41-50 g. Thus, it could be observed from the results that, the corm size 41-50 g of gladiolus cv. White prosperity were found to produce superior flowering parameters in respect of early spike emergence, spike length, rachis length, interfloret length, diameter of floret, number of florets per spike, flowering duration.***

Keywords: Gladiolus grandiflorus L., corm, flowering parameters, spike quality, vase life, cut flower crop, White Prosperity

1. Introduction

Floriculture has emerged as a rapidly expanding sector of horticulture, contributing significantly to income generation, employment opportunities and landscape beautification. Ornamental flowers are widely cultivated for their decorative value and increasing demand in domestic as well as international markets. 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). Among bulbous ornamental crops, gladiolus (*Gladiolus grandiflorus* L.) holds a distinguished position due to its attractive flower spikes and vibrant colour variations. Gladiolus is extensively cultivated as a commercial cut flower because of its elegant appearance, long spikes and suitability for bouquets and floral decorations. The crop performs well under diverse agro-climatic conditions and is widely grown during the winter and summer seasons in many parts of India. The success of gladiolus cultivation largely depends on the quality of planting material and proper crop management practices. Corm size is an important factor influencing plant growth, development, and flowering behaviour in gladiolus. Corms act as storage organs, supplying essential nutrients and energy required for sprouting and subsequent plant growth. Larger corms generally possess greater stored reserves, which may result in vigorous vegetative growth and improved floral performance.

Flowering characteristics such as days to spike initiation, spike length, rachis length, number of florets per spike, floret diameter and vase life are important quality parameters in gladiolus production. These traits directly determine the market value and acceptability of the cut flowers. Therefore, selection of appropriate corm size plays a crucial role in enhancing flowering performance and overall yield. 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). 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 flowering attributes (Bose *et al.,* 2003). The current experiment was conducted to examine the variance among the grades of gladiolus cultivar based on size of corms by weight in view of the growing commercial demand for superior spike length, more florets and extended vase life in Konkan region for improving flower quality and economic returns to growers.

2. Material and Methods

The present investigation entitled "Effect of corm size on flowering 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_1-Below 10 g, T_2-11-20 g, T_3-21-30 g,

T_4-31-40 g and T_5-41-50 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, *Gladiolus grandiflorus* L. cv. White Prosperity; flowering parameters *viz.,* number of days required for first spike emergence, days required for 50 per cent spike emergence, spike length (cm), rachis length (cm), interfloret length (cm), diameter of floret (cm), number of florets per spike, duration of flowering and vase life (days), were recorded separately for each treatment. The generated data was subjected to statistical analysis method as suggested by Panse and Sukhatme (1995).

3. Results and Discussion

The data pertaining to flowering parameters as influenced by different corm sizes are presented in Table 1. The results revealed significant differences among treatments with respect to flowering parameter of gladiolus.

Figure: Spike length of gladiolus cv. White Prosperity

3.1 Flowering parameters

The effect of corm size on flowering parameters in gladiolus cv. White Prosperity was observed and the analysed data on mean values for these parameters were recorded and presented in Table 1. Minimum number of days (65.10) required for first spike emergence and days required for 50 per cent spike emergence (71.03), were recorded in treatment T_5- 41-50 g. Similar result was recorded by Uddin *et al.* (2002), Narayan *et al.* (2013), Sarkar *et al.* (2014), Tahmina *et al.* (2014) and Ferdousi *et al.* (2018). The highest spike length (72.36 cm), rachis length (51.17 cm), interfloret length (4.75 cm) and diameter of floret (8.11 cm), maximum number of florets per spike (13.00), duration of flowering (11.95 days) and vase life (5.55 days) were recorded in treatment T_5- 41-50 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 flowering by utilising the stored food that is accessible for early spike emergence. These results are in accordance with the findings of Bhande *et al.* (2015), Ferdousi *et al.* (2018), Deepashree *et al.* (2019) and Methela *et al.* (2019).

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

Sr. No.	Treatment Details	Days to first spike emergence	Days to 50% spike emergence	Spike length (cm)	Rachis length (cm)	Interfloret length (cm)	Diameter of floret (cm)	Number of florets/ spike	Duration of flowering (days)	Vase life (days)
T1	Below 10 g	77.47	84.44	42.95	30.46	4.16	5.49	9.50	8.88	5.10
T2	11-20 g	74.40	79.43	55.70	37.96	4.27	6.19	10.60	9.13	5.50
T3	21-30 g	71.58	77.35	63.42	44.05	4.31	7.06	11.65	9.83	5.85
T4	31-40 g	67.73	74.38	68.80	48.31	4.45	7.79	12.00	10.88	6.10
T5	41-50 g	65.10	71.03	72.36	51.17	4.75	8.11	13.00	11.95	6.50
Range		65.10 - 77.47	71.03-84.44	42.95-72.36	30.46-51.17	4.16 – 4.75	5.49 – 8.11	0.85 - 1.74	0.88 – 11.95	5.10 – 6.50
S.Em ±		1.11	0.88	1.32	0.79	0.08	0.14	0.31	0.21	0.12
CD at 5 %		3.44	2.72	4.07	2.45	0.25	0.45	0.95	0.65	0.40

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 flowering parameters of gladiolus cv. White Prosperity. The present investigation clearly demonstrated that corm size significantly influenced the flowering traits of gladiolus. Larger corms produced early spike emergence, longer spike and rachis length, higher number of florets per spike and better overall floral quality compared to medium and small corm sizes. The improved flowering performance may be attributed to greater food reserves present in larger corms, which support vigorous growth and enhanced reproductive development. Proper selection of corm size can therefore serve as an important strategy to meet the increasing market demand for quality cut flowers in the region. The results reported are suggestive and need to be studied further for appropriate recommendations.

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