

VARIETAL EVALUATION OF GLADIOLUS (*GLADIOLUS GRANDIFLORA* L.) UNDER THE HILLY CLIMATIC CONDITION OF MAINPAT, CHHATTISGARH

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Abstract: The present investigation was carried out at Potato Research Station, Mainpat, Surguja Chhattisgarh, Indira Gandhi Krishi Vishwavidyalaya. The aim of the study was to evaluate the performance of most suitable cultivar under the climatic conditions of Mainpat, Surguja district. Five cultivars of Gladiolus namely White prosperity, Delhi Local, Juster, Punjab Morning, and Surguja Local were evaluated for their adoptability and performance. Results on vegetative characteristics showed that cultivars White Prosperity and Punjab morning took less number of days for sprouting, White prosperity and Punjab morning produced more plants per corm and White Prosperity obtained maximum plant height with maximum florets. Results on floral characteristics showed that cultivar White prosperity and Delhi Local were earlier for spike emergence, White prosperity and Juster took minimum days to flowering, maximum florets were produced by White prosperity and Juster obtained maximum spike length and White Prosperity remained attractive for longer time. Results on corm and cormels characteristics showed that White prosperity produced more corms, Juster produced maximum cormels and gained maximum corm size, maximum corm weight was recorded in Juster. From the results we conclude that keeping in view the vegetative and reproductive characteristics White prosperity, Juster, Punjab Morning is recommended for general cultivation.

Keywords: Gladiolus, Cultivars, Performance

INTRODUCTION

Gladiolus (*Gladiolus grandiflora* L.) is very much liked for its majestic spikes containing attractive, elegant and delicate florets. This floret open in sequence over a longer duration and hence has a good keeping quality of cut spikes. Gladiolus belonging to the family Iridaceae is an important bulbous crop domestic as well as International market. It is commercial grown in tropical, subtropical and hilly parts of the world. The exquisite and majestic beauty of gladiolus spikes, exhausting range of colour, different shades, varying number of florets, size and better keeping quality has made gladiolus the most popular bulbous flower crop grown worldwide. The spikes of gladiolus are mainly used for garden and interior decoration, and for making bouquets. It is known as queen of the bulbous plants is very popular as a cut flower, both with the consumer and the florist alike because of its many spike forms, colours and colour combinations, an advantage in every floral arrangement (Bushman, 1990). Ram, *et al.* (2005) evaluated the performance of 8 gladiolus cultivars, i.e. American beauty, Nova lux, White prosperity, Sylvia, Delhi local, Jester gold, and Picardy, under sodic soil conditions. White prosperity recorded the highest number of corms (1.79) and cormels per plant (3.25).

Chopde *et al.* (2012) evaluated eight varieties of gladiolus for flower and corm production and inferred that varieties Psittacinus Hybrid and Phule Tejas were superior in respect of quantitative yield of spikes and corms, whereas for quality production of spikes and corms, the varieties Phule Ganesh, Pink

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Perfection, Monte Alto and Phule Neelrekha were found better than the other varieties of gladiolus. Bulbs as well as flowers are used for the commercial purposes are very expensive and can be used as effective substitute for the conventional crops. The addition of new varieties every year necessities varietal evaluation to find out suitable variety for specific region. The performance of any crop or cultivar largely depends on genotypic and environmental interaction. As results, cultivar which performs well in one region may not perform the same in other region of varying climatic conditions. Hence, the present investigation is therefore, planning to evaluate five cultivars White prosperity, Juster, Punjab morning, Delhi Local and Surguja Local suitable for cut flower and corm and cormels production in hilly region Mainpat district Surguja Chhattisgarh.

MATERIAL AND METHOD

A field experiment was conducted during the year 2014-15 at Potato Research Station, Mainpat, Surguja district, Indira Gandhi Krishi Vishwavidyalaya, Chhattisgarh. The Mainpat Block, district Surguja is situated at latitude 22^o45' N, longitude 83^o18' E and height 1075 meter from the mean sea level (MSL) with average rainfall 1125-1230 mm per year. The experiment soil was sandy loam. The Experiment evaluation of different cultivars of gladiolus was carried out at Mainpat Block hilly zone in Surguja district Chhattisgarh, India. Five cultivars: White prosperity, Punjab morning, Juster, Delhi Local and Surguja local of gladiolus were

selected for the experiment on the basis of their performance in other areas. The experiment was laid out in a Randomized Block Design (RBD) with five treatments and three replications. Gladiolus corms were planted at a spacing of 45 x 30 cm distance. All the cultural practices i.e., irrigation, hoeing, weeding, spraying and fertilizers application was given in time during the entire growth period for obtaining better yield. The following parameters were studied Days to sprouting, Number of plants per corm, Plant height (cm), Number of leaves per plant, Days to spike emergence, Days to flowering, Number of spikes per plant, Spike length (cm), Number of florets per spike, Average field life of spike (days), Number of corms per plant, Number of cormels per plant, Average weight of corms (g), average Size of corm (cm), Average size of cormels (cm), Average weight of cormels (g).

RESULT

The earliest sprouting of (7.25) days were observed in White prosperity followed by Punjab morning (9.0), Juster (10.0) and Delhi local (11.0) days. The Surguja local was too late and took 9.50 days to sprouting. Hundred per cent sprouting was observed in all the cultivars. The number of corms per plant were obtained from white prosperity (3.5) and Punjab morning (3.25), while least of (2.50) in Surguja local. The number of leaves per plant shown in White prosperity (9.30) followed by Juster (9.20), Punjab morning (8.80) and Delhi local (7.50). The maximum plant height was observed in white prosperity (48.25 cm) followed by Juster (45.50 cm), Punjab morning (42.30 cm) and Surguja local (40.80 cm). Different cultivars showed variable responses for vegetative characteristics. Cultivars under study were given same soil and climatic conditions but variations were there. This might be due to the soil and climatic conditions prevailing in the area.

Floral Characteristics

The spike emergence showed that Surguja local took more days (75.25), whereas minimum number of days were in Punjab morning (45.30), Juster (50.25), Delhi local (48.50) and (55.20). Maximum days to flowering were taken by White prosperity (75.25). Minimum days to flowering were taken by White prosperity (55.33) and Delhi local (52.21). Maximum floret were recorded in White prosperity (20.25) followed by Punjab morning (16.25) whereas, minimum (11.30) were observed for Surguja local. The number of spikes per plant shown in Punjab morning (5.20) followed by white prosperity (4.25), Juster (3.50) and Delhi local (2.30). Maximum spike length (90.25cm) was produced by White prosperity followed by Delhi local (85.50cm), Juster (82.50cm) and Punjab morning (80.20cm) whereas, minimum (75.25cm) was obtained by Surguja local. White prosperity remained attractive for longer period and

obtained spike life of 8.20 days followed by Juster 7.50 while shorter spike life (5.5) was recorded for Surguja local. Variations among floral characteristics can be observed for different cultivars. Similar variations in spike quality parameters of gladiolus varieties were quoted by the workers viz., Rani *et al.* (2007) and Swaroop and Singh (2007) in gladiolus. The variations among the floral characteristics has been observed by Lal, *et al.* (1984). They observed that among 47 cultivars Ban voyage sport and Apple bloom were earliest to flowering. Patil, *et al.* (1994) evaluated 9 exotic gladiolus cultivars and observed that 'Sancerve' produced the longest spike and maximum number of florets per spike. Rao and Janakiram (2006) worked on the performance of gladiolus cultivars and observed that the spike length and rachis length were maximum in Dhiraj while maximum floret size was in Kumkum. Aswath and Parthasarathy (1996) evaluated 18 gladiolus cultivars, and observed that 'Blue moon', 'Power pufp', 'Friendship' and 'Red majesty' were found promising for spike characters.

Corm and Cormels Characteristics

The maximum corms per plant (3.25) were recorded in Delhi local followed by Juster and White prosperity (3.20) whereas, least number of corms in Surguja local (2.50) and Punjab morning (2.25). The Delhi local obtained the maximum number of cormels per plant (2.50) followed by Punjab morning (2.25), Surguja local (2.10) and 1.5 in white prosperity and Juster. The maximum weight of corm (60.30g) was observed in Punjab morning followed by White prosperity (60.25g) and Delhi local (50.25). The least corm weight (38.25g) was recorded in Surguja local. Maximum cormels weight (2.01 g) was observed in White prosperity while least (0.75g) in Surguja local. Maximum corm size of 6.20 cm was observed in White prosperity, followed by 5.50cm in Punjab morning the least corm size of 4.47cm was observed in 'Juster'. Maximum cormels size of 1.25, 1.25, 1.06, and 1.01cm were recorded in Delhi local, Punjab morning, White prosperity, and Juster respectively while least 1.0 cm in Surguja local. Close observations of the corm and cormels characteristics showed variable responses for the cultivars. Different cultivars responded differently with soil and climatic conditions prevailing in the area depending upon their genetic makeup. Ram, *et al.* (2005) evaluated the performance of 8 gladiolus cultivars and recorded highest number of corms and cormels in White prosperity. Superiority of some of the genotypes over the others in respect of corms plant⁻¹ of gladiolus was also reported by Kumar, *et al.* (2009).

CONCLUSION

The evaluation of different cultivars of gladiolus was conducted under the climatic conditions of Mainpat hilly zone of Surguja district. Five cultivars of

Gladiolus namely Punjab morning, White prosperity, Juster, Delhi local and Surguja local were evaluated for their adoptability and performance. Results on vegetative characteristics showed that cultivars White prosperity and Punjab morning took less number of days for sprouting. The variety Juster and Surguja local was produced more plants per corm and variety White prosperity obtained maximum plant height while number of leaves per plant shown White prosperity and Juster. Results on floral characteristics showed that cultivar White prosperity and Delhi local

were earlier for spike emergence, White prosperity and Delhi local took minimum days to flowering, maximum florets were produced by White prosperity and Delhi local, White prosperity obtained maximum spike length and Delhi local remained attractive for longer time. Results on corm and cormels characteristics showed that Delhi local produced more corms, White prosperity produced maximum cormels and gained maximum corm size , maximum corm weight was recorded in Juster.

Table 1. Mean performance of Gladiolus in northern hill zone Mainpat

Genotypes/ Characters	Days of sprouting	No. of corms/ plant	No of leaves/plant	Plant height (cm)	Days to spike emergence	Days to Flowering	No of florets/spikes	No of spikes/ plant
White prosperity	7.25	2.70	9.30	48.25	45.30	65.80	20.25	4.25
Delhi Local	8.50	3.20	7.50	40.20	48.50	70.20	11.50	2.30
Juster	7.50	3.30	9.20	45.50	50.25	72.30	13.50	3.50
Punjab morning	8.25	4.10	8.80	42.50	52.30	70.50	16.25	5.20
Surguja local	9.50	2.20	6.50	40.80	55.25	74.25	11.30	2.30

Table 2. Mean performance of Gladiolus in northern hill zone Mainpat

Genotypes/ Characters	Spike length (cm)	Average field life of spike	No of corms/plant	No of cormels/plant	Weight of corms (g)	Corm size (cm)	Cormel size (cm)
White prosperity	90.25	8.20	3.20	1.50	60.25	6.22	1.06
Delhi Local	85.20	7.30	3.25	2.50	50.25	5.20	1.25
Juster	82.50	7.50	3.20	1.50	50.20	5.10	1.01
Punjab morning	80.50	6.25	2.25	2.25	60.30	5.50	1.25
Surguja local	75.25	5.50	2.50	2.10	38.25	5.20	1.0

Photographs





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