



Research Article

EVALUATION OF MORPHOLOGICAL CHARACTERS OF GLADIOLUS (*Gladiolus hybridus* Hort.) GENOTYPES UNDER SUB HUMID CONDITION OF RAJASTHAN

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Abstract- A field experiment was conducted during *Rabi* season of 2014-15 to study "Evaluation of Morphological Characters of Gladiolus Genotypes (*Gladiolus hybridus* Hort.)" at the Instructional Farm, Department of Floriculture & Landscaping, College of Horticulture & Forestry, Jhalrapatan, Jhalawar. The experiment consisted of 12 varieties 'African Star', 'Arti', 'Darshan', 'Friendship', 'Hunting Song', 'Legend', 'Pusa Srijana', 'PusaKiran', 'Snow Princess', 'Sunayana', 'Trader Horn' and 'Urmi' laid out in randomized block design with three replications. The variety 'Trader Horn' showed the best performance for maximum number of leaves per plant (9.75), plant height (137.09 cm), spike length (123.38 cm), floret diameter (10.93 cm), duration of flowering (16.17), number of florets per spike (20.08). The 'Legend' was noted for best yielding variety regarding, maximum number of spikes (37.0) per plot, sprouts per corm (2.67) and B:C ratio (2.18).

Keywords- Gladiolus Genotypes, Morphological Characters.

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Introduction

Gladiolus is very popular cut spike, commonly known as 'Sword Lily'. It is important commercial bulbous crop and having pivotal place as cut spike both in domestic and international markets. Gladiolus was introduced into cultivation towards the end of the sixteenth century. It is relatively easy to grow and is ideal for bedding and exhibition purposes. The spikes are used in floral arrangement, in bouquets and for indoor decorations. Popularity of this crop as a cut spike is increasing day by day because of its long keeping quality and exhaustive range of colours of the spikes. It stands fourth in the international cut flower trade after carnation, rose and chrysanthemum. In India, gladiolus is commercially grown in West Bengal, Maharashtra, Uttar Pradesh, Uttaranchal, Punjab, Haryana, Sikkim, Jammu and Kashmir, Karnataka, Gujarat, Himachal Pradesh, Tamil Nadu, Madhya Pradesh, Delhi and Rajasthan. Important pockets of commercial gladiolus cultivation are Lucknow, Meerut, Saharanpur, Bulandshahr, Ghaziabad and Uttaranchal. [1]

Materials and Methods

The present investigation was carried out during 2014-15 at the Instructional Farm, Department of Floriculture & Landscaping, College of Horticulture & Forestry, Jhalrapatan, Jhalawar, to identify important yield attributing characters for developing high yielding genotypes in gladiolus and to study performance of gladiolus under Jhalawar condition. The soil had organic carbon 0.48 %, available nitrogen 240.68 kg/ha, available phosphorus 16.83 kg/ha and available potash 299.0 kg/ha. Well decomposed vermicompost at the rate of 5 kg/sqm was applied at the time of land preparation. Recommended dose of NPK (30:20:20 g/m²) was applied in the form of Urea, Single Super Phosphate and Muriate of Potash, respectively. After field and plot preparations the varieties were allocated to experimental plots through randomization. For planting of corms two shallow furrows at 30 cm distance were prepared in each plot with the help of kudali

Treated corms (with bavistin 0.2%) were planted at a distance of 20 cm with depth 6-8 cm in these furrows on 2 November, 2014. Total 16 corms of specific variety were planted in each plot. Earthing up of plants was also done at the time of manual weeding after 45 days of planting to support the plants. The crop didn't face any serious attack of diseases and pests. However, drenching of soil with bavistin with irrigation water and two spray of bavistin @ 0.2%, a spray of monocrotophos 35 EC @ 2 ml/l of water for control insect-pests in the later stage of crop growth has made.

Results & Discussion

The analysis of varietal performance revealed that treatments were significant for most of the characters indicating varietal differences for all characters studied. The variety 'Trader Horn' was found superior in respected to number of leaves per plant (9.75), plant height (137.09 cm), spike length (123.38 cm), floret diameter (10.93 cm), duration of flowering (16.17 days), number of florets per spike (20.08 florets) while, least in sprouts per corm (1.00) and number of spikes (17.33). The variation in number of leaves per plant, spike length, floret diameter and number of florets per spike among the various varieties might be due to genotypic differences in phenotypic expression. The variation in number of leaves per plant amongst all varieties might due to variation in amount of stored food material in mother corms and another probable reason for variation among the varieties might be the environmental conditions. [2] Plant height could have also been influenced by other plant characters viz., corm size, planting distance and nitrogen application might be attributed to greater availability and uptake of nitrogen into the plant system which was involved in cell division, cell elongation as well as protein synthesis which ultimately enhanced the vegetative growth and stem length. [3] The rachis length might be genetically correlated to number of nodes on the rachis, spike length and plant height. Spike length among the varieties might be the environmental conditions prevailed during growth stage of spike and after

slipping stage. [4] Floret diameter also depend upon the corm diameter. [5] Floret diameter had positive correlation with floret diameter and corm diameter. Production of strong and sturdy spike or thin and weak spike might be dependent upon the genotype that could have been further persuaded by the environmental condition. [2] in gladiolus. The 'Legend' was noted for best yielding variety regarding, maximum number of spikes (37.0) per plot, sprouts per corm (2.67) and B:C ratio (2.18). The variety 'Pusa Srijana' was having lowest spike length (77.74

cm), rachis length (28.19 cm), spike diameter (0.74 cm), floret diameter (8.26 cm), duration of flowering (8.33 days), number of florets per spike (10.50 florets). The variation in spike length among the various varieties might be due to genotypic differences in phenotypic expression of spike length. Spike length depends upon the genetic constitution and number of node and internodes length. The similar result has been reported in gladiolus [6, 7] in gladiolus.

Table-1 Performance of gladiolus varieties with respect to vegetative characters

Treatments	Days to 50 % Sprouting	Sprouted corm per cent	Sprouts per corm	Number of leaves/plant	Plant height (cm)
African Star	7.67	100	2.00	7.00	112.25
Arti	6.00	100	1.50	8.08	105.52
Darshan	6.00	100	1.33	9.00	111.41
Friendship	5.67	100	1.33	7.92	116.70
Hunting Song	7.33	100	1.67	8.83	126.87
Legend	5.67	100	2.67	8.92	109.76
PusaSrijana	6.33	100	2.08	6.83	89.84
PusaKiran	7.67	100	1.67	8.50	116.16
Snow Princess	7.00	100	1.83	7.00	109.10
Sunayana	8.00	100	1.58	7.67	121.08
Trader Horn	6.67	100	1.00	9.75	137.09
Urmi	7.00	100	1.50	6.83	1023
Mean	6.75	100	1.68	8.02	1125
SEm±	0.76	0	0.22	0.52	6.12
CD at 5%	1.59	0	0.47	1.09	12.70

Table-2 Performance of gladiolus varieties with respect to floral parameters

Treatments	Days to first spike emergence	Days to first floret opening	Days to 50% Flowering	Spike length (cm)	Rachis length (cm)	Spike diameter (cm)	Floret diameter (cm)	Duration of flowering	Number of Florets per spike
African Star	74.00	85.79	86.00	81.36	39.67	0.91	8.81	14.83	14.58
Arti	79.00	93.67	94.33	96.90	46.58	0.93	8.77	11.67	167
Darshan	76.58	87.42	89.00	96.70	42.74	0.98	8.38	15.33	15.25
Friendship	71.92	85.46	86.33	102.46	52.26	0.94	9.14	14.17	15.92
Hunting Song	79.33	95.21	95.33	112.08	66.26	0.93	9.42	12.58	18.42
Legend	78.08	92.04	92.00	91.85	36.32	0.77	8.86	10.25	10.58
PusaSrijana	73.17	89.13	89.67	77.74	28.19	0.74	8.26	8.33	10.50
PusaKiran	67.17	80.67	81.67	99.71	46.08	0.79	9.44	125	14.58
Snow Princess	65.42	86.42	87.00	92.39	46.78	0.82	9.07	12.92	192
Sunayana	75.17	90.88	91.33	107.28	50.63	0.96	9.54	133	15.75
Trader Horn	77.67	89.25	90.33	1238	61.71	0.96	10.93	16.17	20.08
Urmi	68.00	83.08	83.67	87.56	38.66	0.81	8.63	11.50	12.67
Mean	73.79	88.25	88.88	97.18	46.32	0.88	9.10	12.86	14.65
SEm±	2.21	2.61	2.23	50	1.75	0.60	0.34	1.58	0.94
CD at 5%	4.58	5.42	4.64	7.26	63	0.06	0.71	28	1.96

Conclusion

On the basis of finding of the present experiment the variety 'Trader Horn' found superior quality amongst all varieties. The variety 'Pusa Srijana' had inferior flower quality.

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Abbreviations

%	:	Per cent
@	:	At the rate of
/	:	Per
et al.	:	(et alibi), and elsewhere
C.D.	:	Critical difference
cm	:	Centimeter
g.	:	Gramme
ha	:	Hectare
ml	:	Millilitre

Conflict of Interest: None declared

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