

Research Article

Studies of Vase Life and Corm Characters in Gladiolus (*Gladiolus Hybridus* Hort.) Genotypes

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Abstract

A study was conducted to evaluate the 12 genotypes 'African Star', 'Arti', 'Darshan', 'Friendship', 'Hunting Song', 'Legend', 'Pusa Srijana', 'Pusa Kiran', 'Snow Princess', 'Sunaina', 'Trader Horn' and 'Urmi'. The experiment was conducted during *Rabi* season of 2014-15 to study "Studies of Vase Life and Corm Characters of Gladiolus (*Gladiolus hybridus* Hort.) Genotypes" at the Instructional Farm, Department of Floriculture & Landscaping, College of Horticulture & Forestry, Jhalrapatan, Jhalawar. The experiment consisted laid out in randomized block design with three replications. The variety 'Trader Horn' was found superior for number of cormels per plant (70.83). The 'Legend' was noted best yielding variety in respect to, maximum number of corms per plant (2.50), number of corms per plot (37.67). The maximum vase life was observed in 'Darshan' (17.56 days) and maximum number of florets remaining open at a time in vase life was observed in 'Hunting Song' (6.78 florets).

Keywords: Gladiolus Genotypes, Vase Life, Characters

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Introduction

Gladiolus (*Gladiolus hybridus* Hort.) is native to South Africa. Gladiolus is one the largest genera in Iridaceae family. Gladiolus is very popular cut spike. The name gladiolus was coined by Pliny the Elder (A. D. 23-79) [1] to describe 'the shape of the leaf which resembles that of sword' (Latin word 'gladiolus' meaning sword). So, it is commonly known as 'Sword Lily'. It is important commercial spike 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 fascinating spikes bear a large number of florets, which exhibit varying sizes and forms with smooth, ruffled or deeply crinkled tepals. Except true blue, black and green, practically all colours are available in gladiolus. The spikes are used in spike 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.

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 Jhalawarcondition. 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 and Discussion

The analysis of varietal performance revealed that treatments were significant for most of the characters indicating varietal differences for all the corm and vase characters studied. On the basis of finding of the present experiment the following conclusion may be drawn according to table 1 and 2. Among the 12 varieties of gladiolus the 'Legend' was found for best yielding variety in respect to, number of corms per plant (2.50) and number of corms per plot (37.67). The number of corms per plot showed positive correlated with number of corms per plant [2]. The number of corms per plant has been influenced by the genotypic differences and environmental condition during experimentation period. Kishan *et al.* (2005) [3] reported similar results in gladiolus.

The maximum diameter of corm was found in 'Snow Princess' (7.24 cm) and weight of corm was recorded maximum in 'Arti' (65.50 g). Size of corm might be mainly governed by genotypic makeup of the varieties determining the number of corms produced per plant, as the number of produced corms per plant appeared to be negatively correlated to corm diameter (higher the number of corms produced per plant, smaller the size of corms and *vice versa*) [4].

The variety 'Trader Horn' (70.83) produced more number of cormels per plant. The observed weight of cormels per plant was maximum in 'Arti' (65.50 g). The number of cormels per plant is genetic property of the varieties. However, it might have also been affected by the number of corms produced per plant and the number of cormels forming with each corm [5]. The variety which recorded highest size index of corms was 'Snow Princess' (18.83 cm²).

The variation in size index of corms of different varieties might be due to the differences in diameter and thickness of corms that could be due to variations in their genetic setup leading to differential growth of corms in horizontal (diameter) or vertical (thickness) axis [4].

The maximum vase life was observed in 'Darshan' (17.56 days) and maximum number of florets remaining open at a time in vase was observed in 'Hunting Song' (6.78 florets). The performance of gladiolus varieties with respect to take days to wilting of basal floret maximum in 'Friendship' (7.00 days) amongst all varieties and difference was non-significant over all varieties. The minimum number of florets remaining unopened was observed in 'Urmī' (0.00 florets). The variation in vase life amongst the varieties might be due to different level of reserve carbohydrates in the cut spikes [5]. It could be due to variation among the varieties for production of photosynthetes due to variation in them for photosynthetic area (leaf number and size). Differential sensitivity of the varieties to ethylene could also be a probable reason of variation in vase life [6]. Thus it's concluded that variation in vase life spikes of different varieties due to leading differential accumulation of carbohydrates and disparity in sensitivity to ethylene. The results are in line with those of Patil (2003) [7] in gladiolus.

Table 1 Performance of gladiolus varieties with respect to number of corms per plant, number of corms per plot, number of cormels per plant, diameter of corm (cm) and weight of corm (g)

Treatments	Number of corms per plant	Number of corms per plot	Number of cormels per plant	Diameter of corm (cm)	Weight of corm (g)
African Star	1.92	29.67	15.50	6.18	55.85
Arti	1.58	25.67	35.00	6.27	58.11
Darshan	1.42	24.00	28.92	5.55	49.69
Friendship	1.42	25.33	34.58	6.73	74.71
Hunting Song	1.83	31.67	50.33	6.73	70.94
Legend	2.50	37.67	68.83	6.28	60.29
PusaSrijana	2.08	32.00	19.58	5.64	51.84
PusaKiran	1.67	27.33	28.25	6.45	71.30

Snow Princess	2.00	30.33	45.42	7.24	90.71
Sunaina	1.67	26.67	41.08	7.02	70.57
Trader Horn	1.08	16.33	70.83	6.66	70.50
Urmi	1.75	27.00	22.08	6.71	72.31
Mean	1.74	27.80	38.36	6.45	65.82
SEm±	0.22	1.66	1.43	0.22	3.33
CD _(0.05)	0.47	3.44	2.97	0.47	6.91

Table 2 Performance of gladiolus varieties with respect to weight of cormels per plant (g), size index of corms (cm²), vase life of spikes (days), number of florets remaining open at a time in vase life, days to wilting of basal floret and number of florets remaining unopened

Treatments	Weight of cormels per plant(g)	Size index of corms (cm ²)	Vase life of spikes (days)	Floret remaining open at a time	Days to wilting of basal floret	Florets remaining unopened
African Star	9.57	14.81	15.89	5.11	5.89	2.89
Arti	65.50	11.50	14.33	5.56	5.78	1.11
Darshan	56.90	9.06	17.56	4.22	4.89	0.22
Friendship	15.70	12.78	15.44	6.11	7.00	1.67
Hunting Song	13.33	15.25	16.11	6.78	5.89	1.22
Legend	25.60	9.43	11.33	5.89	6.11	2.78
PusaSrijana	10.54	9.59	14.44	4.78	5.78	3.89
PusaKiran	13.17	12.91	15.22	5.44	6.44	0.33
Snow Princess	18.13	18.83	15.44	4.33	5.33	3.78
Sunaina	20.37	17.56	13.78	5.11	6.11	3.67
Trader Horn	43.43	15.54	14.89	5.44	6.00	0.44
Urmi	30.43	13.21	15.67	5.00	6.22	0.00
Mean	26.88	13.37	15.00	5.31	5.95	1.83
SEm±	0.95	0.69	0.75	0.67	0.51	0.41
CD _(0.05)	1.98	1.44	1.57	1.32	NS	0.84

Conclusion

On the basis of finding of the present experiment the following conclusion may be drawn. The experiment consisted of 12 varieties of which the varieties showed the best performance for maximum number of corms per plot was 'Legend' (37.67) and 'Trader Horn' was maximum number of cormels per plant (70.83). The maximum vase life was observed in 'Darshan' (17.56 days) and maximum number of florets remaining open at a time in vase was observed in 'Hunting Song' (6.78 florets).

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