



Short communication

Evaluation of gladiolus cultivars in Eastern Ghats of Tamil Nadu

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ABSTRACT

Gladiolus grandiflorus L. genotypes were evaluated for growth and floral parameters in Eastern Ghats of Tamil Nadu, under Yercaud conditions. Significant differences were recorded for all traits studied. Among 42 genotypes evaluated, 'Pusa Shagun' and 'Pusa Swarnima' recorded quality spikes with higher vase life indicating their suitability for use in floral arrangement, while, genotypes like 'Thumbolina', 'Priscilla' and 'Candyman' were found superior in characters like corm number, corm weight and corm diameter. Taking into account various growth and floral characters of the genotypes studied, Pusa Swarnima, Pusa Shagun, Thumbolina, Priscilla and Candyman can be recommended for cut-flower production in the Eastern Ghats of Tamil Nadu.

Key words: Genotypes, spike length, corms, gladiolus

Gladiolus is one of the most attractive bulbous cut-flower crops. Its wide open, good textured, impressive coloured spikes have high demand in both international and domestic markets. In recent years, demand for gladiolus has increased owing to its durability in long-shipping and for its fantastic colour range—from blue to white, red, yellow, pink, mauve and combinations of all these colours. The spikes of gladiolus are used mainly for garden display, interior decoration and bouquet making. Total area under bulbous ornamentals in the world is 50,000ha, of which gladiolus occupies 9500ha. Major gladiolus growing countries in the world are The Netherlands, UK, USA, Japan, South Africa and Australia. US is a major producer of gladiolus and exports 6.5 million gladiolus spikes while its import is around 13 million cut stems per year. In India, it is grown in an area of 25,000ha with production of 753 lakh spikes. It is commercially cultivated in West Bengal, Himachal Pradesh, Karnataka, Uttar Pradesh, Punjab and New Delhi (Rupa Rani *et al*, 2007).

Gladiolus is grown round the year in tropical regions of Karnataka and Maharashtra. In Tamil Nadu, it is grown in a few places like Ooty and Kodaikanal. Gladiolus is rich in varietal wealth, and every year there is addition of new cultivars. Hence, an evaluation of various cultivars was carried out to assess suitability of growing these in the Eastern Ghats of Tamil Nadu.

The experiment was conducted at Horticultural

Research Station, Yercaud, from 2006 to 2009. Forty two genotypes of gladiolus were used in the study namely, Thumbolina, White Prosperity, Big Time Supreme, Morello, Apollo, Charms Glow, Priscilla, Her Majesty, Western Song, Tropic Sea, American Beauty, Summer Sunshine, Red Sea, Red Ginger, Intrepid, Candyman, Red Majesty, Pacifica, Jester, Peter Pears, Darshan, Sylvia, Shobha, Alderbaran, Pusa Swarnima, Eighth Wounder, Marvelous, Souvenir, Punjab Dawn, Pascal, Novalux, Red Beauty, Pink Glory, Pusa Shagun, Prabha, Jacksonville Gold, GPG, Bis Bis, Green Bay and Melody. The site of experiment is geographically situated between 17°04' to 11°05' North latitude and 78°05' to 78°23' East longitude at an altitude of 1500m Above Mean Sea Level (AMSL). Average maximum and minimum temperature during the course of study was 31.0°C and 12.4°C, respectively. Mean annual rainfall in Yercaud recorded was 1572mm in 47 rainy days. Average relative humidity was 75 per cent. Soil of the experimental plot was lateritic with pH ranging 4.5 – 6.0. The experiment was laid out in Randomized Block Design, with three replications. Corms of 42 different genotypes were planted in a plot of 1.8m X 1.2m size, with a spacing of 30cm x 30cm. FYM @25t/ha was applied 15 days prior to planting during land preparation. Uniform package of practices was followed throughout the experiment. Growth and floral parameters, viz., days to corm sprouting, days to flowering, spike length, number of florets per spike, number of open flowers at a given time, vase life, corm weight and number of cormels

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Table 1. Comparative performance of gladiolus genotypes in Eastern Ghats of Tamil Nadu (pooled mean for the years 2006-09)

Cultivar	Plant height (cm)	Days to com sprouting	No. of corms	Corm diameter (cm)	Corm weight(g)	Days to flowering	No. of florets per spike	Spike length (cm)	Spike weight (g)	Flower diameter (cm)	No. of days florets remained open	Vase life in water (d)
Alderbaran	103.9	13	17	5.6	50.4	97	10	101.2	62.1	9.9	5	10
American Beauty	87.7	12	1	5.7	53.3	95	14	96.5	62.2	12.7	6	11
Appollo	85.8	14	45	6.0	45.1	107	12	131.7	66.0	10.2	5	12
Big Time												
Supreme	87.1	14	31	5.5	47.2	110	14	91.9	61.8	11.6	5	11
Bis Bis	101.7	15	2	4.7	45.5	86	11	102.2	61.7	9.1	6	9
Candyman	91.5	12	4	7.0	63.7	103	13	114.4	56.2	13.0	5	10
Charms												
Flow	69.1	10	7	6.0	55.9	94	7	94.1	49.6	11.2	7	12
Darshan	97.1	15	8	5.9	42.0	97	16	95.4	62.4	12.0	7	12
Eighth												
Wonder	80.2	10	21	5.7	53.1	90	17	129.0	68.2	12.2	8	11
Green Bay	102.2	17	1	4.9	44.3	100	12	93.3	61.3	10.1	5	12
GPG	81.7	16	11	4.2	21.5	101	10	79.8	51.8	10.4	5	8
Her												
Majesty	83.5	10	2	4.1	47.8	88	2	119.2	68.5	12.1	6	11
Intrepid	82.8	11	16	6.6	56.8	92	16	108.2	57.5	12.5	6	10
Jacksonville												
Gold	79.2	10	3	5.1	39.7	100	12	79.4	54.3	11.3	5	12
Jester	72.2	11	36	5.7	51.1	93	12	82.9	59.2	10.3	5	10
Legend	105.7	13	22	5.4	49.3	89	16	141.5	64.7	8.9	10	14
Marvellous	86.3	14	10	4.8	42.5	97	16	132.1	73.0	11.6	6	11
Mayur	73.7	12	13	5.8	53.0	84	10	96.7	65.1	10.1	4	9
Melody	95.2	16	2	3.7	33.8	72	10	70.7	57.9	11.9	6	11
Morello	50.4	9	3	5.0	28.1	87	10	85.4	54.5	11.9	4	11
Novalux	72.7	10	16	6.4	56.2	69	14	112.3	60.5	10.8	6	11
Pacifica	87.1	11	1	4.7	29.4	96	15	135.8	71.4	9.7	8	11
Pascal	87.8	10	5	5.0	45.4	79	13	93.9	63.0	8.3	6	11
Peter Pears	80.2	13	5	5.3	48.5	100	14	113.6	66.2	10.3	6	11
Pink Glory	94.7	15	5	4.8	47.5	93	18	135.1	72.4	12.1	7	11
Prabha	84.7	10	16	4.9	51.0	94	13	128.4	57.6	10.4	6	11
Priscilla	95.8	11	34	6.5	69.5	105	19	107.5	63.5	12.9	8	14
Punjab												
Dawn	74.2	11	1	5.0	33.0	78	14	79.2	59.2	10.7	8	10
Pusa												
Shagun	91.0	9	8	6.3	64.2	91	16	142.7	70.7	11.0	7	12
Pusa												
Swarnima	69.5	12	38	5.3	55.4	96	19	136.3	72.4	12.5	8	12
Red Beauty	108.7	14	19	5.9	60.1	93	14	118.8	61.7	12.1	7	11
Red Ginger	89.4	13	26	6.4	58.5	104	14	138.8	64.9	12.3	7	12
Red Majesty	75.7	10	2	5.7	51.7	97	12	108.6	64.2	11.7	5	11
Red Sea	77.6	11	11	6.3	41.6	97	12	116.0	64.2	10.5	5	10
Shobha	70.2	14	7	6.2	53.6	87	14	119.6	61.1	12.4	8	11
Souvenir	96.7	13	24	4.7	38.9	92	15	125.7	67.8	12.2	6	10
Summer												
Sunshine	79.3	11	11	6.3	54.2	108	15	158.0	62.2	11.6	6	12
Sylvia	69.4	14	22	6.2	57.0	95	12	118.6	72.0	10.7	5	10
Thumbolina	76.8	12	84	5.6	51.5	83	15	75.8	60.5	13.4	6	12
Tropic sea	87.2	9	29	5.3	34.7	106	18	136.8	67.5	10.0	6	13
Western Song	64.2	9	1	4.0	28.6	65	12	79.7	71.6	9.5	6	10
White												
Prosperity	77.7	12	5	4.8	41.8	88	13	92.4	65.7	12.9	6	12
SEm (±)	13.02	0.83	5.33	1.07	5.47	7.57	1.76	11.77	4.23	0.82	0.67	0.90
CD (P=0.05)	25.91	1.64	10.61	2.13	10.87	15.06	3.51	23.41	8.41	1.64	1.34	1.79

per plant, were recorded and analyzed statistically for assessing suitability of the cultivars for cultivation in Yercaud region of Tamil Nadu.

Results revealed significant variation among the 42 cultivars with respect to all the parameters studied (Table 1). Plant height varied from 50.4 to 108.7cm, with cultivar Red Beauty recording the tallest plants, while, cv. Morello had the shortest plants. Similar results on variation in vegetative characters were observed by Swain *et al* (2008). Flower and cormel characters were significantly influenced by the cultivar. 'Morello' recorded minimum number of days (9d) to sprouting of corm, while, cultivar Green Bay recorded maximum number of days (17d). Similar results on vegetative characters were observed by Mishra (1997) in gladiolus. Cultivar Western Song was found to be the earliest (65 days) to first floret opening. 'Big Time Supreme' was late in opening (110 days). Early and late cultivars can both be used to prolong bloom period. Similar variations in early and late cultivars of gladiolus had been reported by Aswath and Parthasarathy (1996) and Swain *et al* (2008) in gladiolus. Length of the spike is the most important character in gladiolus. In the present study, longest spike (142.7cm) was recorded in cv. Pusa Shagun, followed by cv. Legend (141.5cm), Red Ginger and Pusa Swarnima (138.8cm), while, cv. Melody recorded the shortest spike length of 70.7cm. The weight of spike was maximum in Marvellous (73.0g) and minimum in 'Charms Glow' (49.6g).

There was a significant difference in the number of florets among cultivars. The number of florets per spike ranged from 10 to 19. Highest number of florets was observed in 'Pusa Swarnima' and 'Priscilla' (19). Hence, these were regarded as suitable for bouquet making. Dimri (2002) and Swain *et al* (2008) also noticed significant difference in floret number among different cultivars. The variety Thumbolina exhibited higher flower diameter (13.4cm) among the cultivars tested, and minimum flower diameter was seen in 'Pascal' (8.3cm). Similar findings were observed by Swain *et al* (2008) in the diameter of cut flowers. In a cut flower, keeping quality is the most important character influencing marketability of the flowers. Vase life of the spike in water under ambient conditions was found to be best in cvs. 'Priscilla' and 'Legend' (14 days), followed by cv. Tropic Sea. Rupa Rani *et al* (2007) observed that cv. American Beauty was the best in terms of duration of flowering under natural condition.

Number of corms per plant was found to be significantly different among cultivars. Cultivars also

recorded a wide variation in the number of cormels per mother corm, which ranged from 0 to 84. The variety Thumbolina recorded highest number of cormels. Swain *et al* (2008) reported wide variation in corm and cormel production in different cultivars of gladiolus. Corm weight (69.5g) was higher in cv. Priscilla, while corm diameter was the greatest in Candyman (7.0cm). Corm diameter and corm weight are important parameters for producing quality spikes, with more number of florets of a larger size. Wide variation in corm and cormel production was also reported by Aswath and Parthasarathy (1996) and Kamble *et al* (2004) in different cultivars of gladiolus.

It is evident from the study that cvs. Pusa Shagun and Pusa Swarnima recorded good quality spikes with higher spike length, number of florets per spike, number of flowers that remained open at a given time and, vase life, indicating their suitability for use in floral arrangement. However, cvs Thumbolina, Priscilla and Candyman were found to be better with respect to corm number, corm weight and corm diameter. Hence, with regards to various growth and floral characters, cultivars Pusa Swarnima, Pusa Shagun, Thumbolina, Priscilla and Candyman can be recommended for cut flower production in the Eastern Ghats of Tamil Nadu, under Yercaud conditions.

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