

## Performance of gladiolus varieties and hybrid genotype under Vidarbha condition of Maharashtra

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**ABSTRACT:** The present experiment was carried out at Horticulture Section, College of Agriculture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola; Maharashtra (India) during four years 2010-11 to 2013-14. An experiment was laid out in a Randomized Block Design with eight treatments (varieties) and replicated four times to assess the performance of new hybrid and other varieties, The results of the present investigation indicates that the hybrid AK-GL-04-06-A comes early to flower; produced maximum number of spikes per plant (1.73) and spikes per hectare (2.57 lakhs). The spike of AK-GL-04-06-A was long (105.26 cm) and straight with more number of florets per spike (16.45) having more rachis length (47.99 cm). This hybrid has good corm and cormel production potential (2.13 and 55.54 per plant respectively) with significantly higher (94.24%) consumer preference and longer vase life (10.23 days). The hybrid genotype AK-GL-04-06-A was developed through hybridization which is a cross between Darshan and White Friendship and released in the name of "PDKV Roshni" during the year 2014-5

### INTRODUCTION

Gladiolus, popularly called sword lily, takes its name from the Latin word Gladius because of sword shaped leaves. It is one of the major cut flowers in national and international markets and it is grown commercially. It's elegant spikes with wide range of colours in various forms and size has won for it a place of pride in ornamental gardens and monetary value as a cut flower. It is widely used in flower arrangement, bouquets, bunches, baskets and indoor decorations (Ramachandrudu and Thangam, 2009). The most common method of improving gladiolus is through hybridization. (Kumar and Kulkarni, 2009).

### MATERIAL AND METHODS

To develop gladiolus hybrid having good growth, flowering, corms and cormel production with attractive flower colour and good vase life, promising gladiolus types were selected in the year 2005-06 for crossing programme at the Horticulture Section, College of Agriculture, Akola which were proposed to be used for hybridization programme. A total of 14 parents were randomly crossed in 45 cross combinations in the year 2006-07. The hybrids generated from these crosses were screened for

various quantitative and qualitative characters. The hybrid genotype AK-GL-04-06-A resulting from the cross between Darshan X White Friendship was found to be highly promising with respect of a novel floret colour viz. attractive purplish white petals with white blotch in throat on lower petals. Then the experiment was framed after getting sufficient propagating material of hybrid genotype using eight varieties in Randomized Block Design as a statistical tool with four replications and assessed their performance from 2010-11 to 2013-14. The data on growth, flowering, yield, and vase life were recorded and statistically analysed.

### RESULTS AND DISCUSSION

The four years (2010-11 to 2013-14) pooled data in respect of growth flowering, yield, quality, corm and cormels production, vase life, reaction to fusarium wilt and consumer preference score of hybrid genotype AK-GL-04-06-A and other gladiolus varieties is presented in Tables 1 and 2.

**Plant height:** The data pertaining to plant height is presented in Table 1. Significantly maximum plant height (131.82cm) was recorded in variety Phule Neelrekha which was at par with Suchitra (117.05 cm),

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AK-GL-04-6-A (117.05 cm) and Darshan (110.42 cm). However, significantly minimum plant height was noticed in variety Debonair (84.57cm). Kumar and Kulkarni (2009) reported that highest plant height (84.63 cm) was observed in hybrid of Melody x Summer Sunshine. Similar variation in plant height of gladiolus was reported by Gawali *et. al.*(2012), Prakash and Kumar (2009) and Swaroop and Singh (2007).

**Days to 50% flowering:** The significantly early 50 % flowering was recorded with the varieties Darshan (70.56 days), Phule Tejas (70.95 days), and hybrid genotype AK-GL-04-6-A (73.38 days) and were found to be at par with each other. However, variety Phule Neelrekha was found to be late (93.78 days) in flowering.

**Yield:** Yield data presented in Table 1(a) exhibited significant differences due to different varieties. The maximum number of spikes per plant (1.73) and spikes per hectare (2.57 lakhs) were recorded with the hybrid genotype AK-GL-04-6-A which was at par with the variety Phule Neelrekha (1.72 per plant, 172.00 per bed and 2.55 lakhs/ha). However, minimum spikes per plant (1.00), per bed (100) and per hectare (1.48 lakhs) were recorded in varieties Debonair, Peter Pears and Friendship respectively. Hossain *et al.* (2011) reported significant variation amongst the gladiolus genotypes with respect to studied morphological characteristics as well as with yield and yield attributes.

**Quality:** The data with regard to florets per spike, spike length, length of rachis, floret length and diameter of florets is presented in Tables 1 and 2 shows significant differences among all the treatments. The maximum number of florets per spike (19.72), spike length (112.03 cm) and length of rachis (61.14 cm) were recorded with Phule Neelrekha and it was followed by hybrid genotype AK-GL-04-06-A (16.45, 105.26 cm 47.99 cm, respectively). Inter floret

length (6.60 cm) and diameter of floret (9.63 cm) were recorded maximum with hybrid genotype AK-GL-04-06-A. However, significantly minimum number of florets per spike (11.50), spike length (69.53cm), length of rachis (32.56 cm), inter floret length (6.06 cm) and diameter of floret (7.73cm) were recorded in variety Debonair. However, Ramachandrudu and Thangam (2009) reported that Peter Pears produced good spike length (112.79 cm), rachis length (40.61 cm) and florets per spike (13.1) under Goa conditions. Similar variation in length of spike and florets per spike was recorded earlier by Rani *et. al.* (2007).

**Corm and Cormel production:** The data regarding Corm and Cormel production presented in Table 2 . Significantly maximum (2.46) corms per plant were recorded in variety. White Friendship was at par with variety Phule Tejas (2.45). However, minimum corms per plant were recorded in Phule Neelrekha (1.80). Significantly maximum cormels were recorded in variety Phule Tejas (107.26) followed by Suchitra (85.59) and AK-GL-04-06-A (55.54). Rest of the varieties were shy producer. However, significantly minimum (11.64) cormels per plant were recorded by variety Debonair. Chopde *et al.* (2012) observed that varieties *Psittacinus* Hybrid and Phule Tejas were superior in respect of quantitative yield of spikes and corms. Poon *et al.* (2010) reported regarding corm and cormel production that genotype '*Psittacinus* hybrid' performed better.

**Vase Life:** The significantly long vase life (10.39 days) was recorded with the variety Phule Neelrekha followed by hybrid genotype AK-GL-04-06-A (10.23 days) and was at par with each other. However, significantly minimum vase life (7.32 days) was observed in variety Debonair. Gawali *et. al.*(2012) reported significantly maximum vase life in the variety Monte Alto (9.33 days). Sankari *et al.* (2012) revealed that 'Pusa Shagun' and 'Pusa Swarnima' recorded higher vase life.

**Table 1 (a)**  
Growth, flowering, yield and quality performance of different gladiolus varieties

Cultivars	Plant height (cm)	Days to 50% flowering	No. of spikes/plant	No. of spikes/ha (Lakh)	No. of florets/spike	Spike length (cm)	Length of rachis (cm)	Inter floret length (cm)
Debonair	84.57	85.55	1.00	1.48	11.50	69.53	32.56	6.06
Darshan	110.42	70.56	1.65	2.44	16.23	84.94	40.48	7.78
Phule Tejas	101.55	70.95	1.49	2.22	13.69	85.82	41.48	6.37
Friendship	105.13	80.34	1.00	1.48	14.69	99.87	41.93	6.34
AK-GL-04-06-A	117.05	73.38	1.73	2.57	16.45	105.26	47.99	6.60
Suchitra	117.05	73.68	1.34	1.97	14.67	98.22	43.15	7.06
Peter Pears	103.27	80.70	1.00	1.48	14.49	83.41	40.52	6.45
Phule Neelrekha	131.82	93.78	1.72	2.55	19.72	112.03	61.14	8.24
S.E.(m) ±	8.773	1.012	0.047	0.078	0.013	0.103	0.052	0.081
CD at 5%	26.316	3.027	0.140	0.223	0.039	0.311	0.154	0.242

**Table 2**  
Performance of different gladiolus varieties for flower quality and corm production

Cultivars	Diameter of floret (cm)	Corms/pl.	Dia. of corm (cm)	No. of cormels/plant	Vase life (Days)	Reaction to Fusarium wilt (% incidence)
Debonair	7.73	2.66	3.73	11.64	7.32	1.03
Darshan	9.40	2.13	5.53	39.96	8.41	14.33
Phule Tejas	9.62	2.45	5.37	107.26	8.53	7.22
White Friendship	8.55	2.46	4.20	29.30	9.46	22.17
AK-GL-04-06-A	9.63	2.13	5.72	55.54	10.23	7.30
Suchitra	8.79	2.49	4.39	85.59	8.44	3.54
Peter Pears	8.11	2.32	4.51	40.24	8.90	19.96
Phule Neelrekha	9.28	1.80	5.75	34.38	10.39	7.63
S.E.(m) ±	0.462	0.004	0.124	0.078	0.186	0.176
CD at 5%	1.385	0.012	0.371	0.233	0.555	0.516

**Table 3**  
Performance of different gladiolus varieties for flower quality and corm production

Cultivars	Diameter of floret (cm)	Corms/plant	Diameter of corm (cm)	No. of cormels/plant	Vase life (Days)	Reaction to Fusarium wilt (% incidence)
Debonair	7.73	2.66	3.73	11.64	7.32	1.03
Darshan	9.40	2.13	5.53	39.96	8.41	14.33
Phule Tejas	9.62	2.45	5.37	107.26	8.53	7.22
White Friendship	8.55	2.46	4.20	29.30	9.46	22.17
AK-GL-04-06-A	9.63	2.13	5.72	55.54	10.23	7.30
Suchitra	8.79	2.49	4.39	85.59	8.44	3.54
Peter Pears	8.11	2.32	4.51	40.24	8.90	19.96
Phule Neelrekha	9.28	1.80	5.75	34.38	10.39	7.63
S.E.(m) ±	0.462	0.004	0.124	0.078	0.186	0.176
CD at 5%	1.385	0.012	0.371	0.233	0.555	0.516

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