



Asian Journal of Plant Sciences

ISSN 1682-3974

science
alert

ANSI*net*
an open access publisher
<http://ansinet.com>

Introduction and Evaluation of Exotic *Gladiolus grandiflorus* Cultivars

M. Jamil Ahmed, Zarqa Akbar, Nazia Kosar and Zahida Aslam Khan

Department of Horticulture, University College of Agriculture, Rawalakot, Azad Kashmir, Pakistan

Abstract: Ten exotic cultivars of *Gladiolus* namely Wine and roges, Wing's sensation, Red beauty, Oscar, Praha, City light, Green wood packer, Blue Isle, Priscilla, and Victor borge were evaluated for their performance. Among these cultivars Wine and roges was promising for earlier sprouting of corms, days to flowering, diameter of corms, weight of corm whereas Red beauty was better for number of plants per corm, number of spike per plant and diameter of cormlet. Oscar, Blue Isle and Wine and roges were promising for number of leaves per plant. While Oscar was better for plant height. Blue Isle showed superiority for spike length whereas Victor broge was superior for spike life in field. City light was promising for florets per spike and weight of cormlets. Non-significant differences were obtained for number of corm. Keeping in view the performance, for vegetative and reproductive characteristics Wine and roges, Red beauty, Blue Isle, Victor broge and City light, were recommended for general cultivation.

Key words: Cultivars, *Gladiolus grandiflorus*, corm, spike, evaluation, performance

Introduction

Gladiolus grandiflorus is an ornamental bulbous plant native to South Africa, known as Sward lily belongs to monocot family Iridaceae, having approximately one hundred and fifty known species (Negi *et al.*, 1982). It has its natural habitat in the Mediterranean regions and South Africa. In subcontinent, *Gladiolus* cultivation gets back the nineteenth century, when it was confined to temperate regions (Jhon *et al.*, 1996). *Gladiolus* is one of the most important bulbous cut flowers in the flower industry. It occupies the fifth position in the international floriculture trade. It has great economic value as a cut flower and for decoration and known as queen amongst the bulbous flower. The demand of cut flower increases day by day (Sharma and Sharga, 1988).

Lal *et al.* (1984) reported that Bon voyage sport and Apple bloom were earliest. It has been observed that Hybrid 77-59-32 was promising for spike length, florets and number of spike (Negi and Raghava, 1984).

Rao and Janakiram (1991), evaluated various cultivars and recommended 82-7-2, 82-11-90 and 82-18-109 for cultivation. Sharma and Sharga (1988) observed that cultivars, Aidebaran, Biglime supreme, Deciso, Copper king and Tunias classic were superior for vegetative and reproductive characteristics. Pant *et al.* (1987) reported that cultivars Apple blossom, Friendship and Oscar were superior for floral characteristics. Bahar and KorKut (1998) found that cultivars Power puff, Red majesty, Nova lux and Victor broge were promising for cormlet characteristics.

Safiullah and Ahmed (2000) evaluated ten exotic cultivars of *Gladiolus* and recommended Nova Lux, Rose Delight, Deciso, Trader Horn and Mary Housley for general cultivation.

Climatic conditions of Pakistan allow *Gladiolus* cultivation throughout the year in various parts. There is a great scope of *gladiolus* export as a cut flower to the Middle East and Gulf countries.

Keeping in view the economical importance of *Gladiolus*, exotic cultivars were evaluated for their performance to boost up flower industry in the country.

Materials and Methods

These studies were carried out at University College of Agriculture, Rawalakot, Azad Kashmir, during 2000. Ten exotic cultivars of *Gladiolus* namely, Wine and Roges, Wing's sensation, Red beauty, Oscar, Praha, City light, Green wood packer, Blue Isle, Priscilla and Victor borge were collected from Awan Nursery and Seed Store Rawalpindi which were imported from Netherlands.

The experiment was laid out according to randomized complete block design (RCBD). There were 30 plots, 3 plots were randomly allocated to each cultivar. Before planting soil was prepared uniformly by adding F.Y.M. 1 kg m⁻² and commercial fertilizers of S.S.P, murate of potash and nitrophosphate 100 g m⁻².

Data were collected on days to sprouting, number of plants per corm, plant height (cm), number of leaves per plant, days to spike emergence, number of flower per plant, spike length, number of florets per spike, field life of spike, number of corm per plant, diameter of corm and weight of corm.

Data collected were statistically analysed and results exhibiting significant differences were subjected to DMR test for comparison of their means (Steel and Torrie, 1981).

Results and Discussion

Vegetative characteristics: Results (Table 1) for days to sprouting showed that Wine and Roges sprouted earlier after 19.5 days of sowing whereas Victor broge was too late and took 29.8 days for sprouting. City light and Wings sensation also took more days (27.4) and (26.0) respectively for sprouting. More plant (2.12) per corm were obtained for Red beauty. Oscar, Blue Isle, Wine and roges, showed superiority with more leaves per plant, i.e., 9.9, 9.6 and 9.5 respectively. For plant height superiority was shown by Oscar (101.05 cm) followed by Blue Isle (97.5 cm) and 'Praha' (94.05 cm). Minimum plant height (70.45 cm) was obtained by Red beauty.

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 their genetic composition, which interact differently to the soil and climatic conditions of this area. Safiullah and Ahmed (2001) also confirmed these results. They observed variation in vegetative and floral characteristics for *Gladiolus* cultivars.

Floral characteristics: Number of days to spike emergence showed that Blue Isle took more days (73.8) to spike emergence followed by Oscar (Table 2). Maximum days to flowering were taken by Blue Isle (95) and Oscar (93.5). Whereas, minimum days (53.3) were exhibited by Wing sensation. Maximum spike length (64.4 cm) was recorded for Blue Isle whereas minimum (37 cm) was obtained by Red beauty. More spike per plant (1.5) were recorded for Red beauty. Maximum floret (16.45) were produced by City light, whereas minimum (11.55) were observed for Red beauty. Victor broge remained attractive for longer period and obtained spike life of 37.75 days, while shorter spike life (19.7 days) was recorded for par hacter.

One can observe variations among floral characteristics for different cultivars. These variations among floral characteristics of the *Gladiolus* cultivars have been observed by Lal *et al.* (1982). They observed that among 47 cultivars Ban voyage sport and Apple bloom were earliest to flowering.

Negi *et al.* (1982) observed variation in floral characteristics of four Indian *Gladiolus* hybrids. The hybrid produced longest and marketable spikes. Mahnata and Pagwan (1994) compared various

Ahmed *et al.*: Cultivars, *Gladiolus grandiflorus*, corm, spike, evaluation, performance

Table 1: Vegetative characteristic of *Gladiolus* cultivars

Cultivars	Days to sprouting	No. of plant per corm	No. of leaves/plants	Plant height (cm)
Wine and roges	19.5c	1.25e	9.5a	93.8ab
Wing's sensation	26.0a	1.87b	6.9c	82.0c
Red beauty	23.4ab	2.12a	7.7bc	70.45c
Oscar	21.3b	1.37d	9.9a	101.05a
Paraha	24.6a	1.37d	8.5b	94.05ab
City light	27.4a	1.37d	66.5d	81.0c
Green wood packer	22.2b	1.25e	7.5c	73.6d
Priscilla	21.3b	1.50c	8.9ab	88.85b
Blue isle	22.3b	1.37d	9.6a	97.65a
Victor broge	29.8a	1.62c	8.7ab	90.25b

Table 2: Floral characteristics for *Gladiolus* cultivars

Cultivars	Days to spike emergence	Days to flowering	Spike length (cm)	No. of spike/plant	Florets per spike	Spike life (days)
Wine and roges	57.2c	82d	46.8c	1.12a	13.8cd	30.37b
Wing's sensation	53.3d	88.5b	45.5d	1.0b	14.65c	33.87b
Red beauty	53.5c	84.0c	37.0c	1.5a	11.55e	26.0c
Oscar	67.6b	93.5a	53.8b	1.0a	15.8b	35.62a
Praha	62.6b	87.5b	50.2b	1.32a	14.9c	19.7e
City Light	62.6b	92.5a	51.0b	1.0b	16.45a	30.0b
Green wood Packer	64.3b	91.5ab	38.6d	1.0b	12.3cd	35.25a
Blue Isle	73.8a	95.0a	64.4a	1.0b	14.0c	30.5b
Priscilla	65.1b	92.0a	53.1b	1.0b	14.7c	21.5d
Victor broge	64.4b	87.5b	49.7bc	1.0b	16.0a	37.75a

Table 3: Corm and cormal characteristics of *Gladiolus* cultivars

Cultivars	Corm diameter (cm)	Weight of corm (g)	Cormlet diameter (cm)	Weight of cormlet (g)
Wine and roges	5.51a	53.06a	1.11b	0.39c
Wing's sensation	3.70l	21.33d	0.69f	0.37c
Red beauty	3.84g	21.68d	1.83a	0.28d
Oscar	5.44b	30.08b	1.0c	0.36c
Praha	4.03f	39.87b	0.92c	0.59a
City light	4.05l	17.23c	0.96g	0.20e
Green wood Packer	3.55l	17.23e	0.69f	0.20e
Blue Isle	4.57d	32.67bc	0.77e	0.14f
Priscilla	4.75c	39.05b	1.04c	0.43b
Victor Broge	4.23e	26.95c	0.77e	0.39c

Means shearing same letters are not significant at $P > 0.05$

cultivars and observed highly significant differences among the cultivars for floral characteristics. Cultivars Copper king and Tunias classic were superior for reproductive characteristics. These results are also confirmed by Pant *et al.* (1987) during comparison of *Gladiolus* cultivars.

Corm and cormal characteristics: Maximum diameter (5.51 cm) of corm for Wine and roges whereas minimum diameter (4.23 cm) was exhibited by Victor broge (Table 3). Wine and roges obtained maximum weight of corm (53.06 g). Maximum diameter of Wing's sensation obtained minimum diameter of cormlet (0.69 cm). Maximum weight of cormlet (0.59 g) was recorded for Praha, whereas minimum weight (0.14 g) was produced by Bule Isle. Close observation of the corm and cormlet characteristics showed variable responses for the cultivars under study. Different cultivars responded or interact differently with given soil and climatic conditions depending upon their genetic composition. Jhon *et al.* (1996) observed that out of 41 *Gladiolus* cultivars White prosperity, Puff beauty and King lear produced larger size corms and cormlets than other cultivars. Largest corm and cormlets production was observed for the cultivars Yellow stone and Hunting sorg (Patil *et al.*, 1994). Mahanta and Paswan (1994) compared 10 cultivars and observed highly significant differences among the cultivars for corm and cormal characteristics. Cultivars Copper King and Tunias classic were superior for corm production. The area found suitable for *Gladiolus* cultivation. Among the

cultivars under study, Praha, Green wood packer, Priscilla, Oscar and Wings sensation were failed to thrive well in this area. Keeping in view the spike length, number of plant/corm, number of spike/plant, field life of spike, corm and cormal production. Blue Isle, City light, Red beauty, Victor borge, Wine and Roges are recommended for general cultivation.

References

- Bahar, S. and A.B. Korkut, 1998. Effect of planting densities on the yield of corm and cormlets in some *gladiolus* cultivars. *Turk. J. Agric. and Forest.*, 22 :55-58.
- Jhon, A.R., G.B. Bichos and M.A. Siddique, 1996. Performance of *gladiolus* cultivars in Kashmir. *Flora and Fauna Jhansi.*, 2 : 75-77.
- Lal, S.D, J.N. Seth. and N.S. Daci, 1984. Studies on varietal performance of *gladiolus* in U.P. Hills. *Progressive Hort.*, 16:124-128.
- Mahanta, P. and L. Paswan, 1994. Performance of some *gladiolus* cultivars under Assam conditions. *J. Agric. Sci. Soc. North East. India*, 7: 103-106.
- Negi, S.S., T.M. Rao and T. Jankiram, 1990. Performance of some new Indian-bred *Gladiolus* Hybrids. In: J. Parkash and R. Bhandary (Eds) *Floriculture Technology Trades and Trends*. Oxford Publishing Co. Pvt. Ltd. New Delhi, India, pp: 251-257.
- Negi, S.S. and S.P. Raghava, 1984. Improvement of *gladiolus* through breeding. *Annual Report Indian Institute of Hort. Res. Bnglore*, 85.

Ahmed *et al.*: Cultivars, *Gladiolus grandiflorus*, corm, spike, evaluation, performance

- Negi, S.S., T.S. Sharma, S.P.S. Raghava and Q.S. Srinivasan, 1982. Variability studies in gladiolus. *Indian J. Hort.*, 39: 29-272.
- Pant, C., C. Lal and D. Shah, 1987. Combining ability studies in gladiolus. *J. Ornament. Hort.*, 1: 32-3.
- Patil, S.S.D., S.M. Katwate, M.T.P. Patil and G.K. Patil, 1994. Performance of some exotic varieties of gladiolus. *J. Maharashtra Agric. Uni.*, 19: 38-42.
- Rao, T.M. and T. Jankiram, 1991. Quantative and Qualitative evaluation of Fungarial wilt resist and tolerant hybrids of gladiolus In: J. Parkash and R. Bhandary (Eds). *Floriculture Technology Trades and Trends*. Oxford publishing Co. Pvt. Ltd. New Delhi India, pp: 231-235.
- Safiullah and M.J. Ahmed, 2001. Evaluation of exotic cultivars of gladiolus at Rawalakot Conditions. A thesis submitted for partial fulfillment for the degree of B.Sc (Hons.) Agriculture, Department of Horticulture, University College of Agriculture Rawalakot, Azad Kashmir, Pakistan.
- Sharma, S.C. and A.N. Sharga, 1998. Commercial cultivation of gladiolus In: J. Parkash and R. Bhandary (Eds). *Floriculture Technology Trades and Trends*. Oxford publishing Co. Pvt. Ltd. New Delhi, India, pp: 199-202.
- Steel, R.G.D. and J.H. Torrie, 1981. *Principles and procedures of statistics; a biometrical approach*. McGraw Hill, Tokyo.