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Performance of exotic gladiolus (*Gladiolus hybridus*) for off season under Meghalaya conditions

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Gladiolus (*Gladiolus hybridus*), family Iridaceae, is an excellent flowering geophyte commercially grown in many tropical, sub-tropical and hilly parts of the world owing to its attractive colour and exquisite florets. It is used as cut flower, for flower arrangements, bouquet and for exhibition. Gladiolus is very rich in varietal wealth and every year there is an addition of new varieties, hence, varietal evaluation becomes necessary to find out suitable variety for the region. Gladiolus is normally grown in September-October in plains, whereas in hills it is grown in March–April. Thus gladiolus spikes become available in December-January in plains and August-September in hills. Further, off season cultivation of gladiolus is coming up commercially to get more benefit during off season. The present investigation was undertaken with an objective to study the performance of exotic gladiolus cultivars suitable for cut flower and cormel production for off season under sub-tropical mid-hills of Meghalaya during 2007-08.

Six cultivars of gladiolus, viz. Casa Blanca, Golden Goddess, Fidelio, Rosibee Red, Spic-N-Span and White Friendship were evaluated for vegetative growth, flowering, corm and cormels. Umiam is situated at 25° 41´ N latitude, 91° 55´ E longitude and 1010 meter above mean sea level. Healthy and uniform corms of 3-4 cm in diameter were treated with Carbendazim (0.2%) for 30 minutes to control Fusarium wilt, and after treated corm planted 5 cm deep with planting at 30 cm × 20 cm spacing in second week of January. The soil of experimental plot was sandy loam with 5.5 pH. Five randomly selected plants per cultivar per replication were taken for recording vegetative growth, flowering and corms parameters. Uniform cultural practices were followed throughout the experiment. Various growth, flowering, corm and cormel production parameters were periodically recorded and analyzed statistically.

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On the perusal of the data presented in Table 1 indicated significant variations in different vegetative parameters of all the six varieties studied. Significantly tallest plant (118.22 cm) was measured in cv. Casa Blanca followed by Golden Goddess (102.95 cm) while shortest plant was observed in cv. Fidelio (93.60 cm). Cultivar Golden Goddess produced more number of leaves per plant (8.92) and longest 2nd pair leaves (43.58 cm). Significantly broader leaves (3.22 cm) were recorded in cv. White Friendship, whereas narrower leaves (2.67 cm) were recorded in cv. Golden Goddess. Differences in vegetative characters of different cultivars may be due to varied growth rate and their genetic make up. As a result, variations in phenotypic expression are expected to occur. Ramachandrudu and Thangam (2008) and Archana *et al.* (2008) also reported similar results.

Data presented in Table 2 indicated significant differences among the varieties for flowering parameters. Early flowering (80.32 days) was recorded in cv. Spic n Span followed by cv. Casa Blanca (86.62 days), while cv. Golden Goddess was found late flowering (102.20 days). Planting of early and late cultivars in a staggered manner will prolong flowering duration. Similar variation in early and late cultivars of

Table 1 Vegetative growth of gladiolus cultivars in off season under Meghalaya conditions

Cultivar	Plant height (cm)	Leaves/ plant	Leaf length (cm)	Leaf breadth (cm)
Casa Blanca	118.22	8.17	36.90	2.71
Fidelio	93.60	7.37	37.48	2.69
Golden Goddess	102.95	8.92	43.58	2.67
Rosibee Red	89.12	7.87	37.45	3.02
Spic-N-Span	94.85	7.50	35.90	2.95
White Friendship	94.82	7.00	35.30	3.22
SEm±	1.64	0.090	0.833	0.053
CD (*P*=0.05)	3.49	0.191	1.77	0.112

Table 2 Flowering parameters of gladiolus cultivars in off season under Meghalaya conditions

Cultivar	Days to flowering	Spike length (cm)	Rachis length (cm)	Florets/ spike	Diameter of 1st floret (cm)	Spike diameter (mm)	Duration of flowering (days)	Vase life (days)
Casa Blanca	86.62	98.07	51.10	15.22	10.02	8.04	13.63	10.10
Fidelio	90.00	77.92	37.95	11.10	8.80	6.94	10.50	9.20
Golden Goddess	102.20	86.40	41.10	11.07	9.62	6.93	9.43	7.50
Rosibee Red	88.40	73.57	31.60	10.17	8.60	8.21	9.26	8.00
Spic-N-Span	80.32	80.20	40.10	11.82	9.24	7.71	10.82	9.62
White Friendship	98.16	80.50	45.37	12.60	9.50	6.81	12.00	9.43
SEm±	1.18	1.14	1.74	0.38	0.151	0.177	0.24	0.12
CD (*P*=0.05)	2.63	2.42	3.70	0.809	0.382	0.377	0.75	0.33

Table 3 Corm and cormel production parameters of gladiolus in off season under Meghalaya conditions

Cultivar	Corm diameter (cm)	Corm weight (g)	Polar diameter (cm)	Equatorial diameter (cm)	Cormels/ plant	Weight of 20 cormels (g)	Propagation coefficient (%)
Casa Blanca	4.51	32.00	1.67	1.55	27.60	7.61	206.60
Fidelio	4.45	32.25	1.86	1.60	39.25	5.05	213.00
Golden Goddess	4.50	34.25	1.87	1.66	9.75	4.45	228.00
Rosibee Red	4.59	30.25	1.79	1.57	29.35	8.57	201.60
Spic-N-Span	4.83	42.50	2.03	1.73	31.90	14.74	266.50
White Friendship	4.45	37.00	1.81	1.67	45.60	14.53	226.00
SEm±	0.055	1.80	0.028	0.036	0.827	0.474	1.36
CD (*P*=0.05)	0.117	3.83	0.059	0.076	1.76	1.01	3.12

gladiolus has also been reported by Saud *et al.* (2008) and Kumar (2009). Among the quality characters studied, cultivar Casa Blanca produced longest flowering spike (98.07 cm) while shortest spike (80.20 cm) was recorded in cv. Spic n Span. Further, cultivar Casa Blanca produced maximum rachis length (51.10 cm), number of florets per spike (15.22), diameter of 1st floret (10.02 cm) and duration of flowering (13.63 days). Cultivars producing long spikes with more numbers of florets are found suitable for display in exhibition and for decoration. Significantly more spike diameter (8.21 mm) was observed in cv Rosibee Red whereas thin spike (6.93 mm) was recorded in cv. Golden Goddess. Longest vase life (10.10 days) was recorded in cv. Casa Blanca. Long vase life of the cv Casa Blanca may be due to possession of more number of florets that opened in acropetal succession. Kumar (2009) and Swaroop (2010) have also been observed similar variation in different flowering characters in different exotic gladiolus varieties.

Significant variation in corm and cormel characters was observed (Tale 3). Significantly bigger size corms were produced in cv Spic-N-Span (4.83 cm), followed by Rosibee Red (4.59 cm). Heaviest corms (42.50 g) were produced from cv Spic-N-Span followed by White Friendship (37.00 g), while cv Casa Blanca produced lightest corms (32.00 g). Kumar & Yadav (2005) and Swaroop (2010) also reported similar results on variation in weight of corms in different cultivars. Significantly maximum polar (2.03 cm) and equatorial (1.73) diameter were recorded in cv Spic n Span, whereas it was minimum (1.67 cm and 1.55 cm, respectively) in cv Casa Blanca. Polar and equatorial diameter of corms is one of the important criteria for selection of quality corms. Number of cormels per plant were varies from 9.75 (Golden Goddess) to 45.60 (White Friendship). Maximum weight of 20 cormels was recorded in cv. Spic-N-Span (14.74 g) followed by White Friendship (14.53 g), while it was recorded minimum in cv Golden Goddess (4.45 g). Significantly highest propagation coefficient was recorded in cv Spic-N-Span (266.50) followed by Golden Goddess (228.00) and White Friendship (226.00). Variations in propagation coefficient are due to difference in corm and cormel production by different cultivars.

SUMMARY

An experiment was carried out with six cultivars of gladiolus, viz. Casa Blanca, Golden Goddess, Fidelio, Rosibee Red, Spic-N-Span and White Friendship to evaluate their performance for vegetative growth, flowering, corm and cormels characters for off season under sub-tropical mid-hills of Meghalaya during 2007-08. Among the quality flowering characters, cultivar Casa Blanca produced longest

flowering spike (98.07 cm), longest rachis (51.10 cm), florets/spike (15.22), diameter of 1st floret (10.02 cm) and duration of flowering (13.63 days). Cultivar Spic-N-Span produced bigger size (4.83 cm) and corm weight (42.50 g), maximum polar (2.03 cm) and equatorial (1.73) diameter, weight of 20 cormels (14.74 g), propagation coefficient (266.50). With the results obtained, it can be concluded that cultivar Casa Blanca was found suitable and recommended for cut flower quality and cultivar Spic-N-Span for quality corms and cormels production for off season under sub-tropical mid-hills of Meghalaya.

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