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Jagdish
Department of Horticulture,
SHIATS, Allahabad, Uttar
Pradesh, India

Narendra Singh Solanki
Department of Horticulture,
SHIATS, Allahabad, Uttar
Pradesh, India

Madhukar Kumar
Department of Horticulture,
SHIATS, Allahabad, Uttar
Pradesh, India

Correspondence
Jagdish
Department of Horticulture,
SHIATS, Allahabad, Uttar
Pradesh, India

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Performance of different cultivars of gladiolus under Allahabad agro-climatic conditions

Jagdish, Narendra Singh Solanki and Madhukar Kumar

Abstract

The present experiment was conducted during October 2010 – April 2011 in the Department of Horticulture, Sam Higginbottom Institute of Agriculture Technology and Science, Allahabad, (U.P.). The experiment of design was randomized block design consisting 13 treatment with 3 replication, with a view to find out the overall performance of different cultivars of Gladiolus viz. White Prosperity (T₁), American Beauty (T₂), Her Majesty (T₃), Jester (T₄), Pacifica (T₅), Summer Pearl (T₆) Priscilla (T₇), Red Majesty (T₈) Summer Shunshine (T₉), Candyman (T₁₀), Noulux (T₁₁), Panjab Morning (T₁₂), Green Bay (T₁₃). On the basis of different growth and yield parameters the maximum plant height (87.72 cm) were recorded by white prosperity following by Red Majesty (86.72 cm). The maximum number of leaves (8.73) was recorded in American Beauty and maximum days taken for spike initiation (80.87 days) was observed in white prosperity. The minimum days taken for colour showing of; first floret (86.73 days) were recorded in white prosperity. The minimum days taken for complete opening of first floret (4.47 days) and the maximum spike length (90.15 cm) was obtained in White Prosperity. An analysis of the maximum weight of spike (62.80 g) was observed in White Prosperity and the maximum number of spike/plant (1.51%) was recorded by White Prosperity and the maximum number of corm/plant (1.73%) was obtained by American Beauty. An analysis of the maximum number of cormels per plant (39.04) was recorded in American Beauty. Thus, it was concluded that cultivars 'American Beauty' and 'white Prosperity' can be recommended for cultivation in Allahabad agro-climatic condition.

Keywords: gladiolus, agro-climatic conditions

Introduction

Gladiolus, belonging to sub family Ixioidae and family Iridaceae, is a glamorous ornamental bulbous plant of both beauty and perfection. The name Gladiolus, was originally coined by Pliny The Elder (A.D. 23 - 79) deriving from the Latin word gladius, meaning a sword on account of the sword like shape of its foliage. Gladiolus is commonly called sword Lily. Gladiolus is principally a native of South Africa and Europe. There are about 226 recorded species of Gladiolus scattered in Natal and Cape of Good Hope in the Republic of South Africa. Certain species are also native of countries like Ethiopia, Rhodesia, Malawi, Macarena Islands, Mediterranean region, Italy, the Balkans, France, England, Middle East and Armenia and Caucasus region of U.S.S.R. The modern garden cultivars (numbering about 30,000) have been developed through natural and man-made crosses involving about 23 species (Arora *et al.* 2002) [1].

Keeping the above points in view, the present study entitled "Performance of different cultivars of gladiolus (*Gladiolus grandiflorus*) under Allahabad Agro-climatic conditions" was carried out in the Department of Horticulture, Allahabad School of Agriculture, Sam Higginbottom Institute of Agriculture, Technology and Science, Allahabad, in the year 2010 - 2011 with the following objectives:

1. To study the morphological characters of different gladiolus cultivars.
2. To select the most promising cultivar in term of spike quality.
3. To screen a cultivar of gladiolus with best corm and cormel production.
4. To workout the economics of the different cultivars.

Materials and method

The present experiment was conducted during October 2010 – April 2011 in the Department of Horticulture, Sam Higginbottom Institute of Agriculture Technology and Science, Allahabad, (U.P.). The experiment of design was randomized block design consisting 13 treatment with 3 replication, with a view to find out the overall performance of different cultivars of *Gladiolus* viz. White Prosperity (T₁), American Beauty (T₂), Her Majesty (T₃), Jester (T₄), Pacifica (T₅), Summer Pearl (T₆), Priscilla (T₇), Red Majesty (T₈), Summer Sunshine (T₉), Candyman (T₁₀), Noualux (T₁₁), Panjab Morning (T₁₂), Green Bay (T₁₃).

The parameters studied were plant height (cm.) (30, 45, 60, 75, 90 DAP) number of leaves/plant (30, 45, 60, 75 DAP), number of shoots/corm, days to spike initiation, days for opening of the first florets (days), first florets durability (days), spike length (cm), weight of spike (g.), number of florets/spike, florets size (cm), number of spike/plant, number of corms per plant corm, weight of corm/plant (g.), size of corm, number of cormlets per plant corm

Result and discussion

The maximum plant height (87.72 cm) was recorded in White Prosperity (T₁) followed by Red Majesty (T₉) (86.16 cm). However, minimum plant height (72.99 cm) was recorded in Green Bay (T₁₃). These findings were in conformity with those of Dalal *et al.* (2006) [2].

The maximum number of leaves (8.73) was recorded in American Beauty (T₂) followed by White Prosperity (T₁) (8.47). However, minimum number of leaves (7.20) was obtained in Her Majesty (T₃).

The minimum days taken for spike initiation (80.87) was observed in White Prosperity (T₁) followed by American Beauty (T₂) (86.20) maximum delay in spike initiation (93.47) was observed in Candyman (T₁₀). These findings were in conformity with those of Misra *et al.* (1988) [4].

The minimum days taken for colour showing of first floret (86.73) was observed in White Prosperity (T₁) followed by American Beauty (T₂) (93.13). Maximum day taken for colour showing of first floret (102.20) was observed in Candyman (T₁₀).

The minimum days taken for complete opening of the first floret (4.47) was observed in White Prosperity (T₁) followed by American Beauty (T₂) (4.80). Maximum delay in complete opening of the first floret (6.00) was observed in Summer Sunshine (T₉). These findings were in conformity with those of Dalal *et al.* (2006) [2].

The maximum days for first floret durability (7.40) was found in White Prosperity (T₁) followed by American Beauty (T₂) (6.33). While minimum days for first floret durability (4.33) was observed in Punjab Morning (T₁₂).

The maximum spike length (90.15 cm) was obtained in White Prosperity (T₁) followed by Candyman (T₁₀) (79.85) minimum spike length (50.91) was obtained in Punjab Morning (T₁₂). These findings were in conformity with those of Jhon *et al.* (1996) [3].

The maximum weight of spike (62.80 g) was observed in White Prosperity (T₁) followed by American Beauty (T₂) (58.73 g). However minimum weight of spike (39.53 g) was observed in Punjab Morning (T₁₂).

The maximum number of floret per spike (16.13) was found in White Prosperity (T₁) followed by American Beauty (T₂) (14.60) and minimum number of florets/spike (8.27) was found in Punjab Morning (T₁₂). These findings were in conformity with those of Swain *et al.* (2008) [8].

The maximum floret diameter (12.87 cm) was found in White Prosperity (T₁) followed by American Beauty (T₂) (12.00 cm) and minimum floret diameter (9.49) was found in Punjab Morning.

The maximum number of spikes per plant (1.51) was observed in White Prosperity (T₁) followed by American Beauty (T₂) (1.45). However minimum weight of spike (0.97) was observed in Punjab Morning (T₁₂). These findings were in conformity with those of Misra *et al.* (1988) [4].

The maximum number of corms (1.73) was observed in American Beauty (T₂) and was followed by White Prosperity (T₁) (1.36). However minimum number of corms (1.11) was observed in Red Majesty (T₈).

The maximum corm weight (59.73) was obtained in American Beauty (T₂) followed by White Prosperity (T₁) (54.53 g) and minimum weight of corm (31.00 g) was obtained Red Majesty (T₈). These findings were in conformity with those of Swain *et al.* (2008) [8].

The maximum diameter of corm (6.14 cm) was obtained in American Beauty (T₂) and it was followed by White Prosperity (T₁) (5.72 cm). However minimum diameter of corm (3.88 cm) was obtained in Her Majesty (T₃).

The maximum number of cormlets per planted corm (39.04) was recorded in American Beauty (T₂) further followed by White Prosperity (T₁) (35.86). However, minimum number of cormlets per planted corm (19.35) was recorded in Her Majesty (T₃). These findings were in conformity with those of Shiramagond *et al.* (1999) [7].

Table 1: Performance of different cultivars of *gladiolus* on different parameters

Cultivars	Plant height (cm)	No. of leaves/plant	No. of shoots/corm	Spike initiation (days)	Opening of the first florets (days)	First florets durability (days)	Spike length (cm)	Weight of spike (g.)
White Prosperity	87.72	8.47	80.87	86.73	4.47	7.40	90.15	62.80
American Beauty	84.82	8.73	86.20	93.13	4.80	6.33	77.89	58.73
Her Majesty	81.29	6.20	89.00	94.67	5.13	5.47	61.61	54.80
Jester	78.49	6.53	91.53	98.73	5.47	5.20	57.99	45.60
Pacifica	80.47	6.00	92.47	99.20	5.20	5.07	70.67	55.73
Summer Pearl	73.69	8.20	87.70	95.33	5.53	5.13	71.71	55.60
Priscilla	81.57	7.13	91.40	97.87	5.20	4.53	64.42	52.27
Red Majesty	86.16	7.53	91.80	99.13	5.20	5.27	71.29	58.20
Summer Sunshine	77.33	6.33	93.13	99.93	6.00	4.87	67.33	55.33
Candyman	75.38	6.93	93.47	102.20	5.53	5.33	79.85	54.73
Novalux	77.85	6.53	92.87	100.73	5.47	5.20	60.81	45.53
Punjab Morning	74.39	7.40	86.67	93.40	5.27	4.33	50.91	39.53
Green Bay	72.99	7.13	92.53	99.53	5.40	4.80	64.30	50.13

Table 2: Performance of different cultivars of gladiolus on different parameters

Cultivars	No. of florets/spike	Florets diameter (cm)	No. of spikes/plant	No. of corms/plant	Weight of corm/Plant (g.)	Diameter of corm	No. of cormlets/plant	Benefit cost ratio
White Prosperity	16.13	12.87	1.51	1.56	5.72	5.72	35.86	1:3.19
American Beauty	14.60	12.00	1.45	1.73	6.14	6.14	39.04	1:3.40
Her Majesty	11.87	10.99	1.35	1.17	3.88	3.88	19.35	1:2.14
Jester	9.93	10.40	1.28	1.43	4.63	4.63	19.96	1:2.26
Pacifica	10.94	10.20	1.07	1.46	5.48	5.48	26.34	1:2.48
Summer Pearl	12.47	10.50	1.30	1.17	4.54	4.54	31.39	1:2.69
Priscilla	11.73	10.09	1.41	1.32	4.60	4.60	25.79	1:2.55
Red Rajety	11.80	10.77	1.17	1.11	5.38	5.38	34.47	1:2.76
Summer Sunshine	9.87	10.35	1.26	1.19	5.38	5.38	22.39	1:2.25
Candyman	11.96	10.26	1.15	1.31	5.56	5.56	23.90	1:2.33
Novalux	10.87	10.01	1.25	1.29	4.86	4.86	28.90	1:2.61
Punjab Morning	8.27	9.49	0.97	1.19	4.59	4.59	23.95	1:2.19
Green Bay	10.53	10.26	1.07	1.12	4.86	4.86	27.16	1:2.36

Conclusion

On the basis of the results obtained, it is concluded that out of 13 cultivars, White Prosperity was found most promising with respect to spike yield per plant (1.51) and American Beauty was found to be superior with respect to number of corm per plant (1.73) and number of cormlets per plant (39.04) production and maximum benefit cost ratio was obtained with American Beauty (1:3.40) under Allahabad, agro-climatic condition.

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