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Narendra Singh Solanki
Senior Research Fellow Rajgarh
in EPCO Bhopal, Madhya
Pradesh, India

Madhukar Kumar
Assistant Professor, SHIATS
Allahabad, Uttar Pradesh, India

Devi Singh
Farm Manager, KVK Gridhi,
Jharkhand, India

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Studies on morphological characters of gladiolus (*Gladiolus grandiflorus*) Cultivars under Allahabad agro climatic Condition

Narendra Singh Solanki, Madhukar Kumar and Devi Singh

Abstract

The present experiment was conducted during October 2011 – April 2012 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 11 treatment with 3 replication, with a view to find out the overall performance of different cultivars of Gladiolus viz. Panjab Morning (T₁), Green Bay (T₂), Novalux blue (T₃), American Beauty (T₄), Priscilla (T₅), White Prosperity (T₆) Red Majesty (T₇), Summer Shunshine (T₈) Delhi local (T₉), Novalux (T₁₀), Candyman (T₁₁). On the basis of different growth and yield parameters the maximum plant height (125.16 cm) were recorded by Red Majesty following by Candy man (T₁₁) (124.56 cm). The maximum number of leaves (8.71) was recorded in American Beauty and maximum days taken for spike initiation (69.06 days) was observed in white prosperity. The minimum days taken for colour showing of; first floret (73.86 days) were recorded in white prosperity. The minimum days taken for complete opening of first floret (3.17 days) was Delhi local. An analysis of the maximum weight of spike (64.40 g) was observed in White Prosperity and the maximum number of spike/plant (17.73%) was recorded by Delhi Local’ which can be recommended for cultivation in Allahabad agro-climatic condition.

Keywords: Gladiolus, *Gladiolus grandiflorus*, morphological characters, growth and yield parameters

Introduction

Gladiolus, belonging to sub family Ixioideae 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 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 2011 - 2012.

Materials and Methods

The present experiment was conducted during October 2011 – April 2012 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 11 treatment with 3 replication, with a view to find out the overall performance of different cultivars of Gladiolus viz. Panjab Morning (T₁), Green Bay (T₂), Novalux blue (T₃), American Beauty (T₄), Priscilla (T₅), White Prosperity (T₆) Red Majesty (T₇), Summer Shunshine (T₈)

Correspondence

Narendra Singh Solanki
Senior Research Fellow Rajgarh
in EPCO Bhopal, Madhya
Pradesh, India

Delhi local (T₉), Novalux (T₁₀), Candyman (T₁₁) The parameters studied were plant height (cm.) (30, 45, 60, 75, 90 DAP), number of leaves/plant (30, 45, 60, 75DAP), Days taken for heading or spike initiation were calculated from the date of planting of corms to just the visibility of spike from the sheath leaves. Days taken from the date of planting of corms to the first bud of spike to show the colour of corolla tip was recorded. The number of days taken from colour showing of first floret to the days taken for complete opening of first floret was recorded. Number of spike was calculated from the date of planting of corms to just the visibility of spike from the sheath leaves. The total number of florets per spike was counted at the end of flowering. The recorded data on the selected parameters were set for statistical analysis. The mean for collected data for each treatment was calculated.

Results and Discussion

Plant height

The periodical data regarding plant height was recorded, tabulated and analyzed. Plant height was measured at 15 days interval right from 30 days after planting Overall five

observations were taken i.e. 30 DAP, 45 DAP, 60 DAP, 75 DAP, and 90 DAP which were analyzed statistically. At 30 DAP the maximum plant height (54.23cm) was recorded in Summer Pearl (T₈) followed by Candy man (T₁₁) (53.20). However, minimum plant height (43.66) was recorded in Delhi Local (T₉). At 45 DAP the maximum plant height (73.40) was recorded in Candy man (T₁₁) followed by Summer Pearl (T₈) (73.06). However, minimum plant height (61.40) was recorded in Delhi Local (T₉). At 60 DAP the maximum plant height (89.93) was recorded in Candy man (T₁₁) followed by Summer Pearl (T₈) (86.26). However, minimum plant height (65.20) was recorded in Delhi Local (T₉). At 75 DAP the maximum plant height (90.86) was recorded in White Prosperity (T₆) followed by American Beauty (T₄) (87.60). However, minimum plant height (75.96) was recorded in Delhi Local (T₄). At 90 DAP the maximum plant height (125.16cm) was recorded in Red Majesty (T₇) followed by Candy man (T₁₁) (124.56 cm). However, minimum plant height (89.90cm) was recorded in Delhi Local (T₉). These findings were in conformity with those of Dalal *et al.* (2006) [2].

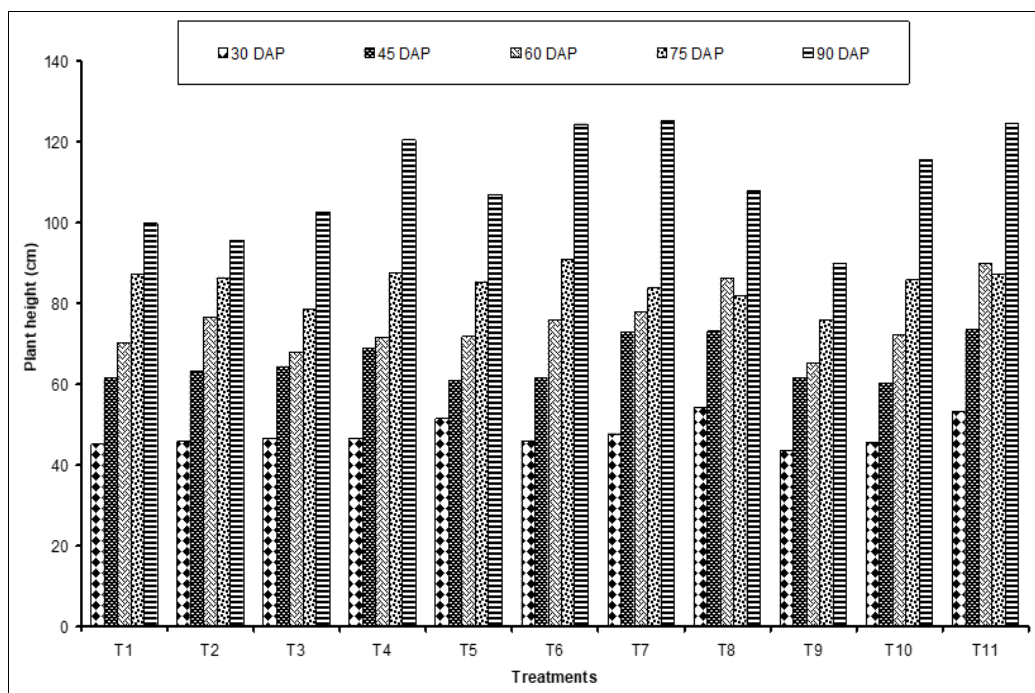


Fig 1: Plant height (cm) of different cultivars of gladiolus at 30, 45, 60, 75 and 90 DAP

Number of leaves per plant

The number of leaves per plant was studied at 15 days interval right from the 30 days after planting. Over all four observation were taken i.e. 30 DAP, 45 DAP, 60 DAP and 75 DAP which were analyzed statistically. The successive stages of growth, different cultivars showed significant effect on number of leaves per plant except for 30 DAP. At 30 DAP the maximum number of leaves (5.11) was recorded in American Beauty (T₄) followed by Novalux (T₁₀) (4.63). However, minimum number of leaves (2.68) was obtained in Delhi Local (T₉). At 45 DAP the maximum number of leaves (6.15)

was recorded in Summer Pearl (T₈) followed by American Beauty (T₄) (6.10). However minimum number of leaves (3.94) was obtained in Delhi Local (T₉). At 60 DAP the maximum number of leaves (7.65) was recorded in American Beauty (T₄) followed by Red Majesty (T₇) (7.63). However, minimum number of leaves (5.40) was obtained in Delhi Local (T₅). At 75 DAP the maximum number of leaves (8.71) was recorded in American Beauty (T₄) followed by Summer Pearl (T₈) (8.64). However, minimum number of leaves (6.32) was obtained in Nova lox Blue (T₃).

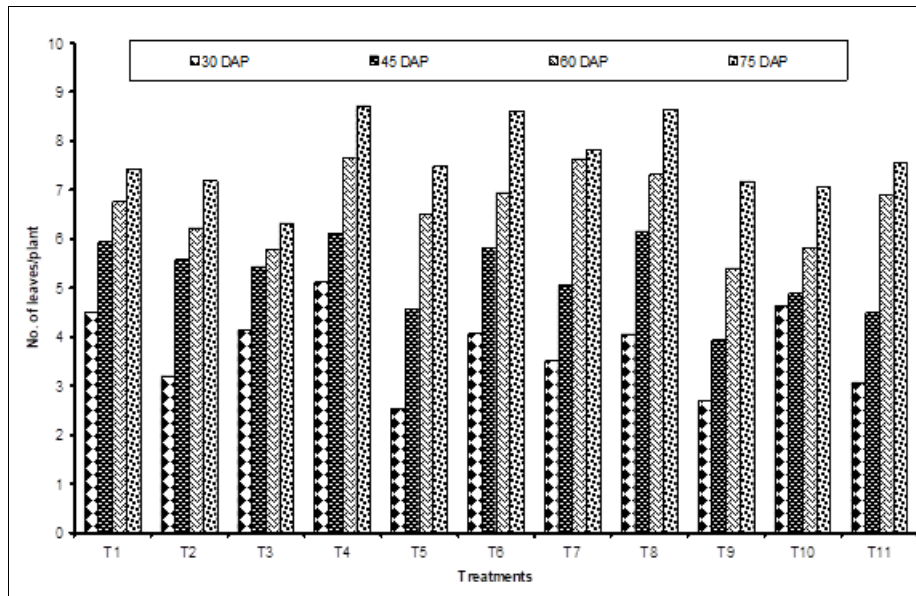


Fig 2: Number of leaves of different cultivars of gladiolus at 30, 45, 60 and 75 DAP

Days taken for spike initiation of different cultivars of gladiolus

The minimum days taken for spike initiation (69.06) was observed in White Prosperity (T₈) followed by Punjab

Morning (T₁) (70.86) maximum delay in spike initiation (83.73) was observed in Delhi Local (T₉). These findings were in conformity with those of Misra *et al.* (1988) [4].

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

Cultivars	Plant height (cm)	No. of leaves/plant	Days for Colour Showing of first floret	Spike initiation (days)	Opening of the first florets (days)	Number of floret/spike	Number of spike/plant
Punjab Morning	99.86	7.43	78.46	76.86	3.90	15.33	1.66
Green Bay	95.50	7.18	79.26	73.06	4.38	16.80	1.46
Novalux Blue	102.50	6.32	79.00	74.40	4.62	13.80	1.73
American Beauty	120.43	8.71	84.33	74.53	5.55	17.73	1.60
Pricilla	106.86	7.48	82.73	78.93	4.45	16.80	1.66
White Prosperity	124.33	8.60	73.86	69.06	4.94	18.00	1.93
Red Majesty	125.16	7.82	82.66	75.13	4.63	17.46	1.80
Summer Sunshine	107.83	8.64	85.60	73.73	4.86	17.53	1.63
Delhi Local	89.90	7.17	98.26	83.73	3.17	13.06	5.33
Novalux	115.4	7.06	78.66	70.13	4.59	12.93	1.80
Candy man	124.56	7.54	90.46	83.36	4.70	17.26	1.53
SE							
CD							

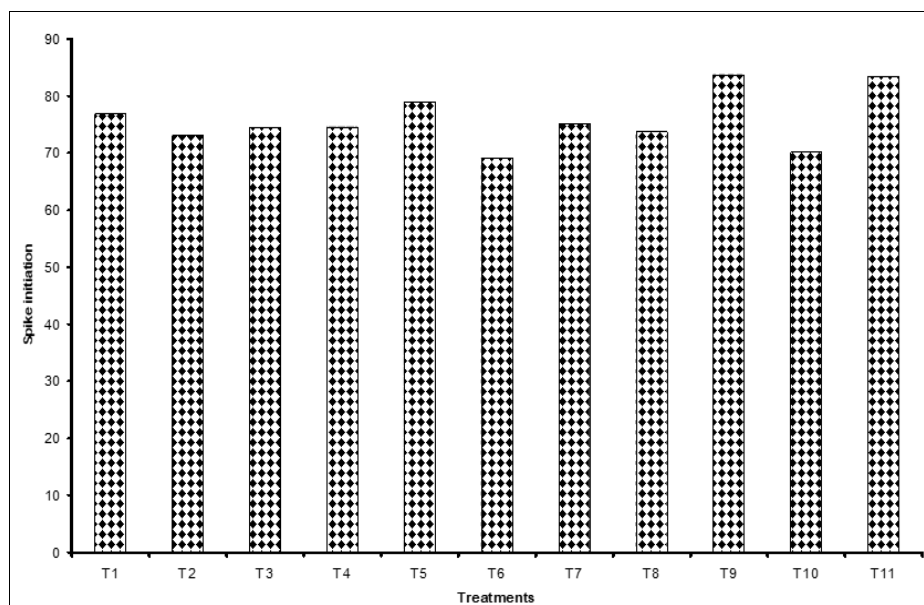


Fig 3: Days taken for spike initiation of different cultivars of Gladiolus

Days taken for colour showing of first floret of different cultivars of gladiolus

The minimum days taken for colour showing of first floret (73.86) was observed in White Prosperity (T₆) followed by Punjab Morning (T₁) (78.46). Maximum days taken for colour showing of first floret (96.26) were observed in Delhi Local (T₉).

Days taken for complete opening of first floret (days)

The minimum days taken for complete opening of the first floret (3.17) was observed in Delhi Local (T₉) followed by Punjab Morning (T₁) (3.90). Maximum delay in complete opening of the first floret (5.55) was observed in American Beauty (T₄). These findings were in conformity with those of Dalal *et al.* (2006) [2].

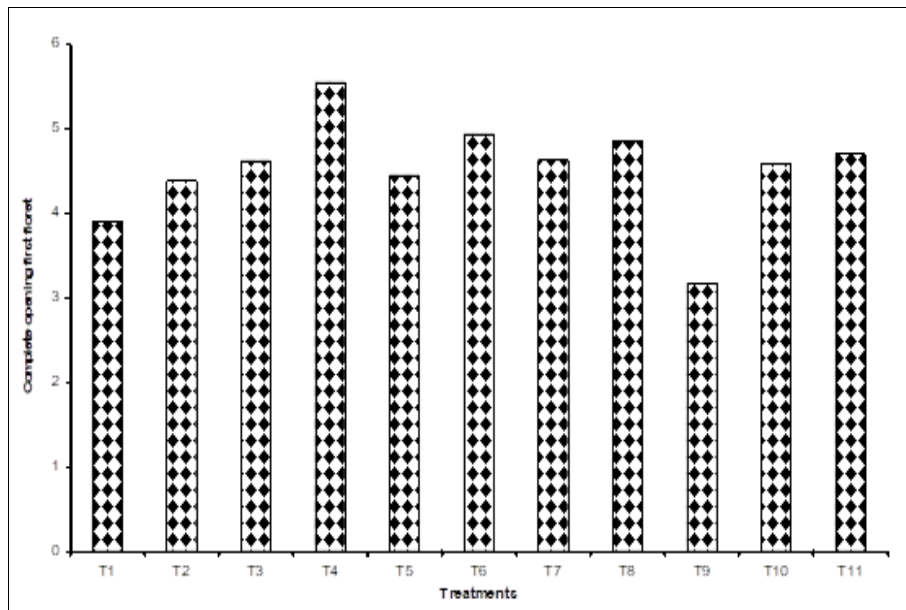


Fig 4: Days taken for complete opening of first floret of different cultivars of gladiolus

Number of florets/spike

A study of the data reveals that maximum number of floret per spike (18.00) was found in White Prosperity (T₆) followed by American Beauty (T₄) (17.73) and minimum number of

florets/spike (12.93) was found in Novalux (T₁₀). These findings were in conformity with those of Swain *et al.* (2008) [8].

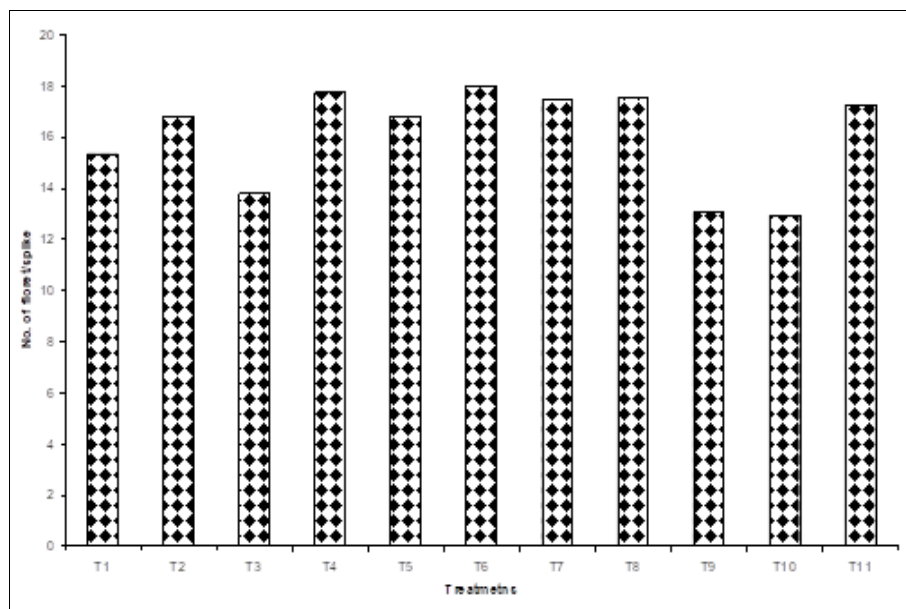


Fig 5: Number of floret/spike of different cultivars of Gladiolus

Number of spikes/plant

An analysis of the data clearly shows that maximum number of spikes per plant (5.33) was observed in Delhi Local (T₉) followed by White Prosperity (T₆) (1.3). However minimum weight of spike (1.46) was observed in Green Bay (T₂). These findings were in conformity with those of Misra *et al.* (1988) [4].

Conclusion

On the basis of the results obtained, it is concluded that out of 11 cultivars, Delhi Local was found most promising with respect to spike yield per plant and 90 DAP the maximum plant height (125.16cm) was recorded in Red Majesty followed by Candy man (124.56 cm). However, minimum

plant height (89.90cm) was recorded in Delhi Local. The minimum days taken for complete opening of the first floret (3.17) was observed in Delhi Local followed by Punjab Morning (3.90). Maximum delay in complete opening of the first floret (5.55) was observed in American Beauty under Allahabad, agro-climatic condition

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