P: ISSN NO.: 2394-0344 RNI No.UPBIL/2016/67980 VOL-3* ISSUE-5* August- 2018
E: ISSN NO.: 2455-0817 *Remarking An Analisation*

Response of GA_3 as Foliar Spray on The Performance of Different Varieties of Gladiolus (Gladiolus Grandiflorus L.)

V.N. Mishra
Assistant Professor,
Deptt. of Horticulture
R. B. S. College,
Bichpuri, Agra

Sheelendra Kumar
Research Scholar,
Deptt. of Horticulture
R. B. S. College,
Bichpuri, Agra

B.K. Chaturvedi
Assistant Professor,
Deptt. of Horticulture
R. B. S. College,
Bichpuri, Agra

Abstract

A field experiment was conducted during 2014-2015 at R.B.S. College, Bichpuri, Agra, U.P to assess the effect of gibberellic acid on growth and flower production in different varieties of Gladiolus. The investigation was laid out in Randomized Block Design (RBD) consisting12 treatment combinations (0, 100, 150 and 200 ppm GA_3) along with 3 Varieties Viz.PusaVidushi (V_1) Chandni (V_2) And Popidear (V_3) Among all the treatment combination under the trial was found significant, On the basis of results obtained on various aspects of the study envisaged that foliar spray of 150 ppm GA_3 on variety Chandni produced better growth and flowering as well as corms production of gladiolus under the experiment.

Keywords: Gibberellic acid, Concentration, PusaVidushi, Chandni, Popidear Gladiolus Varities.

Introduction

Gladiolus *(Gladiolus grandiflorus L.)* belongs to the family "Iridaceae" and sub-family "Exioideae". The origin place of this plant is said to be South Africa. The word gladiolus is derived from the means a "Swordif" it comprises 300 species in 250 are wild and 50 of garden origin. Gladiolus was introduced in India in 16th-19th century by the Britishers. Gladiolus being a potential cut flower is grown globally for its attractive spikes (Sinha and Roy, 2002). Gladiolus has 4th rank in globally and 3rd rank in India in cut flower production and 6th rank in loose flower Production. The major producing countries are the United States (Florida and California), Holland, Italy, France, Poland, Bulgaria, Brazil, India, Australia and Israel. In the United States, the best selling bulb is the gladiolus with an estimated annual sale of more than 370 million corms. However, mass production and quality flower spikes of gladiolus is still problem in many countries. Gladiolus is grown as flower bed in gardens and used in floral arrangements for interior decoration as well as making high quality bouquets (Lepcha et al, 2007).Gladiolus is the next most important cut flower after rose in the country. Earlier it was considered a crop for temperate regions and its growing was restricted to the hilly areas, particularly in the north-eastern region, which still continues to supply the planting material to most part of the country. However, with improved a gnomic techniques and better management, the northern plains of Delhi, Haryana, Punjab, Uttar Pradesh, Maharashtra and Karnataka have emerged as the major areas for production of gladiolus. Gibberellic acid (GA_3) is important plant growth hormones which stimulate the physiological activities of plant by inducing cell division and elongation which result increase the germination, vegetative growth and flower production. Such information is not available properly on gladiolus;therefore the present study was under taken to generate the sufficient information regarding performance of gladiolus.

Duration of Study

The Experiment was conducted at Research from R. B. S. College, Bichpuri Agra During 2014 -2015

Aim of The Study

The main objective of the present experiment was to find out the effect of foliar spray of (GA_3) and there concentration on the vegetative growth and quality floweryield of different gladiolus varieties which was practically utilize by the growers for increasing the flowers yield and economic status.

Review of Literature

A brief review of literature on important aspects pertaining to present study is given here. *Kumar et al* (2010) reported that corm of gladiolus treated with 100 ppm GA_3 produced early germination and improved the plant height, number of leaves and number as well as, size of florets.*Joshi et al* (2012) found that application of GA_3 at 100 ppm gave maximum increment in plant height, number of shoot and spike length in gladiolus, Var. Jester and Snow princess. *Montessori et al* (2013) observed that application of 500 ppm GA_3 induced early flowering and significantly increased the number of florets per spike and spike length.*Chopde et al* (2013) reported that the vegetative growth of the plant in respect of plant height, leaf area, length of spike, and rachis were increased markedly with foliar spray of 150 ppm GA_3 in Gladiolus Var. PhuleTajas*. Similarly khan and Bahadur* (2014) also reported in variety white prosperity and Nova lux.

Methods and Materials

The experiment was conducted at research farm of Department of Horticulture, Raja Balwant Singh College, Bichpuri, Agra during 2014-15. The research farm is situated at latitude of $27^0$2 N and longitude of $77^0$9 E at an elevation of 163.4m above sea level. The Agra tract has a tropical and subtropical climate with hot dry summer and sever winter. Under normal climate condition the area receives about 670mm annual rain fall, around 80% of which occurs from July to September. The mean annual maximum and minimum atmospheric temperature are 46^0 and 1-2^0 respectively.

The soil of experimental plot was genetic alluvial with calcareous layer at the depth of about 1.5 m to 2.0 meter. It was sandy loam.Fertile, well drained and slightly alkaline in reaction having 7.9PH.The soil sample were collected from 30 cm. depth just before layout and after analysis It was found that field was sufficient in potash content but low in available nitrogen and organic carbon and medium in available phosphorus content. The investigation was laid out under Randomized Block Design having 12 treatment combinations including 4 concentration of Gibbrelic Acid (GA_3) Viz. C_0 (Control), $C_1$100ppm,$C_2$150ppm, $C_3$200ppm and three Varieties i.e. PusaVidushi(V_1) Chandni (V_2) And Popidear (V_3) which were replicated thrice. The planting material (Corms) of gladiolus was taken from IARI, New Delhi and was planted in the first week of November at 30X30 Cm distance between row to row and plant to plant. Before planting the corms were treated with dipping in 0.2% Bavistin fungicide for 30 minutes. The application of GA_3 was done as spray on 4 week, 6week and 8 week after the corm plantation.

Results and Discussion

The pooled data regarding vegetative growth, flowering and yield of corms were presented in Table-1 and Table-2. It is evident from Table-1 that application of GA_3 Concentration and different varieties of gladiolus affected significantly on plant height, no of leaves, length of spike, number of florets per spike length of first florets,weight of per corm, number and weight of corm q/ha.

The foliar application of GA_3 at the rate of 150 ppm(C_2) was found superior regarding all the growth and development characters of gladiolus varieties, followed by C_3 ($GA_3$200ppm). While as, the inferior qualities plant were recorded in C_0(Control). The maximum plant height (103.71 cm), number of leaves(11.11), length of spike(42.95cm).number of florets per spike(13.26), number of corms per ha(253.97), weight of corms (68.05 q/ha) and weight per corm (43.73 g) were recorded with foliar spray of 150ppm GA_3(C_2) which was significantly superior over all the treatment except the number of leaves, length of first basal florets and weight per corm which were found statistically at par with treatment C_3(200ppm GA_3)and C_1 (100ppm GA_3).It may be to that GA_3 involves in physiological activity on plant growth and development by inducing cell division and elongation. These findings are in the close proximity to the results obtained by Maitra *et al* (2011).Chopde*et al* (2013) and khan and Bahadur (2014).

Among three varieties including in this experiment Chandni is found statistically superior followed by Popidear and PusaVidushi. The maximum number of leaves (10.88), length of spike(42.86 cm),Number of floret per spike(13.77),weight per corm(43.97g) and weight of corms (66.90q/ha) were recorded with var. Chandni which were at par with Var.Popidear. Whereas, the maximum plant height (102.89cm), and number of corms per ha.(249.16) were found in variety Popidear. However the overall performance of Var. Chandni was found better as compared to Popidear and PusaVidushi. The findings are in consonance with the results of Devi *et.al* (2007) and Kumar *et al* (2010).

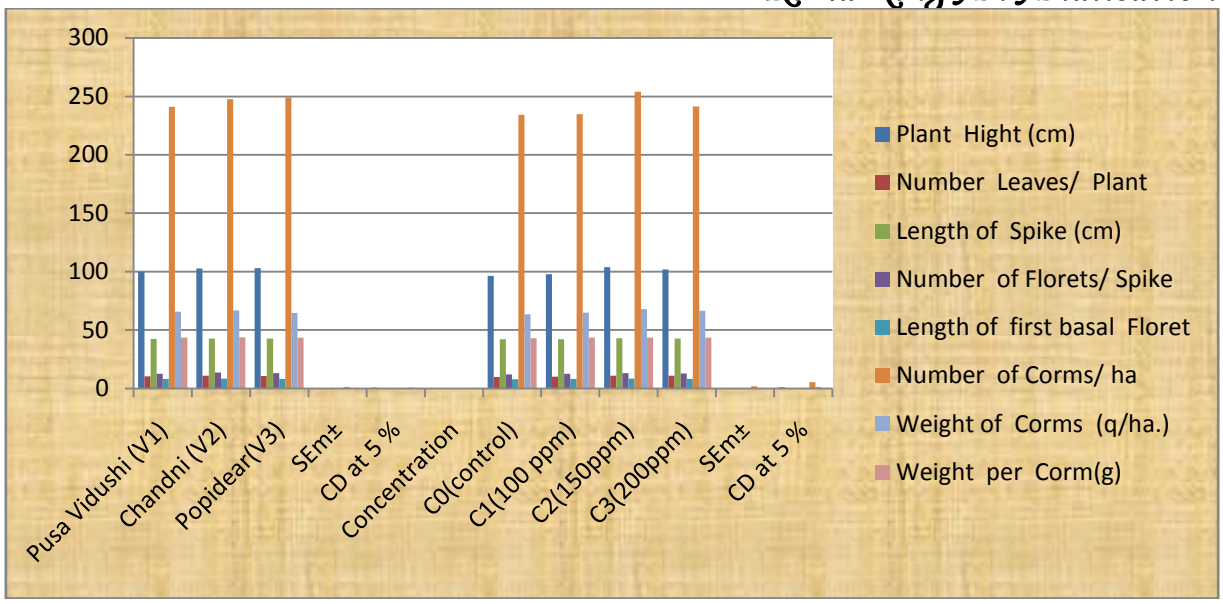
Table-2 indicates that interaction effect between different concentrations of $GA_3$and Varieties of gladiolus were found statistically non-significant. However the variety Chandni was found better with application of 150 ppm GA_3 in terms of plant height, number of leaves,length of spike,number of florets per spike,weight per corm,number and weight corms q/ha.Whereas, lower performance was observed to variety Pusavidushi at C_0 (Control)in this respect.

Table No 1: Effect of GA_3 concentration and varieties of gladiolus on growth, flowering and corm production.

Varieties	Plant Hight (cm)	Number Leaves/ Plant	Length of Spike (cm)	Number of Florets/ Spike	Length of first basal Floret	Number of Corms/ ha	Weight of Corms (q/ha.)	Weight per Corm(g)
Pusa Vidushi (V_1)	100.04	10.53	42.51	12.75	8.3	241.1	65.79	43.52
Chandni (V_2)	102.83	10.88	42.86	13.77	8.49	247.57	66.9	43.97
Popidear(V_3)	102.89	10.81	42.72	13.28	8.37	249.16	64.61	43.59
SEm±	0.271	0.053	0.058	0.062	0.035	1.245	0.285	0.096
CD at 5 %	0.795	0.156	0.17	0.183	0.103	NS	0.836	0.281
Concentration								
C0(control)	96.48	9.78	42.15	12.25	8.11	234.24	63.55	43.12
C1(100 ppm)	97.94	10.22	42.28	12.53	8.31	234.92	65.01	43.59
C2(150ppm)	103.71	11.11	42.95	13.26	8.41	253.97	68.05	43.72
C3(200ppm)	102.01	10.99	42.67	12.96	8.35	241.27	66.54	43.65
SEm±	0.407	0.08	0.087	0.093	0.053	1.868	0.427	0.144
CD at 5 %	1.193	0.234	0.256	0.274	0.155	5.479	1.254	0.422

Table No 2: Interaction on effect between different Concentration of GA_3 and varieties of gladiolus on growth,flowering and corm production.

Interaction	Plant Hight (cm)	Number Leaves/ Plant	Length of Spike (cm)	Number of Florets/ Spike	Length of first basal Floret	Number of Corms/ ha	Weight of Corms (q/ha.)	Weight per Corm(g)
C_0V_1	96.48	9.78	42.15	12.25	8.11	234.24	63.55	43.12
C_0V_2	100.56	9.96	42.32	13.12	8.18	241.07	64.7	43.26
C_0V_3	101.88	10.12	42.28	12.68	8.12	241.07	62.1	43.08
C_1V_1	97.94	10.22	42.28	12.53	8.31	234.92	65.01	43.59
C_1V_2	101.07	10.66	42.89	13.22	8.49	241.27	66.73	43.81
C_1V_3	102.5	10.89	42.78	12.86	8.37	241.27	64.32	43.18
C_2V_1	103.71	11.11	42.95	13.26	8.41	253.97	68.05	43.72
C_2V_2	106.37	11.66	43.28	14.55	8.69	253.97	68.92	44.67
C_2V_3	104	11.22	42.98	14.11	8.55	260.32	66.57	44.27
C_3V_1	102.01	10.99	42.67	12.96	8.35	241.27	66.54	43.65
C_3V_2	103.33	11.22	42.96	14.18	8.58	253.97	67.24	44.12
C_3V_3	103.16	10.99	42.83	13.53	8.43	253.97	65.43	43.82
SEm±	0.235	0.046	0.05	0.054	0.031	1.078	0.247	0.083
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS



Research Picture: Different 3 Varieties of Gladiolus Flowers Picture

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