
**To Study the Performance of Fifteen Most Commercial Varieties
of *Gladiolus (Gladiolus Grandiflorus Linn.)* on Agro-Climatic
Conditions of Chitrakoot, Satna (M.P.).**

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ABSTRACT

*The present investigation was laid out with fifteen gladiolus genotypes in a randomized block design with three replications at the experimental plot on year 2016-17 is located at agriculture field village Rajula Chitrakoot Satna. Mean performance of 15 varieties for growth and flowering characters of *Gladiolus (Gladiolus grandiflorus)*. The character Yield of spike (No.) plant⁻¹ exhibited a wide range of variation 2.73 to 1.13 with a grand mean of 1.82. The highest Yield of spike (No.) plant⁻¹ of genotype salvia (2.73) followed by Priscilla and Red ginger. While lowest Yield of spike (No.) plant⁻¹ was observed for pacifica (1.13). Yield of spike (Lakh No.) plant⁻¹ The character Yield of spike (lakh No.) plant⁻¹ exhibited a wide range of variation 6.07 to 2.52 with a grand mean of 4.05. The highest Yield of spike (Lakh No.) plant⁻¹ of genotype salvia (6.07) followed by Priscilla and Red ginger. While lowest Yield of spike (Lakh No.) plant⁻¹ was observed for pacifica (2.52). Vase life of cut flowers (days). The character vase life of cut flower (days) exhibited a wide range of variation 17.87 to 10.33 with a grand mean of 13.60. The highest vase life of gladiolus flower (days) of genotype salvia (17.87) followed by Priscilla and Red ginger. While lowest vase life of cut flower (days) was observed for pacifica (10.33). Physiological character leaf area index show wide range of variation 0.2348-0.1292 with grand me 0.1687. the leaf area per plant , specific leaf area of genotype salvia maximum followed by parecilla and red ginger and minimum in pacifica .*

Keyword : *Gladiolus (Gladiolus grandiflorus Linn.) , Commercial varieties, Agro-climatic*

INTRODUCTION

The importance of gladiolus as cut flower is well known all over the world. It is native of South Africa, where about fifty species have been discovered. It is also a native of middle Africa, central and southern Europe, Persia, Caucasus, and the country around the eastern end of the Mediterranean. About forty additional species have been found in these localities, and one in Hampshire, England. These have been hybridized and crossed until they are so mixed that it is impossible for the ordinary grower to say what blood may have entered into a given variety, nor does it matter. This is one of the most beautiful bulbous flowers. Its cultivation is very easy and simple and is within the reach of almost anyone who cares to have it. The gladiolus is a bulbous plant that grows only in the beginning of winter season of the year in India. It may be grown from corms, cormlets. Amateurs have to do mainly with bulbs, as their chief object is to produce flowers, The bulb contains the food for the nourishment of the young plant until it has leaves, when it commences to form a new bulb close above the old

one, which latter gradually shrivels and dies, its work being done. Meanwhile, the young plant, having roots and leaves of its own, continues to grow and build up the new bulb. When far enough advanced, the flower spike starts up through the middle of the foliage and makes its appearance above the upper leaf. From the time the spike comes in sight, the plant seems to devote the most of its energy to developing the flowers, and the seed which follows. When the latter is allowed to ripen, the bulb is smaller than it otherwise would have been, and not only this, it is vertically thin, having been partially starved by the diverting of the nourishment to ripen the seed. On the other hand, if the spike is removed when the first flower opens, the bulb will grow larger and thicker. Other things being equal, a bulb is valuable according to its vertical diameter. The most perfect ones are obtained by planting small ones, just below the blooming size. Not being able to send up flower spikes, their vitality goes to the production of new bulbs, and these are conical, or nearly round, which is the ideal shape. Many florists insist upon this form when buying bulbs for forcing. They are known to the trade as virgin bulbs. As to the breadth of bulbs, the broader the better, other points being the same. One that is conical in shape, and three-fourths of an inch in horizontal diameter, will probably produce as fine a spike of flowers as is possible to the variety, but it will yield only one, while bulbs of larger size may send up from two to six. Other bulbs, from bulblets, or from seeds, and have soft shells. They may be very tiny, no larger than apple seeds, but still they are bulbs. Gladiolus varieties differ widely in their ability to produce, The May and Augusta are exceedingly prolific, while the Shakespeare is just the opposite. A bulb too small to bloom will yield many times more bulblets than a large one of the same variety. Sometimes as many as two hundred bulblets have been found on a single bulb. Corm and cormel are the correct botanical terms respectively for solid bulbs, like those of the gladiolus, and the small underground increase, but these names are rarely used in commercial horticulture.. Its magnificent spikes in dazzling colours remain fresh for 10 to 22 days. The major gladiolus producing states in the country are Uttar Pradesh, West Bengal, Odisha, Chattishgarh, Haryana & Maharashtra. Gladiolus is also grown in states like Uttarakhand, Karnataka, Andhra Pradesh and Sikkim. Even though gladiolus is mainly a winter season flower crop, in areas having moderate climatic conditions, gladiolus can be grown throughout the year. Gladiolus cultivation under Northern Indian plains (that include whole of U.P), coastal areas of Tamilnadu and Pondicherry has a potential to change the conomic scenario of farmers of these areas **Verty et al., (2017)**.

MATERIALS AND METHODS

The present investigation will be conducted at M.G.C.G. Vishwavidyalaya, Chitrakoot, (Satna) entitled **“To study the performance of fifteen most commercial varieties of gladiolus (*Gladiolus grandiflorus* Linn.) on agro-climatic conditions of Chitrakoot, Satna (M.P.)”** during the rabi season on the year 2016-2017 .**List of Genotypes** Thirty varieties of gladiolus were selected for this study. The name of genotypes and source are noted below:-

S.No.	Name of Genotypes	Source of Corm
1	Aldeberan	NBRI, Lucknow
2	Sylvia	NBRI, Lucknow
3	Praha	NBRI, Lucknow
4	American beauty	NBRI, Lucknow
5	True love	NBRI, Lucknow
6	Snow Princess	NBRI, Lucknow
7	Vedio	NBRI, Lucknow
8	Yellow Stone	NBRI, Lucknow
9	Orange Ginger	NBRI, Lucknow
10	Shagon	NBRI, Lucknow
11	Pacifica	NBRI, Lucknow
12	Rogency	NBRI, Lucknow
13	Victor	NBRI, Lucknow
14	Priscilla	NBRI, Lucknow
15	Red Ginger	NBRI, Lucknow

RESULTS AND DISCUSSION

Mean performance of fifteen varieties for growth and flowering characters of *Gladiolus* (*Gladiolus grandiflorus*)

Days to sprouting The character days to sprouting exhibited a wide range of variation 20.80 to 13.00 with a grand mean of 15.41. The highest days to sprouting of genotype Pacifica (20.80) followed by Regency (17.47) and Yellow stone (16.60). While lowest days to sprouting was observed for Salvia (13.00).

Plant height (cm) The character plant height (cm) exhibited a wide range of variation 131.87 to 115.40 with a grand mean of 122.52. The highest plant height (cm) of genotype salvia (131.87) followed by Priscilla and Red ginger While lowest plant height (cm) was observed for pacifica (115.40).

Number of leaves plant⁻¹ The character number of leaves plant⁻¹ exhibited a wide range of variation 17.93 to 10.73 with a grand mean of 17.93. The highest number of leaves plant⁻¹ of genotype salvia (17.93) followed by Priscilla and Red ginger. While lowest number of leaves plant⁻¹ was observed for pacifica (10.73).

Length of pseudo stem (cm) The character length of pseudo stem (cm) exhibited a wide range of variation 81.13 to 69.40 with a grand mean of 74.37. The highest length of pseudo stem (cm) of genotype salvia (81.13) followed by Priscilla and Red ginger. While lowest length of pseudo stem (m) was observed for pacifica (69.40).

Days taken to flower initiation The character days taken to flower initiation exhibited a wide range of variation 101.33 to 85.13 with a grand mean of 81.38. The highest days to taken to flower initiation of genotype Pacifica (101.33) followed by Shagun and Vedio. While lowest days taken to flower initiation was observed for Salvia (85.13).

Length of spike (cm) The character length of spike (cm) exhibited a wide range of variation 102.80 to 75.80 with a grand mean of 86.22. The highest length of spike (cm) of genotype salvia (102.80) followed by Priscilla and Red ginger. While lowest length of spike (cm) was observed for pacifica (75.80).

Number of florets spike⁻¹ The character number of florets spike⁻¹ exhibited a wide range of variation 22.33 to 13.20 with a grand mean of 17.81. The highest number of florets spike⁻¹ of genotype salvia (22.33) followed by Priscilla and Red ginger. While lowest number of florets spike⁻¹ was observed for pacifica (13.20).

Yield of spike (No.) plant⁻¹ The character Yield of spike (No.) plant⁻¹ exhibited a wide range of variation 2.73 to 1.13 with a grand mean of 1.82. The highest Yield of spike (No.) plant⁻¹ of genotype salvia (2.73) followed by Priscilla and Red ginger. While lowest Yield of spike (No.) plant⁻¹ was observed for pacifica (1.13).

Yield of spike (Lakh No.) plant⁻¹ The character Yield of spike (lakh No.) plant⁻¹ exhibited a wide range of variation 6.07 to 2.52 with a grand mean of 4.05. The highest Yield of spike (Lakh No.) plant⁻¹ of genotype salvia (6.07) followed by Priscilla and Red ginger. While lowest Yield of spike (Lakh No.) plant⁻¹ was observed for pacifica (2.52).

Self life of cut flowers (days) The character self life of cut flower (days) exhibited a wide range of variation 12.33 to 8.33 with a grand mean of 9.79. The highest self life of cut flower (days) of genotype salvia (12.33) followed by Priscilla and Red ginger. While lowest self life of cut flower (days) was observed for pacifica (8.33).

Table 01 Mean performance of 15 varieties for growth and flowering characters of Gladiolus (Gladiolus grandiflorus) - II Year (2016 - 17).
Mean performance of 15 varieties for physiological characters of Gladiolus (Gladiolus grandiflorus)

Varities	Days to sprouting	Plant height (cm)	Number of leaves plant ⁻¹	Length of pseudo stem (cm)	Days taken to flower initiation	Length of Spike (cm)	Number of florets spike ⁻¹	Yield of spike (No.) plant ⁻¹	Yield of spike (Lakh No.) ha ⁻¹	Self life of cut flowers (days)	Vase life of cut flowers (days)			
V ₁	Aldeberan	15.07	122.20	14.53	73.40	89.33	85.00	18.00	1.80	4.00	9.73	13.53		
V ₂	Salvia	13.00	131.87	17.93	81.13	85.13	102.80	22.33	2.73	6.07	12.33	17.87		
V ₃	Praha	14.13	125.73	15.87	77.27	86.93	92.80	19.79	2.13	4.74	10.47	15.07		
V ₄	American Beauty	14.53	124.07	15.47	77.00	87.33	88.93	19.13	2.07	4.59	10.33	14.87		
V ₅	True Love	15.27	121.73	14.07	73.00	92.40	83.13	17.67	1.73	3.85	9.60	13.00		
V ₆	Snow Princess	14.73	123.20	15.27	76.27	87.80	88.13	18.47	2.00	4.44	10.33	14.40		
V ₇	Vedio	15.73	119.67	13.53	71.60	95.07	82.47	16.80	1.53	3.41	9.00	11.87		
V ₈	Yellow Stone	16.60	117.60	12.73	70.20	97.40	77.13	15.13	1.33	2.96	8.53	11.33		
V ₉	Orange Ginger	14.93	122.47	15.07	75.80	87.93	85.60	18.33	1.93	4.30	10.00	14.40		
V ₁₀	Shagun	16.27	118.40		13.00		70.67	95.93	81.20	15.67	1.40	3.11	8.73	11.67
V ₁₁	Pacifica	20.80	115.40		10.73		69.40	101.33	75.80	13.20	1.13	2.52	8.33	10.33
V ₁₂	Regency	17.47	116.73		12.27		70.00	98.13	76.47	14.13	1.27	2.81	8.33	11.07
V ₁₃	Victor	15.53	120.87		13.80		72.40	93.67	82.93	17.20	1.60	3.56	9.07	12.53

V ₁₄	Priscilla	13.40	129.27	16.40			79.13	85.93	97.40	20.73	2.40	5.33	11.27	16.40
V ₁₅	Red Ginger	13.67	128.60	16.13	78.27	86.33	93.53	20.53		2.27	5.04	10.80		15.67
	Mean	15.41	122.52	14.45	74.37	91.38	86.22	17.81	1.82	4.05	9.79	13.60		
Range	Minimum	13.00	115.40	10.73	69.40	85.13	75.80	13.20		1.13	2.52	8.33		10.33
	Maximum	20.80	131.87	17.93	81.13	101.33	102.80	22.33		2.73	6.07	12.33		17.87
Coefficient of Variance (CV)		12.47	3.90	12.80	5.00	5.71	9.07	14.30	24.99	24.99	11.86	15.94		
F- test		S	S	S	S	S	S	S	S	S	S	S		S
S. Ed. (±)		0.27	0.29	0.20	0.19	1.41	0.59	0.50		0.09	0.19	0.11		0.11
C. D. at 5%		0.55	0.59	0.40	0.39	2.88	1.22	1.03		0.18	0.40	0.22		0.23

Vase life of cut flowers (days) The character self life of cut flower (days) exhibited a wide range of variation 17.87 to 10.33 with a grand mean of 13.60. The highest self life of cut flower (days) of genotype salvia (17.87) followed by Priscilla and Red ginger. While lowest self life of cut flower (days) was observed for pacifica (10.33)

Leaf area plant₁ (cm) The character leaf area plant⁻¹(cm) exhibited a wide range of variation 105.40 to 58.13 with a grand mean of 75.90. The highest leaf area plant⁻¹(cm) of genotype salvia (105.4) followed by Priscilla and Red ginger. While lowest leaf area plant⁻¹(cm) was observed for pacifica (58.13).

Leaf area index (LAI) The character leaf area index exhibited a wide range of variation 0.2342 to 0.1292 with a grand mean of 0.1687. The highest leaf area index of genotype salvia (0.2342) followed by Priscilla and Red ginger. While lowest leaf area index was observed for pacifica (0.1687).

Specific leaf area (SLA) The character specific leaf area exhibited a wide range of variation 104.13 to 57.47 with a grand mean of 75.20. The highest specific leaf area of genotype salvia (104.13) followed by Priscilla and Red ginger. While lowest specific leaf area was observed for pacifica (57.47).

Specific leaf weight (SLW) The character specific leaf weight exhibited a wide range of variation 0.0174 to 0.0096 with a grand mean of 0.0137. The highest specific leaf weight of genotype Pacifica (0.0174) followed by Yellow and Shagun. While lowest specific leaf weight was observed for Salvia (0.0096).

Harvest index The character harvest index exhibited a wide range of variation 35.65 to 29.89 with a grand mean of 31.13. The highest harvest index of genotype salvia (35.65) followed by Priscilla and Red ginger. While lowest harvest index was observed for pacifica (29.89).

Table 02 Mean performance of 15 varieties for physiological characters of Gladiolus (Gladiolus grandiflorus) - II Year (2016 - 17).

Varieties		Leaf area plant ⁻¹ (cm ⁻²)	Leaf area index (LAI)	Specific leaf area (SLA)	Specific leaf weight (SLW)	Harvest index
V ₁	Aldeberan	73.27	0.1628	72.27	0.0138	30.74
V ₂	Salvia	105.40	0.2342	104.13	0.0096	31.49

V ₃	Praha		90.67	0.2015	89.47	0.0112	30.38
V ₄	American Beauty		76.53	0.1701	78.53	0.0127	30.58
V ₅	True Love		71.93	0.1599	71.07	0.0141	30.22
V ₆	Snow Princess		76.27	0.1695	75.13	0.0133	30.50
V ₇	Vedio		65.33	0.1452	64.53	0.0155	30.21
V ₈	Yellow Stone		63.47	0.1410	62.73	0.0159	33.14
V ₉	Orange Ginger		73.93	0.1643	73.07	0.0137	30.59
V ₁₀	Shagun		65.20	0.1449	64.40	0.0155	29.89
V ₁₁	Pacifica		58.13	0.1292	57.47	0.0174	31.81
V ₁₂	Regency		62.93	0.1399	62.20	0.0161	35.65
V ₁₃	Victor		65.53	0.1456	64.73	0.0154	30.01
V ₁₄	Priscilla		95.07	0.2113	94.40	0.0106	31.07
V ₁₅	Red Ginger		94.87	0.2108	93.80	0.0107	30.74
	Mean		75.90	0.1687	75.20	0.0137	31.13
Range	Minimum		58.13	0.1292	57.47	0.0096	29.89
	Maximum		105.40	0.2342	104.13	0.0174	35.65
Coefficient of Variance (CV)			18.68	18.68	18.72	17.1440	4.81
F- test			S	S	S	S	S
S. Ed. (\pm)			0.31	0.0007	0.26	0.00005	0.98
C. D. at 5%			0.64	0.0014	0.53	0.00010	2.01

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