

PERFORMANCE OF GLADIOLUS VARIETIES TO YIELD AND QUALITY ATTRIBUTES UNDER NAGPUR CONDITIONS

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ABSTRACT

An experiment on the performance of different genotypes of gladiolus was conducted at Horticulture Section, College of Agriculture, Nagpur during the year 2014-15 for the identification of a suitable variety for the cultivation in Nagpur region. Nine varieties of gladiolus viz., Snow Princess, Yellow Stone, Chandani, Nova Lux, Flaro Sovenier, Princess Morgerate Rose, Pricilla, Forta Rosa and Jester Gold were evaluated and found that, variety Forta Rosa recorded maximum spike length (117.47 cm), length of rachis (63.53 cm), length of floret (10.13 cm) and number of florets spike⁻¹ (17.40). Maximum diameter of florets (11.17 cm) and diameter of spike (1.23 cm) were recorded in variety Nova Lux while maximum vase life (11.47 days) was recorded in variety Yellow Stone. Yield parameters viz., maximum number of spikes plant⁻¹ (2.33) and heacter⁻¹ (2.05 lakh), number of cormels plant⁻¹ (72.13), heacter⁻¹ (67.39 lakh) and weight of cormels plant⁻¹ (36.67g) were maximum in variety Yellow stone.

(Key words: Gladiolus, yield, spike, florets, cormels, variety)

INTRODUCTION

The gladiolus has a long and noble history. The Latin word 'Gladius' means sword and hence, it is often called as 'Sword lilly' because of the shape of its leaves. Gladiolus was also called 'xiphium' based on the Greek word 'Xiphos' also meaning sword. So, we have here what might appear to be pretty war like flower. But in another sense, the gladiolus is a romantic flower as it signifies remembrance and it also expresses infatuation. The roots of the gladiolus plants were thought to be an aphrodisiac. Gladiolus remains as a popular garden flower, an old fashioned one that is equally at home in a cottage garden or in something more modernistic.

Though India has suitable agro-climatic conditions for gladiolus cultivation, it is being grown over an area of 1200 ha with a production of 1905.88 lakh spikes. In India, it is commercially cultivated in West Bengal, Himachal Pradesh, Sikkim, Karnataka, Uttar Pradesh, Tamil Nadu, Punjab and Delhi. In the eastern states like Tripura, Assam, Manipur, Meghalaya and Nagaland, this flower has established itself as a commercial proposition.

Considering the importance and popularity of gladiolus as cut flower both in Indian market and World increasing availability of gladiolus flowers in large quantities over wider period of the year is considerably important and Gladiolus is very rich in its varietal wealth and every year there is an addition of new varieties; hence varietal evaluation becomes necessary to find out suitable variety

for a particular region. Therefore, the present investigation was carried out.

MATERIALS AND METHODS

A field experiment was carried out at farm of Horticulture Section, College of Agriculture, Nagpur during *rabi* season of the year 2014-2015. The experiment was laid out in a Randomized Block Design with three replications. The experiment comprised with nine gladiolus varieties viz., Snow Princess, Yellow Stone, Chandani, Nova Lux, Flaro Sovenier, Princess Morgerate Rose, Pricilla, Forta Rosa and Jester Gold.

The experimental plot was ploughed and subsequent harrowing was done and soil was brought to fine tilth. At the time of land preparation, well rotted FYM @ 20 t ha⁻¹ was mixed uniformly in the soil before last harrowing. Layout of ridges and furrows of a dimension 2.25 m x 1.20 m was made.

Corms were dipped in copper fungicide (0.1%) solution for 20 minutes as preventive measure for *Fusarium* wilt disease before planting. These corms were planted at a spacing of 45 cm x 15 cm in each row along the sides of the ridges at a depth of 5-6 cm on 24th November, 2014. Light irrigation was given immediately after planting.

Recommended dose of NPK (400:200:200 kg ha⁻¹) was applied in the form of urea, single super phosphate and muriate of potash respectively. At the time of planting half the dose of N, full dose of P₂O₅ and K₂O were applied. The

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crop was top dressed with remaining half dose of N at 30 days after planting (DAP).

Observations like yield parameters viz., number of spikes plant⁻¹ and ha⁻¹, quality parameters like number of florets spike⁻¹, length of spike, length of rachis, diameter of spike, diameter of florets at harvesting time (90 days after planting) and cormels were recorded at harvesting stage i.e. (150 days after planting). Recorded data was statistically analyzed as per method suggested by Gomez and Gomez, (1984).

RESULTS AND DISCUSSION

Spike yield

Data from table 2 revealed that the variety Yellow Stone had recorded significantly maximum number of spikes plant⁻¹ (2.67) and ha⁻¹ (2.39 lakh ha⁻¹) which was found to be at par with the variety Chandani (2.33 and 2.05 lakh ha⁻¹ respectively). Whereas, significantly minimum spikes plant⁻¹ and ha⁻¹ (1.73 and 1.42 lakh ha⁻¹ respectively) were recorded in the variety Jester Gold. Variation for yield of spikes clump⁻¹ and ha⁻¹ among the gladiolus variety was mainly attributed due to the variation in production of shoots clump⁻¹ which is a genetically controlled character. Similar results were recorded by the earlier research workers Das *et al.* (2014). They reported that maximum number of marketable spikes plot⁻¹ and in hectare was recorded in the gladiolus cultivar Aarti. Sarkar and Chakraborty (2014). They quoted that Kumkum variety of gladiolus recorded highest number of spike. Gaidhani *et al.* (2016) reported that, maximum number of spikes clump⁻¹ was recorded in tuberose genotype Prajwal.

In respect of number of florets spike⁻¹, significantly maximum number of florets spike⁻¹ (17.33) was recorded in variety Forta Rose which was found to be at par with the variety Yellow Stone (17.33) and Snow Princess (17.20). However, significantly minimum florets spike⁻¹ (12.40) was recorded with Princess Morgerate Rose.

This might be due to the difference in number of florets spike⁻¹ in tuberose and might be also due to the variation in genetically make up of different genotypes. The findings are close conformity with the results obtained by Kumar (2014). He found that gladiolus cultivar Casa Blanca produced maximum florets spike⁻¹.

Quality parameters

Significantly maximum length of spike (117.47cm) and length of rachis (63.53 cm) was recorded in variety Forta Rosa followed by varieties Yellow stone, Snow princess and Chandani. Variety Nova Lux recorded minimum length of spike (87.87cm) and Princess Morgerate Rose recorded minimum length of rachis (46.87cm).

Significantly maximum diameter of spike (1.23 cm) and diameter of floret (11.17 cm) was recorded in variety Nova Lux which was at par with the varieties Jester Gold, Snow princess and yellow stone. Variety Chandani recorded

minimum diameter of spike (0.80 cm) and diameter of floret (7.30 cm).

Significantly maximum floret length (10.27 cm) was observed in the variety Yellow Stone which was statistically found to be at par with the varieties Forta Rosa (10.13 cm) and Nova Lux (10.00) whereas, minimum floret length (8.53 cm) was observed in the variety Chandani.

Significantly, maximum florets spike⁻¹ was recorded in the cultivar Forta Rosa (17.40) and which was statistically found to be at par with the cultivars Yellow Stone (17.33) and Snow Princess (17.20). However, minimum florets spike⁻¹ was observed in the variety Princess Morgerate Rose (12.40).

The vase life of cut spike was found significantly maximum in variety Yellow Stone (11.47 days) which was statistically found to be at par with the variety Jester Gold (11.13 days). Whereas, significantly minimum vase life of spike was recorded in the variety Chandani (9.47 days).

The variation in quality parameters in gladiolus might be attributed due to the genetic differences of the genotypes used. Similar variations in spike length, diameter of spike length and diameter of floret were reported by the earlier workers viz., Singh *et al.* (2013). They reported that maximum length of spike in gladiolus variety Summer Rose. Kumar (2014) reported that gladiolus cultivar Casa Blanca produced longest flowering spike, longest rachis, florets spike⁻¹ and diameter of floret.

Cormels study

The variety Yellow Stone had produced significantly maximum cormels plant⁻¹ (72.13) and hectare⁻¹ (67.39 lakhs). It was followed by the variety Forta Rosa (60.47), whereas significantly minimum cormels plant⁻¹ (33.60) and hectare⁻¹ (27.43 lakhs) were recorded with the variety Chandani.

The differential behavior of the gladiolus varieties as regards the production of cormels plant⁻¹ might be due to variation in the genetic make up of the varieties studied in the experiment. Similar variation has already been reported by Shaukat *et al.* (2012). They showed that gladiolus variety Applause produced maximum cormels.

The variety Yellow Stone (36.67 g) had produced significantly maximum weight of cormels plant⁻¹ which was statistically found to be at par with the variety Forta Rosa (31.67 g), whereas significantly minimum weight of cormels plant⁻¹ was recorded with the variety Snow princess (10.33 g).

The increased weight of cormels plant⁻¹ might be happened due to number and size of cormels plant⁻¹ by the variety which was higher than the other varieties. The results are in close conformity with the findings of Gawali *et al.* (2012). They found that, the maximum cormels produced plant⁻¹ and their weight was noted maximum with the gladiolus variety Phule Ganesh. Safiullah and Ahmed (2001) reported that cultivars, Deciso, Trader Horn and T₅₁₂ were superior for corm weight, cormel weight, corm and cormel diameters

Table 1. Quality and yield parameters as influenced by gladiolus varieties

| Varieties | Length of spike (cm) | Length of rachis (cm) | Diameter of spike (cm) | Diameter of floret (cm) | Length of floret (cm) | Number of florets spike ⁻¹ | Vase life (days) | Number of Spikes clump ⁻¹ | Spike yield ha ⁻¹ | Number of Cormels plant ⁻¹ | Number of Cormels ha ⁻¹ (lakh) | Cormels weight plant ⁻¹ (g) |
|-------------------------|----------------------|-----------------------|------------------------|-------------------------|-----------------------|---------------------------------------|------------------|--------------------------------------|------------------------------|---------------------------------------|---|--|
| Snow Princess | 106.20 | 57.27 | 1.20 | 10.23 | 9.80 | 17.20 | 10.73 | 2.13 | 1.84 | 54.13 | 48.72 | 10.33 |
| Yellow Stone | 113.13 | 59.60 | 1.03 | 10.70 | 10.27 | 17.33 | 11.47 | 2.67 | 2.39 | 72.13 | 67.39 | 36.67 |
| Chandani | 100.87 | 52.13 | 0.80 | 7.30 | 8.53 | 13.93 | 9.47 | 2.33 | 2.05 | 33.60 | 27.43 | 13.67 |
| Nova Lux | 87.87 | 54.33 | 1.23 | 11.17 | 10.00 | 16.40 | 10.07 | 1.80 | 1.49 | 42.47 | 36.63 | 25.50 |
| Flaro Sovenier | 99.47 | 50.60 | 0.90 | 10.57 | 9.93 | 15.53 | 10.27 | 1.93 | 1.63 | 50.67 | 45.13 | 18.83 |
| Princess Morgerate Rose | 97.33 | 46.87 | 0.90 | 8.23 | 9.77 | 12.40 | 9.87 | 1.87 | 1.56 | 58.60 | 53.29 | 21.67 |
| Pricilla | 99.30 | 56.47 | 1.00 | 9.73 | 9.10 | 14.33 | 10.47 | 2.07 | 1.77 | 44.33 | 38.68 | 20.67 |
| Forta Rosa | 117.47 | 63.53 | 1.20 | 10.60 | 10.13 | 17.40 | 10.87 | 2.20 | 1.91 | 60.47 | 55.29 | 31.67 |
| Jester Gold | 97.80 | 56.20 | 1.10 | 9.97 | 9.60 | 15.40 | 11.13 | 1.73 | 1.42 | 36.67 | 30.28 | 14.50 |
| SE (m) ± | 1.47 | 0.65 | 0.06 | 0.09 | 0.09 | 0.18 | 0.18 | 0.12 | 0.15 | 0.90 | 0.86 | 1.82 |
| CD at 5 % | 4.39 | 1.95 | 0.19 | 0.27 | 0.27 | 0.54 | 0.55 | 0.37 | 0.44 | 2.67 | 2.56 | 5.42 |

however, maximum cormels were recorded by variety Mary Housley. Nair and Shiva (2003) reported that Pusa Suhagin variety of gladiolus produced the maximum number of cormels plant⁻¹.

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