Original Research Article

Varietal Assessment of Gladiolus (Gladiolus spp.) for flowering characters and yieldunderhighlandagroclimatic condition of Wayanad

Abstract

Gladiolus (*Gladiolus grandiflora* L.) is a significant commercial flower that has been grown all over the world since the late 16th century. It is perfect for both garden displays and floral arrangements. It ranks first in the world for the trade of bulbous flowers and eighth for the production of cut flowers.This study was carried out to assess the high yielding gladiolus variety in Wayanad conditions. To determine thegrowth and yield character of four commercial varieties of *Gladiolus* Arka Amar, Arka Ayush, Arka Kesar, and Arka Tilak was planted in open field under ecological conditions of Wayanad by comparingvarieties for their plant height, spike length, number of florets, floret diameter andyield.As the result of the study, the data reveals that maximum plant height was recordedin Arka Kesar (134 cm) followed by Arka Amar(126 cm). Spike length was recorded highest in (114.66 cm) in Arka Kesar followed by (112.33cm) in Arka Amar. Floret diameter recorded highest in Arka Tilak (11.47 cm) and lowest was recorded in Arka Ayush (8.43 cm).Number of florets was observed maximum in Arka Kesar (20.10) followed by Arka Amar(18.30). Number of spikes/hectare was recorded maximum in Arka Kesar (2.40lakhs) followed by Arka Amar(2.25 lakhs).

Keywords: *Cultivars, growth and yield, variety, Gladiolus*

Introduction

Gladiolus (*Gladiolus grandiflora* L.) is herbaceous plant popularly known as “Queen” of the bulbous flowers belongs to the family Irridaceaederived from the Latin word “Gladius” meaning ‘sword’(Ranjan *et al*., 2010). It is also named as “Sword Lily” or “Corn Flag the most worldwide cultivated(Poon *et al*., 2012), flowers not only offer aesthetical beauties, but also have become a commercial and economically important flowering plant.Gladiolus ranks fourth in global trade, third in cut flower output in India, and sixth in loose flower production(Nath *et*

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al.,2020). Gladiolus flower cultivation generates six times profit as compared to rice production (Ainarkar*et al.,* 2023). Asexual propagation is accomplished through the use of corms and cormlets (Moradi and Azimi, 2017). There are spring and summer flowering types, with the summer type being more common and widely used to produce cut flowers (Azimi, 2020). It produces magnificent inflorescence with variety of colours which makes it attractive for use as herbaceous border, beddings, rockeries, pots and cut flowers(Sathyanarayana *et al.,* 2017).It is having high demand in both domestic and international markets due to the vibrant colors, variable size of spikes, used in bouquets, for interior decorations and flower arrangements(Bhat *et al.,* 2017andMeena*et al.,* 2018**)**. Given the current situation, enhancing both quantitative and qualitative aspects is imperative to leverage demand. When cultivating gladiolus, soil and climate plays a major role. As there is no data on how well gladiolus genotypes perform in Wayanad, the study's findings can be applied to gladiolus enhancement through the introduction of new color, earliness, and quality spike criteria. To determine the right variety for a given area, performance evaluation is vital. The current experiment was conducted to examine flower variation and yield characteristics among the varieties with the goal of increasing Wayanad's flower production.Hence, the objective of the study was assessment of *Gladiolus grandiflora L.*varieties in Wayanad district for high income from existing crops in homesteads.

Materials and methods:-

An experiment was conducted at Krishi Vigyan Kendra, Wayanad during 2019- 2020 inorder to evaluatethe performance of four cultivars, *viz*., Arka Amar (**T_1**), Arka Ayush (**T_2**), Arka Kesar (**T_3**) and Arka Tilak (**T_4**).For the cultivation of different cultivars of gladiolus standard methodology,cultural operations and plant protection measures were followed according to standardized package of practices throughout the crop stand. The experiment was laid out in Randomized Block Design (RBD) with fivereplications.The mean value of five selected plants in each treatment was taken to represent a particular character.Healthy and uniform size corms of different varieties were selected for planting at the spacing of 45 X 15 cm. Data was recorded on different plant parameters viz.,Growth, flowering and economics and generated data was subjected to statistical analysis.

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Results and Discussion

Results obtained from the observations of parameters belonging to four different*Gladiolus* types are thus explained.

Table: 1 Assessment of Gladiolus in Wayanad Conditions on the basis of Plant height, spike length, Number of floret/spike, Floret diameter, Spike yield and B:C ratio suitable for Wayanad cultivation**.**

Treatment	Plant ht (cm)	Spike length (cm)	Number of Floret/spike	Floret diameter (cm)	Spike Yield / ha	B:C Ratio
T_1	126.00	112.33	18.30	10.67	2.25	3.00
T_2	111.51	109.11	16.23	8.43	1.91	2.60
T_3	134.00	114.66	20.10	10.32	2.40	3.21
T_4	117.00	77.33	14.30	11.47	2.10	2.80
Mean	**122.12**	**103.35**	**17.08**	**10.00**	**2.18**	
SEd	**4.76**	**3.475**	**1.157**	**0.916**	**0.105**	
CD(0.05)	**10.486**	**7.654**	**10.659**	**12.67**	**6.826**	

Plant height

The data pertaining to plant height of gladiolus have been presented and it is clear from the results that data had favorable effect on plant height (Table 1).Among the four varieties the height of the plant, was recorded maximum in Arka Kesar (134cm) followed by Arka Amar (126 cm).The height difference of plants may be due to their competitiveness for light, space, moisture, nutrition, and ventilation (Karavadia and Dhaduk, 2002) and also due to the soil and climatic conditions prevailing in the area (Reshma Negi *et al.*, 2014).Similar findings are also reported in dahlia (Manjula *et al*., 2017).

Spike length and Number of florets

The data presented in table 1 envisaged that the maximum spike length (114.66 cm) and numbers of floret per plant (20.10) were observed in variety Arka Kesar and the minimum was recorded in Arka Ayush (77.33cm), (14.30) respectively. Producing spike with more florets happens because of less competitiveness among plants to obtain water, minerals, nutrition, and light (Azim,2020).The variation in spike length may be due to the corm vigour attributed due to the genetic potential of the varieties(Nalage*et al*., 2019).

Floretdiameter

Floret diameter was recorded highest in Arka Tilak (11.47 cm) and lowest was recorded in Arka Ayush (8.43 cm).This may be due to enhanced uptake of nutrients from the soil, which

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helped in the production of auxin-like substances which was translocated to the apical region of the plant and considerably increased the floret length respectively (Meena*et al.*,2018)similar findings were also observed by (Chakradhar *et al.*,2019).

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Spike yield

With respect toNumber of spike yields/hectare, the maximum yield was recorded in the variety Arka Kesar (3.21 lakhs/ha) followed by Arka Amar (3.00lakhs/ha). The increased yield might be due to its capacity to produce a maximum number of spikes/plant mainly attributed due to the variation in the sprouting percentage of corms and sprouts per plant which are the genetically controlled characteristics (Nalage, 2018 and Ghadage, 2020). Similar findings were also reported in tuberose (Ranchana *et al.*, 2018).

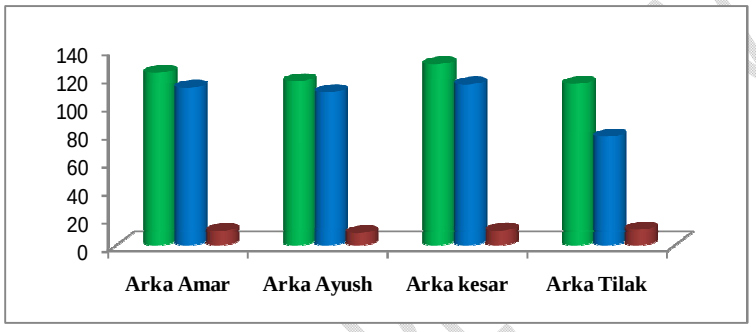

Figure 1a: Plant height (cm),Spike length (cm), Floret diameter (cm)

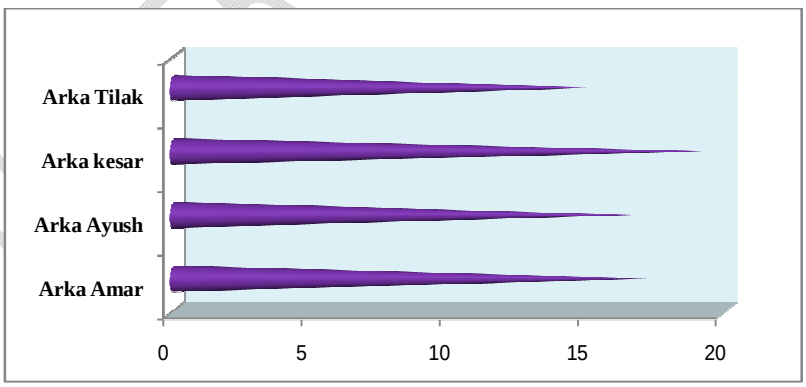

Figure 1b: Number of floret/spike

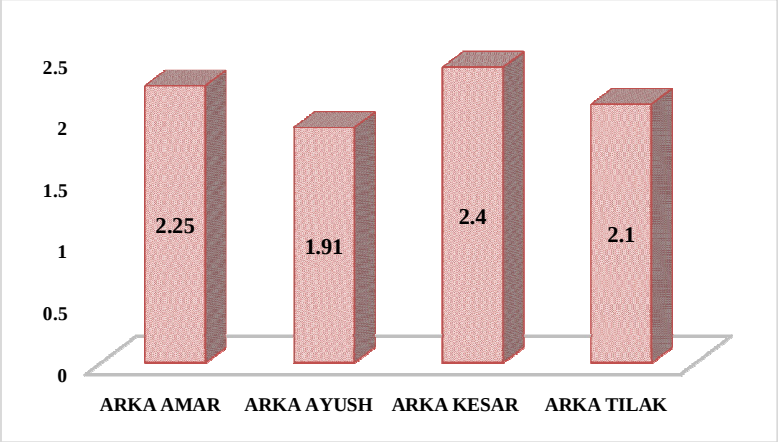

Figure 1c: Yield (Number of spike lakhs/hectare)

The studies revealed that the gladiolus varieties Arka Amar and Arka Kesar were also superior with respect to vegetative and reproductive character and the varieties can be recommended for commercial cultivations in Wayanad district.

Conclusion

In the present investigation, it is observed that the maximum plant height, spike length, number of florets per plant, and spike yield were found to be in Arka Kesar. The maximum floret diameter however was found to be in Arka Tilak. The results reported from the present investigation are suggestive and can be further applied for appropriate recommendations.

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