

RESEARCH ARTICLE :

Evaluation of different cultivars of gerbera (*Gerbera jamesonii*) under naturally ventilated polyhouse in northern Telangana region

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SUMMARY : An experiment was conducted to evaluate four cultivars of gerbera (*Gerbera jamesonii* Bolus ex hooker F.) at the Horticulture Research Station, Dasnapur, Adilabad, Telangana for successful cultivation in this agro-climatic conditions. The cultivars viz., Julia, Marinella, Cocuy, and Lorina were evaluated under natural ventilated polyhouse conditions during 2009- 2012. After studying three consecutive years, it has been found that cv. JULIA recorded maximum plant height (27.06 cm), while greater plant-spread was recorded in cv MARINELLA (39.27 cm). More number of leaves per plant was produced by cv. MARINELLA (35.44), though early flowering was recorded in cv. JULIA (65.61 days). Cultivar Julia (36.44) produced the longest stalk, while cv. MARINELLA recorded maximum number of cut-flowers (45.81), with highest vase life period (4.47 days). Therefore, among four different varieties of gerbera tested Marinella recorded maximum number of flowers /plant with highest vase life period under northern Telangana conditions.

KEY WORDS :

Gerbera, Julia, Marinella, Cocuy, Lorina, Polyhouse, Flower production

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BACKGROUND AND OBJECTIVES

Gerbera (*Gerbera jamesonii* Bolus) is one of the most important cut-flower, successfully grown under semi controlled conditions in several parts of India. It is native to tropical Asia and Africa. Gerbera also commonly known as Transvaal Daisy (Pattanashetti *et al.*, 2012) belongs to the family Asteraceae with chromosome number $2n = 50$. It is considered as one of the nature's beautiful creations because of its excellent flowers with exquisite shape, size and

bewitching colours. Modern gerbera arose from *Gerbera jamesonii* hybridized with *Gerbera viridifolia* and possibly other species (Leffring, 1973). Gerbera flowers lend themselves beautifully to different floral arrangements and have a longer vase life (Naik *et al.*, 2006). It is difficult to get good quality cut flowers of gerbera under open-field conditions. Hence, to meet the qualitative and quantitative standards, the high yielding and long lasting varieties have to be grown under protected conditions (Pattanashetti, 2009) like greenhouse/ polyhouse. Previously, in a

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performance study of gerbera varieties, Singh and Ramachandran (2002), Singh and Mandhar (2002) and Kandpal *et al.* (2003) grew gerbera under protected conditions and observed better growth, yield and quality characteristics. Success of gerbera under protected conditions has encouraged farmers to take up its cultivation extensively during the past few years in India. Though a wide array of gerbera cultivars are grown, it becomes inevitable to evaluate new cultivars for their qualitative and quantitative characters. Therefore the present experiment was conducted to identify and recommend the suitable cultivars for the agro-climatic conditions of Telangana, so as to match the demand of both the domestic and international markets.

RESOURCES AND METHODS

The experiment was conducted under natural ventilated polyhouse of Horticulture Research Station of Adilabad during 2009-2012. The beds were thoroughly pulverized and enriched with red soil, sand and well decomposed farm yard manure in 2:1:1 proportion. The polyhouse was fumigated with methyl bromide (30g/m²). The experiment was laid out in Randomized Block Design, with five replications. Four cultivars with uniform size (4-5 leaves) were collected from Florance Flora, Secunderabad and planted at a spacing of 30cm both in between rows and plants. The treatments consist of gerbera varieties viz., Julia (T₁), Marinella (T₂), Cocuy (T₃) and Lorina (T₄). The leaves were pruned to half to reduce the leaf surface in order to restrict the evaporation loss. Standard package of practices was followed during the crop growth period with regular nutrient application through fertigation. Five plants per replication in each cultivar were used for recording observations on plant height, plant spread, number of leaves/plant, days taken to flowering, stalk length, flower diameter, number of flowers/plant/year and vase-life. Number of leaves/plant was recorded from the tagged plants by counting the number of leaves and average number of leaves produced per plant was worked out. Stalk length of the flowers was measured from the point of origin of stalk to the point just below the flower head and the average stalk length of flowers was recorded and expressed in centimeter (cm). Diameter of flower was recorded at full bloom stage from the flowers harvested at peak flowering. The readings were taken from the tagged plants and average was measured and expressed in

centimeters. Gerbera flowers for vase life evaluation were harvested early in the morning when all the florets opened fully and were perpendicular to the stalk and were immediately placed in fresh water. Later these flower stalks were cut to have uniform stalk length. After that flowers were kept individually in flask containing tap water and observed daily till they were found unfit for containing in vase. The vase life was expressed in terms of days from the date of harvesting to final observation. Data were statistically analyzed for the study of different cultivars of gerbera.

OBSERVATIONS AND ANALYSIS

The growth economic character displayed a wide range of variation and showed significant differences among genotypes. The interpretation of analyzed data revealed that the cultivar 'Julia' recorded significant maximum plant height (27.06 cm) and remained superior over others while 'Lorina' being the short stature recorded minimum plant height (19.60 cm). A similar variation in plant height among gerbera cultivars was observed by Reddy *et al.* (2003) and Anand *et al.* (2013). The plant height being genetically factored, it is expected to vary among the cultivars (Sarkar and Ghimiray, 2004). Significant greater plant-spread was recorded in cv. MARINELLA (39.27 cm) and minimum was observed in cv. LORINA (23.64 cm). Difference among the cultivars could be due to leaf size variation. These results are in accordance with findings of Singh and Ramachandran (2002), Thomas *et al.* (2004) and Kumar and Yadav (2005). More number of leaves per plant were produced by cv. MARINELLA (35.44), while minimum in Lorina (22.15). The marked variation in vegetative characters may be due to differential characters of individual varieties that expressed their genetic characters. This variation may be due to the response of cultivars of varying genetic make up to the environmental condition. Similar variations were also reported due to such interactions by Kumar and Kumar (2001); Bhuyar and Sable (2003); Gajanana *et al.* (2003) and Mahanta and Paswan (2003) in gerbera. Least number of days taken to flowering was recorded in cv. JULIA (65.61 days), while the maximum number of days taken to flowering was recorded in cv. COCUY (79.14 days). The flower opening from appearance of bud was generally early in variety with more number of suckers, leaves and higher leaf area as observed by Bhattacharjee (1981)

Table 1 : Performance of gerbera cultivation under polyhouse conditions during the 2009- 2012

Varieties	Plant height (cm)	Plant spread (cm)	No. of leaves/plant	Days taken to bud emergence	No. of flowers/plant	Stalk length (cm)	Flower diameter (cm)	Flower colour	Vase life (days)
1	2	3	4	5	6	7	8	9	10
Julia	27.06	36.62	29.53	65.61	36.4	36.44	5.34	Red	3.64
Marinella	26.59	39.27	35.44	68.24	45.81	19.63	4.78	Orange	4.47
Cocuy	22.89	27.56	26.22	79.14	29.90	17.87	4.75	Light pink	3.19
Lorina	19.60	23.64	22.15	74.87	27.57	21.91	5.032	Light pink	3.59
S.E.±	1.03	0.80	0.92	1.7	0.91	0.6	NS		NS
C.D. (P=0.05)	3.18	2.5	7.3	5.3	2.8	1.9	-		-

NS=Non-significant

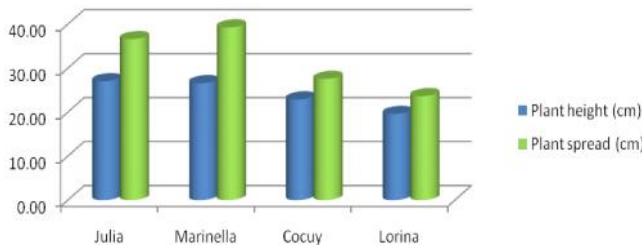


Fig. 1 : Bar graph for yield plant height and plant spread among gerbera varieties

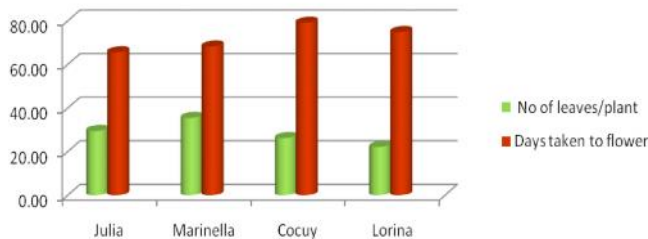


Fig. 2 : Bar graph for number of leaves per plant and days taken to flower emergence among gerbera varieties

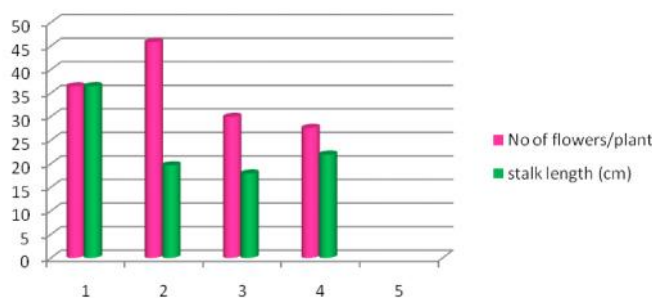


Fig. 3 : Bar graph for number of flowers per plant and stalk length (cm) among gerbera varieties

ingerbera. On perusal of data presented in Table below, it is seen that floral characters differed significantly among cultivars. Number of cut-flowers per plant varied from 28 to 46 flowers per plant per year. Cultivar Marinella produced the highest number of cut-flowers (45.81), while minimum number of cut-flowers were

produced by Lorina (27.57). The results are in accordance with Biradar (1996); Meeramanjusha *et al.* (2003) and Kumar and Kumar (2001). This appreciably good yield might be due to favorable conditions under protected conditions have been observed by Malik *et al.* (2013). Stalk length is one of the most important characters considered in grading cut-flowers. Long stalk with considerable girth and neck thickness imparts mechanical strength to lowers which helps in better handling, keeping quality and transportation. Cultivar Julia (36.44) produced the longest stalk, while cultivars Cocuy (17.87) produced the shortest. Similar variations have been earlier observed by Kandpal *et al.* (2003) in cutgerbera. The results were in conformity of findings of Ahlawat *et al.* (2012); Chobe *et al.* (2010); Malik *et al.* (2013) and Kankana and Talukadar (2015). Longer keeping quality which could be a very popular choice in the wholesale market. Though significant variation was not observed in case of shelf life of cultivars, however, longest vase-life of cut-flower in water was recorded in cv. MARINELLA (4.47). Though all the varieties established well and put forth sufficient vegetative growth to yield marketable flowers, quality of the flowers is not upto the export standards due to high temperature prevailing in Adilabad conditions. Among four different varieties of gerbera tested marinella recorded maximum number of flowers /plant with highest vase life period under northern Telangana conditions.

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