



Research Article



Performance of different varieties of gerbera (*Gerbera jamesonii* Bolus) under protected cultivation in the Konkan region of Maharashtra.

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ABSTRACT

An investigation was carried out to evaluate ten varieties of gerbera (*Gerbera jamesonii* Bolus) viz. Stanza, Ankur, Danna Ellen, Brilliance, Balance, Silvester, Goliath, Dune, Intense, and Rosalin under protected cultivation at the High-Tech nursery, College of Horticulture, Dapoli, Ratnagiri (M.S.) during 2020-21. Among the varieties study, there were highly significant variations observed for flowering parameters. The significantly minimum days to first flower bud emergence (84.76 days), maximum flower stalk length (64.15 cm), flower diameter (99.59 cm), length of ray floret (4.81 cm), number of flowers per plant (22.00), flowers yield per ha (7.92 lakhs), vase life (9.67 days) and longevity of flowers in the field (11.33 days) were recorded in variety Ankur. The maximum flower disc diameter (2.41 cm) was recorded in a variety of Dune. Flower stalk diameter (5.98 cm), number of petals per flower (85.02) were recorded maximum in a variety Goliath. The maximum width of ray floret (8.96 cm) was observed in variety Balance.

Keywords: Gerbera, flowering parameters, vase life, shelf life, protected cultivation.

INTRODUCTION

Gerbera (*Gerbera jamesonii* Bolus) with chromosome number $2n=50$, popularly known as Transvaal Daisy, Barberton Daisy, or African Daisy belongs to the family Asteraceae. In India, gerbera is distributed in the temperate Himalayas from Kashmir to Nepal at an altitude of 1300 meters to 3200 meters. It is a commercially important cut flower that occupies the fourth place among the elite top ten flowers in the international market. Gerbera plants are stemless and tender perennial herbs. The leaves are radical, petiolate, lanceolate, deeply lobed, sometimes leathery, narrower at the base and wider at the top, and arranged in a rosette at the base. Gerbera flowers are single or double type having one or two rows of ray florets on the periphery of the disc and the rest are disc florets in the single types which are available in innumerable colors. The variation in the performance concerning flowering parameters may be due to the response of cultivars to varying genetic makeup and environmental conditions. Hence selection of variety is an important criterion for the successful cultivation of any flower crop. Hence the present investigation was carried out with the qualitative as well as location-specific evaluation of ten genotypes under polyhouse in the Konkan region. Gerbera daisy polyhouse genotype assessment has also been reported by previous researchers (Magar et al., 2010 and Kumar et al., 2012).

MATERIALS AND METHODS

The present investigation was conducted at High-Tech nursery, College of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Ratnagiri (M.S.). The experiment was carried out in a randomized block design with three replications viz. Stanza, Ankur, Danna Ellen, Brilliance, Balance, Silvester, Goliath, Dune, Intense and Rosalin. Tissue cultured plantlets of eight weeks old were procured from KF Bio plant, Pune, and planted on a raised bed of 45 cm height, 60 cm width, and 30 cm pathway at a spacing of 30 cm x 30 cm in double row zig-zag system. The recommended package of practices was followed for raising the crop. Five plants of each variety were selected randomly from the net plot and were tagged for recording the observations. All the mean values of the recorded data were subjected to statistical analysis as per the procedure given by Panse and Sukhatme (1985) and tabulated in tables.

RESULTS AND DISCUSSION

The results obtained from the investigation exhibited significant differences among the gerbera varieties and are presented in Tables 1 and 2.

The flower opening from the appearance of bud was generally early in a variety with a maximum number of suckers, leaves and leaf area. Significantly earlier flower bud appearance (84.76 DAP) was observed in variety Ankur followed by Goliath (87.42 DAP), whereas

Balance took the maximum number of days (104.28 DAP). A similar variation was reported by Singh et al. (2014) in gerberas. Maximum flower disc diameter (2.41 cm) was found in Dune followed by Stanza and Danna ellen (2.24 cm, respectively), whereas the smallest disc diameter (1.94 cm) was observed in Goliath. The result is in accordance with (Sil et al., 2017). The increase in flower diameter was due to bigger florets of the same cultivars. The variety Ankur recorded a significantly superior flower diameter (99.59 cm) and it was at par with Goliath (96.31 cm), whereas the smallest flower diameter (77.15 cm) was observed in Intense. Variation in flower diameter has also been reported by (Ahlawat et al., 2012).

Flower stalk length imparts mechanical strength which helps in better handling, keeping quality, and transportation of flowers. The maximum stalk length (64.15 cm) was observed in a variety Ankur which was at par with Goliath (61.51 cm), whereas Rosalin recorded the shortest stalk length (51.43 cm). A similar trend was observed by (Pareneetha, 2006). Maximum flower stem diameter significantly (5.98 mm) was observed in variety Goliath which was at par with Intense (5.75 mm)

while the minimum stalk diameter (5.14 mm) was observed in Brilliance. A certain number of petals greatly affects the quality of flowers and determines the commercial longevity of flowers. The superiorly highest number of petals (85.02) was registered in Goliath followed by Silvester (73.80) while the least number of petals (51.49) were recorded by Rosalin. The findings of the present study are by (Thirugnanavel et al., 2019). An increase in the floret length directly contributed to the increase in diameter. The data revealed that the maximum length of the ray floret (4.81 cm) was observed in Ankur and it was at par with Rosalin (4.77 cm), Stanza (4.73 cm), Goliath (4.73 cm), Danna ellen (4.71 cm) and Silvester (4.61 cm), whereas the minimum length of ray floret (3.96 cm) was observed in Intense. This is in line with the findings of (Thomas et al., 2004). The maximum width of ray floret was observed in variety Balance (9.52 mm) and it was at par with Goliath (8.96 mm), Rosalin (8.94 mm), Ankur (8.83 mm), and Stanza (8.28 mm) while, the minimum width of ray floret was observed in Brilliance (6.74 mm). findings of the present study are in accordance with (Rangnamei et al., 2019).

Table 1. Quality parameters influenced by different varieties

Varieties	Days to first flower emergence (days)	Disc bud diameter (cm)	Flower diameter (cm)	Flower stalk length (cm)	Stalk diameter (mm)	Number of petals per flower
T ₁ - Stanza	102.03	2.24	87.52	52.24	5.36	59.49
T ₂ - Ankur	84.76	2.09	99.59	64.15	5.60	72.00
T ₃ - Danna ellen	95.38	2.24	82.91	55.20	5.42	66.02
T ₄ - Brilliance	97.10	2.21	78.51	56.17	5.14	61.57
T ₅ - Balance	104.28	1.96	93.21	59.40	5.54	69.60
T ₆ - Silvester	96.32	2.18	91.73	56.82	5.59	73.80
T ₇ - Goliath	87.42	1.94	96.31	61.51	5.98	85.02
T ₈ - Dune	95.50	2.41	94.00	57.47	5.16	68.84
T ₉ - Intense	98.06	2.20	77.15	59.12	5.75	70.64
T ₁₀ - Rosalin	97.31	2.09	88.10	51.43	5.56	51.49
Mean	95.82	2.16	88.90	57.35	5.51	67.85
S.Em.±	1.04	0.06	1.18	1.32	0.10	0.81
C.D. @ 5%	3.08	0.16	3.52	3.92	0.30	2.41

Table 2. Quality parameters influenced by different varieties

Varieties	Length of ray floret (cm)	Width of ray floret (mm)	Number of flowers per plant	Flower yield per ha (In lakhs)	Vase life (days)	Longevity of flowers in the field (days)
T ₁ - Stanza	4.73	8.28	16.27	5.86	7.33	9.44
T ₂ - Ankur	4.81	8.83	22.00	7.92	9.67	11.33
T ₃ - Danna ellen	4.71	7.49	15.87	5.71	6.67	8.22
T ₄ - Brilliance	4.25	6.74	14.07	5.06	7.67	9.00
T ₅ - Balance	4.09	9.52	16.60	5.98	7.33	8.88
T ₆ - Silvester	4.61	7.62	17.87	6.43	6.67	7.99
T ₇ - Goliath	4.73	8.96	20.07	7.22	9.00	10.78
T ₈ - Dune	4.25	7.96	17.28	6.22	7.33	9.22
T ₉ - Intense	3.96	7.65	18.36	6.61	7.67	9.55
T ₁₀ - Rosalin	4.77	8.94	16.20	5.83	8.00	9.33
Mean	4.49	8.20	17.46	6.28	7.73	9.37
S.Em.±	0.14	0.24	0.41	0.15	0.51	0.40
C.D. @ 5%	0.40	0.72	1.23	0.44	1.52	1.20

The flower yield may be attributed to the greater vegetative area resulting in the production and accumulation of maximum photosynthates. A maximum number of flowers per plant and flower yield per ha was observed in variety Ankur (22.00 and 7.92 lakhs/ ha, respectively) and the minimum was observed in Brilliance (14.07 and 5.06 lakhs/ ha, respectively). The variation in the yield of flowers was also reported by (Wankhede and Gajbhiye, 2012). The vase life of flowers might be attributed to stalk length and senescence behavior of the cultivars. The longest vase life (9.67 days) of a flower was observed in the variety Ankur which was at par with Goliath (9.00 days), whereas the shortest vase life was recorded in Danna ellen and Silvester (6.67 days, respectively). A similar observation was reported by (De Silva et al., 2013). The longevity of flowers can be attributed to prevailing climatic conditions in the region as well as varietal character. The maximum longevity of flowers (11.33 days) was observed in Ankur and it was at par with Goliath (10.78 days) while the minimum (7.99 days) was recorded in Silvester.

CONCLUSION

During the period of the experiment, there were certain anomalies found concerning flowering parameters which could be attributed to distinct genetic makeup. The varieties which perform better in one region may not do well in other regions of varying climatic conditions. Therefore, the evaluation of variety becomes a prime consideration before suggesting it for a particular region. Considering all the parameters studied and evaluated the cultivars that emerged most suitable among the ten varieties are Ankur followed by Goliath under protected cultivation in the Konkan region.

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