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EVALUATION OF GERBERA VARIETIES UNDER NATURALLY VENTILATED POLYHOUSE

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ABSTRACT

An experiment was carried out to evaluated seven varieties of gerbera for the growth, flowering and yield under naturally ventilated polyhouse conditions at the farm of Horticulture Section, College of Agriculture, Nagpur during December, 2014 to December, 2015. The experiment was laid out in Randomized Block Design with seven treatments replicated thrice. The treatments comprised of seven varieties viz., T_1-Barok, T_2-W-Grizzly, T_3-Alecatras, T_4-Vesuvius, T_5-T-Juba, T_6-Faith and T_7-Basic. Among the varieties studied, there were significant variations observed for growth, flowering and yield parameters. The results revealed that, significantly highest plant height (55.63 cm) was recorded in variety W-Grizzly. Whereas, the number of leaves plant^{-1} (39.27), number of suckers plant^{-1} (6.30), plant spread (N-S) (E-W) at 50% flowering (68.30 cm and 70.29 cm respectively) and leaf area at 50% flowering (221.38 cm^2) was recorded significantly maximum in variety T-Juba. As regards flowering parameters *viz.*, minimum days to first flower bud initiation (55.37 days) and minimum days to first harvesting of flower after planting (74.12 days) were recorded in variety Barok. Whereas, minimum days to opening of first flower from bud initiation (16.34 days) were recorded in variety T-Juba. Flower yield m^{-2} was recorded significantly maximum in variety T-Juba (232.14).

(Key words: Gerbera, growth, flowering, yield, varieties)

INTRODUCTION

Gerbera (*Gerbera jamesonii* L.) also commonly known as Transvaal Daisy is an important cut flower grown throughout the world (Pattanashetti *et al.*, 2009) with long stalks and daisy-like flower, belongs to the family Asteraceae. Variety in colour has made this flowering plant attractive for use in garden decorations, such as herbaceous borders, bedding, and pots and for cut flowers as it has a long vase life (Chauhan, 2005). It ranks fourth in the International cut flower market and a popular cut flower in Holland, Germany and USA.

It is difficult to get good quality cut flowers of gerbera under open field conditions. To meet the qualitative and quantitative standards, gerbera cultivars have to be grown under protected conditions (Pattanashetti, 2009). Kandpal *et al.* (2003) grew gerbera under protected conditions and observed that better growth, yield and quality of flower were recorded under protected conditions. Under protected conditions, gerbera grows faster and produces larger and greener leaves with high dry matter content, as a result, more side shoots will be formed and flower yield increases. The market requirement for cut flowers is very specific and it can be met consistently, only when the crop is grown under protected conditions.

Gerbera as a cut flower has tremendous demand in domestic and international markets. Though, different varieties of gerbera exist in Maharashtra, none has been officially released. Hence, it is needed to evaluate varieties for their vegetative, yield and quality characters and finally to recommend the suitable variety for the agro-climatic conditions of Maharashtra. Considering the above facts, the present research work was planned to study the performance of gerbera varieties under polyhouse conditions.

MATERIALS AND METHODS

The experiment was conducted under naturally ventilated polyhouse at commercial floriculture unit of Horticulture Section, College of Agriculture, Nagpur during the year 2014-2015. The experiment was laid out in a Randomized Block Design with seven treatments replicated thrice. The treatments consist of gerbera varieties *viz.*, T_1-Barok, T_2-W-Grizzly, T_3-Alecatras, T_4-Vesuvius, T_5-T-Juba, T_6-Faith and T_7-Basic. The healthy uniform two months hardened tissue culture plantlets were collected from Kumar Florist Bioplant, Pune and were planted on the raised beds at 30 cm spacing both in between rows and plants. For the preparation of raised beds garden soil, well rotten FYM and rice husk (2:1:1) were taken and mixed thoroughly. The whole mixture was then sterilized with formalin (0.2 %) and covered with polythene sheet for 48 hours. Then, it was washed 2-3 times with water to remove the residues. Raised beds were prepared of 25 m long, 0.80 m breadth and 45 cm height for planting the gerbera plantlets. Standard package of practices were followed during crop growth period with regular

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nutrient application through fertigation.

Observations on plant height and number of leaves plant^{-1} were recorded at 180 days after planting, number of suckers plant^{-1} were recorded at 180 days after planting, plant spread and leaf area was recorded at 50% flowering stage, days to first flower bud initiation, days to opening of first flower recorded at flowering stage and days to first harvesting and yield of flowers were recorded at harvesting. The data were statistically analyzed as per method suggested by Gomez and Gomez, (1984).

RESULTS AND DISCUSSION

Growth parameters

Data presented in table 1 showed that, there were significant differences among the different of gerbera varieties regarding plant height, number of leaves plant^{-1}, number of suckers plant^{-1}, plant spread and leaf area. The data in table 1 revealed that, significantly maximum plant height (55.63 cm) was recorded in variety W-Grizzly which was found to be at par with the varieties Basic (53.60 cm) and Faith (51.50 cm). However, variety Alecatras recorded significantly minimum plant height (41.67 cm).

The maximum number of leaves plant^{-1} (40.06) was recorded in variety T-Juba which was found to be at par with the varieties Faith (38.90) and Basic (36.47). However, significantly minimum number of leaves plant^{-1} (22.27) was recorded in the variety Alecatras.

The maximum number of suckers plant^{-1} (6.30) was recorded in the variety T-Juba which was found to be at par with the varieties Barok (6.10), Alecatras (5.86) and Vesuvius (5.68). Whereas, the minimum number of suckers plant^{-1} (4.05) was recorded in variety W-Grizzly.

The maximum plant spread (North-South and East-West) was recorded in variety T-Juba (68.30 cm and 70.29 cm, respectively) which was found to be at par with the varieties Faith (63.70 cm and 66.60 cm, respectively) and Basic (59.04 cm and 63.11 cm, respectively). Whereas, minimum plant spread, North-South and East-West (45.34 cm and 48.82 cm, respectively) was recorded in variety W-Grizzly.

The variety T-Juba recorded significantly maximum leaf area (221.38 cm^2) as compared to other varieties which was followed by the varieties Faith (213.34 cm^2) and Basic (208.43 cm^2). However, minimum leaf area (180.26 cm^2) was recorded in the variety W-Grizzly.

The marked variation in vegetative characters might be due to differential characters of individual varieties that expressed their genetic characters. These results are close conformity with the findings of Chobe *et al*. (2010). They revealed that gerbera cv. Sonata performed maximum number of leaves plant^{-1} and plant spread. Kumar and Yadav (2013) revealed that among seven gerbera genotypes, genotype Monarch recorded maximum number of leaves plant^{-1} (23.22), genotype Sangria recorded maximum number of suckers plant^{-1} (4.13). However, maximum plant spread (46.51 cm) was recorded in genotype Pink Elegance under polyhouse conditions. Wankhede and Gajbhiye (2013) reported that gerbera cv. Charmandar recorded maximum plant height however Cv. Savannah recorded maximum leaves plant^{-1}.

Flowering parameters

The results of different varieties of gerbera regarding flowering characters were found significant (Table 1). The variety Barok observed significantly minimum days required for first flower bud initiation (55.37 days) and it was found to be at par with the varieties W-Grizzly (56.93 days) and Vesuvius (59.93 days). However, significantly maximum days (66.03 days) were required for first flower bud initiation in variety Faith.

The variety T-Juba recorded significantly minimum days for opening of flower from bud initiation (16.34 days) and it was found to at par with variety W-Grizzly (17.62 days). However, maximum days were recorded for opening of flower from bud initiation in variety Alecatras (20.56 days).

The variety Barok recorded significantly minimum days for first harvesting of flower after planting (74.12 days) and it was found to be at par with varieties W-Grizzly (74.56 days), T-Juba (79.07 days) and Vesuvius (80.32 days). However, maximum days (86.41 days) for first harvesting of flower were recorded in variety Faith.

Variation in flowering parameters *viz.,* days to first flower bud initiation, days to opening of flower from bud initiation and days to first harvesting of flower after planting showed by different gerbera varieties might be due to variation in their genetic factor.

Results, obtained in the present investigation are in consonance with the findings of Kumar *et al.* (2014). They revealed that variety Salvador recorded minimum days for initiation of first flower bud and development of flowers under shade net conditions at Hobli (Karnataka). Kumar and Yadav (2013) revealed that genotype Sazou recorded early bud burst and early first flower opening as compared to other genotypes of gerbera. Sarmah *et al*. (2014) revealed that the cultivar Dune required minimum days for visibility of flower bud under polyhouse.

Yield parameters

The data in table 1 revealed that, significant differences were recorded among the gerbera varieties in respect of number of flowers plant^{-1} and square^{-1} meter. Significantly maximum number of flowers plant^{-1} (30.11) and square^{-1} meter (232.1) were recorded in variety T-Juba which was at par with varieties faith (27.87 and 225.25, respectively) and Basic (26.53 and 223.36, respectively). However, minimum number of flowers plant^{-1} and square^{-1} meter was recorded in W-Grizzlly (22.79 and 196.15, respectively).

From the above results, T-Juba recorded significantly maximum number of flower plant^{-1} and square^{-1} meter. Variation in number of flowers plant^{-1} and square^{-1} meter among the gerbera varieties was mainly attributed due to the variation in production of shoot clump^{-1} , leaf area which is a genetically controlled character.

Table 1. Growth flowering and yield as influenced by gerbera varieties

Treatments	Plant height (cm)	Number of leaves plant^{-1}	Number of suckers plant^{-1}	Plant spread (cm)		Leaf area (cm^2)	Days to first flower bud initiation (days)	Days to opening of flower from bud initiation (days)	Days to first harvesting after planting (days)	Flower yield plant^{-1} Year^{-1} (No.)	Flower yield square^{-1} meter year^{-1} (No.)
				North-South	East-West						
T_1- Barok	42.10	32.76	6.10	49.18	50.54	191.59	55.37	18.75	74.12	23.37	205.81
T_2- W-Grizzly	55.63	30.43	4.06	45.34	48.82	180.26	56.93	17.62	74.56	22.79	196.15
T_3- Alecatras	41.67	22.27	5.86	54.83	59.78	204.10	63.43	20.56	83.99	23.53	218.24
T_4- Vesuvius	48.13	28.73	5.68	51.87	54.50	203.59	59.93	20.38	80.32	24.87	205.12
T_5- T-Juba	45.07	39.27	6.30	68.30	70.29	221.38	62.73	16.34	79.07	30.11	232.14
T_6- Faith	51.50	38.90	4.89	63.70	66.60	213.34	66.03	19.95	86.41	27.87	225.25
T_7- Basic	53.60	36.47	5.30	59.04	63.11	208.56	64.87	20.20	85.07	26.53	223.36
SE(m) ±	1.42	1.37	0.42	3.56	3.34	2.43	1.89	0.60	2.34	1.25	3.27
CD at 5%	4.20	4.04	1.25	10.50	9.84	7.17	5.57	1.79	6.92	3.70	9.64

Similar results were recorded by Wankhede and Gajbhiye (2013). They found that variety Savannah recorded more number of flowers plant^{-1}under poly house conditions. Sarmah *et al.* (2014) found that among seven varieties of gerbera maximum number flowers plant^{-1} recorded in cultivar Dune under polyhouse condition.

REFERENCES

Chauhan Neelam, 2005. Performance of gerbera genotypes under protected cultivation. M. Sc. (Agri.) Thesis (Unpub.) submitted to Univ. of Agriculture Sciences, Dharwad (Karnataka).

Chobe, R.R., P.B. Pachankar and S.D. Warade, 2010. Performance of different cultivars of gerbera under polyhouse conditions. Asian J. Hort. **5**(2): 333-335.

Gomez, K.A. and A.A. Gomez, 1984. Statistical procedure for Agriculture Research, IInd Edition Singapore, A Willey International Publication.

Kandpal Kavita, Santosh Kumar, Ranjan Srivastava and Ram Chandra, 2003. Evaluation of gerbera (*Gerbera jamesonii*) cultivars under Tarai condition. J. Orna. Hort. **6**(3):252-255.

Kumar, N., R. Manoj, S.N. Sachidananda, Hanumanthe Gowda and A.C. Jnanesh, 2014. Study the growth and flowering of gerbera genotypes under protected cultivation in Tumkur district of Karnataka-India. Ann. Hort. **7**(1):78-84.

Kumar Rajiv and D.S. Yadav, 2013. Evaluation of gerbera (*Gerbera jamesonii* Bolus Ex. Hooker F.) genotypes for vegetative and flower quality under polyhouse. Hort. Flora Res. Spectrum. **2**(3):244-246.

Pattanashetti, C. N. ,2009. Evaluation of Gerbera Cultivars Under Protected Condition. M. Sc.(Agri.) Thesis (Unpub.) Univ. of Agriculture Sciences, Dharwad (Karnataka)

Sarmah Dipika, Bidhan Chandra and Tapas Mandal, 2014. Evaluation of gerbera varieties for growth and flowering under polyhouse in the plains of West Bengal. International J. Sci. Res. **3**(12):2277- 8179.

Wankhede Shruti and R.P. Gajbhiye, 2013. Evaluation of gerbera varieties for growth and flowering under shade net. International J. Hort. **3**(9):42-44.

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