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Varietal Evaluation of Gerbera (*Gerbera jamesonii*.) Grown in a Polyhouse

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A B S T R A C T

A study was carried out from October, 2013 to February, 2015 at the Horticulture Research Station, Mondouri, of Bidhan Chandra Krishi Viswavidyalaya under subtropical plains, to evaluate the growth and flowering of 11 cultivars of Gerbera under polyhouse (Stanza, Inferno, Preintense, Brilliance, Balance, Paradisi, Goliath, Walhalla, Rosalin, Jaffna, Daneallean).Among the varieties studied, there were highly significant variations observed for growth, yield and quality parameters. The vegetative parameters studied were Individual Plant height, No. of leaves per clump, and Individual Leaf length; the flowering parameters recorded were Days to first flower bud emergence, Days to flower harvest, Self-life, Flower diameter, Floral disc diameter, and the yield and quality parameters measured were Individual Stalk length, Number of flowers per plant, and Individual Vase life. Among the cultivars studied, there were highly significant variations observed for growth, yield and quality parameters, as per indication of the results. The results were analyzed statistically using RBD (Randomized Block Design). Under the warm humid subtropical climate of West Bengal, the maximum no. of leaves (36.47) was produced by Balance, maximum growth in plant height (55.52 cm) was observed in Stanza while the maximum leaf length (33.81 cm) was recorded in Stanza. Among the cultivars, Inferno produced largest flowers with average diameter of 10.27 cm. In terms of flower disc diameter, the highest measure was observed in Jaffna at 2.41 cm. The shortest duration to reach harvest maturity (17.61) was observed in Daneallean. As per observation, Preintense showed the longest field life (23.84 days). Regarding the yield and quality parameters, the maximum no. of flowers (13.88) was produced by Stanza and Rosalin. The highest stalk length (58.83 cm) was found in Preintense. The cultivar with longest vase life (15.97 days) was Rosalin On the overall basis; the best performing cultivars have been Stanza, Rosalin, Preintense and Inferno respectively.

Keywords

Yield and quality, Polyhouse, Vegetative parameters and Growth.

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Introduction

Gerbera (*Gerbera Jamesonii* Hook.) is a dwarf stem-less herbaceous perennial herb growing in clump with solitary flower heads termed capitulum on a long slender stalk, well above the foliage. The leaves are petioled, lobed, coarse or sometimes tubular and two lipped and the flowers are daisy like in appearance available in wide range of colours. Gerbera came into dictionary of Floriculture after it was discovered by pre-Linnaean botanist Gronovious, but it received its fortunate name in honour of German naturalist, Traugot Gerber, who travelled extensively in Russia. Gerbera belongs to family Asteraceae. This group at present comprises 45 species, native to tropical Asia

and Africa. About seven species were recorded in India distributed in temperate Himalayas from Kashmir to Nepal at an altitude of 1300 to 3200 metres. It is considered as nature's one of the beautiful creations because of the excellent flowers with exquisite shape, size, and vibrant colours. It finds utility in garden beds, rock gardens, pot culture and also used extensively as cut flower.

Materials and Methods

The experiment was carried out at the Model Center on Floricultural Excellence, Horticulture Research Station, Mondouri Farm, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Dist-Nadia, State-West Bengal. India, from October 2013 till February 2015. The experiment was laid out in Randomized Block Design, which was replicated thrice with 11treatments, namely, Stanza, Inferno, Preintense, Brilliance, Balance, Paradisi, Goliath, Walhalla, Rosalin, Jaffna, Daneallean, under polyhouse condition, with an aim to assess the performance of the Gerbera cultivars and the suitability of their cultivation under polyhouse condition applied in the subtropical plains of West Bengal.

Results and Discussion

The results of the present study as well as relevant discussion have been presented under following sub heads:

Vegetative characters

The parameters studied were Individual Plant Height, No. of Leaves per clump, and Individual Leaf Length. From the data presented in table 1, the maximum plant height (55.52cm) was recorded in cultivar Stanza, followed by Balance (51.17cm), whereas the shortest height among the cultivars was observed in cultivar Paradisi (43.46cm), closely followed by cultivar Walhalla (43.96cm). The maximum no. of leaves per clump (36.47cm) was produced by cultivar Balance, followed by cultivar Goliath (35.84) while the minimum production of leaves (27.48) was recorded in cultivar Inferno, followed by cultivar Walhalla (28.91). The longest leaf (33.81cm) was produced by cultivar Stanza, followed by cultivar Walhalla (32.61cm). Minimum score in terms of leaf length (22.48cm) was recorded in cultivar Inferno, followed by cultivar Brilliance (26.67cm).

Flower characters

The parameters studied under this category were Days to First Flower Bud Emergence, Days to Harvest Maturity, Field Life, Flower Diameter, and Flower Disc Diameter. From the data presented in table 2, it is evident that cultivar Brilliance is the earliest (97.76 days) of all cultivars to reach first flower bud emergence, closely followed by cultivar Goliath (98.34 days). However, the longest time taken to show first flower bud emergence was cultivar Jaffna (111.87 days), followed by cultivar Daneallean (110.63). The earliest cultivar (17.61 days) to reach harvest maturity was Daneallean, followed by Walhalla (18.61 days) whereas the cultivar that took longest time (21.97 days) to reach harvest maturity was cultivar Preintense followed by cultivar Inferno (21.74 days). Maximum field life (23.84 days) was recorded in cultivar Preintense followed by cultivar Stanza (22.86 days) while the minimum field life (18.67 days) was observed in cultivar Balance followed by cultivar Daneallean (18.83days). From table 1, it is gathered that cultivar Inferno produced the largest flower with an average diameter of 10.27cm, followed by cultivar Rosalin (10.14cm).

Table.1 Quality characters

TREATMENT	PLANT HEIGHT	NO. OF LEAVES PER CLUMP	LEAF LENGTH	FLOWER DIAMETER	DISC DIAMETER	NO. OF FLOWERS PER PLANT	STALK LENGTH
STANZA (T1)	55.52	30.42	33.81	10.09	1.86	13.88	47.86
INFERNO (T2)	45.92	27.48	22.48	10.27	2.22	9.96	44.59
PREINTENSE (T3)	45.37	35.19	30.16	9.16	2.18	12.29	58.83
BRILLIANCE (T4)	44.07	34.54	26.67	8.97	2.12	10.77	49.36
BALANCE (T5)	51.17	36.47	29.78	10.11	1.99	12.00	45.76
PARADISI (T6)	43.46	30.84	29.90	10.08	1.64	11.99	39.93
GOLIATH (T7)	44.97	35.84	29.97	9.19	1.52	12.26	57.62
WALHALLA (T8)	43.96	28.91	32.61	9.60	2.36	13.44	54.00
ROSALIN (T9)	45.94	33.54	32.31	10.14	1.43	13.88	52.01
JAFFNA (T10)	48.51	32.81	29.66	9.86	2.41	11.37	46.70
DANEALLEAN (T11)	44.53	30.19	29.60	9.92	2.33	10.40	51.81
Sem (+ -)	1.40	0.92	0.19	0.11	0.04	0.65	0.06
CD 5%	4.13	2.72	0.55	0.31	0.11	1.91	0.19

Table.2 Yield characters

TREATMENT	DAYS TO FIRST FLOWER BUD EMERGENCE	DAYS TO HARVEST MATURITY	FIELD LIFE	VASE LIFE
STANZA (T1)	102.27	20.48	22.86	12.61
INFERNO (T2)	101.67	21.74	19.61	8.91
PREINTENSE (T3)	105.86	21.97	23.84	15.47
BRILLIANCE (T4)	97.76	19.54	20.54	9.92
BALANCE (T5)	104.62	21.53	18.67	6.16
PARADISI (T6)	109.58	20.83	18.93	6.61
GOLIATH (T7)	98.34	18.97	21.33	7.99
WALHALLA (T8)	99.94	18.61	19.84	9.96
ROSALIN (T9)	100.72	19.80	22.66	15.97
JAFFNA (T10)	111.87	19.86	20.96	6.72
DANEALLEAN (T11)	110.63	17.61	18.83	7.16
Sem (+ -)	0.04	0.04	0.03	0.04
CD 5%	0.13	0.13	0.08	0.11

On the other hand, the smallest flower (8.97cm) was produced by cultivar Brilliance, followed by cultivar Preintense (9.16cm). Maximum flower disc diameter (2.41cm) was observed in cultivar Jaffna, followed by cultivar Walhalla (2.36cm), whereas the smallest flower disc (1.43) was found to be produced by cultivar Rosalin, followed by cultivar Goliath (1.52cm).

Yield and quality characters

The parameters observed were Number of Flowers per plant, Individual Stalk Length, and Individual Vase Life. According to the data studied in table 1, the cultivar producing the maximum no. of flowers (13.88) were cultivars Stanza and Rosalin, followed by Walhalla (13.44). The cultivar that produced the minimum no. of flowers (9.96) was cultivar Inferno, followed by cultivar Daneallean (10.40).

The cultivar recorded to produce the highest stalk length (58.83cm) was cultivar Preintense, followed by cultivar Goliath (57.62cm). However, the shortest stalk (39.93cm) was produced by cultivar Paradisi, followed by Inferno (44.59cm). Maximum vase life (15.97 days) was observed in cultivar Rosalin, followed by cultivar Preintense (15.47 days), whereas the shortest vase life was recorded in cultivar Balance (6.16 days), followed by cultivar Paradisi (6.61 days).

It can be concluded from the experiment conducted, that there were certain anomalies and differences in respect to vegetative growth, flower yield and quality among the genotypes, which could be attributed to the fluctuations in temperature according to season and also to the distinct genetic constitution of each of the cultivar. Gerberas for the market are usually preferred with higher stalk length, bright and even coloration of florets, uniformly opened florets, larger sized flowers and with a long and robust vase life. Considering all the parameters studied and cultivars evaluated the cultivars that emerged most suitable for commercial cultivation in warm subtropical plains of West Bengal, were Stanza (T1), Rosalin (T9) and Preintense (T3) respectively.

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