



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2019; 7(1): 1138-1140

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Received: 19-11-2018

Accepted: 23-12-2018

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Evaluation of gerbera (*Gerbera jamesonii*) cultivars for growth, flowering and yield under different growing structure

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Abstract

An experiment was conducted to evaluate ten varieties of gerbera for growth and flowering and yield under different growing structure, the experiment was laid out in FRBD design with 10 treatments and each treatment was replicated thrice. The maximum plant height and sucker per plant was recorded in Bonnie and Rosella under polyhouse condition, Cultivar Sciella (42.72 days) shows early bud initiation under shade house, Early 50 per cent bud initiation was observed in Cultivars Bonnie, Ambra and Sciella (77.25, 78.05 and 79.89 days) Cultivar Carocci in polyhouse condition and Sciella in shade house took minimum days of 17.00 days for full flower development. Cultivation Cassiana blooms low flower (5.11) under shade house. The above mentioned findings indicated that considering the important characteristics, Cultivars Bonnie, Ambra and Sciella is the best variety having early flowering along with good yield under both polyhouse and shade house conditions.

Keywords: gerbera, cultivars, growing structures, growth, flowering

Introduction

Gerbera is an elegant cut flower belongs to family Astraceae, native to South Africa and it's also popularly called as Transval daisy, Barbeton daisy and African daisy. It is one of the nature's beautiful creation with remarkable cultivars in colour, form and size. Gerbera flowers are used for borders in landscape, pot culture and as a cut flowers, it occupies 4th position in the international trade market and have a great demand in both domestic and international market.

There are so many variation are available in gerbera in different colour, shape and form but selection of particular cultivar for a specific region is one of the key factors enhancing the yield and quality of the flower. To get good quality flowers either for export or domestic market under open condition is highly impossible hence; to meet the quality standard, utilization of available technology under protected cultivation is very meager. Keeping this in mind, the present investigation was carried out with 10 cultivars under different growing structure.

Material Method

The present investigation was carried out at Kittur Rani Chenamma College of Horticulture, Arbhavi to evaluate 10 gerbera cultivars under different growing structures (Polyhouse and shade net). The experiment consisting of 10 cultivars like Alberibo, Ambra, Ariyana, Bonnie, Carocci, Cassiana, Devil, Luxes, Rosella, Sciella were selected. Healthy rooted plants of 30 days old (2 - 4 leaf stage) were obtained from a reputed tissue culture laboratory, Shri Ramco Bio-tech Bangalore. They were planted at the spacing of 30 X 30 cm under polyhouse and shade house condition. Then, the beds were irrigated thoroughly to maintain the optimum soil moisture condition. The experiment was laid out in Factorial randomized complete block design with 10 treatments and 2 factors (cultivars and growing structure) each treatment was replicated thrice. The recommended package of practices was followed for raising the successful crop. Observation were recorded from 5 plants in each replication in different parameters of vegetative growth, flowering and yield parameters and data were statistically analysis as per the procedure given by panse and sukhatme (1984) [6] and tabulated in table 1 and 2.

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Results and Discussion

The findings of the present investigation are presented in table 1 and 2. There was significant difference among the different cultivars under different growing structure with respect to vegetative parameters (plant height and number of suckers), flowering parameters (days taken for first flower bud initiation, days taken for 50 % flower bud initiation, days for full flower development) and yield per plant.

The maximum plant height was recorded in the cultivar Bonnie (18.12 cm, 28.00cm, 38.83 cm) at 30, 60 and 90 days after planting respectively under polyhouse, followed by cultivars Luxes and Sciella. Minimum plant height was recorded in the cultivar Ariyana, Ambra, at 30, 60 and 90 days after planting under shade house

There is no sucker production up to 90 days after planting, only few suckers were emerged after 90 days. There is no significant difference among the cultivars. The cultivar Rosella produced higher suckers per plant (2.25) under polyhouse condition, while cultivar Devil (1.75) and Bonnie (1.82) produced less number of suckers under shade house condition.

This variation in vegetative parameters may be due to response of cultivars of varying genetic make up to the environmental condition and variation in light intensity with changing season under polyhouse, where light plays a major role on plant growth. Similar variation were also reported due to light intensity by Mandal and Biswas (2003) ^[5]

Data pertaining to flowering characters like days taken for first flower bud initiation, days for 50 per cent bud initiation,

days for full flower development and yield per plant are presented in table 2.

Minimum days after planting for first flower bud initiation were recorded on cultivar Sciella (42.72 days) under shade house, but under polyhouse condition it took 68.92 days. Delayed bud initiation was seen in cultivar Luxes (78.32 days) grown under shade house followed by Devil (76.67 days) under polyhouse. Cultivars Bonnie, Ambra and Sciella were early to reach 50 per cent bud initiation by taking 77.25, 78.05 and 79.89 days after planting under polyhouse condition. Cultivar Ariyana took maximum days (107.50 days) under polyhouse for the same. Cultivar Carocci under polyhouse condition and Sciella under shade house took minimum days of 17.00 days for full flower development. Time taken for flower development was maximum in Cv. Cassiana under shade house (23.67 days), followed by Bonnie (22.67 days) under same condition. Carocci and Sciella performed well irrespective of growing conditions (40.61 and 38.33, respectively under polyhouse and 34.52 and 35.10 flower/plant respectively under shade house). The flowers per plant was least in cultivation Cassiana (5.11) grown under shade house followed by Cv. Ambra (6.03) under same growing condition.

This variation in flowering characters and yield may be attributed to the response of cultivars of varying genetic makeup with environmental factors. Similar variations for flowering characters under varying environments have been reported previously by Kumar and kumar (2001) ^[3], Mahanta and Paswan (2003) ^[4] and Mendal and Biswas (2003) ^[5] in gerbera.

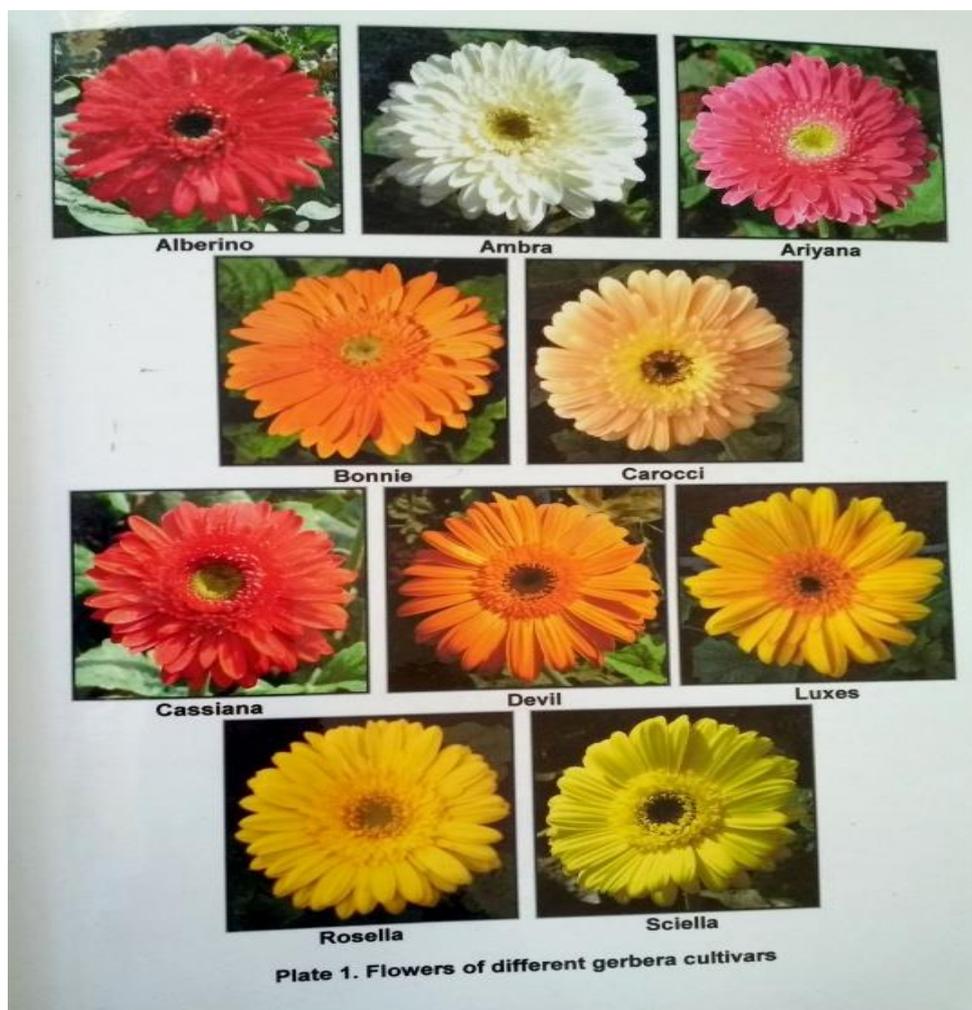


Table 1: plant height and number of suckers per plant of gerbera cultivars as influenced by different growing conditions

Cultivars	Plant height (cm)			Number of suckers (no's)
	30 DAP	60 DAP	90 DAP	90 DAP
S ₁ C ₁	15.00	26.78	27.27	2.00
S ₁ C ₂	10.08	23.67	24.27	2.00
S ₁ C ₃	12.92	22.33	23.27	1.92
S ₁ C ₄	18.12	28.00	27.50	2.07
S ₁ C ₅	11.52	25.30	27.53	2.07
S ₁ C ₆	9.60	22.11	23.40	2.11
S ₁ C ₇	14.58	24.37	24.47	2.00
S ₁ C ₈	16.47	26.37	28.03	2.15
S ₁ C ₉	12.13	20.90	26.73	2.25
S ₁ C ₁₀	15.67	27.12	33.03	2.08
S ₂ C ₁	10.49	19.50	34.60	2.19
S ₂ C ₂	8.58	16.13	32.33	2.17
S ₂ C ₃	8.57	17.37	32.53	2.00
S ₂ C ₄	10.99	21.23	38.83	1.83
S ₂ C ₅	10.83	21.13	32.97	2.00
S ₂ C ₆	11.93	21.36	34.53	2.00
S ₂ C ₇	11.10	20.37	37.27	1.75
S ₂ C ₈	8.60	20.51	38.03	2.07
S ₂ C ₉	9.53	17.93	31.73	2.13
S ₂ C ₁₀	14.27	24.37	34.27	2.07
S. Em	0.57	1.35	1.38	0.11
CD at 5 %	1.63	NS	3.95	NS

Conditions: Polyhouse (S₁) Shade house (S₂)

Cultivars: Alberino (C₁), Ambra (C₂), Ariyana (C₃), Bonnie (C₄), Carocci (C₅), Cassiana (C₆), Devi (C₇), Luxes (C₈), Rosella (C₉), Sciella (C₁₀)

Table 2: Flowering character and yield of gerbera cultivars as influenced by different growing conditions

Cultivars	Days to first flower bud initiation	Days to 50 % bud initiation	Days for flower development	Yield per plant (Number of flowers)
S ₁ C ₁	63.00	87.75	19.17	28.28
S ₁ C ₂	63.50	78.05	19.22	7.78
S ₁ C ₃	60.47	107.50	18.42	18.63
S ₁ C ₄	69.47	77.25	21.89	20.17
S ₁ C ₅	73.26	89.00	17.00	40.61
S ₁ C ₆	72.91	105.25	20.59	11.96
S ₁ C ₇	76.61	90.50	20.76	26.48
S ₁ C ₈	70.92	93.70	19.00	23.01
S ₁ C ₉	69.25	83.50	21.45	12.48
S ₁ C ₁₀	68.92	79.89	18.30	38.33
S ₂ C ₁	70.72	93.25	21.83	20.55
S ₂ C ₂	61.96	84.00	19.00	6.03
S ₂ C ₃	68.96	95.75	19.00	13.57
S ₂ C ₄	72.90	85.05	22.67	14.22
S ₂ C ₅	74.48	89.75	18.17	34.52
S ₂ C ₆	71.06	85.50	23.67	5.11
S ₂ C ₇	73.21	84.00	20.08	16.21
S ₂ C ₈	78.32	97.70	18.90	20.52
S ₂ C ₉	74.99	95.30	20.33	8.29
S ₂ C ₁₀	42.72	98.05	17.00	35.10
S. Em	6.38	0.95	0.34	0.19
CD at 5 %	NS	2.72	0.97	0.54

Conditions: Polyhouse (S₁) Shade house (S₂)

Cultivars: Alberino (C₁), Ambra (C₂), Ariyana (C₃), Bonnie (C₄), Carocci (C₅), Cassiana (C₆), Devi (C₇), Luxes (C₈), Rosella (C₉), Sciella (C₁₀)

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