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A STUDY ON VARIETAL PERFORMANCE OF GERBERA (*GERBERA JAMESONII* BOLUS EX. HOOKER F.) UNDER POLYHOUSE CONDITIONS

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ABSTRACT

The experiment was laid out in a Randomized Block Design (RBD) with ten treatments and three replications. The data revealed that there was a significant variation among the treatments for all the recorded parameters. The results of experiment revealed that the maximum plant height and leaf length was recorded in variety Gonzo. The maximum number of leaves per plant, plant spread in (E-W & N-S) direction, leaf width, chlorophyll content, leaf area was recorded in variety Fozzie.

Keywords: Gerbera, varietal performance, vegetative parameters.

Introduction

Gerbera (*Gerbera jamesonii* Bolus Ex. Hooker. F) belongs to the Asteraceae family and is commonly known as the 'Transvaal daisy', 'African daisy', 'Veldt daisy', 'Hilton daisy' and 'Barberton daisy'. The gerbera is indigenous to both Asia and South Africa. Traugott Gerber, a German botanist and physician, was honoured with the genus *Gerbera*, while Captain Jameson was honoured with the species *jamesonii* (Kaur *et al.*, 2021). Gerbera is a popular cut flower grown throughout the worldwide. It is also well-suited for flower beds, pot plants, window boxes and gardens. The commercially grown species, *Gerbera jamesonii* is a diploid species with somatic chromosomal number $2n = 50$ (Singh, 2006). Plants are stemless and tender perennial herbs. Leaves are radical, petioled, lanceolate, deeply lobed and occasionally leathery, narrowing at the base, widening at the top, arranged in a rosette at the base. Flower stalks are long, thin and leafless. Flower heads are grouped into single, double and semidouble cultivars. The blooms come in red, orange, pink, white, yellow, brick red, scarlet, salmon

and various intermediate shades (Gupta and Bashir, 2024). For instance, it is an ingredient in traditional Chinese medicine, where the whole plant is used to make Tu-er-feng, a remedy that helps to treat colds, coughs, mouth sores, and rheumatism and acts as an anti-spasmodic, potentially reducing the risk of cancer (Kaur *et al.*, 2021). Gerbera contains naturally occurring coumarin derivatives. Gerbera is a symbol of innocence, purity, joy and genuine love (Dipmala *et al.*, 2023).

Gerbera is suitable for tropical and subtropical regions but in a temperate climate, it should be shielded from frost and cultivated in greenhouses. The production of quality flowers of gerbera can be achieved under controlled environmental conditions, as they require partial shade. It required the optimum temperature range is 22-25°C during the day and 12-16°C at night. The ideal humidity level is 80-85%, should be maintained. And the soils should be well drained, rich, light, neutral or slightly alkaline soil with a pH range of 5.5-7.0.

Material and Methods

The present investigation entitled “A study on varietal performance of Gerbera (*Gerbera jamesonii* Bolus Ex. Hooker F.) under polyhouse conditions” was carried out during the period December 2024-May 2025 at Sri Konda Laxman Telangana Horticultural University, Floricultural Research Station, Rajendranagar, Hyderabad, Rangareddy District. Geographically, it lies at a latitude of 17.32° N and a longitude of 78.40° E. The soil of this region is red lateritic, deep, porous and acidic having pH range 5.6 to 6.5. The experiment was laid out in a Randomized Block Design (RBD) with ten treatments and three replications. The treatments consist of different varieties viz., (T₁) Gonzo, (T₂) Fozzie, (T₃) Janice, (T₄) Camilla, (T₅) Floyd, (T₆) Bunny, (T₇) Beaker, (T₈) Black Pearl, (T₉) Honeydew and (T₁₀) Tracy. The healthy tissue cultured planting material was procured from (Kumar Florist) KF Bioplane, Pune, Maharashtra and planted on raised beds of 45 cm height, 80 cm width and 40 cm pathway, with spacing of 30 × 40 cm. The recommended package of practices was followed for raising the crop. In each treatment five plants were randomly tagged for data collection. The data was recorded on various growth parameters at 30, 60 and 90 DAT and physiological parameters were recorded at 150 DAP.

Results and Discussion

The results obtained from the research investigation exhibited significant differences in all growth parameters among the ten different gerbera varieties and are presented in Table 1.

Growth parameters

Plant height (cm)

The data recorded on the plant height shown significant variations in ten different varieties of gerbera. The maximum plant height was recorded in variety Gonzo (15.07 cm, 25.31 cm and 32.46 cm) while, minimum was recorded in variety Bunny (10.48 cm, 19.94 cm and 26.64 cm) at 30, 60 and 90 days after transplanting (DAT) respectively. Plant height is varied significantly in different varieties of gerbera this may be due to genetic makeup of variety and was reported in gerbera by Sarmah *et al.* (2014) and Deka and Talukdar (2014).

Number of leaves per plant

The significant differences were observed in number of leaves per plant. The maximum number of

leaves per plant was observed in variety Fozzie (10.40, 16.53 and 29.13) whereas, minimum was recorded in variety Black Pearl (6.87, 8.93 and 16.47) at 30, 60 and 90 days after transplanting (DAT) respectively. The variation may be due to attributed to the inherent characteristics of the different varieties grown under similar environmental. Results were accordance with the finding of Naik *et al.* (2006), Kandpal *et al.* (2003) and Sarmah *et al.* (2014) in gerbera.

Plant spread (East- West and North- South) (cm)

Gerbera varieties showed significant variations. The maximum plant spread (E-W direction) was recorded in variety Fozzie (24.04 cm, 42.11 cm and 53.83 cm) while, minimum in variety Beaker (18.93 cm, 30.80 cm and 35.57 cm) at 30, 60 and 90 days after transplanting (DAT) respectively. The maximum plant spread (N-S direction) was recorded in variety Fozzie (23.55 cm, 41.01 cm and 52.85 cm) whereas, minimum was recorded in variety Beaker (17.96 cm, 30.39 cm and 34.86 cm) at 30, 60 and 90 days after transplanting (DAT) respectively. This variation in plant spread may be due to varietal characters. Such variation was earlier reported in gerbera by Ahlawat *et al.* (2012) and Kumar *et al.* (2014).

Leaf length (cm)

The significant differences were observed among the gerbera varieties. The perusal data revealed that the maximum leaf length was recorded in variety Gonzo (20.93 cm, 29.87 cm and 35.60 cm) however, minimum was recorded in variety Beaker (13.98 cm, 17.81 cm and 22.72 cm) at 30, 60 and 90 days after transplanting (DAT) respectively. The leaf length varies from variety to variety, it may due to the inherent genetic characters of the cultivars. The similar finding was reported earlier in gerbera by Kumar and Yadav (2005) and Anand *et al.* (2013).

Leaf width (cm)

The leaf width in different varieties of gerbera varied significantly. The maximum leaf width was recorded in variety Fozzie (6.29 cm, 9.15 cm and 11.71 cm) while, minimum was recorded in Honeydew (4.20 cm, 5.97 cm and 6.92 cm) at 30, 60 and 90 days after transplanting (DAT) respectively. The significant variations in leaf width might be due to the distinct genetic traits expressed by individual varieties. These results were in conformity with the finding of Vasudevan and Rao (2010) and Biswal *et al.* (2017) in gerbera.

Table 1: Performance of different varieties of gerbera on growth parameters.

Treatments	Plant height (cm)			No. of leaves per plant			Plant spread (EW) direction (cm)			Plant spread (NS) direction (cm)			Leaf length (cm)			Leaf width (cm)		
	30	60	90	30	60	90	30	60	90	30	60	90	30	60	90	30	60	90
	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT
T ₁ (GONZO)	15.07	25.31	32.46	7.53	10.07	20.40	23.33	40.51	51.25	22.65	40.41	50.79	20.93	29.87	35.60	5.63	8.85	10.99
T ₂ (FOZZIE)	14.63	24.30	31.11	10.40	16.53	29.13	24.04	42.11	53.83	23.55	41.01	52.85	16.72	26.10	31.43	6.29	9.15	11.71
T ₃ (JANICE)	13.41	21.22	29.67	9.33	13.80	25.93	23.02	39.87	48.77	21.70	39.67	48.66	18.83	27.09	32.21	4.75	7.77	8.78
T ₄ (CAMILLA)	13.23	22.14	30.12	7.80	11.07	19.13	22.01	35.17	44.51	20.89	35.35	44.51	16.07	26.33	28.53	5.13	7.89	10.25
T ₅ (FLOYD)	12.04	20.65	28.55	7.27	9.60	17.20	21.27	34.62	42.79	20.22	35.59	40.01	15.81	25.01	26.87	5.49	8.13	10.51
T ₆ (BUNNY)	10.48	19.94	26.64	7.53	10.13	22.40	20.88	32.46	40.67	19.55	34.79	39.83	14.97	22.95	24.66	4.93	6.78	7.68
T ₇ (BEAKER)	11.48	20.31	27.75	7.60	10.20	18.20	18.93	30.80	35.57	17.96	30.39	34.86	13.98	17.81	22.72	4.89	6.36	7.63
T ₈ (BLACK PEARL)	12.30	21.55	29.75	6.87	8.93	16.47	20.83	35.85	47.90	19.87	35.45	47.60	15.48	24.95	30.39	5.08	7.34	8.88
T ₉ (HONEYDEW)	14.34	23.79	30.70	7.60	11.07	23.67	22.23	36.02	49.72	21.63	36.59	48.10	19.28	28.04	32.77	4.20	5.97	6.92
T ₁₀ (TRACY)	12.49	21.30	28.58	8.93	12.93	21.87	19.81	31.56	39.63	19.17	34.09	38.95	14.84	20.09	23.96	5.33	7.31	8.12
SE (m) ±	0.09	0.23	0.18	0.29	0.41	0.59	0.12	0.13	0.24	0.22	0.61	0.26	0.45	0.39	0.69	0.11	0.24	0.27
CD @ 5%	0.26	0.70	0.55	0.85	1.22	1.76	0.36	0.39	0.72	0.65	1.82	0.76	1.33	1.17	2.06	0.33	0.72	0.79

Physiological parameters

The data resulted that the significant variation was observed in ten different gerbera varieties and are presented in table 2.

Leaf area (cm²) at 150 DAP

The data on leaf area at 150 DAP showed the significant differences among the different varieties of gerbera. The data resulted that the highest leaf area was recorded in variety Fozzie (109.06 cm²) while lowest leaf area was recorded in Honeydew (56.78 cm²). An increase in leaf may enhances the photosynthesis efficiency of leaf surface, resulting in higher flower production. The observed variation in leaf area indicates additive gene effects could play a

significant role in gerbera. The results were in accordance with the findings of Vijayalaxmi *et al.* (2021) in gerbera.

Chlorophyll content (SPAD meter units) at 150 DAP

The perusal data on chlorophyll content indicates that there is significant variation in all varieties of gerbera. The data showed that the maximum chlorophyll content was recorded in Fozzie (47.41) whereas, minimum chlorophyll content was recorded in Bunny (25.25), Beaker (24.26) and Camilla (22.68). The variations in chlorophyll content, which might have led to increased photosynthesis and increased carbohydrates. These results are similar with the findings of Vijayalaxmi (2021) in gerbera.

Table 2: Performance of different varieties of gerbera on Physiological paraameters

TREATMENTS	Leaf area (cm ²) at 150 DAP	Chlorophyll content (SPAD meter units) at 150 DAP
T ₁ (Gonzo)	93.29	44.53
T ₂ (Fozzie)	109.06	47.41
T ₃ (Janice)	82.20	36.18
T ₄ (Camilla)	79.00	22.68
T ₅ (Floyd)	74.94	26.47
T ₆ (Bunny)	73.12	25.25
T ₇ (Beaker)	65.79	24.46
T ₈ (Black Pearl)	86.89	35.71
T ₉ (Honeydew)	56.78	41.98
T ₁₀ (Tracy)	63.46	36.97
SE (m) ±	4.25	3.40
CD 5%	12.63	10.11

Conclusion

Based on the present research findings, it can be concluded that among the ten different gerbera varieties, variety Fozzie was found to be superior to all

other varieties in terms of growth and physiological parameters. Therefore, Fozzie variety found to be suitable for the commercial cultivation under polyhouse conditions.

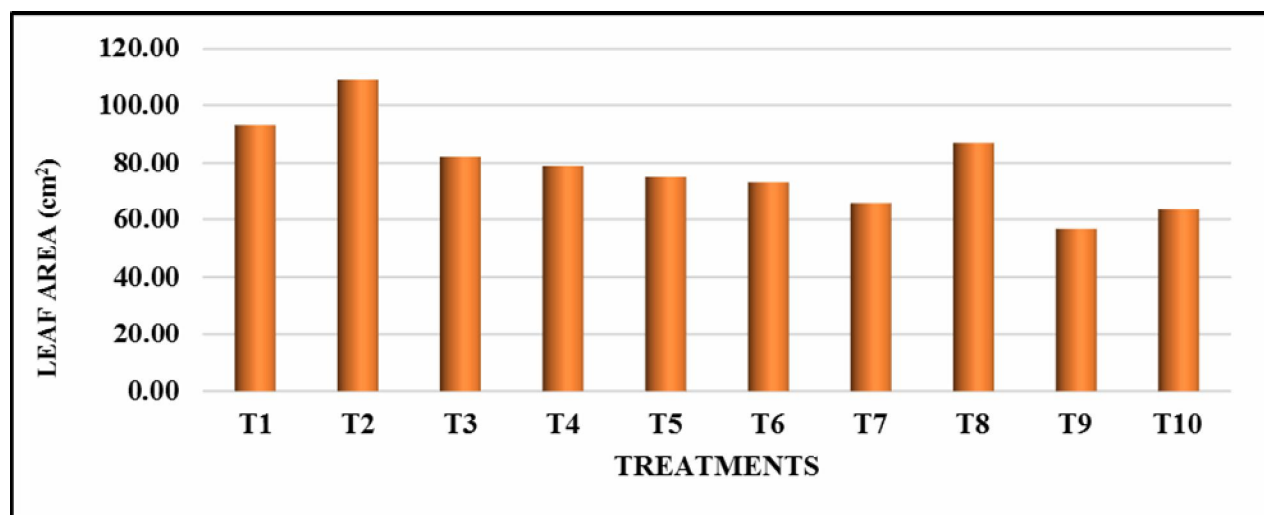


Fig. 1: Leaf area (cm²) of different gerbera varieties at 150 DAP

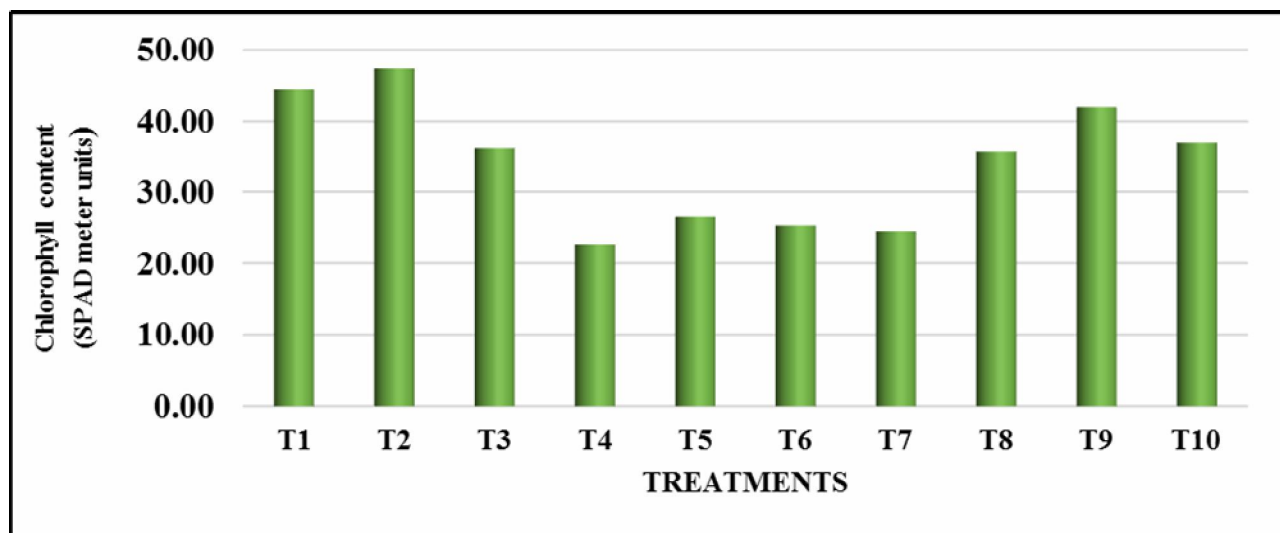


Fig. 2: Chlorophyll content (SPAD meter units) of different gerbera varieties at 150 DAP

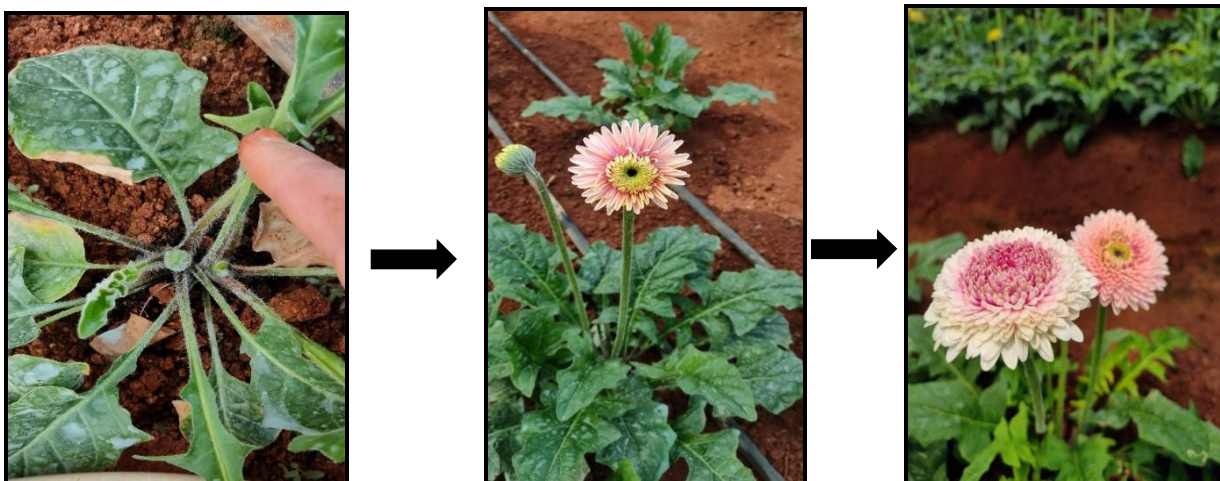


Fig. 3: Different stages of flower from flower bud initiation to complete opening of flower



Fig. 4 : Different Gerbera varieties flower head

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