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# EVALUATION OF GERBERA (*Gerbera jamesonii* BOLUS EX. HOOKER F.) GENOTYPES FOR VEGETATIVE AND FLOWER QUALITY UNDER POLYHOUSE

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**ABSTRACT:** The present investigation was carried out to evaluate the performance of seven genotypes under polyhouse conditions in sub-tropical mid hills of Meghalaya. Significant differences were observed for all the characters. The results revealed that genotype Monarch recorded maximum leaf length (38.75 cm), number of leaves/plant (23.22) and delayed bud burst (123.00 days) and first flower opening (130.00 days). Maximum stalk length (62.85 cm) and disc diameter (2.97 cm) was recorded in genotype Piton. Genotype Sangria recorded maximum leaf breadth (11.25 cm), number of suckers/plant (4.13) and number of ray florets/flower head (69.65 cm). Maximum plant spread (46.51 cm), stalk diameter (0.83 cm), flower diameter (12.98 cm) and vase life (11.65 days) was recorded in genotype Pink Elegance. However, genotype Sazou recorded maximum number of flowers/plant (37.65 cm) followed by Piton (37.25) and Sangria (36.62). On the basis of overall performance, genotypes Pink Elegance, Piton and Sangria were found promising for cut flower production under polyhouse in Meghalaya conditions.

***Keywords:*** *Gerbera, evaluation, polyhouse, cut flower, vase life.*

Gerbera (*Gerbera jamesonii* Bolus ex Hooker F.) is one of the important cut flowers grown for domestic as well as for export market. Due to availability of wide range of cultivars and their adaptability to grow on wide range of climatic conditions makes it profitable to the farmers as cut flower. Gerbera flowers are available in various colours and form, which suit very well in different floral arrangement. As the commercial cultivation of cut flowers has a good potential, introduction and popularization of high-yielding cultivars of gerbera is gaining importance. Protected cultivation is beneficial for better quality and high yield of flowers. Gerbera flowers grown under polyhouse are in good demand in domestic as well as in the international markets. Evaluation of gerbera genotypes under polyhouse has also been reported by Magar *et al.* (3) and Kumar *et al.* (2). Considering the importance of the crop, experiment was planned to evaluate the performance of seven gerbera genotypes for quality under polyhouse in Meghalaya conditions.

## MATERIALS AND METHODS

The present experiment was carried out under Fan Pad polyhouse at Research Farm of the Division of Horticulture, ICAR Research Complex for NEH Region, Umiam, Meghalaya in randomized block design with three replications during 2004-05 and 2005-06. Umiam is situated at 25° 41' N latitude, 91° 55' E longitude and 1010 m altitude. Tissue cultured plants (4–5 leaves) of seven genotypes of gerbera viz., Foske, Magnum, Monarch, Pink Elegance, Piton, Sangria and Sazou were grown in 4 row system at 30 cm × 30 cm spacing in 1.5 m broad bed. Maximum and minimum temperature was recorded inside polyhouse was 38°C and 10°C, respectively and average relative humidity was 75%. Five plants from each genotype and from each replication were randomly selected for recording observation on growth, flower quality and vase life parameters. Data of both the year were pooled and statistically analyzed and tabulated.

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**Table 1: Evaluation of gerbera genotypes for vegetative characters under Fan Pad polyhouse (pooled data of two years)**

| Genotype | No. of leaves/ plant | Leaf length (cm) | Leaf breadth (cm) | Plant spread (cm) | No. of suckers/plant |
|---|---|---|---|---|---|
| Foske | 17.08 | 29.10 | 7.47 | 44.97 | 3.03 |
| Magnum | 18.73 | 25.79 | 10.91 | 42.24 | 3.52 |
| Monarch | 23.22 | 38.75 | 8.60 | 35.52 | 3.48 |
| Pink Elegance | 18.25 | 36.39 | 11.11 | 46.51 | 3.07 |
| Piton | 14.59 | 31.55 | 10.59 | 45.74 | 3.85 |
| Sangria | 20.42 | 25.98 | 11.25 | 45.35 | 4.13 |
| Sazou | 15.48 | 33.57 | 10.74 | 39.36 | 3.85 |
| C.D. (P=0.05) | 2.90 | 2.91 | 1.41 | 3.39 | 0.32 |

**Table 2: Evaluation of gerbera genotypes for flower quality under Fan Pad polyhouse (pooled data of two years).**

| Genotype | Days to bud burst | Days to first flower open-ing | Stalk length (cm) | Stalk diamet er (cm) | Flower dia-meter (cm) | Disc dia-meter (cm) | Length of ray floret (cm) | Bread th of ray floret (cm) | No. of ray florets/ flower head | No. of cut flowers/ plant | Vase life (days) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Foske | 100.00 | 106.33 | 50.68 | 0.56 | 11.72 | 2.44 | 4.44 | 1.12 | 52.02 | 32.27 | 7.79 |
| Magnum | 112.00 | 116.66 | 46.63 | 0.67 | 11.85 | 2.86 | 4.70 | 1.10 | 63.37 | 26.27 | 8.91 |
| Monarch | 123.00 | 130.00 | 61.06 | 0.57 | 11.29 | 2.51 | 4.45 | 1.14 | 66.73 | 31.52 | 9.03 |
| Pink Elegance | 99.66 | 106.00 | 50.51 | 0.83 | 12.98 | 2.53 | 4.95 | 1.14 | 54.87 | 34.90 | 11.65 |
| Piton | 102.33 | 109.66 | 62.85 | 0.71 | 12.19 | 2.97 | 4.81 | 1.00 | 64.03 | 37.25 | 8.18 |
| Sangria | 112.66 | 119.00 | 57.59 | 0.74 | 12.24 | 2.46 | 4.96 | 1.15 | 69.65 | 36.62 | 10.69 |
| Sazou | 90.00 | 95.66 | 45.67 | 0.56 | 11.55 | 2.26 | 4.49 | 1.05 | 63.84 | 37.65 | 7.24 |
| C.D. (P=0.05) | 3.75 | 3.81 | 1.49 | 0.02 | 2.53 | 0.15 | 0.19 | 0.10 | 4.07 | 5.03 | 0.67 |

## RESULTS AND DISCUSSION

The mean performance of gerbera genotypes for vegetative growth characters (Table 1) revealed that all the genotypes showed significant differences for vegetative characters. Genotype Monarch recorded maximum number of leaves per plant (23.22), while minimum was recorded in genotype Piton (14.59). Longest leaf was recorded in genotype Monarch (38.75 cm) and shortest leaf was recorded in genotype Magnum (25.79 cm). Genotype Sangria recorded broader leaves (11.25 cm) followed by Pink Elegance (11.11 cm), whereas, genotype Foske recorded narrowest leaf (7.47 cm). Maximum plant spread (46.51 cm) was recorded in genotype Pink Elegance, while minimum in genotype Monarch (35.52 cm). Genotype Sangria recorded maximum number of suckers/plant (4.13) followed by Sazou (3.85) and Piton (3.85). Variation in vegetative characters might be attributed to the genetic makeup of the cultivar as has been reported by Chobe *et al* (1) and Vasudevan and Rao (4).

The data (Table 2) revealed that flower characters differed significantly among cultivars. Genotype Sazou recorded earliest bud burst (90 days) and first flower opening (95.66 days),

whereas, genotype Monarch recorded delayed bud burst (123.00 days) and first flower opening (130.00 days). The early and late blooming of the genotypes was primarily due to their genetic make up. In cut gerbera, improvement of flower yield with sturdy and long stalk, flower diameter and vase life is desirable and have prime importance in development of new gerbera varieties. Maximum stalk length was recorded in genotype Piton (62.85 cm), followed by Monarch (61.06 cm) and Sangria (57.89 cm), while genotype Sazou recorded minimum stalk length (45.67 cm). Gerbera genotypes with short stalk are more suitable for pot culture. Flower stalk diameter was recorded maximum in genotype Pink Elegance (0.83 cm) followed by Sangria (0.74 cm) and Piton (0.71 cm), whereas, it was recorded minimum in genotype Foske (0.56 cm) and Sazou (0.56 cm). All the genotypes under study recorded flower head diameter more than standard 10 cm, however, maximum flower diameter was recorded in genotype Pink Elegance (12.98 cm), followed by Sangria (12.24 cm), Piton (12.19 cm) and Magnum (11.85 cm). Genotype Piton exhibited maximum disc diameter (2.97 cm).

The length, breadth and number of ray florets per flower head contributed for size and doubleness of the flower head as double and semi-double types are most preferred as cut flower in florists trade, while, Single types are suitable for pot culture and landscaping. Maximum length and breadth (4.96 cm and 1.15 cm, respectively) of ray florets were recorded in genotype Sangria, whereas, minimum length (4.44 cm) and breadth (1.00 cm) of ray floret was recorded in genotypes Foske and Piton, respectively. The number of ray florets per flower head ranged from 52.02 (Foske) to 69.5 (Sangria) followed by genotypes Monarch (66.73) and Piton (64.03). Maximum number of flower head per plant was recorded in genotype Sazou (37.65), followed by Sangria (36.62) and Pink Elegance (34.90), whereas, minimum number of flowers/plant was recorded in genotype magnum (26.27). Genotypes Pink Elegance recorded long vase life (11.65 days followed by Sangria (10.69 days) and Monarch (9.03 days), while genotype Sazou recorded shortest vase life (7.24 days) in tap water under ambient condition. Variation in number of cut flowers per plant has also been reported by Vasudevan and Rao (4) and Wankhede and Gajbhiye (5).

## CONCLUSION

On the basis of results obtained, it can be concluded that genotypes Pink Elegance, Piton and Sangria were found suitable and recommended for cut flower production under Fan Pad polyhouse in sub-tropical mid-hills of Meghalaya.

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