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National Academy of Agricultural Science (NAAS)
Rating : 3. 03

Evaluation of Gerbera (*Gerbera jamesonii* Bolus Ex. Hooker F.*)* under polyhouse conditions in mid hills of western Himalayas

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Abstract: *Gerbera (Gerbera jamesonii Bolus ex Hooker F.), family Asteraceae, is one of the important cut flower grown for domestic as well as for export market. It is used in floral arrangement, beds, border, pots etc. The experiment was conducted at Institute of Himalayan Bioresource Technology, Palampur during 2009-12 to evaluate the performance of 5 cultivars of gerbera (Gerbera jamesonii Bolus ex Hooker F.) under poly house conditions. Significant differences were recorded in maximum characters studied. The results revealed that cv. Jaffana produced maximum length of leaf (32.24 cm), width of leaf (15.89 cm), longest flower stalk (56.98 cm) and maximum diameter of flower stalk (0.656 cm). Maximum number of suckers per plant (8.75), number of flowers per plant per year (33.42) and thickness of ray floret (0.35 cm) were recorded in Ice Queen (V_4). Longest ray floret (4.01 cm) in V_5, maximum diameter of flower (10.54 cm) in Lion (V_3) and longest vase life (9.77 days) in Fenna (V_5) were observed.*

Key words: *Gerbera and performance evaluation*

Gerbera (*Gerbera jamesonii* Bolus ex Hooker F.) is commonly known as Transval Daisy, African Daisy or Barberton Daisy. It is belongs to family Asteraceae and native to Africa, Madagascar, Asia and Indonesia Bailey and Bailey (1976). Gerbera is one of the most popular cut flower crops due light weight of flowers with long and slender stalks, exquisite petal arrangements with different shades of colours, shapes & size of flower and its ability to withstand long transportation with excellent vase life. Gerbera plant is grown for beds, borders, pots and as cut flower for interior decoration and for making bouquets. There is a great demand of its cut flowers in domestic market throughout the year.

Gerbera is grown commercially under protected condition for cut flower and an ornamental potted plant. It is being grown in India and abroad under wide range of climatic conditions. In India it is mainly grown in North-Eastern states, Karnataka, Maharashtra and Gujarat. In Himachal Pradesh gerbera introduced as a new cut flower crop. Generally, cut flower characters like yield and quality of bloom are influenced by the climatic and soil factors Kannan and Ramdas (1990). As the commercial cultivation of cut flowers have a good potential; introduction and popularization of high yielding cultivars of gerbera gain importance. Evaluation of gerbera for vegetative and flowering characters under polyhouse for commercial cultivation as cut flowers has a good potential. However, no data was available in the past to identify the suitable cultivars of gerbera for cut flower production under polyhouse conditions at mid hills of western Himalayas. So, 5 cultivars of gerbera were evaluated to identify the performing cultivars.

MATERIALS AND METHODS

The experiment was carried out on five Gerbera cultivars Jaffana (V_1), Fenna (V_2), Lion (V_3), Ice

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Queen (V_4), and Mayonaise (V_5) at Institute of Himalayan Bioresource Technology (CSIR), Palampur (H.P.) during October, 2009 to February, 2012. Experimental material consist of 5 cultivars of gerbera were procured from private company. The site is located at altitude of 1325m amsl and 32^0 06'05" N, latitude and longitude 76^0 34'10" E. Soil of experimental plots was well drained, clay loam in texture and having pH 5.28 and EC 0.942. The experiment was laid out in randomized complete block design with three replications. Nine plants from each cultivar in each replication were used for recording observations. The net plot size was 90 cm x 90 cm and raise to a height of 25 cm from the soil surface. Mixture of fine sand @ 1 cft/m^2 and decomposed dry FYM @ 5 kg/m^2 were applied as basal dose to each plot 15 days before planting for improvement in texture of soil and after that soil sterilized by formaldehyde. Uniform and healthy plants were planted in the month of October, 2009 under polyhouse conditions at spacing of 30 cm x 30 cm between rows and plants and maintained uniform cultural practices Bridgen (1993). The experiment was planned under polyhouse conditions which was fabricated with UV stabilized polyfilm (200 micron) as a cladding material at the top. The data were recorded from each cultivars in each replication for 10 characters viz., length of leaf (cm), width of leaf (cm), number of suckers/plant/year, number of flowers per plant per year, length of flower stalk (cm), diameter of flower stalk (cm), size of flower (cm), length of ray floret (cm), thickness of ray floret (cm) and shelf life of flower (days). Flower production allowed at 7 to 8 full size leaves stage after five month of plantation. Observations were recorded and two years data were pooled and analyzed (Table 1) using the analysis of variance (ANOVA) technique, outlined by Gomez and Gomez (1994) and treatments were compared at 5% level of significance.

RESULTS AND DICUSSION

Mean pooled data in respect of various vegetative and reproductive growth parameters were studied on five different cvs. under polyhouse conditions. Data presented in Table 1 indicated that cultivars showed significant variation for length of leaf, width of leaf and number of suckers/plant/year. Among the cultivars studied, cultivar Jaffana recorded highest length of leaf (32.24) followed by Ice Queen (30.40), while it was lowest in cv. Mayonaise (20.16). Significantly maximum width of leaf (15.89 cm and 15.79 cm, respectively) was recorded in cv. Jaffana and cv. Fenna. Propagation of cultivars in terms of suckers/plant/year produced by cultivar was found more in cv. Ice Queen (8.75) followed by Lion (7.0) and Jaffana (4.07) while least in cv. Mayonaise (5.0).

The maximum number of flowering stalk per plant per year were produced in cultivar Jaffana (32.24) followed by cv. Ice Queen (30.40).The heights and lowest length of flowering stalk were recorded in Jaffana (56.98 cm) and Mayonaise (37.81 cm). Maximum stalk diameter (0.656 cm) was recorded in cv. Jaffana followed by Ice Queen (0.603 cm) and Lion (0.596 cm). Stalk diameter and stalk length in gerbera are important parameter which leads to improvement in the vase life. The variation among the cultivars might be due to different varietal behaviour and their interaction with the production environment. Significantly maximum size of flower (10.54 cm) was recorded in cv. Lion, while it was minimum in cv. Fenna (9.19 cm). Length of ray floret was recorded the maximum in Mayonaise, while the lowest was observed in Fenna (Table 1). Maximum thickness of ray floret was recorded in cv. Jaffana (0.35 cm) however, it was minimum in cv. Fenna (0.29 cm). Significantly maximum durability of single flower was recorded in cv. Fenna (9.77 days) followed by Ice Queen (9.66 days) while minimum in cv. Mayonaise (8.78 days). Cultivars with more durability could be used to prolong the blooming period. The differences in cut flower quality characters might be due to the inherent characters of the individual cultivars.

Conclusion

The study was conducted with 5 cultivars of gerbera (Gerbera jamesonii Bolus ex Hooker F.) under polyhouse to evaluate their performance for growth, flowering, quality and yield for their

Table 1
Varietal performance evaluation of Gerbera under Polyhouse conditions in mid hills of western Himalayas

Observations Varieties	*Length of Leaf (cm)*	*Width of Leaf (cm)*	*No. of suckers per plant*	*No. of flower per plant/ year*	*Length of flower stalk (cm)*	*Diameter of flower stalk (cm)*	*Diameter of flower (cm)*	*Length of ray floret*	*Thickness of ray floret (cm)*	*Shelf life of flower (in days)*
Jaffana **(V_1)**	32.24	15.89	6.08	27.60	56.98	0.656	10.24	3.72	0.34	7.66
Fenna **(V_2)**	29.52	15.79	6.17	31.88	41.09	0.556	9.19	3.21	0.29	9.77
Lion **(V_3)**	22.72	10.10	7.05	28.92	44.39	0.596	10.54	3.53	0.30	9.00
Ice Queen **(V_4)**	30.40	13.49	8.75	33.42	44.73	0.603	9.32	3.45	0.35	9.66
Mayonaise **(V_5)**	20.16	10.37	5.00	24.92	37.81	0.593	9.81	4.01	0.31	8.78
CD at 5%	8.56	2.68	0.915	4.64	6.46	**NS**	0.578	0.261	0.021	0.486

suitability under mid hills of western Himalayas conditions, during 2009-12. Among the 5 cultivars studies, all cultivars were found promising under polyhouse for mid hills of western Himalayas conditions.

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