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Evaluation of Novel Gerbera (*Gerbera jamesonii* Bolus ex. Hooker F.) Hybrids for Flower Quality Traits under Polyhouse Condition

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Abstract: The present study was carried out to evaluate the performance of two gerbera hybrids IIHR15-7 and IIHR16-8 along with their parents and a commercial check, for flower quality traits under polyhouse condition in completely randomized block design, during 2016-17 to 2018-19. The hybrids IIHR15-7 and IIHR16-8 had been developed through the half-sib method of breeding with IIHR9 and Arka Ashwa, respectively, as parents. Data for three years were pooled and analyzed statistically. In both hybrids IIHR15-7 and IIHR16-8, all the quantitative traits were found to be on par with the respective commercial checks. They had novel flower colour (as per RHS Colour Chart) *i.e.* NN155A, White Group for IIHR 15-7 and 65A Red Purple Group for IIHR16-8, with semi-double and double forms of flowers, respectively. These hybrids are suitable for cut-flower and flower arrangement purposes. Further, these hybrids will be useful for developing new gerbera hybrids with novel traits.

Keywords: Cut-flower, Evaluation, Gerbera, Novel hybrids, Polyhouse.

INTRODUCTION

Gerbera (*Gerbera jamesonii* Bolus ex. Hooker F.), of the family *Asteraceae*, is one of the important cut-flowers grown for domestic and export markets. The total area of floriculture in India is 275000 ha and cut flower production of 783000 MT. Gerbera grown under 870 ha with productivity of 21300 t/ha, and stands fourth most important cut flower in India. Highest production of gerbera comes from Uttarakand with 7.80 (000' MT), while share of Karnataka is 6.2 (000, MT) (Anon., 2017). There is a great demand for gerbera, particularly in European markets during the winter season and almost around the year in India. In view of importance of the crop and to bring down the high cost of imported gerbera, two indigenously gerbera hybrids *i.e.* IIHR15-7 and IIHR16-8 were developed and evaluated with their parents and commercial check for flower quality traits under polyhouse condition.

Half sib method of crossing was employed to develop novel gerbera hybrids involving parents IIHR9 and Arka Ashwa during 2014-15 which were crossed with mixed pollen of different varieties. The hybrid seeds thus obtained were raised *in vitro*. The plants obtained from these

single seeds were sub-cultured many times till the sufficient suckers are produced *in vitro*. The hardened plants were planted in polyhouse with 50% shade for evaluation. Two hybrids, IIHR15-7 and IIHR16-8, were selected on the basis of flower quality traits. Both the hybrids, along with their parents and the respective commercial check varieties Susan and Bismark, were evaluated in replicated trial in Completely Randomized Block Design under naturally-ventilated polyhouse for three consecutive years 2016-17, 2017-18 and 2018-19. Observations were recorded on flower diameter (cm), flowerstalk length (cm), flowers talk diameter (mm), number of flowers/plant/month, vase life (days), flower colour from RHS Colour Chart and flower form. Data of three years were pooled and analyzed statistically using OPSTAT.

Data presented in Table 1 showed that hybrid IIHR15-7 found to be on par with parent IIHR9 and commercial check Susan for flower quality traits. It recorded flower diameter of 11.89 cm, which was on par with the parent IIHR9 (11.46 cm), Arka Ashwa (11.86 cm) and commercial check Susan (12.04 cm); flower stalk length (61.39 cm) which was on par with parent IIHR9, Arka Ashwa and commercial check Susan; flower stalk diameter (5.79 mm) and number of flowers/plant/month (2.87) recorded were on par with the parent IIHR9 (2.43), Arka Ashwa (2.56) and commercial check Susan (2.69). The hybrid IIHR 15- 7 recorded vase life of 7.74 days which was also on par with the parent IIHR9, Arka Ashwa and commercial check Susan. Hybrid IIHR 15-7 recorded novel flower colour (RHS Colour Chart) NN155A, White Group, with semi-double form of flowers. Kumar (2013), Singh *et al.* (2017) and Soni and Godara (2017) evaluated ten genotypes under naturally ventilated polyhouse at different locations and recommended Kyllian, Vilassar, Partrizia, Szantal, Feliks and Dana Ellen for getting better cut flower yield and quality flowers.

Table 1
Evaluation of gerbera hybrid IIHR 157 with parent and commercial check for flower quality traits under polyhouse pooled data of three years

Hybrid/ Genotype	Flower diameter (cm)	Flower stalk length (cm)	Flower stalk diameter (mm)	No. of flowers/ plant/ month	Vase life (days)	Flower colour (RHS colour chart)	Flower form
IIHR15-7	11.89	61.39	5.79	2.87	7.74	White group NN155A	Semi- double
IIHR9 (parent)	11.46	61.19	5.80	2.43	7.29	Red purple group 69A	Semi- double
Arka Ashwa (check)	11.86	61.10	6.64	2.56	7.42	Red purple group 68D	Semi- double
Susan (commercial check)	12.04	62.81	6.62	2.69	7.59	White group NN155C	Semi- double
SEM±	0.47	0.44	0.38	0.49	0.51	-	-
C.D. at 5%	NS	NS	NS	NS	NS	-	-

Data presented in Table 2 showed that hybrid IIHR16-8 also found to be on par with parent Arka Ashwa and commercial check Bismark for flower quality traits. The hybrid IIHR 16-8 recorded flower diameter of 12.89 cm, which was on par with its parent Arka Ashwa (11.86 cm) and the commercial check Bismark (12.12 cm); flower stalk length (65.64 cm) was also found to be on par with parent Arka Ashwa (61.10 cm) and commercial check Bismark (62.93 cm); flower stalk diameter (5.77 mm) was on par with parent Arka Ashwa (6.64 mm) and the commercial check Bismark (6.21 mm) and, number of flowers/plant/month (2.85) recorded was on par with the parent Arka Ashwa (2.56) and commercial check Bismark (2.73). The hybrid IIHR 16-8 recorded vase life of 7.00 days which was also on par with the parent Arka Ashwa and commercial check Bismark. The hybrid IIHR16-8 also recorded novel flower colour (RHS Colour Chart) 65A Red Purple Group, with double form of flowers. Aswath *et al.* (2016) also evaluated two novel gerbera hybrids with check for flower quality under naturally ventilated polyhouse. Mahender *et al.* (2017), Deepa *et al.* (2019) and Jangde *et al.* (2019) evaluated different gerbera varieties for flower quality traits and found that cultivars Marinella, Bonnie, Ambra, Sciella and Fredi recorded more number of flowers per plant under polyhouse condition.

On the basis of three years of evaluation under naturally-ventilated polyhouse, gerbera hybrids IIHR15-7 and IIHR 16-8 were found to be promising for novel flower colour, flower form and flower quality traits.

Table 2
Evaluation of gerbera hybrid IIHR 168 with parent and commercial check for flower quality traits under polyhouse pooled data of three years

Hybrid / Genotype	Flower diameter (cm)	Flower stalk length (cm)	Flower stalk diameter (mm)	No. of flowers / plant / month	Vase life (days)	Flower colour (RHS colour chart)	Flower form
IIHR16-8	12.89	65.64	5.77	2.85	7.00	Red purple group 65A	Double
Arka Ashwa (parent and check)	11.86	61.10	6.64	2.56	7.42	Red group 68D	Semi-
Bismark (commercial check)	12.12	62.93	6.21	2.73	7.26	Red purple 45B	double
SEm±	0.50	0.47	0.43	0.41	0.52	-	-
C.D. at 5%	NS	NS	NS	NS	NS	-	-



IIHR 15-7 (Arka White) IIHR 16-8 (Arka Pink)

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