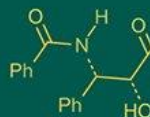


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Evaluation of gerbera genotypes for growth, yield and flower quality under subtropical conditions of Jammu

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Abstract

An experiment was conducted to evaluate the performance of seventeen genotypes of gerbera, viz., Bonmare, Palmbeach, Romella, Natasha, Toro Rosso, Bubblegum, Esmara, Marinilla, Rionegro, Havana, Lexington, Vilassar, Amlet, Nigella, Silky Tears, Fahrenheit and Sona under naturally ventilated polyhouse in Jammu subtropics. The experiment was performed in Completely Randomized Block Design and replicated three times. Among the genotypes considered, there was significant difference in terms of vegetative growth, floral characteristics and yield. The maximum plant height (30 cm) and number of leaves (10), plant spread and floral characters were found in genotype 'Toro Rosso'. Moreover, the Maximum flowering duration of 14.67 days was recorded in genotype 'Rionegro', whereas the maximum vase life of 10 days as also recorded in genotype Rionegro'.

Keywords: Gerbera, genotypes, growth, yield, flower quality, genetic diversity

Introduction

The Asteraceae family, the largest family of flowering plants, includes the lovely cut flower crop gerbera (*Gerbera jamesoni* Bolus). It occupies a unique position in beauty and trade among cut flowers and has significant demand due to its multitude of colours. Since it has a long vase life and a variety of colours, this flowering plant is appealing for use in garden decorations such herbaceous borders, beds, pots, rock gardens, and for cut flowers (Chung *et al.*, 2005) [17].

In addition, each cultivar performs differently depending on the region, season, and other growth circumstances. Identification of appropriate cultivars for particular locales is essential given the commercial significance of this commodity.

Materials and Methods

Experimental material consisting of seventeen genotypes planted in Complete Randomized Design (CRD) with three replications in a plot size of 1 x 1.m at spacing of 30 cm x 30 cm. The trial was conducted at the experimental farm of Advance Centre for Horticultural Research ACHR, Udheywala, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, Chatha, Jammu. Recommended package of practices and plant protection measures were followed for healthy crop growth during the season. Observations were recorded on twenty one parameters at appropriate stages of plant growth from five randomly selected plants in each plot from each replication.

Results and Discussion

The data on various vegetative characters are presented in Table 1. Significant differences were recorded among cultivars for all the characters studied.

Vegetative growth parameters

Plant height

The data regarding the plant height is an important parameter which determines the vigour and yield of the plant and showed significant differences among genotypes (Table 1). Plant height was maximum in cultivar Toro Rosso (30.00 cm) and the next superior were Silky Tears (28.05 cm) and Bubblegum (27.33 cm) while cv. Lexington recorded minimum plant height (15.23 cm). The plant height being genetically factored, it is expected to vary among the cultivars (Sarkar and Ghimiray, 2004) [12].

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The marked variation in the plant height may be due to varietal characters. Similar findings observed in Singh *et al.*, (2017) ^[15] and Chobe *et al.*, (2010) ^[5].

Number of Leaves

Gerbera cultivars showed significant variation for Number of leaves per plant as shown in Table 1. The cv. Toro Rosso exhibited more number of leaves per plant (18.00). While as cv. Nigella recorded minimum number of leaves (10.00) which was found to be at par with cv. Sona (10.00). Wankhede and Gajbhiye (2013) ^[16] suggested that variation in leaf production per plant among the varieties might be due to varietal characters. Variation in leaf production per plant has also been reported by Headu *et al.*, (2012) ^[18].

Plant spread

Plant spread was observed to be greater in Toro Rosso (52.00 cm) followed by Bubblegum (49.00 cm) while it was least in Bonmare (34.02 cm) followed by Sona (35.00 cm). The variations in the plant spread may be due to additive gene effect.

Floral characters

In the present study, flower diameter and stalk length are the parameters that will eventually define the quality and suitability of the cut flower. Flower diameter was maximum in cv. Toro Rosso (10.00 cm) followed by cv. Sona (9.20 cm). Whereas minimum flower diameter was recorded in cv. Esmara (6.00 cm). Similar variation in flower diameter has also been reported in gerbera by Kumar *et al.*, 2013 ^[7] and Magar *et al.*, 2010 ^[8].

Longest stalk was produced in cv. Toro Rosso (45.00 cm) followed by cv. Bubblegum (44.00 cm). While the shortest was found from cv. Bonmare (25.05). The stalk length is a genetic factor therefore; it is expected to vary among the cultivars as earlier observed by Sarkar and Ghimray (2004) ^[12]. Stalk length is a very important factor for gerbera cut flower. It decides the quality of cut flowers. As there will be more stalk length more reserved food will be stored in the stalk which will later be available to the flower for longer time period. Maximum flowering duration of 14.67 days was recorded in genotype 'Rionegro', whereas the maximum vase life of 10 days as also recorded in genotype Rionegro'. The findings are in accordance with the result reported by Bhat *et al* (2017) ^[4], Manaswita Sil *et al.*, (2017) ^[9], Anand *et al.*, (2013) ^[2] Ahlawat *et al.*, (2012) ^[11], Chobe *et al.*, (2010) ^[5], Naik *et al.*, (2006) ^[10] and Singh and Ramchandran (2002) ^[13].

Flower yield

Flower yield decides the significance of the particular genotypes, which are suitable for commercial cultivation. Significantly the maximum yield was produced by cv. Toro Rosso (18.00) and cultivar Bonmare yielded the least number of flowers per plant (9.33). Such variation in flower yield was reported in gerbera by Singh *et al.*, (2016) ^[14]. The differences in flower production among the cultivars might be due to temperature, prevailing in the region along with their genetic variability. Also, additive genes determine the productivity in gerbera plants. This was in accordance to the findings of Barooah and Talukdar (2009) ^[3], Bhat *et al* (2017) ^[4].

Table 1: The data on various vegetative characters are presented

Genotypes	Plant Height (cm)	Number of leaves	Plant Spread (cm)	Flower Dia. (cm)	Stalk Length (cm)	Duration of flower (Days)	No. flower per plant	Vase Life (Days)	Flower Colour
Bonmare	22.04	14.00	34.02	6.01	25.05	10.00	9.33	7.00	Yellow
Palmbeach	24.02	15.33	38.00	7.02	28.00	9.50	10.00	6.00	Yellow
Romella	21.00	12.00	40.00	7.00	38.00	9.90	12.00	6.00	Pink
Natasha	19.08	11.33	35.05	6.57	35.00	9.33	13.00	7.00	Red
Toro Rosso	30.00	18.00	52.03	10.00	45.00	12.00	18.00	8.00	Red
Bubblegum	27.33	15.67	49.00	7.50	44.00	13.00	15.00	9.00	Pink
Esmara	19.40	13.00	37.00	6.00	34.00	11.00	16.00	8.00	Pink
Marinilla	25.67	17.67	39.02	8.00	29.00	12.00	14.00	9.00	Orange
Rionegro	25.08	15.00	41.00	7.30	33.00	14.67	13.00	10.00	Pink
Havana	23.00	12.00	46.00	7.60	42.00	14.00	10.00	9.33	yellow
Lexington	15.23	11.33	36.00	8.00	38.00	13.00	16.00	9.00	Red
Vilassar	20.53	12.00	42.00	8.20	41.00	11.00	17.00	7.00	Yellow
Amlet	23.08	14.00	40.00	7.90	29.00	12.00	13.00	8.00	Red
Nigella	24.15	10.00	44.00	8.00	36.00	12.50	12.00	7.00	Pink
Silky Tears	28.05	16.67	44.05	8.50	40.00	13.00	15.00	9.00	Pink
Fahrenheit	22.03	13.67	47.00	9.00	43.00	13.50	16.00	10.00	white
Sona	17.30	10.00	35.00	9.20	39.00	14.00	12.00	8.00	Yellow
C.D.	1.423	1.67	1.65	0.94	1.00	1.75	3.01	2.21	
SE(m)	0.492	0.58	0.57	0.32	0.35	0.60	1.04	0.77	
SE(d)	0.696	0.82	0.81	0.46	0.49	0.85	1.47	1.08	
C.V.	3.742	7.34	2.40	7.24	1.64	8.70	13.24	16.40	

Conclusion

The experiment clearly indicated that genotype 'Toro Rosso' performed better followed by the genotype 'Bubblegum'. Moreover the Maximum flowering duration of 14.67 days was recorded in genotype 'Rionegro', whereas the maximum vase life of 10 days as also recorded in genotype Rionegro'

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