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Evaluation of dahlia (*Dahlia variabilis* L.) genotypes for quality, yield and shelf life

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Abstract
The experiment on "Evaluation of dahlia (*Dahlia variabilis* L.) genotypes for quality, yield and shelf life" was carried out at the Department of Floriculture and Landscape Architecture, College of Horticulture, Sirsi, University of Horticultural Sciences, Bagalkot, Karnataka during the year 2018 to 2019 with a view to find out the best genotypes for quality, yield and shelf life of dahlia. The genotype HUBD-30 recorded highest individual flower weight (15.33 g), flower diameter (13.52 cm) and length of petals (7.25 cm) whereas, maximum width of petal (3.05 cm) was registered in HUBD-19, highest stalk length (14.04 cm) was observed in the genotype HUBD-12, genotype HUBD-34 registered the more shelf life (6.30 days). Maximum number of flowers per plant (67.40) was observed in the genotype HUBD-26.

Keywords: HUBD-horticulture University of Bagalkot dahlia

Introduction
Dahlia (*Dahlia variabilis* L.) is a bushy, tuberous, herbaceous ornamental plant native to Mexico. It is a member of the asteraceae family, dicotyledonous plant, related species includes sunflower, daisy, chrysanthemum and zinnia. There are approximately 42 species in the genera of Dahlia, with hybrids commonly grown as garden plants. It is one of the most popular tuberous rooted perennial and herbaceous flowering plant valued for their gorgeous attractive spectacular flowers with the multitude of colours, greater variation in size ranging from miniature to giant types. Dahlia is best suited for gardening because they are easy to grow both in field and pot. Flowers having attractive colourful daisy like flowers, which increase the beauty of gardens. Hence they are extensively used for exhibition, garden display and home decoration. Dahlia has great diversity, resulted from it is being octoploid that have eight sets of homologous chromosomes, whereas most plants have only two sets of chromosome. In addition, dahlias also contain many transposons genetic pieces that move from place to place upon an allele which contributes to their manifesting such great diversity. Dahlia received its name by Cavanilles in the year 1791, to commemorate the work of a Swedish Botanist Dr. Andreas Dahl, a pupil of Linneaus (Smith, 1971) [1].
Though there are many species and cultivars of dahlia with different number, placement, texture, colour and size of florets (ranging from miniature, less than 2.5 cm across to giant over 40 cm in diameter) with different peduncle length, symmetry and vigour available in the world but there is still scope for improving these characters through breeding (Ajeet *et al*. 2015) [2]. The range of variation in dahlia is quite large, considering the potentiality of this crop present study was conducted with the objective of to evaluate the dahlia genotypes for quality, yield and shelf life.

Material and Methods
The experiment was conducted with 35 genotypes of dahlia *viz*. HUBD-1 to HUBD-35 were planted according to randomized block design with two replications. The experiment was conducted in the Department of Floriculture and Landscape Architecture, College of Horticulture, Sirsi, University of Horticultural Sciences, Bagalkot, Karnataka, India. Observations were recorded on all the indicating characters *viz*. individual flower weight (g), flower diameter (cm), length of petals (cm) width of petals (cm), stalk length (cm), shelf life (days) and number of flowers per plant.

Results and Discussion

All the characters studied were significantly differed. Individual weight of flower was maximum of 15.33g in genotype HUBD-30 which is followed by HUBD-19 (13.81 g) and minimum of 2.46 g flower weight was noticed in genotype HUBD-13. This variation in flower weight among genotypes might be attributed to the higher water and carbohydrate levels in the flower. Water plays an important role in maintaining flower turgidity, freshness and petal orientation. These results were in conformity with the results reported earlier in dahlia by Dhane and Nimbalkar (2002) [3]. Flower diameter was registered maximum in HUBD-30 (13.52 cm) whereas, HUBD-19 (12.62 cm) was at par with HUBD-30 and minimum flower diameter of 3.52 cm was noticed in genotype HUBD-25 (0.82cm). The variation in flower diameter may be due to the genotypic expression of the genotypes and also depend on nutrient applied to the plant. Similar trend was observed in dahlia by Shukla *et al.* (2018) [4]. Maximum length of petals was registered in the genotype HUBD-30 (7.25cm) followed by HUBD-19 (6.27 cm). While, minimum length of petal noticed in HUBD-34 (1.38cm). Width of petal recorded highest in genotype HUBD-19 (3.05 cm) which is followed by HUBD-2 (2.95 cm). Whereas, minimum width of petals was noted in HUBD-25 (0.82 cm). Variation in length and width of petals may be due to genetic makeup and vegetative growth of the genotypes, similar findings were obtained by Swaroop *et al.* (2018) [5] in gladiolus.

Significant differences in stalk length was recorded among the genotypes. The genotype HUBD-12 had maximum stalk length (14.04 cm) which is followed by HUBD-30 (12.78 cm) whereas, genotype HUBD-11 had minimum stalk length (6.07 cm) it may be due to different genotypic character of the individual genotype. Same outcome was seen in dahlia by Manjula *et al.* (2017) [6]. While, shelf life of flowers varied significantly among the genotypes. Shelf life of flowers in genotypes was highest in HUBD-34 (6.30 days) which is at par with HUBD-25 (6.10 days) and least in genotype HUBD-5 (2.00 days). Shelf life of flower seems to be an inherent capacity of the cultivar and variation in shelf life among the genotypes might be attributed to the increased accumulation of carbohydrates and reduction in the transpiration rate. These are in accordance with study conducted by Vikas *et al.* (2011) [7] in dahlia. However, genotype HUBD-26 recorded maximum number of flowers per plant (67.40) which was at par with HUBD-17 (63.70) and the minimum (15.50) was in HUBD-29. The number of flowers produced per plant may be directly related to increase in plant height, number of branches, Number of leaves and leaf area which ultimately leads to accumulation of more photosynthates which results in production of good number of flowers with bigger size. The similar results were observed in dahlia by Baburao *et al.* (2018) [8].

Table 1: Evaluation of dahlia (*Dahlia variabilis* L.) genotypes for quality, yield and shelf life

Genotypes	Individual flower weight (g)	Flower diameter (cm)	Length of petals (cm)	Width of petals (cm)	Stalk length (cm)	Shelf life (days)	Number of flowers per plant
HUBD-1	7.59	10.32	5.90	1.95	7.78	3.70	28.10
HUBD-2	7.28	8.52	3.47	2.95	10.43	3.70	21.40
HUBD-3	7.95	7.04	2.80	2.05	10.21	4.40	52.00
HUBD-4	5.16	7.75	2.93	1.86	8.25	4.30	24.70
HUBD-5	5.61	8.38	3.27	1.60	12.34	2.00	29.70
HUBD-6	7.95	6.41	2.57	1.97	9.39	4.90	56.20
HUBD-7	10.30	10.18	4.28	1.62	10.21	3.50	36.60
HUBD-8	7.50	8.04	2.69	1.65	9.23	3.80	30.10
HUBD-9	7.22	10.49	4.07	1.88	8.36	2.90	39.50
HUBD-10	12.49	12.17	5.54	2.08	12.68	4.30	27.00
HUBD-11	7.09	6.61	3.10	1.65	6.07	2.50	18.60
HUBD-12	11.27	6.92	1.90	1.45	14.04	5.30	26.70
HUBD-13	2.46	6.22	2.50	1.84	7.18	3.00	28.10
HUBD-14	2.59	5.93	2.66	2.12	8.17	3.70	21.80
HUBD-15	7.14	8.15	2.96	1.94	9.18	2.90	41.00
HUBD-16	6.60	7.51	3.37	1.65	7.65	4.20	31.10
HUBD-17	8.10	9.27	4.19	2.05	11.50	4.50	63.70
HUBD-18	6.86	9.35	3.48	1.87	9.79	3.40	20.50
HUBD-19	13.81	12.62	6.27	3.05	7.95	3.20	17.20
HUBD-20	12.45	10.63	4.03	2.15	7.83	4.70	25.80
HUBD-21	13.44	11.33	3.91	1.90	10.88	4.80	22.90
HUBD-22	6.72	7.67	2.86	1.98	11.08	2.90	17.90
HUBD-23	8.30	9.30	3.47	2.09	11.95	3.40	60.00
HUBD-24	5.73	9.51	3.59	1.47	8.03	2.90	23.40
HUBD-25	5.25	4.46	1.52	0.82	8.31	6.10	46.00
HUBD-26	8.29	9.10	2.82	1.95	9.88	3.10	67.40
HUBD-27	8.20	10.38	4.10	2.22	8.27	4.10	60.00
HUBD-28	6.71	8.77	2.62	1.52	10.35	2.60	17.20
HUBD-29	8.51	6.55	2.97	1.85	8.14	2.90	15.50
HUBD-30	15.33	13.52	7.25	1.96	12.78	3.50	27.50
HUBD-31	6.63	8.67	3.23	2.00	9.47	3.70	36.70
HUBD-32	10.28	12.50	4.38	2.28	9.21	2.70	16.70
HUBD-33	7.98	9.35	5.45	1.55	11.07	4.70	45.00
HUBD-34	3.57	3.52	1.38	0.89	7.07	6.30	42.50
HUBD-35	9.97	11.20	5.52	2.14	9.97	3.00	20.60

Mean	8.16	8.82	3.63	1.89	9.56	3.76	33.12
S.Em±	0.47	0.46	0.19	0.05	0.34	0.23	1.53
CD at 5%	1.36	1.32	0.54	0.16	0.99	0.65	4.39
CV	8.18	8.66	7.32	4.05	5.10	8.55	6.52

Conclusion

On the basis of present investigation it is concluded that, out of thirty five genotypes HUBD-30 recorded highest individual flower weight, flower diameter and length of petals. Whereas genotype HUBD-34 registered the more shelf life. However, maximum number of flowers per plant was observed in the genotype HUBD-26.

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