



EVALUATION OF DAHLIA GENOTYPES BASED ON VEGETATIVE AND QUALITY CHARACTERS

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Abstract

An experiment was conducted during *kharif* season, 2007-2008 at Floriculture Unit, New Orchard, Department of Horticulture, University of Agricultural Sciences, Dharwad to evaluate the performance of twenty five different dahlia genotypes based on vegetative and flower quality characters. The accession number 16 recorded significantly highest number of flowers per plant (37.3) followed by accession number 12 (29.7), 25 (29.0) and 5 (28.0). The accession number 16 recorded significantly highest values in terms of plant height (140.33 cm), leaf area (72.89 cm²), duration of flowering (63.3 days), longevity (14.67 days), vase life of flower (6.7 days) and number of flowers per plant (37.3).

Key words : Climatic conditions, leaf area, plant height, dahlia, vegetative and quality characters.

Introduction

Dahlia is one of the most popular bulbous flowers grown in many parts of the world for its beautiful ornamental blooms having varying shades of different colours, being useful as cut flowers besides for the beautification of gardens. Dahlia occupies a place of pride in any garden anywhere. Dahlias are easy to grow both in field and pots. They are extensively used for exhibition, garden display and home decoration. Identification of genotypes better suited for particular region and their improvement is of immediate task to exploit their full potential. The improvement can be brought out after confirming the association among the most important growth with quality attributes. Hence an experiment was conducted at Dharwad to identify the best dahlia genotypes suited to transitional zone of Karnataka.

Materials and Methods

The experiment was carried out at New Orchard, Floriculture Unit, Main Agricultural Research Station, Department of Horticulture, Dharwad (Karnataka), India. The experiment was laid out in completely randomized design with three replications. Tubers collected from different places were kept in warm humid condition for 24 hours to initiate sprouting. The dahlia tubers were planted in pots of 12" × 9" size on 25th June 2007, at the rate of one tuber per pot. An investigation was carried

out on twenty-five different dahlia genotypes, which represent diverse characters. The data were recorded on three plants from each accession.

Results and Discussion

The results obtained in this study are presented in tables 1, 2 and 3.

The plant height ranged from 73.67 cm in accession number 8 to 140.33 cm in accession number 16. Accession number 16 was vigorous in its growth throughout the life in terms of plant height, whereas accession number 8 was dwarf and recorded minimum plant height. Similar variations in plant height among different genotypes were also reported by Mishra *et al.* (1987) in dahlia.

The accession number 16 recorded highest leaf area (72.89 cm²) and accession number 8 had the lowest (30.86 cm²). Leaf area was significantly different among the various accessions. Summarily, leaf area was highest in accession number 16 and least in accession number 8. Significant variation for leaf area among various genotypes was observed by Shruthi *et al.* (2004) in gerbera.

Significant variation was observed among the different genotypes of dahlia for number of days taken for initiation of flower bud. The accession number 16 recorded 42.0 days to initiate flower bud while the accession number 18 took 67.3 days for flower bud initiation. Thus, accession number 16 was highly

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Table 1 : Plant height (cm), leaf area (cm²), number of days for flower bud initiation and number of days for flowering as recorded by various genotypes of dahlia.

Accession no.	Plant height (cm)	Leaf area (cm ²)	Number of days for flower bud initiation	Number of days for flowering
1	109.33	44.35	52	60.3
2	107.33	41.23	53.7	62.3
3	99	36.01	46	58.7
4	101.67	37.13	52.3	63.3
5	118.67	56.17	56	66.7
6	93.83	31.19	51.7	62
7	98.67	34.5	58	68.8
8	73.67	30.86	50	61.3
9	111	45.66	48	64
10	103	38.1	54.7	63.3
11	105.33	39.83	58	68.4
12	135	59.01	60	66
13	111.33	45.89	55.7	66.7
14	114.67	54.44	45.7	56.3
15	103	38.11	51.3	60.7
16	140.33	72.89	42	66
17	113.67	48.16	52.7	59.5
18	109.67	45.33	67.3	74.3
19	99.33	36.31	49.7	61
20	104.33	38.2	57.3	66.3
21	97	32.83	50	64.3
22	101.33	36.57	56.7	54.7
23	98.33	32.98	57.3	65.7
24	112	46.1	58	68.7
25	123	56.35	47	58.5
Mean	107.38	43.13	53.24	63.51
S.Em \pm	2.71	0.89	1.61	1.6
CD at 5%	7.71	2.54	4.6	4.56

precocious and accession number 18 delayed flowering for maximum number of days. These variations may be attributed to the fact that the performance of genotypes may vary with the climatic conditions prevailing in a particular area. Mishra *et al.* (1987) reported similar results in dahlia.

The duration of flowering varied significantly among the genotypes. The genotype 14 had maximum flowering duration (63.3 days) over all the other genotypes of dahlia where as accession number 21 recorded minimum duration (32.00 days). Similar variations in duration of flowering was also reported by Mishra *et al.* (1987) in dahlia and Negi *et al.* (1983 and 1988) in china aster.

The results on flower quality parameters are presented in table 2.

The duration of flowering varied significantly among the accessions. The accession 14 had maximum duration

of 63.3 days, which is highest overall other accessions of dahlia and on par with accession number 22 (53.3 day) whereas accession number 21 recorded minimum duration of 32.00 days. Duration of flowering was significantly influenced by the accessions. Among the different accessions, duration of flowering was more in Accession number 14 and Accession number 21 had the lowest, as evidenced by Mishra *et al.* (1987) in dahlia and Negi *et al.* (1983 and 1988) in china aster.

Diameter of flowers ranged from 8.60 cm to 19.30 cm with a grand mean of 13.94 cm. Higher diameter of flower recorded in accession number 10 (19.3 cm) whereas, accession number 3 recorded least (8.6 cm). Diameter of flower was maximum in accession number 10 and accession number 17. Whereas, it was less in accession number 3. The variation among the cultivars was mainly because of genetical factors. Variations

Table 2 : Duration of flowering, diameter of flower (cm), number of ray florets per plant, stalk length, longevity and vase life of flower (days) in the various genotypes of dahlia.

Accession no.	Duration of flowering	Diameter of flower (cm)	Number of ray florets per plant	Stalk length (cm)	Longevity	Vase life of flower
1	36.0	14.3	128	14.7	6.3	5.7
2	41.0	13.2	118.7	8	10.7	5.7
3	45.3	8.6	93.3	22.2	6.7	6.0
4	41.0	14.8	115.3	5.2	9.7	5.3
5	45.7	18.5	151.3	19	9.3	5.3
6	52.0	11.1	56.7	7.8	6.7	4.3
7	49.0	11.1	105.3	5.8	12.3	6.7
8	52.3	13.7	74.7	20	4	3.0
9	43.3	12.2	124.7	11.8	9	5.3
10	41.7	19.3	137.3	17	11.3	4.7
11	44.7	16.3	113.7	17.2	10	6.0
12	40.3	13.9	183.3	6.3	10.7	4.7
13	39.7	10.8	112.7	11.5	12.3	5.7
14	63.3	14.6	152	12.7	9.3	5.0
15	43.5	17.2	271.3	15.5	8.3	4.7
16	42.3	13.3	118.7	15.8	14.7	6.7
17	58.3	18	110	15.5	14	6.3
18	41.3	11.3	84	12.5	11.7	5.0
19	52.0	10.8	83.7	12.8	13.3	4.3
20	50.7	14.2	96	15.3	11	6.0
21	32.0	13.1	116	22.7	7.7	5.0
22	53.3	12.7	59.7	13.8	11.3	5.7
23	49.3	17	84.7	16.2	6	4.3
24	40.3	17.6	144.3	6.8	11	6.3
25	40.7	11.1	124	21	9	4.7
Mean	43.92	13.94	118.37	13.89	9.45	5.28
S.Em±	1.57	0.31	2.09	1.15	0.75	0.49
CD at 5%	4.50	0.87	5.97	3.29	2.16	1.4

expected among the accessions of dahlia. Dhane and Nimbalkar (2002) reported similar results in dahlia.

There is a significant variation among dahlia accessions for number of ray florets per flower. The accession number 15 (271.3) were recorded significantly higher ray floret numbers. The number of ray floret per flower recorded in accession number 6 (56.7) found significantly lower. Variations in this study were due to varietal characters, which attributed to their genetical make up. Similar variations have been reported previously in dahlia (Dhane and Nimbalkar, 2002).

The range of stalk length recorded from 5.2 cm to 22.7 cm with a grand mean of 13.89 cm accession number 21 recorded higher stalk length of 22.7 cm and accession number 4 recorded least (5.2 cm) stalk length. Longer stalk length is a desirable character in dahlia. Nair and Shiva (2003) observed same results in gerbera.

For garden display, longevity is important factor. Among the accessions, wide variations were observed for this trait. Maximum longevity (14.67 days) recorded in accession number 16 whereas; it is least number of days in accession number 8 which is 4.0 days. Longevity was maximum in accession number 16, while, minimum longevity was recorded in accession number 8 as evidenced by Mishra *et al.* (2001) in dahlia.

The data on vase life showed that there were significant variations for this trait. Genotypes differed significantly with respect to vase life, which ranged from 3.0 to 6.7 days. Maximum vase life was observed in accession number 16 and accession number 7 whereas, it was least in accession number 8. It is mainly due to varietal characters. Dhane and Nimbalkar (2002) observed similar results in dahlia.

Table 3 : Individual flower weigh (gm), number of flowers per plant as recorded by various genotypes of dahlia.

Accession no.	Individual flower weight	Number of flowers/plant
1	25.5	24.7
2	22.2	24.0
3	14.5	18.7
4	21.2	19.3
5	23.2	28.0
6	15.7	16.0
7	19.8	18.0
8	13.7	14.0
9	23.5	24.7
10	26.8	21.0
11	22.2	22.0
12	29.3	29.7
13	18.5	24.7
14	28.3	27.7
15	24.5	21.0
16	24.8	37.3
17	26.5	27.3
18	16.8	24.7
19	17.8	19.0
20	16.2	21.7
21	21.2	17.7
22	17.8	19.0
23	17.8	18.0
24	25.5	25.3
25	25.8	29.0
Mean	21.56	22.9
S.Em±	0.51	1.91
CD at 5%	1.46	5.45

The weight of individual flower differed significantly over different cultivars of dahlia. The accession number 12 recorded maximum (29.3 g) flower weight while, lower flower weight was recorded in accession number 8 (13.7 g). Weight of flower was highest in accession number 10 whereas, lowest flower weight recorded by accession number 3. The variation among the accessions was mainly because of increased flower size. Bhattacharyya *et al.* (1976) and Mishra *et al.* (1987) reported similar results in dahlia.

The genotypes exhibited significant variations with respect to number of flowers per plant. The accession number 16 recorded the highest (37.3) number of flowers per plant while the accession number 8 (14.0) recorded the least. Number of flowers per plant was higher in accession number 16 and accession number 13 followed. Increased number of flower was because of varietal genetical factor. It was recorded lowest number of flowers was recorded in accession number 8. Mishra *et al.* (1987 and 2001) in dahlia earlier observed variation in flower number.

Thus, it can be summarized that dahlia accession number 16 yielded more number of flowers within a shorter duration of flowering, besides being highly precocious. However, in case where the flower production is to be delayed or spread over maximum duration, accession numbers 14, 6, 8 etc may be preferred.

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