

Varietal Evaluation of Medium Decorative Dahlia (*Dahlia variabilis* L.) under Subtropical Plains of West Bengal

Raghupathi B., M. Mitra Sarkar, Kahkashan
 Bano Karim, Manaswita Sil

Received 22 December 2016; Accepted 25 January 2017; Published online 10 February 2017

Abstract The experiment entitled Varietal Evaluation of Medium Decorative Dahlia (*Dahlia variabilis* L.) Under Subtropical Plains of West Bengal was carried out from November, 2014 to April, 2015 in well drained sandy loam soil having pH 6.5. The experiment laid out in randomized block design, which was replicated thrice. 15 varieties of medium decorative dahlia were selected to evaluate in open field condition. (T₁-J. Pee Jee, T₂-Mother Teresa, T₃-Prabhujee, T₄-A. Humbley, T₅-Black Out, T₆-Sachin, T₇-Arab Queen, T₈-Pagal Thakur, T₉-Ankita, T₁₀-Dhoni, T₁₁-Bhu Sona, T₁₂-Bharati, T₁₃-Chitchor, T₁₄-Agni, T₁₅-Aditya). Cultivars Arab Queen (T₇) and Aditya (T₁₅) recorded highest plant height (73.81, 72.0 cm) respectively. Leaf area was maximum (237.08 cm²) in cultivar J. Pee Jee (T₁) followed by cultivar Dhoni (T₁₀) (203.31 cm²). Early flowering

was observed in cultivar Dhoni (T₁₀) while cultivar Aditya (T₁₅) took maximum number of days to complete flowering. The diameter of flower was maximum (15.41 cm) in cultivar Arab Queen (T₇) followed by (15.06 cm) in cultivar Bhu Sona (T₁₁). The maximum (55.98 cm, 55.11 cm) stalk length was recorded in Aditya (T₁₅) and Arab Queen (T₇) respectively. Stalk diameter was highest (0.69 cm) in cultivar Aditya (T₁₅). Among the cultivars, Dhoni (T₁₀) produced early flowering, longer flower with longer stalks were recorded in cultivar Arab Queen (T₇).

Keywords Varietal evaluation, Dahlia, Arab queen, Prabhujee, Agni.

Introduction

Dahlia (*Dahlia variabilis* L.) is tuberous rooted half hardy herbaceous perennials. Stems are mostly erect, branched, glabrous or scabrous, belonging to the Family Asteraceae having its origin in Mexico. Dahlia was introduced to India as early as 1857 under the auspices of the Agric Horticultural society of India (formerly, Royal Agric Horticultural Society of India).

Dahlia is one of the most important garden

Raghupathi B.*, M. Mitra Sarkar, Kahkashan
 Bano Karim, Manaswita Sil
 Department of Floriculture and Landscaping,
 Faculty of Horticulture,
 Bidhan Chandra Krishi Viswavidyalaya,
 Mohanpur 741252, Nadia, West Bengal, India
 e-mail : raghuabrhortico@gmail.com

* Correspondence

plants. Multitude of colors, great variation in sizes (ranging from miniature, less than 2.5 cm across to giant over 40 cm in diameter), attractive shapes, many forms, profusion of flowering and easy cultivation have made them immensely popular. They are easy to grow both in ground and pot and are extensively used for exhibition, garden display and home decoration and as cut flowers pompon and miniature types stay fresh in flower vases for greater number of days and also make moderately good garlands. The work was taken up with an objective to assess the suitability of the cultivars in the said locations.

Materials and Methods

The experiment was carried out at Horticultural Research Station, Mondouri of Bidhan Chandra Krishi Viswavidyalaya, Nadia, West Bengal from November, 2014 to April, 2015 in well drained sandy loam soil with spacing of 40 × 30 cm and pH 6.5. The experiment laid out in randomized block design, which was replicated thrice and 15 treatments in open field condition with a view to study the performance of dahlia cultivars under subtropical plains of West Bengal and also to assess the suitability of cultivars as cut flowers taking in account its vase life. The location has latitude of 23.5° N latitude and 89° E longitude with an average altitude of 9.75 m above mean sea level. The site falls under subtropical humid climatic zone, being situated just the South of the Tropic of Cancer. Recommended Agro techniques were followed and observations were made on the vegetative and floral parameters. Treatments details are as follows cultivar J. Pee Jee (T_1), Mother Teresa (T_2), Prabhuji (T_3), A. Humbley (T_4), Black Out (T_5), Sachin (T_6), Arab Queen (T_7), Pagal Thakur (T_8), Ankita (T_9), Dhoni (T_{10}), Bhu Sona (T_{11}), Bharati (T_{12}), Chitchor (T_{13}), Agni (T_{14}), Aditya (T_{15}).

Results and Discussion

The result of the present study as well as relevant discussion has been presented under following sub heads :

Vegetative characteristics

Table 1 the maximum (73.81 cm) plant height at full

bloom stage was recorded in cultivar Arab Queen (T_7). The cultivar Aditya (T_{15}) attained height of 72.0 cm almost at par to Arab Queen. Cultivar Agni (T_{14}) produced shortest plants (38.56 cm). Among the cultivars the maximum linear growth was obtained by cultivar Arab Queen from flower bud emergence to full bloom. Among the 15 cultivars selected for the study cultivars Arab Queen (T_7) and Aditya (T_{15}) can be grouped as tallest, while the cultivars Prabhuji (T_3), Mother Teresa (T_2), Chitchor (T_{13}), Bharati (T_{12}), Bhu Sona (T_{11}), J. Pee Jee (T_1) were in the range of 56.94-66.31 cm and can be grouped as semi-tall. Cultivars producing plants with height range 51-55.25 cm can be grouped as medium Dhoni (T_{10}), Ankita (T_9), A. Humbley (T_4), Pagal Thakur (T_8), Black out (T_5). Grouping according to height facilitate landscape designing and planting plans for herbaceous borders. The cultivars Agni (T_{14}), and Sachin (T_6) are grouped in the dwarf group. Similar results were reported by Dhane and Nimbalkar [1] and Ajeetkumar et al. [2] found in Dahlia. Munikrishnappa [3] reported variation in plant height in cultivars of China Aster. Cultivar J. Pee Jee recorded maximum (237.08 m²) leaf size. Among the cultivars smallest (94.78 cm²) leaf size was observed in cultivar Black Out (T_5) which was almost at par with cultivar A. Humbley (T_4). Shruti [4] observed difference in leaf sizes of different cultivars of chrysanthemum.

Floral characteristics

The days required for flower bud emergence varied from as early as 63.95 days (cultivar Dhoni, T_{10}), T_3 (65.31 days in Prabhuji) to delayed flowering in Aditya (T_{15}) (102.94 days), (Table 1). The findings was in conformity to the works reported by Ravikumar et al. [5] in chrysanthemum. The minimum number of days to reach 75% opening of flower bud was recorded in T_{10} (17.88 days) and delayed opening was exhibited by cultivar T_{15} (22.78 days). Cultivar T_{10} took minimum time to attain full bloom (20.72 days) while ccultivar T_{15} was almost 5 days later (26.59 days), closely followed by cultivar T_{14} (25.72). The tabular representation of the data showed that cultivars T_{15} and T_{14} have longer flowering duration. Variation in days to attain full bloom among cultivars were reported by Ajeet et al. [2] in Dahlia and Sankari et al. [6] in Gerbera. Cultivar T_7

Table 1. Vegetative, floral and tuber characteristics of medium decorative dahlia cultivars under subtropical plains of West Bengal. (T₁-J. Pee Jee, T₂-Mother Teresa, T₃-Prabhuji, T₄-A. Humbley, T₅-Black Out, T₆-Sachin, T₇-Arab Queen, T₈-Pagal Thakur, T₉-Ankita, T₁₀-Dhoni, T₁₁-Bhu Sona, T₁₂-Bharati, T₁₃-Chitchor, T₁₄-Agni, T₁₅-Aditya).

Treat-ments	Plant height at flower bud emergence (cm)	Plant height at full bloom (cm)	Leaf area (cm ²)	Days to FBE from planting	Days to 75% bloom from FBE	Days to full bloom from FBE	Flower diameter (cm)	Flower weight (g)	Stalk length (cm)	Stalk diameter (cm)	Self life (days)	Vase life (days)	Cluster weight of tubers (g)
T ₁	33.94	66.31	237.08	77.34	18.56	22.13	14.44	39.5	47.7	0.68	3.75	3.17	1.1
T ₂	37.13	59	146.04	72.06	18.44	22.03	12.88	24.8	40.08	0.4	3.94	3.33	3.47
T ₃	34.44	56.94	101.46	65.31	20.09	23.72	12.41	23.33	37.06	0.51	4	2.83	0.2
T ₄	35	52.94	96.75	91.53	18.16	21.63	12.91	28.08	38.3	0.48	3.88	3	2.1
T ₅	19.38	55.25	94.78	86.34	19.63	22.81	12.31	28.17	39.92	0.43	3.75	3.17	3.75
T ₆	29.81	49.44	171.01	77.75	21.22	25.03	13.19	35.33	30.91	0.55	3.92	3.33	3.2
T ₇	32.88	73.81	109.7	67.63	21.28	25.31	15.41	23.98	55.11	0.56	3.94	3.33	0.6
T ₈	30.19	54	142.64	70.08	19.16	22.75	13.56	34.83	33.33	0.55	3.94	3.17	1.7
T ₉	30.31	51.94	126.57	67.69	21.13	24.69	14.16	29.83	33.83	0.54	3.88	3	1.77
T ₁₀	31.06	51.63	203.39	63.95	17.88	20.72	12.22	32.42	31.39	0.54	3.94	2.83	0.17
T ₁₁	37.81	62.94	116.42	72.25	20	23.16	15.06	37.83	44.39	0.53	4.06	3.5	0.2
T ₁₂	30.31	59.63	171.48	70.19	20	23.25	14.63	32.75	41.45	0.62	4	3.33	0.8
T ₁₃	31.31	59.44	169.21	82.06	21.06	24.22	12.84	34.92	40.23	0.64	4.06	3.17	2.5
T ₁₄	20.25	38.56	125.71	66.6	21.84	25.72	12.54	22	24.14	0.51	4	2.83	1.1
T ₁₅	49.13	72	141.13	102.94	22.78	26.59	12.53	28.83	55.98	0.69	3.94	3	3.2
SEm(±)	1.1	1.32	9.44	1.58	0.4	0.49	0.13	1	1.07	0.01	0.07	0.13	0.06
CD at 5%	3.18	3.81	27.36	4.58	1.16	1.42	0.39	2.89	3.11	0.03	0.22	0.39	0.19

(Arab Queen) produced largest flowers (15.41 cm) followed T₁₁ (Bhu Sona). The cultivars Bharati (T₁₂) J. Pee Jee (T₁) and T₉ (Ankita) produced flower with negligible difference in flower size. Minimum flower diameter was recorded in cultivar Dhoni (T₁₀). However, from the data is evident that although the variation in flower size was significant most of cultivars produced flowers with less degree of prominence in flower size. Variation in flower diameter among cultivars was also reported by Dhane and Nimbalkar [1]. The cultivar Aditya (T₁₅) and Arab Queen (T₇) were at par in terms of stalk length (55.98 and 55.11cm respectively). Shorter (24.14 cm) stalk length was recorded in cultivar Agni (T₁₄). The traits stalk diameter, self life of flowers although significant, failed to exhibit any prominence in the readings, all the cultivars senescence after about 4 days from full bloom. The vase life is maximum (3.50 days) in cultivar Bhu Sona (T₁₁), followed by (3.33 days) cultivars Mother Teresa (T₂), Sachin (T₆), Arab Queen (T₇), Bharati (T₁₂) and minimum (2.83 days) is recorded in Prabhuji (T₃), Dhoni (T₁₀), Agni (T₁₄). Dhane and Nimbalkar [1] and Vikas et al. [7] observed

similar results in dahlia. The weight of flower was highest (39.50 gm) in cultivar J. Pee Jee (T₁) followed by cultivar Bhu Sona (T₁₁) (37.83 g) and least (22 g) flower weight was recorded in cultivar Agni (T₁₄).

Tuber characteristics

Cluster weight of tubers was maximum (3.75 g) in the cultivar Black Out (T₅) followed by (3.47g) in the cultivar Mother Teresa (T₂) and minimum (0.17 g) in cultivar Dhoni (T₁₀) followed by (0.20g) cultivar Bhu Sona (T₁₁) and cultivar Prabhuji (T₃).

Conclusion

From the result it can be concluded that the cultivars of medium decorative dahlia has a great potential in the trade. The crop can be effectively recommended for commercial cultivation due to its wide color range, acceptable flower diameter and stalk length their being the most desirable characters for cut flowers. Among the cultivars selected, while cul-

tivar Dhoni (T_{10}) can be grown for early crop, for longer flower duration cultivar Aditya (T_{15}) was found suitable.

References

1. Dhane AV, Nimbalkar CA (2002) Growth and flowering performance of some dahlia varieties. J Maharashtra Agric Univ 27: 210—211.
2. Ajeetkumar G, Naveenkuymar J, Saravan S (2015) Varietal evaluation of different hybrids of dahlia (*Dahlia variabilis* L.) under Allahabad agro-climatic conditions. Ind J Sci Res and Tech 5: 55—58.
3. Munikrishnappa PM (2011) Study on the standardization of production technology in China aster under transitional tract of north Karnataka. PhD thesis. Univ Agric Sci Dharwad.
4. Shruti W, Golliwar VJ, Shital D, Manjusha A, Nisha B (2004) Performance of gerbera varieties under shade net. J Soils Crops 14: 383—387.
5. Rajivkumar, Yadav DS, Roy AR (2007) Performance of chrysanthemum (*Dendrathera grandiflora* Tzvelcv.) cultivars under subtropical mid hills altitude of Meghalaya. Environ Ecol 255: 941—944.
6. Sankari A, Nagalakshmi S, Renuka M, Lakshamanan V (2010) Performance of gerbera varieties under Yercaud conditions. Abstract published in National symposium on lifestyle floriculture : Challenges and opportunities held at the Dr. Paramar Y. S. Univ of Hort and For, Nauni, Solan, pp 18.
7. Vikas HM, Patil VS, Agasimani AD, Praveenkumar DA (2011) Studies on genetic variability in dahlia. Int J Sci Nature 2: 372—375.