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Evaluation of different dahlia (*Dahlia variabilis* L.) varieties in Saurashtra region of Gujarat

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Abstract

Experiment was conducted with 16 different decorative types of dahlia varieties at Jambuvadi Farm, College of Horticulture, Junagadh Agricultural University, Junagadh which falls under South Saurashtra Agro-climatic Zone during two years, i.e., 2021-22 and 2022-23. Results obtained from the pooled data analysis for both the years under present studies pertaining flowering parameters with respect to different varieties are as under. Variety Good Day recorded less number of days (46.44) to initiate flower bud Variety Nearest Blue recorded largest stem girth (11.39 mm). Maximum flower diameter was recorded in Prime Minister (17.07 cm). Highest stalk length (25.46 cm) was observed in variety Pusa Sona. Highest weight of single flower (79.55 g) was observed in variety Pusa Sona Maximum number of flowers per plant (5.56), per plot (83.50) and per hectare (21806.41) was produced in variety Pusa Sona. Flower yield per plant (430.47 g/plant), per plot (5.75 kg/plot), per hectare (1.79 t/ha) was recorded highest in variety Pusa Sona. Maximum vase life (3.69 days) was observed in variety Pusa Sona.

Keywords: Dahlia, Saurashtra, decorative, evaluation, varieties

Introduction

The flower under consideration for this study is dahlia. "Dahlias are flowers of hope and confidence, dolly bold and jolly flowers of flamboyance" a line from a sonnet by Geeta Radhakrishna Menon poetically captures the beauty of this flower. Dahlia, sometimes known as the "King of Flowers," is a genus of tuberous plants in the Asteraceae family; allied species include the sunflower, daisy, chrysanthemum, and zinnia. The flower head of this Asteraceae member is essentially a composite (thus the former name Compositae), containing both central disc and surrounding ray florets. Each floret is a flower in its own right, but is frequently mislabeled as a petal, especially by horticulturists. Inflorescences can be single or multiple, with an outer red ring of dazzling blooms around a middle disc of smaller and double yellow flowers predominating over the colored ones (Marina, 2015) [22]. Dahlias indicate dignity and instability, as well as 'my gratitude exceeds your care' in floral language. *Dahlia variabilis* L. originated in Mexico and was designated as the country's national flower in 1963. It was named by Cavanilles in 1791 to honor the work of Swedish botanist Dr. Andreas Dahl, a pupil of Linnaeus. Dahlia tubers, a well-known flower florist's blossom, were sold in the millions each year in North America and Europe (Singh and Gupta, 1996) [23]. This cut flower has unique qualities that have made it one of the most beautiful flowers in other countries. In addition, it is a special plant with the most varieties of any plant species, with more than 50,000 varieties officially registered with the Royal Horticultural Society of England.

D. variabilis and *D. rosea*, two of these eight species that include pompons, extravagant kinds, anemone flowered, desert plant and semi-prickly plant types, peony, enhancing, ball types, imbricated, water lily, and star type, are used in landscaping. Before insulin was discovered in 1923, dahlia tubers were utilized in Europe and America to extract a naturally occurring form of fruit sugar called inulin, which is still used today in clinical tests for kidney functioning. Dahlias can be flavored with roasted dahlia tubers. Dahlia plants can grow anywhere from 30 to 180 cm tall, depending on the cultivar.

Dahlias come in a plethora of different varieties. It is necessary to improve it in light of the importance of the harvest and the likelihood that the production will increase. Dahlias have a lot of transposons, or genetic elements that move about on an allele and help to create a very diverse floral population. Crop improvement requires evaluation, which will offer a quick, accurate, and effective method of information to increase the utilization of germplasm. It serves as the first step toward maximizing the use of any crop. Testing the performance of the various genotypes for appropriateness and adaptability is of utmost relevance because the

performance of each genotype differs with geographies, seasons, and growing environments. To fully utilize them, it is important to identify genotypes that are better suited for a given region and to improve them. After establishing the link between the key growth factors and quality features, the improvement can be implemented (Vikas *et al.*, 2015) [24]. Modern dahlia cultivars come in a wide range of colors, sizes, and forms. They are also quite rich in their varietal diversity, and new varieties are added every year (Kumar *et al.*, 2010) [21]. For this reason, varietal evaluation is required to determine the best variety for a given region.

Materials and Methods

Experimental material and method

Terminal cuttings of dahlia were used as the experimental material. The plants are separated by 60 × 40 cm. Dahlia cultivars of 16 different decorative types were chosen as the plants for the experiment. Throughout the inquiry, all of the plants were cared for using consistent cultural practices in accordance with the accepted standards for manures and fertilizers, irrigation, and plant protection measures.

Experimental layout and varietal details

Randomized block design (RBD) was used to set up the experiment, with a gross plot size of 3.6 m x 2.4 m and the net plot size of 1.8 m x 1.2 m. The 20 varieties being evaluated under the investigation were, V1; Pusa Sona, V2; J.P.Jee, V3;

Glory of India, V4; Nearest Blue, V5; C. Monarch, V6; Tenging, V7; Good Day, V8; Black Out, V9; Gargi, V10; Anita, V11; Sachin, V12; Suparna, V13; Ankita, V14; Raja, V15; Montangini and V16; Prime Minister.

Observations recorded

Observations recorded under the present investigation were; Days taken to first bud initiation, flower diameter (cm), stalk length (cm), weight of single flower (g), number of flowers per plant, per plot and per ha, flower yield per plant (g), per plot (kg) and per ha (t) and vase life (days).

Results obtained

From the two years (2021-22) to (2022-23) of pooled data, following results were obtained pertaining to the 16 varieties of dahlia under evaluation in Saurashtra region.

Variety Good Day noted that it took less days (46.44) to begin the bloom bud. Prime Minister had the largest blossom diameter (17.07 cm). Variety Pusa Sona has the highest stalk length (25.46 cm) that was measured. The cultivar Pusa Sona had the heaviest single bloom weight (79.55 g) that was recorded. The variety Pusa Sona produced the most blooms per plant (5.56), per plot (83.50), and per hectare (21806.41). The variety Pusa Sona had the largest flower yield per plant (430.47 g/plant), per plot (5.75 kg/plot), and per hectare (1.79 t/ha). Variety Pusa Sona has the longest vase life (3.69 days).

Dahlia varietal assessment for flower yield parameters (two-year averaged data, 2021–2023)

Variety	Days taken to first bud appearance	Diameter of flower (cm)	Stalk length (cm)	Weight of single flower (g)	Number of flowers per plant	Number of flowers per plot	Number of flowers per hectare	Flower yield per plant (g/plant)	Flower yield per plot (kg/plot)	Flower yield per hectare (t/ha)	Vase life (days)
V1 Pusa Sona	54.75	16.26	25.46	79.55	5.56	82.75	21806.41	430.47	5.75	1.79	3.69
V2 J.P. Jee	96.13	16.02	16.85	64.96	1.25	11.50	2994.31	78.59	0.94	0.33	2.13
V3 Glory of India	65.94	12.08	14.58	43.81	4.25	46.50	12107.44	176.14	2.22	0.73	2.25
V4 Nearest Blue	79.56	14.00	15.60	53.01	1.69	20.00	5207.50	60.58	0.67	0.25	2.31
V5 C. Monarch	77.19	12.24	15.17	54.46	2.00	20.50	5337.69	155.02	1.88	0.65	2.31
V6 Tenging	53.19	11.06	16.89	43.57	1.75	16.75	4361.28	72.47	0.80	0.30	1.75
V7 Good Day	46.44	12.62	13.86	66.18	5.13	70.75	18421.53	337.29	4.83	1.41	2.31
V8 Black Out	85.81	14.19	14.63	68.94	2.69	31.00	8071.63	179.77	2.18	0.75	2.00
V9 Gargi	54.50	13.58	14.32	66.49	5.38	82.75	21546.03	405.22	5.61	1.69	3.31
V10 Anita	57.00	12.73	12.61	38.73	5.25	80.75	21025.28	195.13	2.79	0.81	2.44
V11 Sachin	61.75	16.76	23.29	73.91	5.00	71.25	18551.72	357.28	4.31	1.49	2.56
V12 Suparna	54.75	12.60	21.84	51.20	5.19	77.25	20113.97	315.98	4.49	1.32	3.13
V13 Ankita	63.63	13.01	15.65	40.14	1.63	19.50	5077.31	79.35	1.24	0.33	3.13
V14 Raja	85.75	12.85	18.49	57.36	3.13	45.00	11716.88	208.97	2.63	0.87	2.13
V15 Montangini	85.44	12.90	18.68	61.32	1.69	19.00	4947.13	116.57	1.10	0.49	3.44
V16 Prime Minister	85.69	17.07	16.89	69.07	4.44	58.50	15231.94	277.78	3.98	1.16	2.13
S.Em.±	0.731	0.298	0.239	1.323	0.179	1.120	291.563	5.440	0.060	0.023	0.095
C.D.at 5%	2.11	0.86	0.69	3.82	0.52	3.23	842.09	15.71	0.17	0.07	0.28
C.V.%	2.11	4.33	2.78	4.54	10.20	4.75	4.75	5.05	4.25	5.05	7.45

Conclusion

Variety Pusa Sona outperformed other dahlia varieties in terms of yield under the conditions in the Saurashtra region, according to observations of total dahlia performance. From the perspective of cut flower quality, flower stalk length and vase life are crucial dahlia characteristics. Among all the examined kinds, variety Pusa Sona had the longest flower stalks and the longest vase life.

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