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Tuber production and growth factors in dahlia (*Dahlia variabilis* L.) varieties in Saurashtra region of Gujarat

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Abstract

Experiment was conducted with 20 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 2021-22. The salient results obtained from the pooled data analysis for both the years (2021-22 and 2022-23) under present studies pertaining to growth parameters with respect to different varieties indicated maximum plant height was recorded in variety Pusa Sona (72.40 cm). Variety Ankita had the highest number of leaves (130.44) and highest number of branches (12.19). Largest intermodal length (10.74 cm) was found in variety Prime Minister. Variety Nearest Blue recorded largest stem girth (11.39 mm). Highest number of tubers per plant (5.19), per plot (72.67) and per hectare (21611.13) was found in Sachin variety. Tuber yield per plant (120.33 g/plant), per plot (1.90 kg/plot) and per hectare (0.50 t/ha) was obtained in highest in variety Sachin.

Keywords: Dahlia, tubers, decorative

Introduction

The dahlia, also referred to as the "king of flowers," is a genus of tuberous plants that belongs to the Asteraceae family. Sunflower, daisy, chrysanthemum, and zinnia are related species. The flower head is actually a composite (thus the earlier name Compositae), belonging to the Asteraceae, having both a center disc floret and surrounding ray florets. Even though each floret is a flower in and of itself, especially by horticulturists, they are frequently wrongly referred to as petals. A single inflorescence may exist, with a core disc of smaller, double yellow flowers predominating over the colored ones, and an outer red ring of vibrant blooms encircling it (Marina, 2015). Dahlias signify dignity and instability in the language of flowers, as well as the phrase "my gratitude exceeds your care."

The triangular leaves of the dahlia have a denticulate border and a unifoliate nerve. The foliage is dull and without any distinctive brightness. This plant can range in size from 30 cm to more than 1.2 m high. It also grows disorderly branching that only faces the sun and is densely covered in many leaves. The dahlia is a popular bulbous flowering plant that was bred throughout the world for its gorgeous fancy sprouts of shifting hues for the adornment of beds, borders, and cut flowers (Marina, 2015).

The following goals were kept in mind when conducting the current investigation: 1) To study vegetative parameters of dahlia (*Dahlia variabilis* L.) varieties under Saurashtra region and 2) To evaluate the different decorative types of dahlia varieties under Saurashtra region.

Materials and Methods

Experimental material and method

Dahlia terminal clippings made up the experimental material. The gap between the plants is 60 × 40 cm. 20 varieties were chosen for the experiment. During the course of the inquiry, all the plants were maintained using identical cultural methods in accordance with the standard guidelines for manures and fertilizers, irrigation, and plant protection measures.

Experimental layout

The experiment was laid out in Randomized block design (RBD) having the gross plot size of 3.6 m x 2.4 m and the net plot size of 1.8 m x 1.2 m.

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Observations recorded: Observations recorded under the present investigation were; plant height (cm), number of leaves per plant, number of branches per plant, internodal length (cm), stem girth (mm), number of tubers per plant/plot/ha and yield of tubers per plant/plot /ha.

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.

Maximum plant height was recorded in variety Pusa Sona (72.40 cm). Variety Ankita had the highest number of leaves (130.44) and highest number of branches (12.19). Largest internodal length (10.74 cm) was found in variety Prime Minister. Variety Nearest Blue recorded largest stem girth (11.39 mm). Highest number of tubers per plant (5.19), per plot (72.67) and per hectare (21611.13) was found in Sachin variety. Tuber yield per plant (120.33 g/plant), per plot (1.90 kg/plot) and per hectare (0.50 t/ha) was obtained in highest in variety Sachin.

Table 1: Varietal evaluation of dahlia for growth and tuber yield parameters (pooled data 2yrs) (pooled data of two, 2021 to 2023)

| Variety | Plant height | Number of leaves per plant | Number of branches per plant | Internodal length (cm) | Stem girth (mm) | Number of tubers per plant | Number of tubers per plot | Number of tubers per ha | Tuber yield per plant (kg/plant) | Tuber yield per plot (kg/plot) | Tuber yield per ha (t/ha) |
|----------------|--------------|----------------------------|------------------------------|------------------------|-----------------|----------------------------|---------------------------|-------------------------|----------------------------------|--------------------------------|---------------------------|
| Pusa Sona | 72.40 | 51.25 | 6.63 | 8.94 | 8.82 | 4.25 | 53.29 | 17705.50 | 107.65 | 1.72 | 0.45 |
| J. P. Jee | 54.28 | 57.56 | 1.63 | 9.74 | 6.01 | 3.06 | 32.92 | 12758.38 | 84.32 | 1.35 | 0.35 |
| S. Nibedita | 46.52 | 61.50 | 5.06 | 7.23 | 5.67 | 2.38 | 30.51 | 9894.25 | 64.15 | 1.03 | 0.27 |
| Ketu | 30.97 | 27.63 | 2.13 | 6.09 | 6.42 | 2.63 | 24.32 | 10935.75 | 58.97 | 0.94 | 0.25 |
| Glory of India | 51.86 | 72.00 | 10.44 | 7.44 | 7.92 | 2.88 | 33.47 | 11977.25 | 95.74 | 1.53 | 0.40 |
| Nearest Blue | 49.82 | 26.56 | 2.13 | 8.74 | 11.39 | 3.56 | 35.29 | 14841.38 | 93.95 | 1.50 | 0.39 |
| C.Monarch | 61.50 | 62.94 | 7.00 | 9.45 | 10.25 | 4.06 | 52.05 | 16924.38 | 106.12 | 1.70 | 0.44 |
| Tenging | 46.02 | 26.69 | 2.25 | 6.76 | 7.06 | 3.06 | 43.44 | 12758.38 | 85.34 | 1.37 | 0.36 |
| Tufan | 61.07 | 70.13 | 10.88 | 9.77 | 6.44 | 2.50 | 32.15 | 10415.00 | 61.78 | 0.99 | 0.26 |
| Good Day | 45.94 | 64.44 | 5.81 | 9.85 | 8.00 | 3.44 | 51.92 | 14320.63 | 84.93 | 1.36 | 0.35 |
| Black Out | 63.57 | 33.44 | 2.44 | 8.93 | 6.40 | 3.63 | 45.35 | 15101.75 | 97.54 | 1.56 | 0.41 |
| Gargi | 51.81 | 44.69 | 6.94 | 7.81 | 6.81 | 4.44 | 54.24 | 18486.63 | 112.05 | 1.79 | 0.47 |
| Anita | 52.37 | 47.56 | 9.63 | 7.48 | 5.21 | 4.31 | 62.01 | 17965.88 | 105.24 | 1.68 | 0.44 |
| Sachin | 67.36 | 65.00 | 6.19 | 8.54 | 7.09 | 5.19 | 74.66 | 21611.13 | 120.33 | 1.93 | 0.50 |
| Suparna | 63.69 | 120.81 | 11.19 | 9.12 | 7.38 | 4.25 | 62.70 | 17705.50 | 113.45 | 1.82 | 0.47 |
| Ankita | 54.55 | 130.44 | 12.19 | 8.21 | 7.77 | 2.63 | 30.79 | 10935.75 | 71.11 | 1.14 | 0.30 |
| Raja | 51.00 | 51.81 | 11.44 | 8.60 | 6.62 | 2.44 | 31.03 | 10154.63 | 69.26 | 1.11 | 0.29 |
| Eternity | 34.31 | 103.38 | 11.88 | 8.90 | 7.37 | 2.31 | 24.28 | 9633.88 | 52.69 | 0.84 | 0.22 |
| Montangini | 57.48 | 53.81 | 6.06 | 10.37 | 10.57 | 3.63 | 51.06 | 15101.75 | 92.27 | 1.48 | 0.38 |
| Prime Minister | 61.55 | 42.75 | 3.88 | 10.74 | 9.77 | 3.88 | 52.19 | 16143.25 | 118.84 | 1.90 | 0.50 |
| S.Em.± | 1.48 | 1.444 | 0.339 | 0.134 | 0.141 | 0.162 | 1.253 | 673.169 | 2.718 | 0.043 | 0.011 |
| C.D.at 5% | 4.26 | 4.13 | 0.97 | 0.38 | 0.40 | 0.46 | 3.59 | 1927.23 | 7.78 | 0.12 | 0.03 |
| C. V.% | 5.52 | 4.76 | 9.99 | 3.11 | 3.69 | 9.44 | 5.71 | 9.44 | 6.05 | 6.05 | 6.05 |

Conclusion

By observing the overall performance of the dahlia varieties, variety Sachin excelled in performance in terms of tuber yield in Saurashtra region conditions.

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