The Pharma Innovation Journal 2020; 9(2): 499-501

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2020; 9(2): 499-501

www.thepharmajournal.com
Received: 27-11-2019
Accepted: 05-01-2020

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Varietal evaluation of tuberose under agro climatic conditions of Jammu

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Abstract
The present investigation was carried out to study the performance of tuberose varieties under agro climatic conditions of Jammu. All the vegetative and flowering parameters differed significantly. In vegetative parameters, highest plant height (25.19 cm), number of leaves (41.11) and plant spread (74.96 cm) was obtained in variety 'Nirantara' while maximum leaf width (2.05) and leaf length (43.00 cm) was observed in 'Suvasini'. In flowering parameters, again variety 'Nirantara; found superior for spike length (102.78 cm), rachis length (43.89 cm), number of florets (40.61), and number of spikes (5.67) while earliest bud initiation (53.00 days) was recorded in Calcutta Double. Maximum flower diameter (4.93 cm) and floret length (7.03 cm) was observed in 'Shringar' and 'Suvasini' (7.03 cm), respectively.

Keywords: Varietal evaluation, tuberose and agro climatic

Introduction
Tuberose popularly known as Rajnigandha, is a very important tropical ornamental bulbous flowering plants. It belongs to the family Amaryllidaceae and is native of Mexico It is cultivated for production of long lasting flower spikes. There are three types of tuberose flowers viz., single, double and semi double. Flowers of the Single type (single row of corolla) are commonly used for extraction of essential oil, loose flowers, making garland etc., while that of Double varieties (more than two rows of corolla) are used as cut flowers. Tuberose has immense potential due to pleasant fragrance, longer vase-life of spikes, higher returns and wide adaptability to varied climate and soil. Tuberose grows well in tropical and subtropical regions. In India, it is commercially cultivated in West Bengal, Karnataka, Tamil Nadu and Maharashtra. Jammu is also a subtropical region and holds tremendous potential for raising tuberose crop throughout the year Thus, the present study was conducted to find out a suitable variety of tuberose for its commercial cultivation in Jammu region.

Material and Methods
A trial was conducted at the Experimental field of Department of Vegetable Science and Floriculture, SKUAST-Jammu to study the performance of tuberose varieties for their vegetative and flowering characters. The experiment was laid out in randomized block design with three replications. The experimental site is located at an altitude of and a longitude of. The climate is usually subtropical with hot summer and cold winter. The bulbs of tuberose varieties namely Prajwal, Vaibhav, Nirantara, Suvasini, Sringar were procured from IIHR, Bangalore while the planting material of Calcutta Single and Calcutta Double was procured from Dr Y S Parmar University of Horticulture and Forestry, Nauni, Solan. The bulbs were planted in the month of May after treatment with fungicides (Bavistin@ 0.1% and Dithane @0.2%) at spacing 30cm x30cm. Observations were recorded on various vegetative and flowering parameters and data was analyzed statistically.

Result and Discussion
Vegetative parameters
Results in Table 1. depicted significant diference in vegetative characters. Maximum plant height (25.19 cm) was recorded in variety Nirantara which was at par with Prajwal (24.50 cm) and Calcutta Double (23.00 cm). Again Nirantara found superior with highest number of leaves (41.11) and plant spread (74.96 cm) while lowest number of leaves (27.11) and plant spread (61.15 cm) was recorded in variety Suvasini. Maximum leaf length (43.00 cm) was observed in Suvasini followed by variety Nirantara (34.00 cm). Leaf width (2.05 cm) was

highest in Suvasini followed by variety Shringar (1.83 cm). Madhumati and Reddy (2018) [8] and Prashanta *et al*. (2016) [6] reported similar findings where in varietal difference was observed for various parameters.

Table 1: Vegetative characters of tuberose varieties

Varieties	Plant height (cm)	No. of leaves	Plant Spread (cm)	Leaf length (cm)	Leaf width (cm)
Suvasisni	20.50	27.41	61.15	43.00	2.05
Shringar	21.68	37.45	71.41	29.07	1.83
Vaibhav	20.44	38.11	72.19	30.00	1.77
Nirantata	25.19	41.11	74.96	34.00	1.77
Prajwal	24.50	38.78	66.91	31.00	1.43
Calcutta Single	22.00	33.22	68.11	29.67	1.37
Calcutta Double	23.00	38.55	71.01	29.00	1.33
C.D. (0.05)	2.53	3.31	2.61	2.91	0.18

Table 2: Flowering characters of tuberose varieties

Varieties	Days taken to spike emergence	Spike length (cm)	Rcahis length (cm)	No. of florets	Floret diameter (cm)	Floret length (cm)	No. of spikes/plant
Suvasisni	77.00	98.55	40.00	32.95	4.36	7.03	4.33
Shringar	70.67	82.22	32.37	36.88	4.93	5.27	2.33
Vaibhav	73.33	86.30	29.41	38.17	4.87	6.17	4.00
Nirantata	72.67	102.78	43.89	40.61	4.47	4.60	5.67
Prajwal	71.33	98.97	40.66	38.89	3.50	5.57	3.67
Calcutta Single	54.33	94.33	39.89	39.00	3.23	5.07	4.00
Calcutta Double	53.00	100.89	40.44	37.89	3.40	4.97	3.33
C.D. (0.05)	3.40	3.27	3.71	2.61	0.21	0.30	1.22

Suvasini

Shringar

Vaibhav

Nirantara

Prajwal

Flowering Parameters

Earliest spike emrgence (53.00 days) was observed in Calcutta Double which was at par with Calcutta Single (54.33 days) (Table 2.). The results are in accordance with the finding of Bankar and Mukhopadhayay (1980) [1], Ramachandru and Thangam (2009) [7], and Krishanmurthy (2014) [4]. Longest spike (102.78 cm) was recorded in Nirantara followed by variety Calcutta Double (100.89 cm) while shortest spike was observed in variety Shringar (82.22 cm). Varietal difference in spike length was also reported by Patil *et al*. (1987) [11], Ramchnadru and Thangam (2009) [7], Madhumati *et al*. (2018) [8], Prashanta *et al*. 2016 [6] and Desai and Mamata (2016) [2] in tuberose. Maximum rachis length (43.89 cm) was obtained in Nirantara which was found at par with Prajwal (40.66 cm) and Calcutta Double (40.44 cm) while minimum rachis length was observed in variety Vaibhav (29.41 cm). Flower diameter was found maximum in Shringar ((4.93 cm) followed by variety Vaibhav (4.87 cm).

Number of florets (40.61) and number of spikes (5.67) were recorded highest again in variety Nirantara. Maximum floret length was observed in Suvasini (7.03 cm) followed by variety Vaibhav (6.17 cm). Variation in rachis length, flower diameter, number of florets per spike, and floral length might be due to genotypes and climatic conditions. The results are in close conformity with the findings of Irulappan *et al*. (1980) [3], Murthy and Sriniwas (1997) [10], Ramchandru and Thangam (2009) [7], Madhumati *et al*., (2018) [8], Rachan *et al*., (2013) [8]

It is concluded from the present study that Nirantara can be recommended for commercial cultivation in Jammu region as it performed better than other varieties for various vegetative and flowering characters.

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