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Varietal performance of tuberose in Muzaffarnagar under western plain zone condition

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ABSTRACT : A field experiment was conducted on the varietal performance of tuberose in Muzaffarnagar Under Western Plain Zone condition at Krishi Vigyan Kendra campus and farmers field in 2013 and 2014. The experiment was jointly organised with Directorate of Floriculture Research Institute, I.C.A.R., New Delhi. The study revealed that the Prajwal variety perform better in comparison to other variety. Prajwal variety highest length of spike (111cm), rachis length (31.53cm), number of Florate (60.33) and diametre of spike (12.92mm) and minimum rachis length (20.22cm) number of Florates (40.40) and diametre of spike (3.70mm) in Mexican single. Which was significantly lower in comparison to variety Prajwal?

KEY WORDS : Tuberose, Varietal performance, Varieties, Spikes, Clumb

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Tuberose (*Polianthes tuberosa* Linn.) commonly known as *Rajnigandha* in hindi, is an important commercial flower crop in India and is popular due to its fragrance and long keeping quality of flower spikes (Sadhu and Bose, 1973). The spikes are useful as cut flowers for vase decoration (Benschop, 1993) and bouquets while individual flowers are used for making veni, garland and buttonholes. It is believed to have originated in Mexico (Bailey, 1903). It belongs to the family Amaryllidaceae (Bailey, 1939).

It is estimated that in India tuberose is being commercially cultivated over 30,000 ha mainly in the states of Andhra Pradesh, Assam, Gujarat, Haryana, Karnataka, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh, Uttarakhand and West Bengal. Tuberose is cultivated as summer crop in Northern Indian Plains and produce waxy white flowering spike with sweet and pleasant fragrance.

The quality and production of cut flower is

primarily a variety trait, it is greatly influenced by climatic condition, fertility level of soil, planting time, size of bulb geographical and nutritional factor. The marketing potential can be explained by introduction and evaluation of tuberose varieties. There are many excellent varieties of tuberose with magnificent inflorescence in exhaustive length, varying number of flowers and size and wide range of keeping quality. It is very necessary to evaluate tuberose cultivars.

Several cultivars had been assessed and evaluated for their performance under different regions of the country taking single petalled and double petalled cultivars together by Bankar and Mukhopadhyay (1980); Bhattacharjee *et al.* (1981); Pratap and Manohar Rao (2003) and Singh and Misra (2005) have revealed that a market demand has increased manifold for want of diverse forms and intense fragrance found in them. A particular cultivar may or may not perform satisfactorily in a given location. Hence, five cultivars of tuberose, *viz.*,

Prajwal, Arka niranter, Srinagar, Phool Rajni and Mexican single collected from different sources were evaluated for their various floral growth parameters for two years in Muzaffarnagar under western plain zone condition .

RESEARCH METHODS

This present experiment was jointly conducted by Krishi Vigyan Kendra, Baghra and Directorate of Floriculture Research Institute, New Delhi at Research Farm and Krishi Vigyan Kendra, Baghra, Muzaffarnagar and farmers field during the 2013 and 2014. There were five cultivars viz., Prajwal, Arka niranter, Srinagar Phool Rajni and Mexican Single. The experiment was laid out in Randomized Block Design with five replications. The bulbs having a diameter of 2.5-3.0 cm, well seasoned after the dormancy were planted at the depth of 8-10 cm in the plot size of 2.0m × 2.0 m at 20 × 20 cm spacing in the month of March in both the year of 2013 and 2014. Uniform recommended package of practices were followed along with nutritional application and normal

flood irrigation. Ten plants were selected from each plots for observation. The data on floral parameters viz., number of days in germination, number of days in flowers spike diameter (mm) spike length (cm) rachis length (cm) number of florates, flower diameter (cm) fresh weight (g) were recorded time to time for both the years. Two years data were pooled and analyzed statistically.

RESEARCH FINDINGS AND DISCUSSION

The statistically analysed data presented on the days to sprouting floral parameters and spike characters are presented in Table 1 showed a significant variation over the years of experimentation for all the traits studies.

The data showed significant variation and minimum days (28 days) sprouting were recorded in cv. ARKANIRANTES while maximum days sprouting was recorded in cv. SRINGAR and cv. PHOOLE RAJNI 34 days, respectively.

The mean performance of the varieties for floral character (Table 1) reflected variation among the

Table 1: The present investigation									
Sr. No.	Name of varieties	Germination (Days)	Flowering duration (Day)	Spike diameter (mm)	Spike length (cm)	Rachis length (cm)	Number of florates/spike	Flower diameter (cm)	Fresh weight (g)/ spike
Details of 2012-2013									
1.	Prajwal	30.0	95.0	12.88	110.0	31.04	60.22	4.67	169.78
2.	Arka niranter	27.0	92.0	9.48	92.22	26.0	52.00	4.90	91.55
3.	Sringar	35.0	95.0	8.24	81.33	20.11	51.00	4.40	69.44
4.	Phool Rajni	33.0	90.0	10.98	91.55	27.55	57.55	5.38	99.11
5.	Mexican Single	32.0	91.0	6.56	94.22	15.07	40.44	3.72	45.00
	Average	31.4	92.6	9.63	93.86	23.95	52.24	4.61	94.98
Details of 2013-2014									
1.	Prajwal	32.0	97.0	12.96	112.0	32.02	60.44	4.33	170.22
2.	Arka niranter	29.0	90.0	9.64	94.10	26.80	52.60	4.80	90.45
3.	Sringar	33.0	93.0	8.38	83.17	20.33	51.30	4.6	68.86
4.	Phool Rajni	35.0	92.0	10.82	91.45	27.45	57.45	5.22	98.97
5.	Mexican Single	30.0	93.0	6.72	92.38	15.13	40.36	3.68	44.90
	Average	31.80	93.0	9.70	94.62	24.36	52.43	4.52	94.68
Pooled data of 2012-13 and 2013-14									
1.	Prajwal	31.0	96.0	12.92	111.0	31.53	60.33	4.50	170.00
2.	Arka niranter	28.0	91.0	9.56	93.16	26.40	52.30	4.85	91.00
3.	Sringar	34.0	94.0	8.31	82.25	20.22	51.15	4.50	69.15
4.	Phool Rajni	34.0	91.0	10.90	91.50	27.50	57.50	5.30	99.04
5.	Mexican Single	31.0	92.0	6.64	93.30	15.10	40.40	3.70	44.95
	Average	31.6	92.8	9.67	94.24	24.15	52.33	4.57	94.83
	C.D. (P=0.05)	0.63	0.42	0.56	0.82	1.26	0.38	0.36	2.48

Cultivars	(pooled data 2012-13 and 2013-14)				
	Average length of bulb (cm)	Weight of per clump(g)	Average diameter of bulb (mm)	Average weight of bulb (g)	No of bulb per clump
Prajwal	7.8	410.43	31.12	35.32	21.75
Arka niranter	7.96	532.17	35.17	52.91	19.12
Sringar	7.31	274.21	28.09	13.75	18.62
Phoole Rajni	7.21	246.88	26.90	25.18	14.50
Maxican Single	6.75	230.54	23.79	18.38	20.00
Average	7.38	338.85	29.01	29.10	18.79
C.D. (P=0.05)	0.37	2.78	0.91	1.26	1.32

varieties. The number of days to first flowering was recorded least in Arkanirantes and Phoole Rajni 91 days while the longest vegetative stage was recorded in Prajwal 96 days followed by Srinagar 94 days. Similar results were also reported by Ramachandhralu and Thangam (2009).

The flower and spike growth characters recorded a significant variation among them and revealed that the cv. PRAJWAL produced highest spike length (111.0 cm) followed by cv. MEXICUN SINGLE (93.30 cm) and cv. ARKANIRANTAN (93.16 cm) whereas, Sringar was the smallest with (82.25 cm), spike diameter 12.92 mm, rachis length 31.53 cm number of floret 60.33 and fresh weight of floret per spike 17.00 g were recorded in cv. PRAJWAL when compared with rest of the treated cultivars.

Significantly lowest spike diameter 6.60 mm, rachis length 15.10 cm, number of floret 40.40 and fresh weight of floret per spike (44.95 g) were obtained in cv. MEXICAN SINGLE. The findings in the presented study are in agreement with the reports of Tyagi *et al.* (2008) under western plain zone condition of Meerut (U.P.).

The flower diameter character recorded a significant variation among them the cultivar Phole Rajni produced significantly maximum flower diameter (5.30 cm) followed by cv. ARKANIRANTES 4.85 cm. Significantly lower (shorter) flower diameter was recorded in cv. MEXICAN SINGLE (3.70 cm). Similar findings have also been reported by Martolia and Srivastava (2012).

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