Short Communications

Evaluation of Tuberose (Polianthes tuberosa) Cultivars for Semi-arid Tropic Condition Similar to Tiruchirappalli, Tamilnadu, India

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ABSTRACT

The present investigation was conducted to study the relative performance of the five single type cultivars for semi-arid tropic condition similar to Tiruchirappalli, Tamilnadu. A total of five tuberose genotypes viz., Calcutta single, Hyderabad single, Phule Rajani, Prajwal and Shringar were evaluated for vegetative growth, flowering and yield in a randomized complete block design with four replications. Prajwal recorded the highest plant height (108.75 cm), earliest in days for spike emergence (80 days), number of spike per plant (4.57), maximum number of florets per spike (48.00) and maximum single flower weight (1.59 g). Prajwal and Shringar recorded maximum yield per plant (99.00 g and 95.85) as well as maximum yield per hectare (11.00 t/ha and 10.65 t/ha) respectively. From this experiment, we can conclude that, Prajwal and Shringar cultivars yields comparatively more under semi-arid tropic condition similar to Tiruchirappalli, Tamilnadu.

Keywords
Tuberose, Cultivars, Semi-arid, Yield analysis, Evaluation

Introduction

Tuberose (Polianthes tuberosa) is one of the most important cut flowers in India. It is an ornamental bulbous plant, native to Mexico and belongs to the family Amaryllidaceae. There are only two types of tuberose (Single and Double) cultivated in the world. As a loose flower, they are in great demand for making garlands and veni in Southern India. It is being used for worshipping, offerings in religious functions and auspicious days (Krishnamoorthy, 2014). The flowers are also used for the extraction of valuable essential oil, which is having a greater export demand (Martolia, 2010). It is cultivated on a large scale in Tamil Nadu, Karnataka, West Bengal, and Maharashtra. To a lesser extent, it is also grown in Andhra Pradesh, Haryana, Delhi, Uttar Pradesh and Punjab. At present, throughout India, several cultivars and local varieties are available in tuberose. Varieties which perform well in one region may not do well in other regions of varying climatic conditions (Kamble et al., 2004). Hence, location specific evaluation of varieties will help the growers to select the most suitable and high yielding variety for that particular region. Critical assessment of germplasm also helps in selecting parents for breeding programmes to improve the yield and quality of the flowers. Hence, the present investigation was conducted to study the relative performance of the five loose flower...
cultivars for semi-arid tropic condition similar to Tiruchirappalli, Tamilnadu.

Materials and Methods

The experiment was conducted at Institute of Agriculture, Tamil Nadu Agricultural University, Kumulur, Tiruchirappalli District, Tamilnadu. A total of five tuberose genotypes (single type) via., Calcutta single, Hyderabad single, Phule Rajani, Prajwal and Shringar were evaluated for vegetative growth, flowering and yield in a randomized complete block design with four replications. Before initiating the experiment, the soil was brought to a fine tilt with four deep ploughing. Weeds, stubbles, roots etc., were removed. Medium sized bulbs (3.0-3.5 cm diameter) of about 25 grams were planted at a spacing of 45 m x 20 m which accommodates 11 plants per m². The cultural practices were adopted as per the recommendations of crop production guide of Horticultural Crops, Tamil Nadu Agricultural University to raise the crop. Five random plants were selected for recording various observations viz., plant height (cm), days for spike emergence, number of spikes per plant, number of florets per spike, single flower weight (g), yield per plant (g) and yield per hectare (t/ha). The estimates of mean, variance and standard error were done as per Panse and Sukhatme (1967).

Results and Discussion

The mean performance of the cultivars on various parameters were shown in table 1. The highest plant height was recorded in Prajwal (108.75 cm) followed by Phule Rajani (88.50 cm) and Shringar (86.75 cm). On observing the reproductive characters, Prajwal was significantly earliest in days for spike emergence (80 days) among the cultivars which is in line with the findings of Patil et al., (2009) and Ranchana et al., (2013). Cultivar Prajwal recorded maximum number of spike per plant (4.57), maximum number of florets per spike (48.00) and maximum single flower weight (1.59 g). Next to Prajwal, Shringar performed well with number of spike per plant (3.83), number of florets per spike (43.00) and single flower weight (1.23 g) recorded. The performances of Prajwal and Shringar recorded were similar to the findings of Ranchana et al., (2013).

Table.1 Performance of tuberose genotypes for yield

| Varieties      | Plant height (cm) | Days for spike emergence | No. of spike per plant | No. of floret per spike | Single flower weight (g) | Yield per plant (g) | Yield per hectare (t/ha) |
|----------------|-------------------|--------------------------|------------------------|-------------------------|--------------------------|---------------------|--------------------------|
| Calcutta single| 73.59             | 96.00                    | 3.01                   | 33.00                   | 1.17                     | 56.98               | 6.33                     |
| Hyderabad single| 75.80             | 92.00                    | 3.33                   | 44.00                   | 0.76                     | 61.20               | 6.80                     |
| Phule Rajani   | 88.50             | 87.00                    | 3.28                   | 41.00                   | 1.18                     | 91.35               | 10.15                    |
| Prajwal        | 108.75            | 80.00                    | 4.57                   | 48.00                   | 1.59                     | 99.00               | 11.00                    |
| Shringar       | 86.75             | 85.00                    | 3.83                   | 43.00                   | 1.23                     | 95.85               | 10.65                    |
| Mean           | 86.68             | 88.00                    | 3.60                   | 41.80                   | 1.19                     | 80.88               | 9.89                     |
| SEd            | 1.80              | 0.80                     | 0.08                   | 0.72                    | 0.03                     | 2.60                | 0.29                     |
| CD             | 3.93              | 1.75                     | 0.17                   | 1.56                    | 0.07                     | 5.66                | 0.63                     |

On analysing yield parameters, Prajwal and Shringar recorded maximum yield per plant (99.00 g and 95.85) as well as maximum yield per hectare (11.00 t/ha and 10.65 t/ha) respectively. Calcutta single recorded the very low yield per plant (56.98 g) and yield per
hectare (6.33 t/ha) among the cultivars evaluated. From the study we understood that, days for first flowering, number of spike per plant, number of florets per spike and single flower weight are the parameters have direct influence on the yield. This was in line with findings of Ranchana et al., (2015) that the characters viz., weight of florets per spike, days to spike emergence had significant positive correlation co-efficients and positive direct effects on yield. The weight of florets per spike might be due to the increased number of florets per spike (Ranchana et al., 2013). The highest yield registered by Prajwal might be due to its capacity to produce more number of florets per spike and weight of florets per spike (Ranchana et al., 2013). Similar performances of Prajwal were observed by Krishnamoorthy (2014). From this experiment, we can conclude that, Prajwal and Shringar cultivars yields comparatively more under semi-arid tropic condition similar to Tiruchirappalli, Tamilnadu.

In conclusion from this experiment, we can conclude that, Prajwal and Shringar cultivars yields comparatively more under semi-arid tropic condition similar to Tiruchirappalli, Tamilnadu.

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