

Effect of Planting Dates on Growth, Flowering and Corm Characteristics of Tuberose (*Polianthes tuberosa*) cv. Single

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ABSTRACT

Effect of seven planting dates was observed on growth, flowering and corm characteristics of tuberose (*Polianthes tuberosa*) cv. Single. First planting was carried out on February 01, 2000 and subsequent six plantings were completed with the interval of 15±2 days. Planting at 31st March gave the best results for days required to 10% sprouting of corms, number of leaves, plant height, number and length of spike, number of florits, flower quality and number of corms per plant. Therefore, planting between last week of March and first week of April is recommended for good growth, best cutflower and more corms production of tuberose under agro-ecological conditions of Faisalabad.

Key Words: Tuberose; Florits; Corm; Spike; Cutflower

INTRODUCTION

Tuberose (*Polianthes tuberosa*) is an important flower from the aesthetic and commercial point of view. It belongs to the family Amaryllidaceae and is native of Mexico. Its importance among the commercially grown flowers is due to its potential for cutflower trade, long vase life and essential oil industry (Singh, 1995). It is among the cherished cutflower for its long flower spike and table decoration when arranged in bowls.

It is cultivated in most of the tropical and subtropical countries of the world. In plains of Pakistan, it blooms profusely during the summer and flaunts its fragrance indoor and outdoor. Loamy and sandy loam soils with pH range between 6.5-7.5 are the best for its growth (Sharga & Sharma, 1994). It is also very sensitive to change in the temperature. Mostly tuberose is propagated through corms. The best suitable diameter of corm and planting depth for cutflower production ranges between 2.5-3.5 cm and 6.0 cm, respectively (Hussain, 1999).

Date of planting plays an important role in regulating growth and quality of tuberose. Vegetative growth and quality of tuberose is improved by early plantings (Khobragade *et al.*, 1997). The highest number of spikes per plant were obtained from April to May plantings while highest number of corms per plant were obtained from March and April plantings (Mukhopadhyay & Banker, 1881). Singh *et al.* (1999) observed the longest and maximum number of flower spike per clump from June planting along with the maximum number and size of corms per plant. The highest flower yield was obtained from mid August to mid November plantings (Zizzo *et al.*, 1998). In Pakistan, a limited research work on tuberose is carried out particularly regarding the planting time. Present research work was planned to investigate the best planting time of tuberose for good growth, best flower quality and maximum corm production under agro-ecological conditions of Faisalabad.

MATERIALS AND METHODS

The experiment was conducted at the Floriculture Research Area, Department of Horticulture, University of Agriculture, Faisalabad. There were seven planting dates with three replications. First planting was done on February 01, 2000 while subsequent plantings were carried out with the interval of 15±2 days. There were 100 plants in each replication. Plant to plant and ridge to ridge distance was kept at 15 cm and 45 cm, respectively. Planting depth was 5 cm in all treatments. The corms selected for planting had uniform diameter i.e. between 2.5-3.5 cm. First irrigation was given just after planting while subsequent irrigation were applied at the interval of 15 days which was gradually decreases up to eight days from April to onward, reason being high temperature. The mean monthly temperature during the study period has been presented in Table I.

Table I. Mean monthly temperature (°C)

Months	Mean Minimum	Mean Maximum
February	07.25	20.80
March	12.38	27.50
April	20.33	37.89
May	28.10	41.58
June	27.28	39.87
July	27.05	36.45
August	27.47	37.56

Data regarding sprouting of corms were collected by counting the number of days from the date of planting up to the day when 10% corms completed their sprouting. Plant height was measured when plant was at full bloom stage. Number of leaves were counted at full-grown stage. Days required for 10% flowering were observed from the date of planting up to date when 10% plants initiate flowering. Number and length of spike per plant was recorded at full bloom stage. Number of florets per spike were counted at full open stage. Intact flower life was measured by counting the number of days from the opening of first floret till all the developed florets showed colour fading. Flower quality was

assessed by using the scoring method suggested by Cooper and Spokas (1991). Data on number and size of corms were collected at the end of flowering. The experiment was laid out according to randomized complete block design and means were compared by applying DMR test at 5% probability level (Steel & Torrie, 1984).

RESULTS AND DISCUSSION

Growth characteristics. It was noted (Table II) that significantly more number of days were taken by the corms in early planting dates for 10% sprouting but number of days gradually decreased in late plantings. Plantation on 1st May took the minimum days (11.67), which is statistically at par with number of days taken by 31st March and 15th April plantations. Number of leaves per plant ranged between 25.33 to 30 in all treatments (Table I). More number of leaves were observed in later planting dates, i.e. from 31st March to on ward plantations. Moreover, plant height was significantly greater in the plants, which were planted on 31st March.

Flowering characteristics. Highly significant difference (Table III) was observed among the planting dates regarding the days required to initiate flowering in 10% plant population. Maximum days (153.7) were taken by first planting date but this number gradually decreased with the delay in planting. Minimum days were taken by last the planting dates i.e. 52.33 days.

Number of spikes per plant also significantly varied among all treatments. It was noted that plantation between 15th March to 15th April gave more number of spikes per plant as compared to early or late planting dates. Maximum length of spike was observed in plants, which were sown on 31st March. It was also observed that the length of spike

decreased with the early and late plantings. Results are in line with the findings of Mishra (1999) who also observed poor flower and spike yield in early and late plantings.

Table III also shows that number of florets per spike increased in later planting dates. Maximum florets number (46) was observed in 31st March plantation, which was statistically at par with all other planting dates except 1st February plantation, i.e. 36.33. Our findings are in favor with the observations of Farina and Paterniani (1986) and Zizzo *et al.* (1999) who found more number of florets per plant, when planting was done during hot summer months. Similarly, the best flower quality was noted in latter planting dates i.e. 15th March to 1st May plantation. Likewise, longer intact flower life was also noted in later planting dates as compared to early plantings. This may be due to the fact that temperature during flowering days was comparatively low in late planting dates as compared to early planting dates (Table I).

On overall basis, 31st March plantation gave the best results regarding number and length of spikes per plant, number of florets and quality of flower.

Corm characteristics. It is evident from Table IV that maximum number of corm per plant were produced by the planting dates starting from 1st March to the 31st March. Moreover, corm number decreased in earlier or latter planting dates.

Bigger size of corm was observed in early planting dates, which gradually decreases with delay in plantings (Table IV). Maximum size (1.20 cm) was noted in first planting date while minimum size of corm (0.67 cm) was observed in last planting date. This is probably due to more time available for storing food in earlier plantations and hence making corm size bigger.

Table II. Effect of different planting dates on growth characteristics of tuberose (*Polianthes tuberosa* L.) cv. Single

	1 st Feb.	15 th Feb	1 st Mar.	15 th Mar.	31 st Mar.	15 th April	1 st May
Days required to 10% sprouting	32.67a	33.67a	21.67b	17.00b	14.00c	13.33c	11.67c
No. of leaves/ plant	25.33b	26.00b	26.00b	26.33b	29.67a	28.33ab	30.00a
Plant height (cm)	94.60e	99.67d	99.33d	102.70c	108.10a	105.90b	96.17e

Table III. Effect of different planting dates on flowering characteristics of tuberose (*Polianthes tuberosa* L.) cv. Single

	1 st Feb.	15 th Feb.	1 st Mar.	15 th Mar.	31 st Mar.	15 th April	1 st May
Days required to 10% flowering	153.70a	140.00b	108.30c	93.33d	78.67e	65.67f	52.33g
No. of spikes/plant	1.03c	1.10c	1.00c	1.30bc	1.76ab	2.00a	1.16bc
Length of spike (cm)	22.90c	24.15bc	24.13bc	24.95ab	26.35a	25.74ab	24.21bc
No. of florits/spike	36.33b	40.00ab	40.33ab	40.00ab	46.00a	45.33a	46.00a
Quality of flower	9.33bc	6.00c	7.00c	14.33a	14.67a	12.67ab	15.00a
Intact flower life	33.33c	39.67bc	34.67c	34.67c	39.00bc	45.67ab	51.67a

Table IV. Effect of different planting dates on corm characteristics of tuberose (*Polianthes tuberosa* L.) cv. Single

	1 st Feb.	15 th Feb.	1 st Mar.	15 th Mar.	31 st Mar.	15 th April	1 st May
No. of corms /plant	16.33bcd	14.00d	20.00a	18.00abc	19.67ab	16.00cd	16.00cd
Average size of corm	1.20a	1.16b	1.15b	1.04c	1.04c	0.85d	0.67e

CONCLUSION

It is concluded that best plantation time of tuberose for good growth, best cutflower and more corms production ranged between last week of March and first week of April under agro-ecological conditions of Faisalabad.

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