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Effect of bulb splitting on tuber production of Tuberose (*Polianthes tuberosa L.*) cv. Prajwal in the plains of West Bengal

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ABSTRACT

To study the methods of bulb production of tuberose cv. Prajwal, an experiment was conducted at the Horticultural Research Farm, Mondouri, Bidhan Chandra Krishi Viswavidyalaya during the year 2009 – 2011 with five bulb size of tuberose - Whole bulb, ½ bulb, 1/4th bulb, 1/6th bulb and 1/8th bulb. Each bulb size (treatment) was replicated four times in Randomized Block Design. Planting was done in April 2009, at a spacing of 30 cm X 30 cm. Highest number of bulbs per clump (large, medium and small) per plot was recorded in whole bulb (4.22, 9 and 30.33 nos.) followed by ½ bulb (3.44, 6.77 and 15.33 nos.) and maximum weight of bulbs per clump (large, medium, small) was produced by whole bulb (192.44, 95.33, 55.55) followed by ½ bulb (185.22, 92.50, 34.99). The maximum (Size) diameter of bulbs per clump(large, medium and small) was produced by whole bulb (4.32cm, 1.86 cm, 0.92 cm) followed by ½ bulb (4.27 cm, 1.64 cm, 0.92 cm). Dry matter percentage of bulb was highest in whole bulb (35.72%) followed by ½ bulb (35.51%). The interpretation of the analyzed data reveals that whole bulb and ½ bulb performed comparatively better than other bulb sizes in respect to good quality bulb production. Therefore along with the whole bulbs farmers can use the ½ bulb size with a portion of the disc plate intact for propagation and bulb production of Prajwal under the Gangetic plains of West Bengal.

Keywords: Bulb splitting, bulblets yield, tuberose

Tuberose (*Polianthes tuberosa* Linn.) is one of the most important bulbous ornamentals of tropical and sub- tropical areas. Its importance among commercially grown flowers is due to its potential for cut flower trade, long vase life and essential oil industry. The genotypic and phenotypic coefficient of variation in tuberose was studied by Vanalruati *et al.* 2013. The flowering of tuberose is greatly influenced by bulb size. Bulb size is an important factor for yield and quality of flower effecting a competition for moisture, nutrient, light etc. which obviously influence the growth, yield and quality. The objective of the investigation was to study the influence of whole and cut bulb on bulb yield tuberose cv. 'Prajwal'.

MATERIALS AND METHODS

An experiment was conducted at the Horticultural Research Farm, Mondouri, Bidhan Chandra Krishi Viswavidyalaya during the year 2009 – 2011 with five bulb size of tuberose cv. Prajwal - Whole bulb (T_1), ½ bulb (T_2), 1/4th bulb(T_3), 1/6th bulb (T_4) and 1/8th bulb (T_5). Each bulb size (treatment) was replicated four times in Randomized Block Design. Planting was done in April 2009, at a spacing of 30 cm × 30 cm. Standard package of practices like land preparation, planting, manuring and fertilization and other cultural practices like irrigation, weeding and plant protection measures had been followed during the experimental period.

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RESULTS AND DISCUSSION

From the table 1, it was noticed that the number of large bulbs increased significantly in case of all bulbs treatments. The maximum number (4.22) of large bulbs were obtained in case of whole bulb (T_1) followed by ½ bulb (3.44) and ¼th bulb (3.22) and the minimum number (2.11) of large bulbs were obtained in T_5 *i.e.*, 1/8th bulb followed by 1/6th bulb (2.66). Similar findings of results were found by Reddy *et al.,* (1997) when they planted different size of bulb, they found that the number of bulbs increased with increase in bulb size. Another similar result was found by Nagaraja *et al.,* (1998) in Bangalore in case of tuberose cv. Single.

The number of medium bulbs increased significantly in all bulbs treatments. The maximum number (9.00) of medium bulbs were obtained in whole bulb followed by ½ bulb (6.77) and ¼th bulb (6.66) and the minimum number (4.00) of medium bulbs were obtained in 1/8th bulb followed by 1/6th bulb (6.55) (Table 1). Malam *et al.,* (2008) reported that medium

sized bulbs significantly improved parameters bulbs and bulblets/clump.

From the table 1 it was found that the number of bulblets increased significantly in of all bulbs treatments. The maximum number (30.33) of small bulblets were obtained in case of whole bulb followed by ½ bulb (15.33) and ¼th bulb (12.22) and the minimum number (7.30) bulblets were obtained in 1/8th bulb followed by 1/6th bulb (8.11). Ahmad *et al*. (2009) observed that large bulb size resulted in maximum yield and more number of bulbils as compared to small and medium sized bulbs.

It was evident from the table 1 that the weight of the large bulb was significantly increased by different size of bulb planted. The weight of bulbs was found maximum (192.44 g) in whole bulb followed by ½ bulb (185.22 g) and 1/8th bulb (146.00 g) and the minimum weight of the bulbs was found in ¼th bulb (140.77 g) followed by 1/6th bulb (145.99 g). Arya *et al.,* (2006) reported that the largest bulbs were superior in terms of the weight. The weight of the bulbs increased with the increase in bulb size used for planting (Reddy *et al.,*

Table 1: Characteristics of bulb of tuberose as influence by different bulb treatments

Treatments	Number of bulbs clump^{-1}			Weight of bulblets clump^{-1} (g)			Diameter of bulblet (cm)			Drymatter (%)
	Large	Medium	Bulblets	Large	Medium	Bulblets	Large	Medium	Bulblets	
Whole bulb	4.22	9.00	30.33	92.44	95.33	55.55	4.32	1.86	0.92	35.7
½ bulb	3.44	6.77	15.33	185.22	92.50	34.99	4.27	1.64	0.92	35.51
1/4th bulb	3.22	6.66	12.22	140.77	84.74	30.22	3.72	1.63	0.91	32.56
1/6th bulb	2.66	6.55	8.11	145.99	77.33	25.55	3.55	1.61	0.87	29.28
1/8th bulb	2.11	4.00	7.30	146.00	44.55	23.22	3.04	1.45	0.81	24.56
S.Em(±)	**0.16**	**0.59**	**0.59**	**2.11**	**3.45**	**2.53**	**0.12**	**0.06**	**0.05**	**0.09**
LSD(0.05)	**0.35**	**1.29**	**1.30**	**4.60**	**7.51**	**5.51**	**0.26**	**0.13**	**NS**	**0.19**

1997) in case of cv. Double. This result is similar with the finding of the above experiment.

The weight of the medium bulblets was significantly increased by different size of bulb planted. The weight of bulbs was found maximum (95.33 g) in whole bulb followed by ½ bulb (92.50 g) and 1/4th bulb (82.74 g) and the minimum weight (82.5 g) of the bulblet was found in 1/8th bulb followed by 1/6th bulb (44.55 g) (Table 1).

The weight of the bulblets was significantly increased by different size of bulb planted. The weight of bulblets was found maximum (55.55 g) in whole bulb followed by ½ bulb (34.99 g) and 1/4th bulb (30.22 g) and the minimum weight (23.22 g) of the bulblets was found in 1/8th bulb followed by 1/6th bulb (25.55 g).

It was evident from the data summarized from the table 1 that the diameter of the bulbs increased significantly with all the bulb treatments. The maximum diameter (4.32 cm) of large bulb was found in whole bulb followed by ½ bulb (4.27 cm) and ¼th bulbs (3.72 cm). The minimum diameter (3.04 cm) of large bulb was found in 1/8th bulb followed by 1/6th bulb (3.55 cm). Similar findings were found by Arya *et al.,* (2006) that the largest bulbs were superior in terms of diameter.

It was evident from the table 1 that the Diameter of the medium bulbs increased significantly with all the bulb treatments. The maximum diameter (1.86 cm) of medium bulb was found in case of whole bulb followed by ½ bulb (1.64 cm) and ¼th bulb (1.63 cm) respectively. The minimum diameter (1.45 cm) of medium bulb was found in case of 1/8th bulb followed by 1/6th bulb (1.61 cm).

The maximum diameter (0.92 cm) of bulblets was found in whole bulb and ½ bulb (0.92 cm) and followed by ¼th bulb (0.91 cm). The minimum diameter (0.81 cm) of bulblets was found in 1/8th bulb followed by 1/6th bulb (0.87 cm) (Table 1).

It was found that the highest dry matter % (35.72) was found in the whole bulb followed by ¼th bulb (35.56) and the lowest dry matter % was found in 1/8th bulb (24.56 g) followed by 1/6th bulb (29.28).

The interpretation of the analyzed data reveals that whole bulb and ½ bulb performed comparatively better

than other bulb sizes in respect to good quality and quantity of spikes and bulb production. Therefore along with the whole bulbs farmers can use the ½ bulb size with a portion of the disc plate intact for propagation and bulb production of Prajwal under the Gangetic plains of West Bengal.

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