

## INFLUENCE OF DATE OF HARVEST AND METHOD OF BULB PLANTING ON THE SEED QUALITY IN BELLARY ONION

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### ABSTRACT

An investigation was undertaken to fix the optimum stage of harvest for seed purpose in bellary onion. From the results, it could be concluded that the seed crops of bellary onion should be harvested 125 days after planting bulb for obtaining high quantity of quality seeds. A reduction in seed quality and an increase in shattering percentage were also observed due to delayed harvests. The seed gathered from the flower heads produced by the 1/4th top cut bulbs was better in quality than those from whole bulbs.

KEY WORDS: Bellary onion, Harvest data, Planting method, Seed quality.

Onion (*Allium cepa*), one of the oldest cultivated bulb vegetables, requires vernalisation for flowering and bolting inducement. The process of seed production starts with the raising of mother bulbs, either *in situ* in respect of seed to seed method or in seed to bulb to seed method. Harvesting a seed crop at the correct stage not only aims at preserving the viability and vigour potential of the seeds but also eliminates the field damage. The present investigation was made to fix the optimum stage of harvest for seed purpose.

### MATERIALS AND METHODS

A field trial was laid out with bellary onion cv. Rampoori local during November 1986 at the Agricultural Research Station, Bhavanisagar. The experiment was laid out in a factorial randomized block design with three replications. The treatments included (i) Method of bulb planting: T<sub>1</sub> - whole

bulb, T<sub>2</sub> - 1/4th top cut bulb and (ii) date of harvesting: Harvesting at 100 (H<sub>1</sub>), 105 (H<sub>2</sub>), 110 (H<sub>3</sub>), 115 (H<sub>4</sub>), 120 (H<sub>5</sub>), 125 (H<sub>6</sub>), 130 (H<sub>7</sub>) and 135 (H<sub>8</sub>) days after bulb planting. The plot size was 5 x 4 m to accommodate 666 plants. The seeds obtained from each treatment as well as from each harvests were tested for moisture content, weight of seeds per head, germination, root and shoot length, vigour index and shattering loss (ISTA., 1985).

### RESULTS AND DISCUSSION

The moisture content of seed at H<sub>1</sub> was the highest (73.23 Percent) which gradually decreased and reached the lowest level of 5.71 percent at H<sub>8</sub> (Table 1). The moisture content did not vary between T<sub>1</sub> and T<sub>2</sub>. The weight of seeds per head was gradually increased with the date of harvest and reached the highest value of 0.995g. at H<sub>6</sub> and there after it decreased gradually. This is mainly due to the

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able. 1. Influence of date of harvests and method of bulb planting on the quality of seed in bellary onion

Harvest dates	Moisture content (%)			Weight of seeds/head (g)			Germination (%)			Root length (cm)			Shoot length (cm)			Vigour Index			Shattering loss (%)				
	T1	T2	Mean	T1	T2	Mean	T1	T2	Mean	T1	T2	Mean	T1	T2	Mean	T1	T2	Mean	T1	T2	Mean		
1	70.1	76.3	73.2	0.26	0.42	0.34	7.5	10.0	8.8	4.7	5.0	4.9	7.0	7.2	7.1	93	117	105	-	-	-	-	
2	61.6	66.9	64.2	0.34	0.44	0.39	20.0	25.0	22.5	5.4	5.6	5.5	7.7	7.8	7.8	271	329	300	-	-	-	-	
3	30.7	27.7	29.2	0.37	0.62	0.50	25.0	30.0	27.5	5.6	6.0	5.8	8.2	8.4	8.3	361	416	389	-	-	-	-	
4	18.1	17.0	17.8	0.37	0.67	0.52	30.0	35.0	32.5	6.4	6.4	6.4	8.5	9.3	8.9	474	525	499	-	-	-	-	
5	13.0	12.8	12.9	0.67	0.74	0.70	70.0	70.0	70.0	6.8	7.0	6.9	9.3	10.3	9.8	1150	1199	1174	-	-	-	-	
6	9.7	9.2	9.4	1.08	0.90	0.99	90.0	92.5	91.2	7.8	7.9	7.8	10.8	11.5	11.2	1736	1745	1741	-	-	-	-	
7	7.8	6.8	7.3	0.89	0.69	0.79	82.5	82.5	82.5	6.7	7.2	6.9	9.6	10.6	10.1	1348	1344	1371	16.2	16.7	16.4	16.4	
8	5.7	5.6	5.7	0.73	0.55	0.64	77.5	82.5	80.0	7.0	6.8	6.9	9.4	10.2	9.8	1343	1425	1384	31.9	32.1	32.0	32.0	
Mean	27.1	27.7		0.59	0.63		50.3	53.4		6.4	6.5		8.8	9.4		864	876		24.0	24.4			
D (P=0.05)																							
	0.81**			0.09**			6.69**			0.41**			0.52**				124.36**						
	.NS			0.04**			3.29**			0.26**			0.26**				NS						
XT	1.13**			0.10**			.NS			.NS			.NS				NS						

shattering loss due to delay in harvest leading to reduced seed yield. The findings are in agreement with that of Jacqueline Selvaraj and Ramaswamy (1984) and Clarke (1981). In this study, a shattering loss of 16.5 and 32.0 per cent were recorded in H<sub>7</sub> and H<sub>8</sub>. The weight of seed per head was more (0.634 g) in T<sub>2</sub> than T<sub>1</sub> (0.593).

The seeds collected at 100 days after bulb planting (H<sub>1</sub>) recorded 8.8 Percent germination and the germination reached the highest value of 91.25 Percent at 125 days after bulb planting (H<sub>6</sub>). Then, it declined during the late harvests. The findings of this study corroborate with the results of Ogawa (1961) and Hakimi (1987). The germination of onion seed was the highest in the seeds collected from fully matured as compared to those collected from pre-matured and post-matured stages. (Anghel and Teodorescu, 1962; Sandhu *et al.*, 1972). The present study showed that at 125 days after planting the number of capsules which turned black were the maximum.

Similar results were reported by Hakimi (1987). T<sub>2</sub> recorded the highest germination of 53.4% and T<sub>1</sub> the lowest of 50.3 Percent.

The seed vigour as measured in terms of root and shoot length, and vigour index were the highest when the seeds attained the highest germination on 125 days after bulb planting, recording 7.88 cm of root length, 11.20 cm of shoot length, and 1741 of vigour index. According to Hakimi (1987), the germinability and vigour of bellary onion seeds were higher in the seeds harvested at 120 days after planting under Coimbatore conditions. The reduction in the germinability and vigour of seeds observed in the delayed harvests had clearly revealed the need for the optimum stage of harvest for seed purpose to minimise the loss in seed quality as well in shattering of seeds. From this study, it is clear that bellary onion seeds should be harvested at 125 days after bulb planting to achieve maximum quantity of high quality seed.

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