



Influence of planting date and spacing on growth and earliness parameters in onion seed crop

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Abstract : Planting of bulbs on first October resulted with maximum plant height (80.4 cm) at 90 DAP (Days after planting) and maximum number of leaves at 90 and 120 DAP compared to first September and first November planting. Planting of bulbs at a closer spacing of 45 x 15 cm resulted with maximum plant height at 90 and 120 DAP over other spacing levels. Onion bulbs planted at a closer spacing of 45 x 15 cm resulted with maximum number of leaves on 90 DAP. However, wider spacing of 60 x 30 cm resulted with maximum number of leaves at 120 DAP. Bulbs planted on first October at 60 x 15 cm spacing resulted with maximum plant height (90.5 cm) at 90 DAP, whereas, first November planting at 60 x 15 cm recorded maximum (103.8 cm) plant height at 120 DAP. First October planting at 60 x 15 cm resulted in maximum number of leaves at 90 (65.60 and 120 (58.4) DAP. Onion bulbs planted on first November took least number of days for first and 50 per cent scape emergence and 50 per cent flowering, however first October planting took least number of days for first flowering. Onion bulbs planted at a closer spacing of 45 x 15 cm took least number of days for first and 50 per cent scape emergence and first and 50 per cent flowering. Onion bulbs planted on first November took least number of days for 50 per cent flowering.

Key Words : Onion, Seed production, Planting date, Spacing, Growth, Earliness

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INTRODUCTION

The growth and earliness of onion seed crop greatly depends upon many factors, such as time of planting of mother bulbs, spacing, bulb size, temperature etc. Since the plant growth and flowering of onion is largely influenced by the prevailing temperature, a location specific studies needs to carry out for ideal time of planting. Therefore, it is essential to know the optimum time for planting of onion bulb for obtaining better vegetative and reproductive growth.

MATERIALS AND METHODS

The experiment was conducted in the Olericulture Unit of Kittur Rani Channamma College of Horticulture, Arabhavi, Belgaum (Karnataka). The experimental site was laid out during

Rabi season of 2005-06 with three planting dates (main plots) and four spacing levels (sub plots) in three replications in Split Plot Design. In each plot, five plants were randomly selected leaving the boarder rows and tagged for recording growth and earliness parameters. Data were subjected to analysis of variance and critical differences were calculated to compare the means, as described by Sundarraj *et al.* (1972).

RESULTS AND DISCUSSION

Planting dates significantly influenced the growth parameters, such as plant height at 90 days after planting (DAP) and number of leaves at 90 and 120 DAP (Table 1 and 2). Planting of bulbs on first October resulted with maximum plant height (80.4 cm) at 90 DAP and maximum number of leaves at 90 (61.0) and 120 (56.0) DAP compared to first

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September and first November planting. The plants from the delayed planting were exposed to cool climate during bulb sprouting and early growth which had affected adversely the final growth of the plant. Similar results were also reported by Patil (1959). Reduction in plant population in September planted crop, it can be attributed to the severe intensity of purple blotch disease (Table 1). Spacing levels significantly influenced the plant height at 30, 90 and 120 DAP and number of leaves at 90 and 120 DAP. Planting of bulbs at a closer spacing of 45 x 15 cm resulted with maximum plant height on 30 (54.0 cm), 60 (71.7 cm), 90 (82.9 cm) and 120 (94.7 cm) DAP over other spacing levels. Onion bulbs planted at a closer spacing of 45 x 15 cm resulted with maximum number of leaves (44.50) on 90 DAP. However, wider spacing of 60 x 30 cm

resulted with maximum number of leaves (37.5) at 120 DAP. Such results were also reported by Singh and Singh (1984), Malik *et al.* (1999) and Singh *et al.* (2005). Planting dates interacted significantly with spacing levels for plant height at 30, 60, 90 and 120 DAP. Planting of onion bulbs on first September at 45 x 15 cm recorded maximum plant height (56.8 cm) at 30 DAP and bulbs planted on first October at 60 x 15 cm spacing resulted with maximum plant height (90.5 cm) at 90 DAP, whereas, first November planting at 60 x 15 cm recorded maximum (103.8 cm) plant height at 120 DAP. At 30 DAP, maximum number of leaves (58.0) were recorded in bulbs planted on first September at 45 x 15 cm spacing and first September planting at 60 x 30 cm spacing resulted in maximum number of leaves (59.2) at 60 DAP. However, first October

Table 1: Influence of planting date and spacing on plant height (cm) different stages of growth in onion seed crop

Treatments	Plant height (cm)			
Planting dates	30 DAP	60 DAP	90 DAP	120 DAP
1 st September (D ₁)	51.1	69.9	77.2	85.4
1 st October (D ₂)	47.6	63.9	80.4	86.0
1 st November(D ₃)	48.3	59.1	69.5	91.1
S.E.±	4.431	5.363	0.805	1.599
C.D. 5%	NS	NS	3.1	NS
	Spacing			
45X15 cm (S ₁)	54.4	71.7	82.9	94.7
45X30 cm (S ₂)	47.2	62.8	75.7	86.3
60X15 cm (S ₃)	52.7	68.7	79.4	94.6
60X30 cm (S ₄)	41.8	54.1	64.9	74.3
S.E.±	1.261	2.018	0.814	1.068
C.D. 5%	3.7	5.9	2.4	3.2
	Interaction			
D ₁ S ₁	56.8	77.4	84.3	89.4
D ₁ S ₂	52.3	63.9	76.1	85.9
D ₁ S ₃	49.1	77.4	75.9	87.8
D ₁ S ₄	46.4	60.9	72.5	78.5
D ₂ S ₁	52.5	70.8	78.2	95.3
D ₂ S ₂	42.4	68.2	86.1	86.6
D ₂ S ₃	55.2	69.3	90.5	92.6
D ₂ S ₄	40.5	47.6	66.9	69.5
D ₃ S ₁	54.0	66.9	86.1	99.6
D ₃ S ₂	47.0	56.3	64.7	86.2
D ₃ S ₃	53.7	59.3	71.8	103.8
D ₃ S ₄	38.4	53.8	55.3	74.9
	Spacing at the same level of planting dates			
S.E.±	2.185	3.495	1.414	1.842
C.D. 5%	6.5	NS	4.1	5.5
	Planting dates at the same or different levels of spacing			
S.E.±	4.818	6.159	1.463	2.259
C.D. 5%	18.2	NS	4.5	4.8

NS= Not significant

planting at 60 x 15 cm resulted in maximum number of leaves at 90 (65.60 and 120 (58.4) DAP. A significant increase in plant height at 90 DAP was observed when the bulbs were planted on first October with spacing of 60 x 15 cm. Similar result was also reported by Pall and Padda (1972). Planting dates significantly influenced the earliness parameters, such as days to first and 50 per cent scape emergence and days to first and 50 per cent flowering (Table 3). Onion bulbs planted on first November took least number of days for first (23.3 days), 50 per cent (39.8 days) scape emergence and 50 per cent (65.3 days) flowering, however first September planting took least number of days for first (50.8 days) flowering. Better growth

was observed in October planted crop while earliness was observed in November planted crop. Spacing levels also significantly influenced the days to first and 50 per cent scape emergence and days to first and 50 per cent flowering. Onion bulbs planted at a closer spacing of 45 x 15 cm took least number of days for first (27.7 days) and 50 per cent (41.2 days) scape emergence and first (51.3 days) and 50 per cent (63.7 days) flowering. Planting dates interacted significantly with spacing levels for days to 50 per cent scape emergence. Onion bulbs planted on first November took least number of days (35.0 days) for 50 per cent flowering (Table 3). Similar result was also reported by Rajjadhav *et al.* (1992).

Table 2: Influence of planting date and spacing on number of leaves at different stages of growth in onion seed crop

Treatments	Number of leaves			
	30 DAP	60 DAP	90 DAP	120 DAP
Planting dates				
1 st September (D ₁)	51.2	45.3	13.8	15.4
1 st October (D ₂)	47.9	47.9	61.0	56.0
1 st November(D ₃)	48.1	49.0	51.1	30.9
S.E m±	0.824	1.309	1.390	1.311
CD 5%	NS	NS	5.5	5.1
Spacing levels				
45X15 cm (S ₁)	50.9	44.1	44.5	32.4
45X30 cm (S ₂)	50.7	50.4	41.9	30.7
60X15 cm (S ₃)	48.8	47.8	44.4	36.0
60X30 cm (S ₄)	46.0	47.3	37.1	37.5
S.E.±	1.388	2.242	0.825	0.770
C.D. 5%	NS	NS	2.4	2.3
	Interaction			
D ₁ S ₁	58.0	33.6	11.2	12.3
D ₁ S ₂	51.4	50.1	13.2	15.1
D ₁ S ₃	50.1	38.1	11.3	58.4
D ₁ S ₄	45.3	59.2	19.5	55.9
D ₂ S ₁	40.7	52.6	62.9	52.1
D ₂ S ₂	54.9	49.0	59.1	57.9
D ₂ S ₃	41.0	49.9	65.6	58.4
D ₂ S ₄	55.3	40.2	56.4	55.9
D ₃ S ₁	53.9	46.1	59.5	32.7
D ₃ S ₂	45.8	52.2	53.3	19.0
D ₃ S ₃	55.2	55.3	56.4	34.5
D ₃ S ₄	37.6	42.5	35.4	37.5
	Spacing at the same level of planting dates			
S.E.±	2.405	3.883	1.429	1.333
C.D. 5%	7.1	11.5	4.2	3.9
	Planting dates at the same or different levels of spacing			
S.E.±	2.240	3.609	1.861	1.746
C.D. 5%	6.9	11.2	6.5	6.1

NS= Not significant

Table 3: Influence of planting date and spacing on earliness parameters in onion seed crop

Treatments	Days to first scape emergence	Days to 50 per cent scape emergence	Days to First flowering	Days to 50 per cent flowering
Planting dates				
1 st September (D ₁)	34.7	53.2	57.6	65.3
1 st October (D ₂)	29.2	44.7	50.8	74.4
1 st November(D ₃)	23.3	39.8	56.0	65.3
S.E.±	0.600	0.875	1.185	0.676
C.D. 5%	2.3	3.4	4.6	2.2
Spacing levels				
45X15 cm (S ₁)	27.7	41.2	51.3	63.7
45X30 cm (S ₂)	25.0	46.1	57.7	71.8
60X15 cm (S ₃)	21.3	45.3	52.1	66.7
60X30 cm (S ₄)	24.7	50.8	58.1	71.3
S.E.±	0.517	0.776	1.348	1.185
C.D. 5%	1.5	2.3	4.0	4.6
Interaction				
D ₁ S ₁	33.0	50.7	55.0	61.7
D ₁ S ₂	34.0	53.0	58.7	68.7
D ₁ S ₃	35.0	54.0	57.0	64.0
D ₁ S ₄	36.7	55.0	59.7	67.0
D ₂ S ₁	27.7	37.3	48.0	70.3
D ₂ S ₂	29.7	43.3	53.3	77.0
D ₂ S ₃	28.7	47.0	47.0	74.0
D ₂ S ₄	31.0	51.0	55.0	76.3
D ₃ S ₁	22.3	35.7	51.0	59.0
D ₃ S ₂	25.0	42.0	61.0	69.7
D ₃ S ₃	21.3	35.0	52.3	62.0
D ₃ S ₄	24.7	46.3	59.7	70.7
Spacing at the same level of planting dates				
S.E.±	0.895	1.344	2.335	1.348
C.D. 5%	NS	3.9	NS	NS
Planting dates at the same or different levels of spacing				
S.E. ±	0.981	1.4566	1.667	2.335
C.D. 5%	NS	3.3	NS	NS

NS= Not significant

REFERENCES

- Malik, Y.S., Singh, N. and Nehar, B.K.(1999).** Effect of planting time, bulb cut and pinching of bolt treatments on yield and quality of onion seed. *Veg. Sci.*, **26** (2):143-145.
- Patil, J.A.(1959).** Influence of time of planting on seed yield of onion. *Poona Agriculture College Magazine*, **50** (2):100-104.
- Pall, R. and Padda, S.(1972).** Effect of nitrogen, plant spacing and size of mother bulb on growth and yield of seed crop of onion. *Indian J. Hort.*, **29**: 185-189.
- Raijadhav, S.B., Supe, V.S. and Kale, P.N.(1992).** Effects of different levels of spacing and cuts to bulb on seed yield of onion. *J. Maharashtra Agric. Univ.*, **20** : 278-279.
- Singh, B., Singh, B. and Tomar, B.S.(2005).** Effects of dates of planting, bulb size and bulb spacing on growth and seed yield of onion (*Allium cepa* L.). *Seed Res.*, **33**(1):78-81.
- Singh, G.P. and Singh, R.K.(1984).** Effect of spacing and planting time on seed production in onion. *South Indian J.Hort.*, **32**:284-287.
- Sundarraaj, J., Nagaraju, S., Venkataramu, M.N. and Jagannath, M.K.(1972).** *Design and analysis of experiments*, University of Agricultural Sciences, Bengaluru (KARNATAKA) INDIA.

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