

Short Communications

Response of Direct Seeded and Transplanted Onion (*Allium cepa* L.) to Dates of Sowing and Nitrogen Levels

A. G. Movalia, B. B. Kaneria, V. D. Khanpara,
K. V. Jadav and R. K. Mathukia

Department of Agronomy,
Gujarat Agricultural University, Junagadh 362 001

Onion (*Allium cepa* L.) is an important *rabi* crop of Saurashtra region of Gujarat. In the recent years its area under late *kharif* pre *rabi* season is increased. The sowing of onion is normally done by transplanting of seedlings, which is labour intensive, hence some farmers have adopted direct seedling method. Very meagre information is available on these aspects, therefore, the present experiment was undertaken.

The field experiment was conducted during 1995-96 at the Instructional Farm, Gujarat Agricultural University, Junagadh. The soil was clayey having 218, 15 and 178 kg/ha available N, P_2O_5 and K_2O , respectively with 7.8 pH and 0.31 dS/m E.C. The treatments consisted three dates of sowing (August 10, August 25 and September 9) as main plots and combination of two methods of sowing (direct seeding and transplanting) and three levels of nitrogen (50, 75 and 100 kg N/ha) as sub-plots were tried in split plot design with four replications. The seeds of onion variety 'Agrifound Dark Red' was sown on respective dates by broadcasting method using 10 kg seeds/ha in direct seeding treatment, while transplanting at 45 cm x 10 cm was done 45 days later than direct seeding method by seedling raised in the

TABLE 1

Meteorological data recorded during crop season of the year 1995-96 (Weekly mean).

Month and Year	Standard Week	Dates	Temperature °C		Relative humidity (%)	Brighth sunshine hours/day	Rain fall (mm)
			Min.	Max.			
1.	2.	3.	4.	5.	6.	7.	8.
1995							
August	32	06-12	25.0	30.5	93	0.9	19.3
	33	13-19	25.0	31.3	89	1.2	02.4
	34	20-26	24.3	31.2	95	3.3	22.4
	35	27-02	24.2	31.5	95	2.2	74.5

1.	2.	3.	4.	5.	6.	7.	8.
September	36	03-09	23.7	31.5	90	4.2	-
	37	10-16	23.5	33.9	85	7.9	-
	38	17-23	22.9	34.1	89	8.8	16.9
	39	24-30	24.2	33.5	88	5.8	-
October	40	01-07	24.4	34.3	90	8.1	32.5
	41	08-14	23.7	36.4	66	7.0	0.08
	42	15-21	23.9	34.2	89	6.2	12.2
	43	22-28	18.6	36.0	68	9.3	-
	44	29-04	17.4	35.7	58	9.2	-
November	45	05-11	13.6	34.0	61	9.2	-
	46	12-18	14.9	34.5	67	9.3	-
	47	19-25	14.8	32.5	68	7.9	-
	48	26-02	15.0	31.5	68	7.1	-
December	49	03-09	10.1	31.6	65	8.9	-
	50	10-16	13.7	32.2	69	7.8	-
	51	17-23	14.0	32.2	71	7.9	-
	52	24-31	13.5	29.5	66	7.0	-
1996							
January	01	01-07	14.0	28.6	66	6.3	-
	02	08-14	10.3	29.8	69	8.1	-
	03	15-21	10.5	26.0	77	8.1	-
	04	22-28	13.8	30.6	70	8.9	-
	05	29-04	8.7	31.3	67	9.5	-
February	06	05-11	13.3	32.6	59	9.3	-
	07	12-18	12.9	31.8	69	9.5	-
	08	19-25	17.9	33.9	73	8.9	-
	09	26-04	15.5	33.5	58	9.9	-
March	10	05-11	19.1	38.2	67	10.2	-
	11	12-18	22.5	38.9	56	8.3	-
	12	19-25	21.4	36.8	62	10.5	-
	13	26-01	19.4	38.1	63	10.6	-

seed bed on respective sowing dates. The entire dose of phosphorus and potash and half of nitrogen as per treatments in the form of single super phosphate, muriate of potash and urea, respectively were applied as basal and remaining half dose of nitrogen was top-dressed in the form of urea at 30 days after sowing/transplanting.

The crop sown on August 10 exhibited significantly improved growth and yield attributes viz., leaves/plant, bulb diameter and bulb weight and resultantly increased bulb and straw yields and N uptake over sowing on September 9, however did not differ significantly from August 25 sowing in respects of bulb and straw yields. This could be attributed to

favourable weather condition for growth and development prevailed during early sowing of crop. The results corroborates the reports of Tomar *et al.* (1988) and Bhamburkar *et al.* (1993).

Significantly better growth and yield attributes viz., plant height, leaves/plant, bulb diameter and bulb weight were observed under transplanted crop, which have ultimately increased the bulb and straw yields and N uptake as compared to direct seeded crop. Optimum plant stand and spacing maintained under transplanted crop might have favoured growth and development of the crop. The results are in accordance with those of Khokar *et al.* (1990).

TABLE 2

Effect of dates of sowing, methods of sowing and nitrogen levels on onion.

<i>Treatment</i>	<i>Plant height (cm)</i>	<i>Leaves/plant</i>	<i>Bulb diameter (cm)</i>	<i>Bulb weight (g)</i>	<i>Bulb yield (q/ha)</i>	<i>Straw yield (q/ha)</i>	<i>Total soluble solids</i>	<i>N uptake (kg/ha)</i>
Dates of Sowing								
August 10	45.4	9.1	5.0	46.0	321	52	14.9	66.6
August 25	42.2	8.1	4.6	41.8	293	48	15.2	53.9
September 9	41.2	7.8	4.5	41.2	281	43	15.1	48.2
C. D. at 5%	NS	0.8	0.4	2.8	31	5	NS	10.3
Methods of sowing								
Direct seeding	40.4	8.1	4.5	40.4	284	46	15.0	50.4
Transplanting	45.6	8.6	5.0	45.6	313	50	15.2	62.0
C. D. at 5%	2.2	0.4	0.3	1.7	21	3	NS	6.6
Nitrogen (kg/ha)								
50	41.0	7.9	4.3	38.7	266	40	15.0	45.1
75	42.6	8.3	4.9	44.7	310	51	15.1	58.4
100	45.5	8.8	5.1	45.6	319	52	15.1	85.1
C. D. at 5%	2.7	0.5	0.3	2.1	25	4	NS	8.0

Application of 100 kg N/ha significantly increased growth and yield parameters viz., plant height, leaves/plant, bulb diameter and bulb weight, and consequently increased bulb and straw yields and N uptake over 50 kg N/ha. Application of 50 kg N/ha, however, was found on par with 75 kg N/ha in respect of bulb diameter, bulb weight, bulb and straw yields and N uptake. This might be due to

the fact that N application improved the growth and thereby accelerated the synthesis of photosynthates and their translocation to the bulb resulting in enhancement of diameter and weight of bulb. Mehta (1993) and Vachhani and Patel (1993) also reported similar results.

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