

Effect of sowing date on growth, yield attributes and yield of Indian mustard (*Brassica juncea*)

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ABSTRACT

A field experiment was conducted during the winter (*rabi*) season of 1991–92 and 1992–93 to study the performance of 3 varieties ('Seeta', 'Pusa Bold' and 'Pusa Barani') of Indian mustard [*Brassica juncea* (L.) Czernj & Cosson] under 5 sowing dates (1, 15, 30 October; 15 and 30 November). Highest seed yield was recorded when the crop was sown on 1 October and subsequent sowing at an interval of 15 days induced significant reduction in seed yield during both the years. Seed yield of 'Seeta' was higher than 'Pusa Bold' and 'Pusa Barani' in both years.

Indian mustard [*Brassica juncea* (L.) Czernj & Cosson] varieties grown with similar agronomic practices has shown larger variations in yield and quality. At present Indian mustard is grown as an intercrop or mixed crop with wheat during the winter (*rabi*) season in Maharashtra. The major production factors to boost the yield of Indian mustard are varieties, sowing time and improved package of practices. Since an information on varietal response of Indian mustard to sowing time in Maharashtra is meagre, and a study was undertaken to see the effect of sowing dates on growth and yield attributes of this crop.

MATERIALS AND METHODS

A field experiment was conducted during the winter (*rabi*) season of 1991–92 and 1992–93 at Rahuri. The soil was clayey, low in available N, medium in available P and high in available K content. There were 15 treatment combinations comprising of 5 dates of sowing (1, 15, 30 October, 15 and 30

November) in main plots and 3 varieties ('Seeta', 'Pusa Bold' and 'Pusa Barani') in subplots. The design adopted was split plot with 3 replications. The sowing of the crop was done as per sowing date treatment at a distance of 45 cm x 15 cm. The crop was fertilized with 30 kg N + 30 kg P₂O₅/ha as a basal dose at the time of sowing and remaining 30 kg N was top-dressed 30 days after sowing. The pre-sowing rainfall was 106 and 51 mm during 1991–92 and 1992–93, respectively. Thereafter in crop-growth period there were no rains and hence the crop was raised with 3 irrigations. The crop sown as per the above sowing dates was harvested on 12, 22 January 5, 18 and 28 February, respectively.

RESULTS AND DISCUSSION

Effect of sowing dates

Seed yield of Indian mustard was affected significantly by dates of sowing (Table 1). Early sowing (1 October) gave significantly higher seed yield than late sowing

Table 1. Effect of sowing dates and varieties on growth, yield attributes and yield of Indian mustard

Treatment	Branches/plant				Dry matter/ plant (g)		Siliquae/ plant		Siliqua length (cm)		Seeds/ siliqua		Seed weight/ plant (g)		Seed yield (q/ha)	
	Primary		Secondary		Y ₁	Y ₂	Y ₁	Y ₂	Y ₁	Y ₂	Y ₁	Y ₂	Y ₁	Y ₂	Y ₁	Y ₂
	Y ₁	Y ₂	Y ₁	Y ₂												
<i>Sowing dates</i>																
1 Oct	4.97	5.00	12.95	11.20	48.09	48.92	247.8	237.5	5.4	5.6	14.3	14.4	7.89	9.68	11.69	12.19
15 Oct	4.62	4.80	10.93	9.90	44.68	45.54	234.7	206.1	4.8	5.0	13.8	14.1	7.13	8.92	10.67	11.58
30 Oct	4.28	4.45	8.91	8.54	37.11	39.52	210.3	172.3	4.6	4.4	12.8	13.4	5.76	5.58	8.54	7.59
15 Nov	4.13	3.65	7.81	7.86	32.32	38.22	159.1	110.6	4.4	3.9	11.7	12.1	3.83	3.60	5.70	4.06
30 Nov	3.40	3.13	6.10	6.64	28.28	32.09	132.6	80.1	3.8	3.5	11.4	11.3	3.44	2.16	5.10	2.24
CD (P = 0.05)	0.66	0.14	2.91	0.31	5.01	4.81	40.77	29.33	0.5	0.27	NS	0.47	0.64	0.49	0.99	0.80
<i>Variety</i>																
'Seeta'	4.62	4.64	14.77	13.45	44.56	44.31	289.4	239.1	3.8	3.8	13.0	13.4	6.43	6.47	9.59	9.26
'Pusa Bold'	4.08	4.09	6.49	6.31	42.26	41.67	158.9	135.9	5.1	5.0	13.0	13.2	5.49	5.99	8.14	7.18
'Pusa Barani'	4.14	3.89	6.76	6.72	27.45	37.03	142.4	109.0	4.9	4.6	12.4	12.5	4.91	5.66	7.29	6.14
CD (P = 0.05)	NS	0.15	1.70	0.15	2.96	3.67	25.98	16.80	0.5	0.19	NS	0.28	0.57	0.23	0.83	0.46

Y₁, 1991-92, Y₂, 1992-93

during both the years. Delayed sowing at an interval of 15 days up to 30 November reduced the seed yield by 8.7, 26.9, 51.2 and 56.3% during 1991–92 and 5, 37, 66 and 66.6% during 1992–93. Shastry and Kumar (1981) and Narang and Singh (1987) also made similar observations. The primary and secondary branches, dry-matter accumulation/plant, siliqua/plant, length of siliqua and seed weight/plant were also higher in 1 October sowing in both the years. This might be due to the fact that under earlier-sown crop the temperature and other climatological parameters played a major role for growth and yield attributes. But short growth period and adverse temperature might have affected the yield and total dry-matter production in late-sown crop. The higher seed yield in early-sown crop was owing to the better plant growth and its fa-

vourable yield-attributing parameters. But gradual decrease in the yield with subsequent delay in sowing might be due to the prevailing low temperature at vegetative growth phase of the late-sown crop which could have adversely affected the plant development. Similar findings were also reported by Singh and Singh (1991).

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