

Response of Indian mustard (*Brassica juncea*) cultivars to different sowing time

RAJ SINGH, M. PATIDAR AND B. SINGH

Central Arid Zone Research Institute, Jodhpur, Rajasthan 342 003

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ABSTRACT

A field experiment was conducted during the winter (*rabi*) season of 1996-97 and 1997-98 to evaluate the effect of sowing time on the growth and yield of Indian mustard [*Brassica juncea* (L.) Czernj. & Cosson] varieties. Significantly superior plant height, branches/plant, siliquae/plant, seeds/silique and 1,000-seed weight and seed yield were recorded by the sowing of second and third week of October. However, delay in sowing, i.e. in fourth week of October and first week of November, reduced the seed yield of Indian mustard by 14.4 and 24.7% in comparison with sowing of third week of October respectively. Among the varieties, 'Pusa Bold' and 'T 59' were found statistically at par in respect of yield and yield attributes, but were significantly superior to 'Local' cultivar, accounting an increase of seed yield by 29 and 20.2% respectively.

Key words : Sowing time, Variety, Growth, Yield attributes, Seed yield, Indian mustard

Traditional practices of Indian mustard cultivation are still prevailing in the Western Rajasthan causing low seed yield. Optimum time of sowing and selection of suitable varieties play an important role in boosting the seed yield of Indian mustard. Early sowing suffers due to high existing temperature and moisture stress at early stage, which consequently affects crop germination and establishment but declines silique formation due to aphid infestation. Therefore, sowing of the crop at adequate time is an important non-cash input for boosting crop productivity (Bisnoi and

Singh, 1982; Shastry and Kumar, 1989). Use of high-yielding varieties is also an important factor, responsible for higher yield. The present study was therefore conducted to find out suitable cultivar and optimum sowing time under arid zone of Rajasthan.

MATERIALS AND METHODS

A field experiment was conducted during the winter (*rabi*) season of 1996-97 and 1997-98 in Satheen, Jodhpur, to evaluate the most suitable cultivar and optimum sowing time. The experimental

soil was sandy loam with pH 8.14, organic carbon 0.34% and available P_2O_5 17.5 kg/ha. The experiment consisted of 3 varieties ('Local', 'Pusa Bold' and 'T 59') and 4 sowing times (second, third and fourth weeks of October and the first week of November) was laid out in randomized block design with 3 replications. A uniform basal dose of 20 kg nitrogen and 40 kg P_2O_5 /ha was applied at the time of sowing. Another 40 kg nitrogen was top-dressed in 2 equal splits at the time of first and second irrigations. The crop was sown at 30 cm row spacing using 5 kg/ha seed. Observations on yield and yield attributes were recorded at the time of harvest and data were analysed statistically.

RESULTS AND DISCUSSION

Performance of varieties

'Pusa Bold' and 'T 59' were statistically at par and found significantly superior to 'Local' cultivar in respect of yield components except plant height. It might be due to genetic characters of the 'Local' cultivar. The maximum yield-attributing characters, viz. branches/plant, siliquae/plant, seeds/siliqua and 1,000-seed weight, were recorded in 'Pusa Bold', which resulted in the maximum seed yield, accounting for an increase of 29% over local cultivar. This finding corroborate the results of Tomar *et al.* (1996).

Effect of sowing time

The seed yield and yield-attributing characters of Indian mustard were significantly influenced by sowing time

(Table 1). Crop sown on second and third weeks of October enhanced significantly all yield-contributing characters, i.e. plant height, branches/plant, siliquae/plant, seeds/siliqua and 1,000-seed weight, and seed yield, over the sowing of fourth week of October and first week of November, but did not differ significantly with each other. Pooled analysis indicated that highest seed yield of 19.08 q/ha was recorded with the sowing third week of October and showed an increase of 11.2 and 24.6% over the yield obtained by the sowing in fourth week of October and first week of November respectively. The next higher seed yield was obtained with the sowing on the second week of October. However, delay in sowing (fourth week of October and first week of November) declined yield-attributing characters as well as seed yield. This may be attributed basically to the reason that crop sown in the second and third weeks of October received optimum environmental condition required for better crop growth and yield-attributing parameters, while delay in sowing (fourth week of October and first week of November) could not get favourable environmental condition, which affected yield-contributing parameters with the concomitant effect on seed yield. Henry and Daulay (1988), Singh and Singh (1991) and Yadav and Yadav (1997) also reported similar results.

The interaction effect of varieties and sowing time was found non-significant however, the maximum seed yield of 22.5 q/ha was recorded with 'Pusa Bold' sown in the third week of October.

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

Treatment	Plant height (cm)		Branches/plant		Siliquae/plant		Seeds/siliqua		1,000-seeds weight (g)		Seed yield (q/ha)		Pooled
	1996-97	1997-98	1996-97	1997-98	1996-97	1997-98	1996-97	1997-98	1996-97	1997-98	1996-97	1997-98	
<i>Variety</i>													
'Local'	173	167	4.53	4.67	167	161	11.31	11.15	3.55	3.43	15.86	13.60	14.7
'Pusa Bold'	164	161	5.58	5.63	257	215	14.02	13.95	4.48	4.49	20.43	17.58	19.0
'T 59'	158	152	5.28	5.42	202	198	12.64	12.63	4.38	4.28	19.53	15.88	17.7
CD (P=0.05)	15	15	0.69	0.64	17	18	1.38	1.49	0.44	0.47	2.27	2.19	2.17
<i>Sowing time</i>													
October second week	188	183	5.7	5.47	205	203	12.71	12.90	4.08	4.10	20.43	17.00	18.7
October third week	174	175	5.9	5.87	209	205	13.62	13.60	4.51	4.45	19.93	18.23	19.0
October fourth week	156	154	4.8	5.09	186	180	12.52	12.43	4.08	3.96	18.00	14.77	16.3
November first week	137	131	4.27	4.57	173	170	11.78	11.36	3.86	3.77	16.05	12.73	14.3
CD (P=0.05)	17	18	0.80	0.73	19	21	1.53	1.72	0.50	0.55	2.62	2.53	2.14

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