

Response of late-sown irrigated mustard (*Brassica juncea*) to levels of nitrogen and time of application in coastal Orissa

A. K. MOHAPATRA

Regional Research Station, Orissa University of Agriculture and Technology,
Ranital 756 111

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The optimum time of sowing of mustard [*Brassica juncea* (L.) Czernj. & Cosson] in coastal Orissa is from middle of October to first part of November and sowing beyond the schedule time reduces the seed yield by 25-30%. Sometimes the late harvest of the rainy-season rice (*Oryza sativa* L.) in the first week of November and subsequent delay in land preparation (due to excess of moisture present in the soil) delay the sowing of mustard. As information on N management for late-sown irrigated mustard is meagre in this zone, an experiment was conducted on this aspect.

The field experiment was conducted during the winter (*rabi*) seasons of 1988-89 and 1989-90 at Ranital, with 2 varieties ('Pusa Bold' and 'RW 5613-1') and 4 levels of nitrogen (30, 45, 60 and 75 kg/ha) in the main plot and 4 timings of N application (all N at sowing, 50% N at sowing + 50% N at 21 days after sowing, 75% N at sowing + 25% N at 21 days after sowing and 25% N at sowing + 75% N at 21 days after sowing), in the subplot in 3 replications. The soil was sandy loam with pH 6.9, organic carbon 0.55%, available P_2O_5 and K_2O 13.5 and 210 kg/ha respectively. The field capacity and wilting were 20.4 and 5.6% at a soil depth of 0-10 cm. The depth of water-table remained below 2.5 m from the soil surface. The crop

was sown at a row spacing of 45 cm on 23 November with an uniform basal dose of 30 kg each of P_2O_5 and K_2O /ha. Hoeing, weeding and thinning were done at 21 days after sowing. Three irrigations, viz. each at 21 days after sowing, pre-flowering and fruiting stages, were given. The crop was sprayed with an metasystox and dithane M-45 to control insect-pests (mainly aphids) and alternaria leaf blight and harvested during the first week of March.

No significant difference in seed yield and yield attributes between the 2 varieties was evident (Table 1). But the response to levels of N and its time of application was significant. Application of N @ 60 kg/ha significantly influenced the branches/plant and pods/plants, hence the seed yield compared with application of N @ 30 and 45 kg/ha. N @ 75 kg/ha did not influence the seed yield significantly. Similar results were reported by Joshi *et al.* (1991).

Time of application of N significantly affected the seed yield and yield components. Application of 25% N at sowing + 75% N at 21 days after sowing recorded significantly higher seed yield than all N at sowing, 50% N at sowing + 50% N at 21 days after sowing and 75% N at sowing + 25% N at 21 days after sowing. Application of 25% N at sowing and

Table 1. Seed yield and yield components of mustard varieties as influenced by nitrogen levels and time of application (pooled mean of 2 years)

Treatment	Pods/ plant	Branches/ plant	Seed yield (q/ha)
<i>Variety</i>			
'Pusa Bold'	125	12.3	7.8
'RW 5613-1'	129	13.2	7.9
CD (P = 0.05)	NS	NS	NS
<i>N (kg/ha)</i>			
30	11	8.3	7.0
45	139	11.6	7.5
60	149	14.3	8.0
75	150	14.9	8.2
CD (P = 0.05)	8	2.0	0.3
<i>Time of N application</i>			
All N at sowing	133	9.8	7.8
50% N at sowing + 50% N at 21 DAS	136	11.8	7.8
75% N at sowing + 25% N at 21 DAS	138	12.6	7.8
25% N at sowing + 75% N at 21 DAS	150	14.5	8.3
CD (P = 0.05)	10	34	0.3

DAS, Days after sowing

remaining 75% N at first irrigation (21 days after sowing) coinciding with the peak growth period under late-sown condition resulted in more number of branches/plant and pods/plant than all the other timings of N application and hence higher seed yield.

REFERENCE

- Joshi, A. J., Ahlawat, R. P. S. and Thivedi, S. J. 1991. Effect of nitrogen and sulphur fertilisation on growth and yield of mustard (*Brassica juncea*). *Indian Journal of Agronomy* 36 (4) : 606-607.