

Nitrogen fertilization in oat (*Avena sativa*) varieties

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In the Koshi region of Bihar least attention is being paid towards N fertilization and the use of improved varieties of oat (*Avena sativa* L.) for fodder production, which results in poor biomass production. Production potential of oat to a great extent depends on N fertilization (Singh *et al.*, 1985). The present study was, therefore, aimed at studying the N requirement of different oat varieties under the agro-climatic conditions of Koshi region of Bihar.

The field experiment was conducted at Jalalgarh during the winter seasons of

1989-90 and 1990-91 under irrigated conditions. The soil was well-drained sandy-loam containing pH 6.8, organic carbon 0.31% and available P_2O_5 27.5 kg/ha. The experiment was laid out in randomized block design with 3 replications. The treatments consisted of 4 levels of N (0, 50, 100 and 150 kg/ha) and 5 varieties ('Local', 'Kent', 'OL 9', 'OS 6' and 'UP 094'). Half dose of N, uniform full dose of 60 kg P_2O_5 /ha and 40 kg K_2O /ha were applied basal through urea, single superphosphate and muriate of potash respectively. Remaining half N was applied in 2 splits, at tillering and boot stages.

Table 1. Effect of different levels of N on the herbage yield of oat varieties

Treatment	Plant height (cm)		Herbage yield (tonnes/ha)		Dry-matter yield (tonnes/ha)	
	1989- 90	1990- 91	1989- 90	1990- 91	1989- 90	1990- 90
<i>N (kg/ha)</i>						
0	95.40	100.00	7.59	9.06	1.79	1.85
50	122.00	127.00	15.10	16.15	3.71	3.88
100	144.00	151.00	20.94	21.85	4.90	4.76
150	147.60	153.60	22.26	22.12	5.40	5.15
CD (P = 0.05)	4.00	3.00	1.94	2.27	0.60	0.51
<i>Variety</i>						
'Local'	104.50	108.50	13.44	10.78	3.22	2.28
'Kent'	135.75	140.75	16.85	17.67	4.04	4.09
'OL 9'	128.75	140.50	15.88	15.61	3.89	3.75
'OS 6'	132.00	135.75	16.42	17.60	3.78	4.03
'UP 409'	136.25	139.25	20.03	23.55	4.85	5.57
CD (P = 0.05)	4.00	3.00	2.17	2.00	0.68	0.58

During both the years herbage and dry-matter yields of oat increased significantly over the control with 50, 100 and 150 kg N/ha (Table 1). This was due to the significant increase in plant height at these levels of N over no N. These findings are in conformity with those of Singh *et al.* (1985).

Among the varieties, 'UPO 94' recorded significantly higher herbage yield during both the years than all the other varieties.

Singh *et al.* (1985) also reported similar results. Variety 'OS 6' being statistically on a par with 'Kent' and 'OL 9' gave significantly more green-forage yield of oat. 'UPO 94' is superior to the other varieties of oat.

REFERENCES

- Singh, V., Khokar, J. S., Joshi, Y. P. and Verma, S. S. 1985. Effect of dates of sowing and cutting management on the forage yield of oat varieties. *Forage research* 11 : 45-49.

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Influence of genotypes and plant densities on physiological parameters, grain yield and quality of soybean (*Glycine max*)

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A field experiment in split-plot design was carried out on medium heavy black soil of Sehore during rainy season of 1990, to evaluate the performance of 6 varieties of soybean [*Glycine max* (L.) Merr.] in main plots and 4 plant population levels in sub-plots replicated 3 times. The soil had 148.3, 16.4 and 445 kg/ha available N, P and K respectively. The pH was 7.9. Total rainfall received during the crop season was 1,291.2 mm. The crop was sown on 28 June 1990, keeping row-to-row distance of 45 cm. Plant population of 0.2, 0.4, 0.6 and 0.8 million plants/ha was maintained by thinning. A basal dose of N, P₂O₅ and K₂O @ 20, 60 20 kg/ha was also added at the time of sowing.

Before sowing, the seeds were treated with Thiram @ 3 g and *Rhizobium* culture @ 5 g/kg seed.

The varietal response on plant height and branches/plant was significant, whereas response on dry weight was not significant. Physiological growth parameters like leaf-area index, crop-growth rate and net assimilation rate were significant (Table 1). 'JS 81-335' gave significantly higher grain yield than the other varieties except 'JS 81-1619'. The highest yield of 'JS 81-335' may be attributed to better branches, grain yield/plant, optimum leaf-area index (5.9), highest crop-growth rate (21.6 g/m²/day) and highest net assimilation rate (0.22 mg/cm²/day).