

Effect of nitrogen level on yield attributes of aromatic rice

Brij Lal, D.K. Verma, L.M. Jaiswal, Shiv Prasad, S.P. Giri and R.A. Yadav

N.D. University of Agriculture and Technology, Crop Research Station, Masodha, P.O.- Dabhasemer, Distt.- Faizabad-224133, (U.P.), India

ABSTRACT

Field experiments were conducted during wet seasons of 2005 and 2006 at the Crop Research Station, Masodha, Faizabad, Uttar Pradesh in split plot design having three nitrogen levels (30, 60 and 90 kg N ha⁻¹) in main plots and four aromatic rice varieties (IET – 17566, Badshahbhog, Kalanamak and Kanakjeer as local check) in sub plots to find out the suitable variety and optimum levels of nitrogen were evaluated for maximum grain yield under irrigated ecosystem. It was observed that IET- 17566 gave significantly higher grain yield (3.64 t ha⁻¹). The Kalanamak and Badshah bhog were at par (4.04 and 3.06t ha⁻¹). The graded levels of nitrogen significantly increased grain yield and all the attributing characters upto 60 kg N ha⁻¹ (3.37 t ha⁻¹). The N response at 60 and 90 kg N ha⁻¹ (12.33 and 8.66 t ha⁻¹) was higher over the mean grain yield at 30 kg N ha⁻¹.

Key words: Nitrogen level, aromatic rice, yield

Yield of aromatic rice is generally low mainly due to its tall stature under high nitrogenous fertilizer. Traditional aromatic rice cultivars do not respond to higher levels of nitrogenous fertilizer. Split application of fertilizer specially nitrogen can increase nitrogen use efficiency resulting in high productivity. Tripathi *et al*, (1998) studied the effect of nutrient management on growth and yield of Basmati rice varieties under irrigated ecosystem. They reported a significant increase in grain yield and yield attributes with increase of nitrogen dose up to 90 kg N ha⁻¹. Keeping these facts in view, the present investigation was undertaken to find out the production of aromatic rice with split application of nitrogen fertilizer under irrigated ecosystem.

Field experiments were conducted during 2005 and 2006 (wet season) at Crop Research Station, Masodha, N.D. University of Agriculture and Technology, Faizabad (U.P.) in split plot design having three nitrogen levels in the main plot (30, 60 and 90 kg N ha⁻¹) and four aromatic rice varieties (IET – 17566, Badshahbhog, Kalanamak and Kanakjeer as local check) in sub plots. These varieties were sown on 17.06.2005 and 17.06.2006. Half the dose of nitrogen along with 60 kg P₂O₅, 40 kg K₂O and 20 kg ZnSO₄ were applied as basal. Remaining nitrogen was applied

in two equal doses, first at maximum tillering and second at panicle initiation stage. Thirty days old seedlings were planted with two seedling hill⁻¹ at a spacing of 20 X 10 cm. Yield and yield attributes were recorded at harvest of the crop.

Table 1. Grain yield and ancillary characters of selected aromatic rice under transplanted conditions at graded levels of N fertilizer doses

Treatments	Grain yield (t ha ⁻¹)	Panicle No. m ⁻²	Panicle weight (g)	N response (kg grain kg N ⁻¹ base level 30 kg N ha ⁻¹)
Nitrogen levels				
30 kg N ha ⁻¹	3.05	335	1.86	-
60 kg N ha ⁻¹	3.37	357	2.15	12.32
90 kg N ha ⁻¹	3.53	375	3.18	8.66
CD (P=0.05)	0.23	NS	1.56	NS
Means of Varieties				
IET -17566	3.64	390	2.30	6.60
Kalanamak	3.04	337	2.18	9.92
Badshahbhog	3.06	342	2.00	13.34
Kanakjeer	3.49	359	2.09	12.10
CD (P=0.05)	0.25	23.6	0.19	-
CV%	5.16	539	5.04	-
Average mean	3.33	359	2.06	-

Graded levels of nitrogen increased mean grain yield significantly up to 60 kg N ha⁻¹ (3.37 t ha⁻¹). The N response at 60 and 90 kg N ha⁻¹ was of 12.33 and 8.68 kg grain of per kg N ha⁻¹ over the mean grain yield at 30 kg N ha⁻¹ (3.05 t ha⁻¹). Among the test cultivars IET -17566 recorded maximum grain yield (3.64 t ha⁻¹) followed by Kanakjeer (3.49 t ha⁻¹) and these two cultivars were significantly superior to Kalanamak and Badshah bhog with respect to grain yield (3.04 and 3.06 t ha⁻¹) respectively (Table 1). The grain yield differences between IET -17566 and Kanakjeer were at par with each other. The maximum panicle number (390 m⁻²) and highest panicle weight (2.30 g panicle⁻¹) was recorded by IET -17566. The findings are in agreement with the results of Dwivedi *et al.* (2004) and Shivay and Singh (2003).

REFERENCES

- Dwivedi JL 2004. Present status of short grain aromatic rices strategies and future opportunities. Paper presented in a seminar on 24th and 25th May, 2004 at IISR, Lucknow.
- Shivay YS and Singh S 2003. Effect of planting geometry and nitrogen level on growth, yield and nitrogen use efficiency of scented hybrid rice Indian Journal of Agronomy, 48 (1): 42-44
- Tripathi HP, Jaiswal LM and Verma DK 1998. Effect of nitrogen on growth and yield of Basmati rice varieties under irrigated conditions. Oryza 35 (3): 277-278.