

EFFECT OF MIXTALOL AT DIFFERENT LEVELS OF NITROGEN ON GRAIN YIELD OF RICE

K. U. Ahmed and S. B. Siddique

*Agronomy Division
Bangladesh Rice Research Institute
Gazipur 1701, Bangladesh*

Abstract

Field experiments were conducted in 1988 aus and T. Aman seasons and 1989 boro season to observe the effects of Mixtalol at three levels of nitrogen on grain yield of rice. Application of Mixtalol had no significant effect on grain yield of rice during aus and T. Aman season but it increased the grain yield in the boro season. Mixtalol at 2 ppm a.i./ha produced the highest grain yield of 3.59 t/ha which was 17% higher than the control (no Mixtalol application). Spraying of Mixtalol at 5 ppm a.i./ha gave 14% higher grain yield than the control. The interaction of Mixtalol and nitrogen had no significant effect on rice yield.

Key words: Mixtalol, Nitrogen, Rice.

Mixtalol, a plant growth nutrient, has been claimed to promote photosynthesis in plants and thereby increase plant productivity (Anonymous, 1985). In Bangladesh it has been tried successfully, on wheat (Bhuiya *et al.*, 1987), cabbage (Islam *et al.*, 1992), chilli (Zaman, 1992) and cowpea (Alam and Quasem, 1988). However, a little information is available for rice. Therefore, field studies were conducted to observe the effects of Mixtalol at various levels of nitrogen on grain yield of rice during aus, T. Aman and boro seasons.

Three field trials were conducted in 1988 and 1989 at the Bangladesh Rice Research Institute farm. The soil of the experimental fields were clay loam with P^H ranging from 6.8 to 7.0. Three rates of Mixtalol (0, 2 and 5 ppm

a.i./ha) were applied in combination with three rates of nitrogen (0, 30 and 60 kg/ha in aus and T. aman and 0, 40, 80 kg/ha in boro). The experiments were laid out in split-plot design with N rates in the main plot and Mixtalol rates in the sub-plot and replicated four times. The varieties were BR14 in aus and boro and BR11 in T. aman. The unit plot size was 4 x 4 m.

Twenty-five day old seedlings with 2-3 seedlings per hill were transplanted in aus season. During T. aman and boro, 35 and 40-day old seedlings, respectively with same seedling number were transplanted. Other fertilizers were used at the rate of 40-40-10 of P,K,S kg/ha during aus and T. aman and 60-40-10 kg P,K,S kg/ha in boro season. Standard cultural practices were followed to raise the crops.

Grain yield was recorded from 12m² from plot leaving the border hill and adjusted at 14% moisture content. The data were analysed following standard statistical procedures.

Mixtalol application had no significant effect on the grain yield of rice in aus and T. aman season (Table 1). However, spraying of Mixtalol at 5 ppm a.i./ha gave 9% higher grain yield than no Mixtalol application in T. aman season. During boro season, Mixtalol significantly increased grain yield of rice. Mean highest grain yield of 3.58 t/ha was obtained by spraying Mixtalol at 2 ppm a.i./ha which was 17% higher than the control. Mixtalol at 5 ppm.

a.i./ha gave 14% higher grain yield than the control. Sarker *et al.* (1989) reported that Mixtalol application at 2 or 3 ppm a.i./ha increased grain yield of boro rice by 16.9% and 27.5%, respectively.

The effectiveness of Mixtalol might have been affected by rainfall during aus and aman seasons. If rainfalls after the application of Mixtalol, its efficiency is reduced (Anonymous, 1985). As a result better effect of Mixtalol was not observed in aus and T. aman seasons. But in boro season, rain free condition and higher solar radiation might have helped better use of Mixtalol.

Table 1. Grain yield (t/ha) of rice as affected by Mixtalol and nitrogen rates.

Mixtalol (ppm a.i./ha)	N level (kg/ha)				
	0	30	60	Mean	Relatives
Aus, 1988					
0	2.91	3.23	3.13	3.09 a	100
2	2.99	3.30	3.19	3.14 a	102
5	3.06	3.19	3.26	3.19 a	102
Mean	2.98 B	3.24 A	3.22 A	-	-
SE				0.18	
T. aman, 1988					
0	2.93	3.09	3.25	3.09 a	100
2	3.16	3.13	3.29	3.19 a	103
5	2.89	3.55	3.67	3.37 a	109
Mean	2.99 A	3.25 A	3.40 A	-	-
SE				0.22	
Boro, 1989 ¹					
0	2.40	3.25	3.54	3.06 b	100
2	2.56	3.53	4.69	3.59 a	117
5	2.46	3.83	4.15	3.48 a	114
Mean	2.48 B	3.54 A	4.13 A	-	-
SE				0.12	

¹ N rates were 0, 40, 80 kg/ha during Boro season

Means followed by a common small letter(s) in a column and common capital letter in a row do not differ significantly at 5% level by DMRT.

Nitrogen application increased grain yield of rice significantly over control in aus and boro seasons (Table 1). Application of 30 and 60 kg N/ha in aus and T. aman seasons and 40 & 80 kg N/ha in boro season did not show any significant difference in grain yield of rice indicating that the soil of the experimental plot was not deficient in nitrogen. The interaction between Mixtalol and different levels of nitrogen was not significant. The results of this study showed that boro rice yield can be increased using Mixtalol to a limited level compared to higher yield increased in some leafy crops (Alam and Quasem, 1988 and Islam *et al.*, 1992).

References

- Alam, F. M. and A. Quasem. 1988. A study on the effect of Mixtalol on the grain yield of cowpea strains. *In* Proc. of 13th Bangladesh Science Conference held in May 29-31, 1988 at Dhaka, Bangladesh. p. 75.
- Anonymous, 1985. Mixtalol Technical Information. Agril. Products Division, Hindustan Lever Limited, Bombay 400020, India. pp. 2-3.
- Bhuiya, M. S. U.; A. K. M. S. H. Chowdhury; M. U. Salam and M. G. Miah. 1987. Effect of Mixtalol and NPK on late seeded wheat under minimum tillage. *Bangladesh Agron. J.* 2(1) : 25-29.
- Islam, A. G. M. S.; M. R. Haider; A. R. M. Solaiman and A. M. A. B. Mia. 1992. Effect of Mixtalol and nitrogen on the growth and yield of cabbage. *In* Abstracts of 17th Bangladesh Science Conference held in May 6-9, 1992 at IPISA, Salna, Gazipur. p. 53.
- Sarker, A. U.; M. U. Salam and A. K. M. S. H. Chowdhury. 1989. Effect of Mixtalol at various levels of N on the performance of boro rice. *Bangladesh J. Agril. Sci.* 16(2) : 253-256.
- Zaman, S. K. 1992. Effect of Mixtalol on the performance of chilli. *In* Abstracts of 17th Bangladesh Science Conference held in May 6-9, IPISA, Gazipur. p. 38.