

Influence of Some Herbicides on Weed Flora and Productivity in Transplanted Rice (*Oryza sativa* L.)

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The productivity of transplanted rice to a greater extent depends on adequate and efficient management practices especially weeds. Butachlor and anilofos have been recommended for weed control in transplanted rice and are being used continuously for quite some time. Repeated use of any single herbicide in a crop may lead to the shifting of weed flora with the result that secondary weeds may become of primary importance and also weeds may develop resistance to such herbicides. These herbicides are quite effective against annual grasses but not on sedges and non-grassy weeds. So, herbicides with wide weed control spectrum applied alone or in combination with others may provide satisfactory management of weeds. Keeping in view the above, the present study was, therefore, undertaken.

The field research was conducted during **kharif** 2000 at Crop Research Centre of G. B. Pant

University of Agriculture & Technology, Pantnagar. The soil of the experimental field was loam in texture having pH of 7.3, medium organic carbon (0.64%), high available phosphorus (37 kg P ha⁻¹) and medium available potassium (180.50 kg K ha⁻¹). The treatments comprised weedy, weed-free, oryzalin at various doses, almix alone and in combinations with butachlor at 1.0 and 1.5 kg ha⁻¹ and pretilachlor at 0.75 kg a. i. ha⁻¹ applied at four days after transplanting (DAT). The recommended package of practices was adopted to grow the experimental crop. The experiment was laid out in randomized block design with three replications. Transplanting of rice var. Narendra 359 was done on July 8, 2000 at a spacing of 20 x 10 cm².

The weed flora in the experimental field consisted of *Echinochloa crusgalli*, *Echinochloa colona*, *Paspalum distichum*, *Cynodon dactylon*, *Caesulia axillaris*, *Eclipta alba*, *Commelina*

Table 1. Effect of treatments on weeds and grain yield of rice

Treatment	Dose (kg a. i. ha ⁻¹)	Weed density (No. m ⁻²)	Weed dry weight (g m ⁻²)	Grain yield (kg ha ⁻¹)
Oryzalin	0.5	4.09 (66)	4.68 (113.6)	4271
Oryzalin	0.75	3.85 (53)	4.33 (91.4)	4323
Oryzalin	1.0	3.34 (35)	3.85 (59.1)	4661
Oryzalin	1.25	3.04 (22)	3.59 (35.6)	5417
Oryzalin	1.5	3.52 (38)	4.11 (70.6)	4505
Almix	0.004	3.17 (24)	3.08 (41.8)	5128
Almix+Butachlor	0.004+1.0	0.00 (00)	0.00 (0)	5677
Almix+Butachlor	0.004+1.5	3.36 (31)	3.88 (50.0)	5039
Butachlor	1.5	3.76 (41)	4.43 (82.1)	4349
Pretilachlor	0.75	3.43 (32)	3.87 (55.2)	4844
Weed-free	-	0.00 (00)	0.00 (0)	5859
Weedy	-	4.45 (95)	4.87 (148.2)	4023
LSD (P=0.05)	-	0.70	1.13	1008

Original values given in parentheses are transformed to log_e(x+1).

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benghalensis, *Cyperus rotundus* and *Cyperus difformis*.

The lowest density of weeds at 60 DAT was found with tank mixture of almix + butachlor 4 g + 1.0 kg a. i. ha⁻¹. Increased dose of this mixture at 4 g+1.5 kg a. i. ha⁻¹ did not have additional advantage in decreasing the weed density. Oryzalin at lower doses had more weed dry matter and density than at higher doses.

All the treatments significantly reduced the total weed dry matter production as compared to weedy check. Tank mixture of almix + butachlor at 4 g+1.0 kg a. i. ha⁻¹ provided complete control of weeds at 60 DAT. Singh *et al.* (2003) also recorded the effectiveness of almix + butachlor at 4 g + 938 g

a. i. ha⁻¹. Pretilachlor at 0.75 kg a. i. ha⁻¹ was more effective than butachlor at 1.5 kg a. i. ha⁻¹ in reducing weed dry matter production. Grain yield due to almix +butachlor at 4 g+1.0 kg a. i. ha⁻¹ was significantly more than oryzalin at 0.5, 0.75, 1.0, 1.5 and butachlor at 1.5 kg a. i. ha⁻¹ and at par with weed-free treatment. Among the different doses of oryzalin, 1.25 kg a. i. ha⁻¹ was significant than its 0.5 and 0.75 kg a. i. ha⁻¹ (Table 1).

REFERENCE

Singh, S., H. Singh, S. Narwal and R. Malik, 2003. Evaluation of alkombio and tank mixture of almix + butachlor for the control of weeds in transplanted rice. *Indian J. Weed Sci.* 35 : 24-26.