

Effect of Pyrazosulfuron-ethyl on Weeds and Yield of Transplanted Rice Under Lateritic Belt of West Bengal

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Transplanted **kharif** rice in West Bengal is infested by heterogenous type of weed flora which is one of the serious limitations in their control. The loss of yield occurs from 25-30% due to unchecked weed growth (Upadhyay and Gogoi, 1993). Weed management through farmers' traditional hand weeding is costly. Butachlor has become popular with the rice farmers of the state as pre-emergence herbicide for controlling grassy weeds. However, its application window is very narrow i. e. 0-3 days after transplanting (DAT). Pyrazosulfuron-ethyl, a new herbicide, was found effective for complex weed flora in rice and has not shown any phytotoxic symptoms in boro rice (Maiti *et al.*, 2003). Hence, the present study for evaluating the efficacy of different doses of pyrazosulfuron-ethyl in controlling weeds in transplanted rice was conducted during **kharif** 2003 at the Institute of Agriculture Farm, Visva-Bharati, Sriniketan in sandy loam soil having low organic matter, medium nitrogen and phosphorus and low potassium. Rice cultivar IR-36 was transplanted at a row spacing of 20 cm on 2 August 2003. Nine treatments consisting

of pyrazosulfuron-ethyl both as Rallis and Saathi 10 WP each at 20, 25 and 30 g ha⁻¹, butachlor at 1000 g ha⁻¹, weedy check and hand weeding (25 DAT) were assigned in randomized block design with three replications. The herbicides were applied at 3 DAT on soil surface with knapsack sprayer fitted with flat fan nozzle after draining out water from the field. The field was impounded with water at four days after application of herbicides.

The experimental field was infested with 14 weed species (21% grasses, 64% broad-leaved weeds and 15% sedges) as observed in weedy check. Dominant species were *Ludwigia perennis* L., *Lindernia ciliata* (Colsm.) Pennell., *Fimbristylis miliacea* Vahl. and *Echinochloa colonum* (L.) Link.

Pre-emergence application of pyrazosulfuron-ethyl 10 WP at all the doses significantly controlled grasses, broad-leaved weeds and sedges as compared to weedy check (Table 1) which were better than butachlor at 1000 g ha⁻¹, whereas observation at 45 DAT showed that percentage reduction of grasses and sedges was increased but percentage reduction of broad-leaved weeds was decreased

Table 1 Effect of treatments on weeds and yield of transplanted rice

Treatment	Dose (g ha ⁻¹)	Weed density (No. m ⁻²) 45 DAT			Weed dry weight (g m ⁻²) 45 DAT			Grain yield (kg ha ⁻¹)
		Grassy weeds	Broad-leaved weeds	Sedge	Grassy weeds	Broad-leaved weeds	Sedge	
Weedy	-	13	174	17	64.2	6.9	3.2	3075
Hand weeded	-	4	38	9	2.7	0.5	0.4	4467
Butachlor	1000	3	53	5	5.0	0.5	0.6	4533
Pyrazosulfuron-ethyl ¹	20	3	53	3	4.8	0.5	0.4	4567
Pyrazosulfuron-ethyl ¹	25	3	50	2	4.6	0.5	0.4	4567
Pyrazosulfuron-ethyl ¹	30	2	45	3	3.9	0.5	0.4	4591
Pyrazosulfuron-ethyl ²	20	4	49	4	5.1	0.5	0.3	4558
Pyrazosulfuron-ethyl ²	25	3	46	2	4.3	0.5	0.3	4600
Pyrazosulfuron-ethyl ²	30	3	48	2	3.8	0.5	0.3	4583
LSD (P=0.05)		2	13	3	4.8	0.3	0.2	57

¹Formulation as Rallis, ²Formulation as Saathi.

than that at 30 DAT. Performance of both the products (Rallis and Saathi) was statistically at par in controlling weeds. Similar trend was also observed in case of dry matter of weeds.

Pyrazosulfuron-ethyl at all doses produced similar grain yield and showed better performance than butachlor. Increase of yield due to pyrazosulfuron-ethyl (20, 25 and 30 g ha⁻¹) was 1.99 to 2.89% against farmers' traditional hand weeding.

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