

Relative Efficacy of Pretilachlor 50 EC for Weed Control in Low Land Transplanted Rice-Rice Cropping System

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Controlling the weeds in time is of paramount importance. Pre-emergence herbicides viz., butachlor and anilofos are being used for weed control in transplanted rice. Pretilachlor is relatively a new pre-emergence herbicide, the efficacy of which will have to be worked out for effective and economical weed control in transplanted rice. Rice is grown as a staple food and accounts for about 31% of the total area under food grains and presently grown in about 43 million ha (Singhal, 1999). Therefore, the present study was undertaken to find out the most effective dose of pretilachlor.

A field experiment was conducted during the **rabi** (2001-02) and summer (2002) at experimental farm of Department of Agronomy, Tamil Nadu Agricultural University, Coimbatore. The soil of the experimental field was clay loam in texture, alkaline in reaction (pH 8.5), medium in organic carbon (0.7%), available nitrogen (258 kg ha⁻¹) and available

phosphorus (34.5 kg ha⁻¹) and high in available potassium (465 kg ha⁻¹). The treatments included five doses of pretilachlor (0.5, 0.75, 1.0, 1.5 and 3.0 kg ha⁻¹), alongwith butachlor at 1.25 kg ha⁻¹, anilofos at 0.4 kg ha⁻¹ and pretilachlor at 0.75 kg ha⁻¹ (M/s. Gharda Chemicals) and compared with hand weeding twice and unweeded control (Table 1). The experiments were laid out in a randomised block design replicated thrice.

The herbicides were applied as spray using 750 litre of water per hectare and knapsack sprayer fitted with WFN 40 nozzle, keeping a thin film of water in the field. The field was neither drained nor irrigated for two days after application of herbicides. One hand weeding was done in all herbicide treated plots at 45 DAT. The hand weeding treatment (T9) received two hand weedings at 20 and 45 DAT. Rice varieties CO 43 and CO 47 were used in **rabi** and summer, respectively, following all recommended package of

Table 1. Effect of treatment on weeds and rice

Treatment	Weed density (No. m ⁻²) (Panicle initiation stage)		Panicles (No. m ⁻²)		Yield (kg ha ⁻¹)	
			Rabi	Summer	Rabi	Summer
	Rabi	Summer				
Pretilachlor 0.5 kg	1.53 (33.3)	1.67 (46.6)	240	304	5249	4977
Pretilachlor 0.75 kg	1.35 (22.0)	1.56 (36.0)	315	320	5580	5588
Pretilachlor 1.0 kg	1.23 (16.6)	1.45 (27.3)	315	345	5737	5822
Pretilachlor 1.5 kg	1.11 (12.0)	1.43 (26.0)	249	314	5395	5417
Pretilachlor 3.0 kg	1.08 (11.3)	1.29 (15.3)	256	309	5292	5296
Pretilachlor 0.75 kg	1.36 (22.6)	1.50 (31.3)	274	326	5522	5515
Anilofos 0.4 kg	1.49 (27.3)	1.53 (33.3)	280	334	5524	5491
Butachlor 1.25 kg	1.49 (27.3)	1.45 (27.3)	286	336	5466	5566
Hand weeding twice	1.24 (16.6)	1.39 (24.0)	315	341	5680	5800
Unweeded control	1.64 (43.3)	1.92 (84.0)	235	289	3047	2773
LSD (P=0.05)	0.01	0.04	57.4	7.9	393	298

Figures in parentheses are original values. All herbicide treatments followed by hand weeding at 45 DAT.

Rifit 50 EC—Gharda chemical formulation, other pretilachlor formulations are new formulation 50 EC.

Panicle initiation stage occurs 45-50 DAT in **rabi** and 55-60 DAT in summer.

practices.

The dominant weeds of the experimental fields were *Echinochloa crusgalli* (18%), *Leptochloa chinensis* (49.5%) and *Marsilea quadrifoliata* (32.1%). In **rabi** season higher dose of pretilachlor (3.0 kg ha⁻¹) reduced the total weed population significantly (Table 1). In summer season also, the same trend was observed. At panicle initiation, pretilachlor at 3.0 kg ha⁻¹ was followed by hand weeding twice and pretilachlor at 1.5 kg ha⁻¹ in reducing the total weed population. In both the seasons, the standard herbicides rifit, anilofos and butachlor recorded relatively higher density of total weeds compared to higher three doses of test herbicide (pretilachlor 3.0, 1.5 and 1.0 kg ha⁻¹). Effect of weed dry matter production was similar to weed density.

Pretilachlor at 1.5 and 3.0 kg ha⁻¹ exhibited severe crop phytotoxicity, which affected crop growth adversely. Pretilachlor at 1.0 kg ha⁻¹ exhibited no crop phytotoxicity. Pretilachlor 0.75 kg ha⁻¹ and other standard herbicides viz., butachlor 1.25 kg ha⁻¹,

anilofos 0.4 kg ha⁻¹, rifit 0.75 kg ha⁻¹ and hand weeding twice were comparable with pretilachlor 1.0 kg ha⁻¹.

Pretilachlor at 1.0 kg ha⁻¹ being on par with pretilachlor at 0.75 kg ha⁻¹, butachlor 1.25 kg ha⁻¹ and anilofos at 0.4 kg ha⁻¹. Rifit 0.75 kg ha⁻¹ and hand weeding twice resulted in significantly higher panicle number and grain yield (Table 1) as compared with remaining treatments. This may be attributed to significantly lower weed density and dry matter accumulation of weeds. Similar results were also observed by Angiras *et.al.* (1997).

REFERENCES

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