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Weed control in rice (*Oryza sativa*) nursery

P.D. SONAWANE AND A.T. AMBEKAR

National Agricultural Research Project, Igatpuri, Nasik, Maharashtra 422 403

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ABSTRACT

An experiment was conducted during rainy (*kharif*) season 1991–93 to study weed control in rice (*Oryza sativa* L.) nursery in medium black soil, with 6 treatments consisting 3 herbicides (butachlor 1.5 kg, thiobencarb 1.5 kg and anilophos 0.3 kg a.i./ha) and other treatments being hand-weeding at 20 days after sowing, *Gliricidia* leaves 1 kg/m^2 as mulch and unweeded control. The fresh weight of rice seedlings due to application of herbicides and hand-weeding once were found significantly superior to the unweeded control. The significant reduction in weed biomass was due to application of herbicides and hand-weeding once in comparison with the treatments of unweeded control and *Gliricidia* leaves. The saving due to use of weedicides and *Gliricidia* leaves for 0.10 ha nursery area over manual weeding was Rs 225 and 153 respectively.

Key words: Weed control, Herbicides, Rice nursery

Since rice seedlings are transplanted after attaining an age of 3 to 4 weeks, the time available for weeding in rice nursery is short and this makes the choice of hand-weeding very difficult. However, when manual weeding in nursery is restored, it proved to be time consuming, expensive and ineffective. Under the circumstances, the use of herbicides for weed control in rice nursery seems to be promising. Therefore the experiment was planned to find out the suitable herbicides for effective and economic weed control in rice nursery.

MATERIALS AND METHODS

The field experiment was conducted during rainy (*kharif*) seasons of 1991, 1992 and 1993 at the National Agricultural Research Project, Igatpuri, Maharashtra. Six treatments consisting 3 herbicides [butachlor (50 EC) 1.5 kg a.i./ha, thiobencarb (50 EC) 1.5 kg a.i./ha and anilophos [Gharda] (30 EC) 0.3 kg a.i./ha], hand-weeding once, unweeded control and application of *Gliricidia* leaves after seed germination @ 1 kg leaves/m^2. Weedicides were sprayed 6 days after rice emergence. The experiment was laid out in randomized block design with 4 replications. The soils was medium black.

The sowing was done in first fortnight of June with seed rate of 35 kg/ha on the raised beds. Plot size was 10 m x 1 m. Hand-weeding was done 20 days after sowing. Up rooting of the seedlings was done at the age of

Table 1. Fresh weight of rice seedlings (kg/plot), weed weight and weed count as influenced by various treatments (pooled analysis)

Treatment	Fresh weight of rice seedlings (kg/plot)				Weed weight (kg/plot)				Weed count/plot			
	1991	1992	1993	Pooled	1991	1992	1993	Pooled	1991	1992	1993	Pooled
Butachlor (50 EC) 1.5 kg ai/ha	18.20	18.65	17.50	18.08	2.21	2.18	2.35	2.24	14.6	15.6	14.9	15.2
Thiobencarb (50 EC) 1.5 kg ai/ha	18.17	18.35	17.87	18.06	2.82	2.92	2.62	2.85	15.9	16.8	16.7	16.4
Anilophos (30 EC) 0.30 kg ai/ha	18.67	18.45	19.10	18.74	2.45	2.20	2.50	2.28	14.8	15.8	15.0	15.3
Hand-weeding once	18.50	18.57	19.00	18.69	2.47	2.18	3.05	2.56	16.2	16.8	16.6	16.5
Unweeded control	16.40	16.75	14.70	15.95	3.30	3.65	3.75	3.56	17.8	18.6	17.6	17.8
Gliricidia leaves	17.47	17.87	16.50	17.28	3.11	3.54	3.20	3.28	16.8	18.1	18.2	17.8
CD (P = 0.05)	1.77	1.55	1.46	0.80	0.56	0.54	0.38	0.28	0.95	0.77	0.84	0.9

30 days after that weed count and fresh weight of rice seedlings and weeds/plot were recorded.

RESULTS AND DISCUSSION

The fresh weights of rice seedlings due to application of butachlor 1.5 kg a.i./ha, thiobencarb 1.5 kg a.i./ha, anilophos 0.3 kg a.i./ha and hand-weeding once were found to be significantly superior to unweeded control. The fresh weight was maximum due to anilophos in 1991 and 1993 and due to butachlor in 1992.

Pooled mean fresh weight of seedlings was significantly more due to anilophos and hand-weeding once than unweeded control and *Gliricidia* leaves. The treatments butachlor, thiobencarb, anilophos and hand-weeding once were at par with each other. Similarly, *Gliricidia* leaves was at par with treatments butachlor and thiobencarb. During 1991 and 1992 all the treatments were significantly superior to unweeded control. Whereas during 1993, treatment anilophos and hand-weeding once were at par with each other and significantly superior to butachlor, unweeded control and *Gliricidia* leaves. The treatment thiobencarb was also on a par with anilophos and hand-weeding once and significantly superior to unweeded control and *Gliricidia* leaves (Table 1).

The weed biomass was reduced signifi-

Table 2. Economics of growing seedlings with various methods of weed control

Particulars	Expenditure (Rs)
Total cost of growing seedlings on 0.10 ha seed nursery area	510
Cost of manual weeding of nursery area (20 units)	360
Expenditure on herbicidal weed control, i.e. cost of weedicides	135
Application of *Gliricidia* leaves–cost of manual labour (16 units)	288
Saving due to herbicidal weed control	
Manual labour	225
Use of glyricidia leaves	153

cantly due to butachlor, thiobencarb, anilophos and hand-weeding once in compared with the treatments of unweeded and *Glyricidea* leaves (Table 1).

Weed weight was minimum due to butachlor. Hari Om *et al.* (1993) also reported that the application of butachlor gave adequate weed control. Gogoi and Kalita (1992) reported that application of pre-emergence butachlor at 1.5 kg/ha increased grain yield over the unweeded control and also reducing the weed count/m^2.

Pooled data showed that weight of weeds significantly lower due to butachlor and anilophos over thiobencarb, hand-weeding once, unweeded control and *Gliricidia* leaves (Table 1).

The weed count/plot significantly lowered due to anilophos and butachlor over thiobencarb, hand-weeding once, unweeded control and *Gliricidia* leaves on the basis of pooled data (Table 1).

Economics of growing seedlings with various methods of weed control indicate that saving due to chemical herbicides and *Gliricidia* leaves for 0.10 ha nursery area is Rs 225 and Rs 153 respectively (Table 2).

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