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NEW PRE-EMERGENCE CHEMICALS FOR WEED CONTROL IN FLOODED RICE.

Early weed control is essential for the growth and development of rice (*Oryza sativa* L). Higher yields are obtainable if the crop is kept weed free upto 45 days from sowing (Nair *et al.*, 1975). The traditional labour intensive method of weed control is highly expensive and therefore, consideration is now being given to the use of herbicides. In the present study nine pre-emergence chemicals were compared for crop safety and weed control efficiency in direct-seeded, flooded rice.

The experiment was conducted during the winter season of 1977-78 (November-February) at the Rice Research Station, Pattambi. There were 12 treatments as detailed in Table 1. The design of the experiment was randomised block with 4 replications. Rice cv.Thriveni was dibbled on saturated soil at a spacing of 1 5 cm x 20 cm and flooded with 3 cm of water on the fifth day after sowing. A seed rate of 60 kg per ha was adopted. The herbicides were applied on the seventh day after sowing. The gross plot size was 15.0 m².

Dinitramine at 0.75 Kg. a.i./ha severely injured the rice seedlings, the stand loss being as high as 40 per cent. It was also not effective against grasses, particulary, *Echinochola crus-gally*. At the lower dose of 0.5 kg a.i./ha when it was applied in combination with 2, 4-D IPE, this herbicide was less injurious to the crop, but was better in weed control efficieccy (80.5%). Mon 0385 at 0.5 kg a.i./ha provided excellent weed control. It, however, caused mild toxicity to rice seedlings. The injury inflicted by the lower dose of this chemical (0.25kg a. i./ha) became more pronounced in the presence of 2,4-D IPE, the percentage of mortality of seedlings being 37,5%. The reduction in the dose of the chemical also reduced the weed control efficiency from 100% to 70%. The other herbicides were relatively more safe and efficient in weed control. The unweeded control had a total weed population of 362/m². Grasses, sedges and broad leaved weeds occupied, respectively, 1.4, 35.6 and 63.0 per cent of the weed population. The predominent weed species were *Monochoria Vaginalis, Sphenochlea* sp., *Fimbristylismiliacea, Cyperus iria* and *Echinochloa crusgolly*.

All the herbicide treatments produced significantly more yields than the unweeded control with piperophos/2,4-D IPE topping the list. Dastun/2,4-D IPE ranked second. Both these chemicals were, however, on par with benthiocarb/2, 4-D IPE, dinitramine +2,4-D IPE and butachlor + 2,4-D IPE in grain yield.

Table 1

Effect of treatments on crop safety, weed control efficiency and grain yield

Treatment	Rate of application (Kg a. i. ha)	Toxicity rating % (15 das)	Weed control rating (30 das)	Number of weeds at harvest per m² *	Dry weight of weeds at harvest (g/m²)	Weed control efficiency (%)	Crain yield (kg/ha)
Mon 0385	0.50	22.5	Excellent	1.5 (12.25)	—	100.0	1983
Mon 0385+2,4-D IPE	0.25+0.5	37.5	Fair	7.5 (2.85)	20.7	70.0	1658
C 288	0.50	19.0	Good	6.0 (2.49)	5.6	92.0	1841
Piperophos/2,4-D IPE	0.75	13.0	Good	5.2 (2.45)	1.4	98.0	2543
Dastun/2,4-D IPE	1.0/0.25	11.0	Good	2.0 (1.50)	2.3	97.0	2421
Dinitramine	0.75	40.0	Poor	56.0 (7.32)	59.1	13.0	1963
Dinitramine+2,4-D IPE	0.50+0.50	25.0	Fair	16.0 (3.96)	13.3	80.5	2319
Butachlor+2,4-D IPE	0.75+0.5	12.0	Good	3.0 (1.98)	2.3	96.6	2116
Benthiocarb/2,4-D IPE	1.0/05	10.5	Good	2.0 (1.68)	2.5	96.3	2289
Hand weeding twice				36.0 (5.92)	19.2	72.0	1831
Hand weeding thrice				11.0 (3.40)	9.6	86.0	1679
Unweeded control				90.5 (9.22)	68.2	—	1160
C. D. (0.05)				1.94	26.8		417

*figures in brackets are transformed values.

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