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Short Communications

Effect of Different Weed Control Methods on Yield of Direct Sown Rice under Upland Conditions

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Direct seeded upland paddy contributes 20 per cent of cropped area in India, 10 and 28 per cent of area in Gujarat and Panchmahal district respectively.

It is drilled directly before the onset of rain in dry conditions (heavy soils) and after rains (light soils). Paddy seedlings germinate along with weeds. It is confirmed by Mukhopadhyay *et al.*, (1983) that the losses caused by weeds in upland rice range from 74 to 100 per cent. Generally, hand weedings are laborious, time consuming and expensive. There was no such information about chemical weed control in direct seeded paddy. Thus, the present investigation was taken up to find out the effectiveness of different weed control methods in direct seeded paddy under upland conditions of Panchmahals in Gujarat.

The experiment (filler trial) was conducted at National Agricultural Research Project, Gujarat Agricultural University, under Paddy Research Scheme at Derol, Panchmahals, during kharif, 1988. The soil had sandy loam texture, having 7.7 PH with 0.075% of total N, 155 kg/ha of P_2O_5, 857 kg/ha of K_2O, 7.88 ppm Fe and 0.48 ppm Zn. The total rainfall received was 1069 mm in 52 rainy days during the year. The experiment consisted of six treatments, T_1 (Pendimethalin (stomp) 30 EC @ 1.5 kg a.i./ha) T_2 (Pendimethalin (stomp) 30 E.C. @ 1.0 kg a.i. / ha. + followed by 2, 4-D@ 0.6 kg a.i./ha 30 days after rice emergence (DARE). T_3-Pendimethalin 30 E.C., @ 1.0 kg. ai /ha + one handweeding at 20 DARE).

T_4 (weed free check (hand weeding as and when required, 15th, 30th, 45th and 60th DARE)

T_5 (Hand Weeding (twice) at 20th & 40th DARE) and T_6 (Non weeded check). The experiment was non-replicated, having big plot size (15 m x 10 m i.e. 150 m^2). Sathi-34-36, popular drilled paddy variety was used in the experiment. The experiment was fertilized with uniform dose of 75 kg. N and 37.5 kg P_2O_5 given at the time of land preparation. The experiment was sown on 21st July follwoing 30 cm distance between two lines by means of Tarphan.

The pendimethalin (stomp) was given in 9 liters of water at 7 days after sowing, while 2, 4D was applied 30 days after emergence of crop. The hand weedings were preformed accroding to treatments.

The weed species observed in the experimental plots were *Andropogon anulatus*, Forsk, *Digitaria anguinails*, *Launaea*

TABLE 1

Economics of weed control for direct sown rice under upland conditions.

Sr. No.	Treatments	Seed yield kg/ha	Straw yield kg/ha	Av. No. of tillers per m2	Av. No.of panicles per m2	Av. No. of seeds/ panicle	Drymatter production of weeds kg/ha	Av. weed count at harvest from 50 cm x 50 cm square	Net ICBR
1.	Pendimethalin 30 EC @ 1.5 kg a.i./ha	706	2483	48.8	33.8	114.8	968	20.6	1:3.69
2.	Pendimethalin 30 EC @ 1.0 kg a.i./ha + followed by 2, 4-D @ 0.6 kg a.i./ha 30 days after rice emergence (DARE)	626	1936	42.6	29.8	98.2	673	9.8	1:1.68
3.	Pendimethalin 30 EC @ 1.0 kg a.i. /ha + one hand weeding at 20 DARE	499	1852	47.2	29.8	112.2	1263	37.8	-ve-
4.	Weed free check (H.W. as and when required, 15th, 30th, 45th & 60th (DARE)	1125	3199	44.2	33.6	87.8	126	9.2	-ve-
5.	Hand weeding (twice) 20th & 40th DARE	688	2778	59.2	31.0	90.0	1136	39.0	-ve-
5.	Nonweeded check	241	1094	29.8	16.2	103.0	2736	28.6	-

	Price
1. Pendimethalin	145 Rs./lit.
2. 2, 4-D	110 Rs./lit.
3. Paddy seed	2 Rs./kg.
4. Paddy straw	0.25 Rs./kg.

Rudicaulis Hook, *Amranthus polygamous*, L. *Commelin benghalensis*, L. *Tridax procumbens*, L. *Phyllanthus niruri, sensus Ocimum gratissimum*, L. *Cynodon dactylon*, L. *Cyperus, rotundus*, L., *Echinochloa crusgali*, L., *Digitaria marginata, Cyperus iria, spermacoce hispida and Corchorus olitorious*, L.

The results (Table1) indicated that seed yield was the highest (1125 kg/ha) in the treatment T_4 (hand weedings as and when required at 15th, 30th, 45th & 60th days). The weed dry weight and weed population were also minimum in T_4. Thus hand weeding was found to be most effective method of weed control, as also reported by Ghosh *et al.*, (1977), and Rathiand Tewari (1979). The treatment T_1 (Pendimethalin 30 EC @ 1.5 kg. a.i./ha) 7 days after sowing recorded the next highest seed yield (706 kg/ha)/ and was found to control the weed flora effectively, giving comparatively less weed population. This treatment also gave the highest net ICBR of 1:3.69, and thus was considered to be the most economical.

The treatment T_1 (Pendimethalin 30EC @ 1.5 kg a.i./ha) also gave higher av. number of tillers, av. number of panicles per tiller and av. number of seeds per panicle. Their superiority to unweeded control treatment may be because of proper utilization of nutrients, light and space by the crop as a result of effective weed control.

Pre-emergence application of pendimethalin controlled the grassy as well as non-grassy weeds satisfactorily during early stage of crop growth. The results were confirmed by Bhan *et al.*, (1986) and Ghosh *et al.*, (1987).

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