

RELATIVE EFFICIENCY OF DIFFERENT WEED MANAGEMENT PRACTICES IN DRY SOWN RAINFED RICE

Dry seeding of rice is a common practice in many rice growing areas in Kerala. Weed problems are far more complex and serious in dry seeded rice than in other production systems. A much wider range and intensity of weed problems can be expected in dry sown

rainfed rice because of differences in land preparation and simultaneous germination of weeds and rice. Hence, the present investigation was undertaken at the College of Agriculture, Vellayani, Trivandrum, during the first crop season of 1992 to study the relative effi-

Table 1. Effect of sowing time and weed management on grain yield, weed count, weed dry weight and weed control efficiency

Treatments	Grain yield kg ha ⁻¹	Monocot weed count / m ²		Dicot weed count / m ²		Weed dry weight / m ²		Weed control efficiency, %	
		40 DAS	80 DAS	40 DAS	80 DAS	40 DAS	80 DAS	40 DAS	80 DAS
<i>Date of sowing</i>									
S ₁ May 16	1472.67	5.95	8.18	3.94	4.58	28.39	71.72	41.85	49.58
S ₂ May 23	1933.43	7.20	9.12	2.47	3.50	36.17	107.47	45.12	49.57
S ₃ May 30	1104.12	8.38	9.23	2.46	2.87	56.36	75.98	41.29	44.43
CD(0.05)	771.53	-	-	-	-	-	-	-	-
SE	196.52	0.66	0.47	0.58	0.60	9.55	11.79	-	-
<i>Weed management</i>									
W ₁ Butachlor + 2,4-D	1227.22	9.35	11.72	1.62	2.36	54.33	129.63	36.79	41.01
W ₂ Butachlor + 1 HW 40 DAS	1447.68	8.86	9.03	4.89	5.11	48.11	67.84	38.15	53.08
W ₃ Hand weeding twice 20 and 40 DAS	1796.74	6.23	7.27	2.56	3.81	17.87	54.73	48.64	56.60
W ₄ Complete weed free	2197.25	1.00	1.00	1.00	1.00	0.00	0.00	90.00	90.00
W ₅ Unweeded control	848.77	10.44	15.19	4.72	5.96	81.24	113.00	0.00	0.00
CD(0.05)	145.14	2.00	1.59	1.29	1.07	31.54	38.58	11.72	8.63
SE	49.72	0.68	0.54	0.44	0.36	10.80	13.23	4.01	2.95

Weed count values in table are those obtained after square root transformation

Weed control efficiency values are those obtained after angular transformation and weighted analysis

-ciency of different weed management practices in dry sown rainfed rice sown on different dates using the variety **Onam**, and to suggest an effective weed management practice for such condition. The experiment was laid out in split plot design in a sandy clay loam soil of

pH 5.2 with sowing time (May 16, May 23, May 30) in the main plot and weed management treatments (**butachlor** @ 1.25 kg a.i. ha⁻¹ at 6-7 days after sowing (DAS) + **2,4-D** @ 0.8 kg a.i. ha⁻¹ at 20 DAS, butachlor @ 1.00 kg a.i. ha⁻¹ on the day of sowing + one hand-

weeding (HW) 40 DAS, hand-weeding twice 20 and 40 DAS, complete weed free and unweeded control) in the sub-plot. Nutrients were supplied at the rate of 70 kg N, 35 kg P₂O₅ and 35 kg K₂O per hectare as per the recommendations of the Kerala Agricultural University for short duration high yielding rice varieties (KAU, 1989). Observations on weed counts and weed dry weight were taken at 40 and 80 DAS and grain yield was recorded at harvest.

The weed flora was dominated by grasses (*Brachiaria ramosa* Stapf., *Echinochloa colona*, Link., *Echinochloa crus-galli* Beauv., *Panicum repens* Linn.) followed by sedges (*Cyperus iria* Linn., *Fimbristylis miliaceae* Vahl.) and broad-leaved weeds (*Ludwigia parviflora* Roxb., *Marsilia quadrifoliata* L., *Monochoria vaginalis* Pers.).

Sowing the rice crop on different dates did not influence the weed count, weed dry weight and weed control efficiency (Table 1). Among the weed control treatment, hand-weeding twice 20 and 40 DAS resulted in the lowest monocot and dicot weed population, weed dry weight and highest weed control efficiency. Concurrent results of significant decrease in weed population by hand-weeding was reported by Bhan *et al.* (1985). Application of butachlor + 2,4-D was on par with hand-weeding twice 20 and 40 DAS in controlling the dicot weeds. But, it was not as efficient as

the other treatments in bringing down the total weed dry weight, probably, due its inefficacy in controlling the monocot weeds which constituted more than 60 per cent of the total weed population. However, butachlor + 2,4-D exhibited a higher weed control efficiency than the unweeded control. The treatment butachlor + 1 hand-weeding 40 DAS resulted in a lower monocot weed count and total weed dry weight and its weed control efficiency was on par with hand-weeding twice 20 and 40 DAS. However, with respect to dicot weeds, it was on par with unweeded control. Similar results of poor control of broad-leaved dicot weeds by butachlor alone was reported by Singh (1988). Hence, hand-weeding or application of 2,4-D in initial stage is necessary for the control of dicot weeds.

Rice sown on May 23 resulted in the highest grain yield while the lowest was obtained from crop sown on May 30 (Table 1). Hand-weeding twice resulted in the highest grain yield, followed by butachlor + hand-weeding which was superior to butachlor + 2,4-D. Hand-weeding twice ensured the efficient removal of weeds which resulted in higher yield. The combination of butachlor with one hand-weeding 40 DAS resulted in higher weed control efficiency than butachlor + 2,4-D. The interaction between sowing time and weed control practices had no significant influence on the yield.

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