

## EFFECT OF METHODS OF SOWING AND WEED CONTROL MEASURES ON WEED GROWTH AND YIELD OF RAINFED DIRECT SEEDED UPLAND RICE (*ORYZA SATIVA* L.)

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The low productivity of upland rice in North Eastern Hill region is mainly due to inappropriate method of sowing and severe weed infestation at the early stage of crop growth. Severe weed infestation results in the yield reduction upto 60% and sometimes complete failure of the crop (Poonia, 1983). The present investigation was, therefore, undertaken to evaluate the performance of methods of sowing and weed control measures in rice under rainfed conditions.

Rice was grown at the Research Farm of Nagaland University, School of Agricultural Sciences and Rural Development, Medziphema, Nagaland during *kharij* season of 1999 under rainfed conditions. The climate of the experimental site is subtropical exhibiting high humidity and medium to high rainfall. The soil was sandy loam, acidic in reaction (pH=4.7), medium in available N (261 kg/ha), low in phosphorous (14kg/ha) and low in potassium (109kg/ha). The treatment consisted of all possible combinations of two methods of sowing and five weed control measures (Table 1) arranged in Randomised Block Design with three replications.

Rice Cv. "Leikhumo" was sown as per the treatments on 19th May, 1999. Two to three seeds per hill were dibbled in lines 20 cm apart keeping plant to plant distance of 15 cm in dibbling method of sowing. Farm Yard Manure was applied @10t/ha and was mixed well during seed-bed preparation. Nitrogen @60kg/ha was applied in two equal splits i.e. half at the time of sowing and the remaining half at 40 days after sowing (DAS). A basal dose of 30kg P<sub>2</sub>O<sub>5</sub> and 30kg K<sub>2</sub>O/ha was applied. Adequate moisture level was maintained during the entire crop growth period.

The dominant weed species were *Cynodan dactylon*, *Digitaria sanguinalis*, *Echinochloa colonum*, *Ageratum conyzoides*, *Amaranthus viridis*, *Borreria hispida*, *Eupatorium odoratum*, *Euphorbia hirta* and *Mikania micrantha*, *Mimosa pudica*.

The effect of different treatments on total dry weight of weeds was significant as 60 DAS and at harvest. (Table 1), Dibbling method of sowing recorded significantly less total weed dry weight in comparison to broadcasting at both the stages of crop growth. Hand weeding twice and weedy check recorded the minimum and the maximum total weed dry weight, respectively, at both the stages of observation. At 60 days stage, Butachlor+Hand weeding at 40 DAS was at par with 2, 4 -D + HW at 40 DAS and hand weeding twice. However, the same treatment had significantly less total weed dry weight in comparison to 2, 4 -D + HW at 40 DAS at harvest stage.

Dibbling in lines 20 cm apart recorded significantly higher grain yield as compared to broadcasting method of sowing (Table 1). The benefit cost ratio and weed control efficiency was also higher with dibbling method of sowing in comparison to broadcasting. All the weed control treatments resulted in significant increase in grain yield of rice over weedy check. Hand weeding twice recorded the maximum grain yield, which was comparable to Butachlor @1.5kg/ha + HW at 40 DAS. Hand weeding twice also recorded higher

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weed control efficiency than Butachlor @1.5kg/ha + HW at 40 DAS, but the benefit cost ratio was more in the latter. This signifies that Butachlor @1.5kg/ha + Hand weeding twice is better option to manage weeds of direct seeded upland rice under rainfed conditions. These findings are in conformity with those of Singh and Prakash (1990).

#### REFERENCES

- Poonia, S.S. 1983. Integrated weed control in direct seeded rice. M.Sc. Thesis, Haryana, Agril. University, Hissar.
- Singh, P and Prakash, U. 1990. *Indian J. Weed Science* 2 : 42 - 45.

Table 1. Effect of method of sowing and weed control measures on total weed dry weight, grain yield, weed control efficiency and benefit cost ratio of upland direct seeded rice

Treatment	Total weed dry weight		Grain/yield (q/ha)	Benefit cost ratio	WCE(%)
	60 DAS	At harvest			
Method of Sowing					
Broadcasting (M1)	110.0	173.76	23.18	0.33	60.95
Dibbling(M2)	97.2	152.12	28.37	0.60	65.81
LSD(P=0.05)	6.64	11.49	4.33		
Weed control measures					
Butachlor@1.5kg/ha + 2.4-D@1.0kg/ha(W1)	101.5	143.4	16.90	0.03	67.77
Butachlor @1.5kg/ha + HW at 40 DAS (W2)	37.8	75.5	37.49	1.12	83.03
2.4-D @1.0kg/ha +HW at 40 DAS (W3)	45.2	101.5	29.20	0.57	77.19
HW at 20 and 40 DAS(W4)	33.5	49.3	39.39	0.98	88.92
Weedy check (W5)	298.5	4.45	5.89	-0.58	0
LSD (P=0.05)	10.50	11.49	6.85		

HW : Hand Weeding

WCE : Weed Control Efficiency

DAS : Days After Sowing