

## METHOD AND TIME OF APPLICATION OF THIOBENCARB IN DRY-SOWN RICE

Severe weed competition is a major constraint in dry-sown (semi-dry) rice, grown during the kharif season. Pillai and Rao (1974) estimated that the yield reduction due to weed competition could be as high as fifty per cent. Since manual methods of weed control are labour intensive, costly and require repeated operations, use of herbicides will be the viable alternative. Thiobencarb is reported to be a selective herbicide for dry-sown rice (Manna and Moorthy, 1980 and Bhan *et al.*, 1986). However, the ideal time and method of application of thiobencarb in dry-sown rice fields have not been worked out.

A trial was conducted during May to September, 1986 at the Agricultural Research Station, Mannuthy under Kerala Agricultural University, Trichur. The soil of the field was sandy loam having 0.661% organic carbon, 0.138% total N, 32.06 kg/ha available P and 172.08 kg/ha available K. The treatments comprised of combinations of six time of application (3 days before sowing to 12 days after sowing, at three day intervals) and two methods of application (spray or sand mixed broadcasting). The trial was laid out in RBD with three replications. Rice cv. Annapurna was raised as per recommendations of the Kerala Agricultural University (Anon., 1986), except the weed control operations which varied as per the treatments. The herbicide thiobencarb (Saturn 50 EC) was applied broadcast after mixing with dry sand @ 100 kg/ha or sprayed using a

knap-sack sprayer fitted with flat fan nozzle.

The major weed flora of the field were grasses and sedges. Among the grasses, *Isachne miliacea* Roth, *Echinochloa colona* (L.) Link. and *Sacciolepis interrupta* L. were the main ones, while *Cyperus iria* L. was the major sedge.

The observations on weeds (Table 1) indicated that application of thiobencarb at 0, 3, 6 or 9 days after sowing resulted in significant reduction in population and dry matter production of weeds, at all stages of observation. Applications three days before sowing and 12 days after sowing were less effective in weed control. In general, spray application controlled the weeds better than the sand mixed broadcasting.

The herbicide did not have any phytotoxic effects on rice seedlings. The highest grain yield (4.582 t/ha) was obtained when the herbicide was applied as spray at 6 DAS (Table 2). However, the treatments, hand weeding and spray applications at 0, 3 or 9 DAS and broadcast application at 6 or 9 DAS were on par with it. Unweeded control recorded the least yield, significantly lesser than all the other treatments. A comparison between the two methods of application indicates that spraying could be more effective than broadcast application under dry-sown conditions.

Table 1. Effect of time and methods of application of herbicides on the population and dry matter production of weeds

Treatment	Population (plants/m <sup>2</sup> )										Dry matter production (g/m <sup>2</sup> )		
	30 DAS					Harvest					80 DAS	DAS	Harvest
	T	O	T	O	T	O	T	O	T	O	80 DAS	DAS	Harvest
3 D/S - S	138	189.1	178	319.3	11.1	123.4	2.50	92.27	879.7				
3 D/S - B	129	166.7	141	199.0	11.7	137.6	3.83	205.47	72.8				
0 D/S - S	87	75.9	95	91.2	8.6	73.6	2.00	135.10	411.4				
0 D/S - B	115	132.5	117	112.0	10.4	108.2	2.00	220.80	54.1				
3 D/S - S	53	28.5	83	68.6	7.6	57.6	1.50	47.20	174.5				
3 D/S - B	96	91.4	115	241.5	9.1	83.0	2.17	150.90	81.3				
6 D/S - S	55	30.2	76	57.8	7.1	50.8	0.41	29.07	42.6				
6 D/S - B	63	39.1	86	73.3	10.0	99.6	1.33	36.30	166.3				
9 D/S - S	59	31.2	10.2	104.2	9.6	92.4	0.57	48.93	186.2				
9 D/S - B	81	65.5	12.2	149.8	11.0	120.8	0.83	97.60	94.1				
12 DAS - S	12.6	159.0	13.3	173.2	9.5	90.7	4.41	75.60	91.3				
12 DAS - B	17.1	291.0	12.8	163.0	9.6	92.4	7.67	85.40	101.3				
Harvest - weeding	12.1	166.9	4.6	21.6	6.4	40.7	1.83	5.80	95.7				
Unweeded	24.6	603.2	20.6	423.7	11.5	210.4	26.00	392.30	56.5				
SE ±	1.41		1.46		0.13		1.63		18.2				
C <sub>05</sub> (0.05)	4.11		4.25		2.12		4.85		58.1				

DBS Days before sowing  
 DAS Days after sowing  
 T  $\sqrt{x}$  transformed value  
 O Original value  
 S Spray  
 B Band mixed broadcasting

Table 2. Effect of method and time of application of thiobencarb on yield of rice, t/ha

Treatment	Grain yield	Straw yield
1 3 DBS - S	2.446	3.550
2 3 DBS - B	2.252	2.917
3 0 DAS - S	3.841	5.608
4 0 DAS - B	2.789	4.942
5 3 DAS - S	4.410	6.025
6 3 DAS - B	3.560	5.008
7 6 DAS - S	4.582	6.925
8 6 DAS - B	3.841	4.950
9 9 DAS - S	4.470	6.908
10 9 DAS - B	3.884	5.983
11 12 DAS - S	3.080	4.767
12 12 DAS - B	3.019	4.108
13 Hand weeding	4.467	6.950
14 Unweeded	1.210	1.917
SEm±	0.264	0.378
CD (0.05)	0.767	1.099

The maximum straw yield (6.95 t/ha) was produced in the hand-weeded-plot, and the minimum in unweeded-plot. Among the herbicide treatments, spray applications at 3, 6 or 9 DAS recorded straw yield on par with hand weeding.

The study indicated that for effective weed control in dry-sown rice, thiobencarb should be applied as high volume spray 3-9 days after sowing.

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