Indian J. Weed Sci. **38** (1 & 2) : 131-132 (2006) *Short Communication*

Crop-Weed Competition in Upland Direct Seeded Rice under Foot Hill Conditions of Nagaland

M. Ladu and M. K. Singh
Department of Agronomy
N. U. School of Agricultural Sciences and Rural Development, Medziphema-797 106 (Nagaland), India

Rice is the major food grain crop of north-east region and accounts for about 89% of the area and 92% of the total production (Sharma and Singh, 1998). Weed infestation is the major factor responsible for poor yield of rice under shifting cultivation. In hilly region, weeding is carried out manually, which often leads to delayed weeding due to high demand of manual labour resulting in poor yield. The timely control of weeds during critical crop-weed competition period is important for minimizing losses caused by them. The duration of critical period of weed competition depends on the nature of crop, its competing ability, variety and growing conditions. Thus, establishing the critical period of competition is essential to develop effective and economical weed control measures in upland rice. Keeping above facts in view, an experiment was conducted to find out the critical period of crop-weed competition in upland direct seeded rice.

A field experiment was conducted at Research Farm of Nagaland University, School of Agricultural Sciences and Rural Development, Medziphema Campus, Nagaland during **kharif** season of 2003. The soil was sandy loam, high in organic carbon (1.18%), medium in available nitrogen (284.2 kg ha^{-1}), medium in available P (10.34 kg ha^{-1}) and low in available K_2O (106.4 kg ha^{-1}) and extremely acidic in reaction (pH 4.5). Treatments consisted of weedy condition for initial 15, 30, 45 and 60 days after sowing and upto harvest and weed-free maintenance for the first 15, 30, 45, 60 DAS and upto harvest (Table 1). The experiment was laid out in randomized block design with three replications.

Table 1. Effect of different weed-free and weedy periods on weeds (at harvest) of upland rice

Treatment	Weed density (No. m^{-2})	Weed biomass (g m^{-2})	Crop dry weight (g m^{-2})	Leaf area index of rice at panicle initiation stage	No. of fertile grains $panicle^{-1}$	1000-grain weight (g)	Grain yield (kg ha^{-1})
Weed-free upto (DAS)							
15	24.09 (582)	18.85 (345.3)	36.8	3.17	174.8	24.2	1119
30	23.25 (520)	12.60 (150.6)	40.4	3.21	180.1	23.8	2671
45	19.43 (392)	9.27 (77.3)	45.5	4.75	199.4	23.5	2671
60	17.69 (301)	8.76 (74.6)	45.0	5.39	209.6	24.2	2695
Harvest	0.7 (0)	0.7 (0)	50.8	5.47	248.8	25.1	3240
Weedy upto (DAS)							
15	0.7 (0)	0.7 (0)	43.7	4.27	244.4	25.5	2769
30	0.7 (0)	0.7 (0)	40.3	3.83	211.3	25.3	2127
45	0.7 (0)	0.7 (0)	41.0	4.18	163.3	24.7	2040
60	0.7 (0)	0.7 (0)	39.1	3.14	167.4	25.2	1576
Harvest	25.99 (677)	24.01 (606.6)	32.6	3.35	164.2	23.5	210
LSD (P=0.05)	7.87	5.76	6.06	1.13	NS	NS	749

Figures in parentheses indicate original values.
DAS–Days after sowing, NS–Not Significant.

Weed-free condition for various durations was maintained by hand removal of weeds as and when needed. Recommended package of practices was adopted to grow the experimental crop. Weed density and dry weight at harvest were recorded.

The major weed flora in the experimental field were *Digitaria sanguinalis* (26%), *Eleusine indica* (4%), *Panicum repens* (3%) *Paspalum conjugatum* (2%), *Setaria glauca* (5%), *Ageratum conyzoides* (16%), *Amaranthus viridis* (8%), *Borreria hispida* (31%) and *Mimosa pudica* (6%). Weed-free upto 60 DAS significantly reduced the weed density and dry weight in comparison to weedy upto harvest (Table 1). However, weed-free upto 30, 45 and 60 DAS significantly reduced weed dry weight in comparison to weed-free upto 15 DAS and weedy upto harvest. Weed-free conditions for initial 15 DAS were unable to check weeds and their dry matter.

Weed-free upto harvest recorded the maximum crop dry weight which was significantly more than the weed-free upto 15 DAS and weedy upto 30, 45 and 60 DAS. Weed-free upto 30, 45 and 60 DAS was at par with each other. Weed-free upto harvest recorded the highest leaf area index and it was at par with weed-free upto 45 and 60 DAS and these treatments were significantly superior to rest of the treatments. Weed-free upto harvest recorded the highest grain yield followed by weedy upto 15 DAS and weed-free upto 60 DAS and all these later treatments were at par with each other. Weed-free upto 15 DAS and weedy upto 60 DAS recorded significantly lesser grain yield in comparison to weed-free upto 30, 45 and 60 DAS, and weedy upto 15 DAS. Weed-free upto 15 DAS and weedy upto 30, 45 and 60 DAS had lesser weed index in comparison to weed-free upto 30, 45 DAS and weedy upto 15 DAS.

Weeds during initial 15 DAS had no adverse effect on the grain yield of rice. The crop kept weed-free for the first 30 DAS produced grain yield similar to weed-free upto harvest. This indicated that weed management adopted during 15 to 30 DAS will provide effective weed control without any yield loss. The season long weedy condition caused 93.6% reduction in grain yield (Table 1).

REFERENCE

Sharma, U. C. and R. P. Singh, 1998. Nutrient management in rice in the north-eastern states of India. *Intern. J. Trop. Agric.* **16** : 1-23.