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Weed Management in Groundnut-based Intercropping System

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Weed infestation is one of the major constraints in productivity of any crop. The slow initial growth of groundnut favours the weed growth and reduces yield upto 75% (Gnanamurthy and Balasubramaniyan, 1998). Adoption of manual weeding though efficient but costly too. Further availability of labour at appropriate time is another constraint which allows the weeds to compete at initial stages. Under this situation, use of herbicides could he an alternative and economically feasible method of weed control. However, the success of weed control could be determined by the choice of safe herbicides for both sole and intercrops.

Field study was conducted at Agricultural College and Research Institute, Killikulam during **kharif** 2000 and winter 2001 to study the effect of weed management practices in groundnut based intercropping systems. The soil of the trial field was sandy loam with the pH 6.30. The soil was low, medium and high in available N, P and K. The experiment was laid out in split plot design with three replications. The treatment comprised of four

Table 1. Effect of weed management practices and cropping systems on weeds and pod yield of groundnut (Mean of two seasons)

Treatments/Cropping systems	Weed density 60 DAS			Total weed biomass ($g\ m^{-2}$) 60 DAS	Pod yield ($kg\ ha^{-1}$)
	C. dactylon	*C. rotundus*	*T. portulacastrum*		
Groundnut+blackgram	5.45 (29)	6.50 (41)	7.35 (53)	306.5	3223
Groundnut+sunflower	5.73 (32)	6.97 (48)	7.61 (57)	340.1	3039
Groundnut+redgram	5.52 (29)	6.64 (43)	7.47 (55)	312.0	3163
Groundnut alone	5.63 (31)	6.93 (47)	8.20 (66)	357.8	3301
LSD (P=0.05)	0.21	0.34	0.59	5.4	32
Weed management practices					
Fluchloralin (1.5 kg ha^{-1})+HW on 30 DAS	5.21 (26)	6.59 (42)	7.71 (58)	318.9	3394
Pendimethalin (1.0 kg ha^{-1})+HW on 30 DAS	5.17 (26)	6.22 (38)	7.05 (49)	274.1	3429
Metolachlor (1.0 kg ha^{-1})+HW on 30 DAS	5.01 (24)	5.36 (28)	6.30 (39)	200.2	3630
Alachlor (1.5 kg ha^{-1})+HW on 30 DAS	5.14 (25)	5.36 (35)	6.77 (45)	251.0	3545
Hand weeding 15 & 30 DAS	5.54 (30)	6.17 (44)	7.09 (49)	304.3	3240
Unweeded control	7.15 (50)	9.11 (82)	10.43 (108)	626.1	1746
LSD (P=0.05)	0.12	0.57	0.45	49.7	30

cropping systems in main plot and six weed management practices in sub-plot (Table 1). The intercrops were raised in 4 : 1 ratio in additive series of planting. The herbicides viz., fluchloralin, pendimethalin, metolachlor and alachlor each at 1.5, 1.0, 1.0 and 1.5 kg ha^{-1}, respectively, were applied with a manually operated knapsack sprayer fitted with flood jet nozzle at spray volume of 500 l ha^{-1} on 3 DAS. Density and biomass of weeds were recorded at 60 DAS with the help of 25 x 25 cm quadrate by throwing it randomly at four places from each plot.

Among the weed flora, *Cyperus rotundus* (31%), *Cynodon dactylon* (20%), *Trianthema portulacastrum* (45%) and others (4%) were the dominant weeds. Groundnut+blackgram with application of metolachlor followed by one hand weeding recorded the lowest weed density. All the intercroping systems recorded lesser weed dry matter than sole groundnut (Table 1). Adoption of intercropping system suppressed weed growth due to their spreading canopy coverage. Metolachlor applied on 3 DAS significantly lowered the weed dry matter at 30 DAS. The highest weed control efficiency was achieved due to pre-emergence appliction of metolachlor supplemented with one hand weeding followed by alachlor+hand weeding at 30 DAS. More reduction in weed density and dry matter resulted in higher weed control efficiency.

Application of metolachlor+hand weeding recorded significantly increased pod yield of groundnut. Intercropping either pulses or oilseeds reduced the pod yield but the reduction was minimum with blackgram followed by redgram and it was maximum with sunflower.

REFERENCE

Gnanamurthy, P. and P. Balasubramaniyan, 1998. Weed management practices and their influence on weed growth and yield of groundnut. *Indian J. Agron.* **43** : 122-125.