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Response of Sugarcane to Weed Management Practices

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Sugarcane, being a widely spaced crop with slow initial growth, provides a congenial ambiance to weeds for their growth and development. Weeds by virtue of their competitiveness reduce sugarcane yield to the extent of 10.7 to 73.7% (Verma, 2000). The situation is further aggravated due to inaccessibility to manual hoeing owing to labour shortage and soil wetness. Thus, there is need to identify effective herbicides and also to integrate the various methods of weed control for effective and economic control of weeds.

The present investigation was carried out at Annamalai University Experimental Farm, Annamalainagar during January-November, 2004. The soil was clayey loam having pH of 7.5. Eight weed control treatments replicated thrice were laid out in randomized block design (Table 1). The sugarcane variety CO 86032 was planted. Pre-emergence application of herbicides (atrazine 2.0 kg ha^{-1}, metribuzin 1.5 kg ha^{-1} and alachlor 2.0 kg ha^{-1}) was done three days after planting and post-emergence application of herbicides (2, 4-D 1.0 kg ha^{-1}, glufosinate ammonia 1.0 kg ha^{-1} and metsulfuron-methyl 20 g ha^{-1}) was done 21 days after planting. Herbicides were applied by using hand operated knapsack sprayer fitted with flood jet nozzle with spray volume of 500 litres of water ha^{-1}. Hand hoeing treatment was imposed on 30, 60 and 90 days after planting.

The dominant weed flora of the experimental field comprised of *Cyperus rotundus* (51.73%) *Trianthema portulacastrum* (31.37%), *Cynodon dactylon* (13.21%), *Cleome viscosa* (1.86%) and *Echinochloa colona* (1.79%). Other weed species *Eclipta alba* and *Dactyloctenium aegyptium* were also present in the experimental field.

The lowest weed count, weed biomass and the highest weed control efficiency were observed with hand hoeing thrice which was significantly better than other treatments (Table 1). Among herbicides, metribuzin recorded the lowest weed count, biomass and highest weed control efficiency. Atrazine and metribuzin were on par with each other followed by glufosinate ammonia.

Thrice hand hoeing recorded the highest cane weight, millable cane and cane yield followed by metribuzin (Roshan Lal *et al.*, 2005). This increased yield may be attributed to the reduced weed population and lesser weed biomass production.

REFERENCES

Roshan Lal, S. D. Sharma and Mehar Chand, 2005. Screening of new herbicides for effective weed control in spring planted sugarcane. National Biennial Conference, ISWS, PAU, April 6-9. pp. 72-73.

Verma, R. S. 2000. Weed management in sugarcane. *Tech. Bull. No. 42.11*. SR, Lucknow.

Table 1. Effect of treatments on weed growth and cane yield

Treatment	Dose (kg ha^{-1})	Weed density (No. m^{-2}) 60 DAP			Weed biomass (g m^{-2}) 60 DAP	Weed control efficiency (%) 60 DAP	Cane weight (kg stalk^{-1})	Millable cane ('000 ha^{-1})	Cane yield (t ha^{-1})
		Cyperus rotundus	*Trianthema portulacastrum*	*Cynodon dactylon*					
Unweeded control	-	21.05 (443)	14.80 (219)	10.10 (102)	95.8	-	0.80	081.6	067
Hoeing 30, 60 and 90 DAP	-	8.30 (69)	7.50 (56)	3.70 (14)	09.6	89.9	1.55	119.6	134
Atrazine	2.0	12.75 (163)	10.90 (118)	6.75 (46)	22.2	76.8	1.50	116.6	129
Metribuzin	1.5	11.50 (132)	8.60 (74)	5.50 (30)	22.3	76.8	1.53	118.3	131
Alachlor	2.0	13.70 (188)	11.75 (138)	6.80 (46)	25.4	73.4	1.40	101.3	113
2, 4-D	1.0	13.5 (182)	10.35 (107)	7.10 (50)	25.3	73.8	1.36	093.0	115
Glufosinate ammonia	1.0	12.45 (155)	9.65 (93)	6.50 (42)	23.3	75.6	1.46	109.6	126
Metsulfuron-methyl	0.020	12.65 (160)	9.86 (97)	6.90 (48)	25.0	73.9	1.40	114.0	122
LSD (P=0.05)		1.05	0.68	0.43	1.8	-	0.64	5.20	5

Data in parentheses are original values which were transformed to $\sqrt{x+0.5}$.