

Influence of tank mixture of herbicides on weed control in upland cotton (*Gossypium hirsutum*)

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A field study was carried out at Hisar during the rainy season of 1990 and 1991. The soil was low in nitrogen, medium in phosphorus and high in potassium. 'H 777' upland cotton (*Gossypium hirsutum* L.) was sown on 26 May 1990 and 17 May 1991. All the other cultural practices were followed in accordance with the local package of practices. The experiment was laid out in randomized block design with 3 replications. The treatments used were: oxadiazon @ 0.75 and 1.00 kg/ha, pendimethalin @ 1.00 and 1.50 kg/ha and oxadiazon + pendimethalin @ 0.50 + 0.50 kg/ha and 0.75 + 0.75 kg/ha (applied pre-emergence), while fluchloralin @ 1.00 and 1.50 kg/ha, fluchloralin + pendimethalin @ 0.50 + 0.50 kg/ha and 0.75 + 0.75 kg/ha and oxadiazon + fluchloralin @ 0.50 + 0.50 and 0.75 + 0.75 kg/ha (applied as pre-plant incorporation) with weedy and weed-free checks. All the herbicides were applied by knap-sack sprayer using 650 litres water/ha. Weed counts (No./m²) and dry weight of total weeds (g/m²) were recorded at 60 days after sowing by using 0.50 m x 0.50 m quadrat. The dominant weeds identified were: carpet weed (*Trianthema portulacastrum* L.) and nut sedge (*Cyperus rotundus* L.).

Pendimethalin (pre-emergence) @ 1.50 kg/ha or oxadiazon pre-emergence @ 1.50 kg/ha or fluchloralin (pre-plant incorpora-

tion) @ 1.50 kg/ha significantly reduced the population and dry weight of total weeds at 60 days after sowing compared with the weedy check (Table 1). Combination of these herbicides in a ratio of 1 : 1 did not improve the control of weeds compared with their sole treatments. The dry weight of total weeds in plots where fluchloralin was used alone or as tank mixture with oxadiazon was less than when higher dose of pendimethalin or oxadiazon or their mixture. The seed-cotton yields under the treatment of pendimethalin or fluchloralin or their mixture or oxadiazon @ 1.0 kg/ha or oxadiazon + fluchloralin @ 0.75 + 0.75 kg/ha were significantly more than that under the weedy check. The maximum seed-cotton yield was registered with weed-free check but remained on a par with pendimethalin applied @ 1.50 kg/ha at pre-emergence stage (Table 1). Similar results were reported by Balyan *et al.* (1983) with pendimethalin or fluchloralin and Panwar *et al.* (1989) with oxadiazon.

REFERENCES

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- Panwar, R. S., Malik, R. K., Bhan, V. M. and Malik, R. S. 1989. Evaluation of pre-emergence and post-emergence herbicides in cotton. *Journal of Research, Haryana Agricultural University, Hisar* 19 : 235-239.

Table 1. Influence of herbicides mixture on total dry weight of weeds and weed density at 60 days after sowing and seed-cotton yield in upland cotton

Treatment	Rate (kg/ha)	Time of application	Dry weight (g/m ²)		Weed density (No./m ²)		Seed-cotton yield (kg/ha)	
			1990	1991	1990	1991	1990	1991
Oxadiazon	0.75	PE	14.95 (224)	18.83 (354)	3.77 (17)	6.65 (43)	1,920	1,877
Oxadiazon	1.00	PE	14.10 (200)	17.35 (312)	3.60 (13)	5.62 (32)	2,416	2,243
Pendimethalin	1.00	PE	13.53 (183)	17.57 (308)	4.50 (19)	6.40 (40)	2,075	2,060
Pendimethalin	1.50	PE	12.80 (164)	16.41 (269)	3.96 (17)	5.58 (31)	2,678	2,359
Oxadiazon + pendimethalin	0.50 + 0.50	PE	14.55 (211)	19.00 (360)	5.43 (29)	6.27 (39)	1,958	1,983
Oxadiazon + pendimethalin	0.75 + 0.75	PE	13.31 (176)	17.60 (312)	5.25 (27)	5.33 (28)	2,576	2,287
Fluchloralin	1.00	PPI	15.54 (241)	18.63 (346)	5.35 (28)	6.13 (37)	1,980	2,006
Fluchloralin	1.50	PPI	14.15 (199)	17.92 (323)	4.71 (21)	5.78 (33)	2,483	2,327
Fluchloralin + pendimethalin	0.50 + 0.50	PPI	16.12 (259)	19.50 (380)	6.16 (37)	6.43 (41)	1,827	1,806
Fluchloralin + pendimethalin	0.75 + 0.75	PPI	14.79 (220)	17.83 (321)	5.04 (25)	6.06 (36)	2,332	2,211
Oxadiazon + fluchloralin	0.50 + 0.50	PPI	19.92 (369)	19.09 (3.63)	5.67 (35)	6.56 (43)	2,025	2,045
Oxadiazon + fluchloralin	0.75 + 0.75	PPI	15.58 (242)	17.84 (317)	4.60 (21)	5.25 (27)	2,602	2,351
Weedy check			21.40 (457)	19.58 (483)	6.35 (39)	7.80 (60)	1,600	1,321
Weed-free			1.00 (0)	1.00 (0)	1.00 (0)	1.00 (0)	2,884	2,500
CD (P = 0.05)			1.75	2.70	1.56	1.28	405	359

DAS, Days after sowing; PE, pre-emergence; PPI, pre-plant incorporation
 Actual dry weight and weed counts are in parentheses transformed to $\sqrt{X + 1}$