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Effect of Various Herbicides and Cultural Methods of Weed Control on Cotton G. Cot. 10 (*G. hirsutum* L.) in Rainfed Condition

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Weed infestation is one of the major problems in the successful cultivation of cotton. The cost of manual weeding is increasing day by day and moreover the conventional method of hand weeding is labourious and time consuming. It was, therefore, felt essential to study the various aspects of weed control by cultural and chemical methods to find out ways and means to minimize the cost for weed control.

The experiment was laid out at the Regional Cotton Research Station, Maktampur during *kharif* season of 1979-80 on G. Cot. 10 cotton. Three herbicides viz., Basaline, Cobex and Diuron were tried along with hand weeding and hoeing treatments. The combinations of hand weeding and hoeing treatments were included in main plot treatment and eight combinations of three herbicides in various doses were taken as sub-plot treatments. All the weedicides were sprayed as per treatments. The experiment was sown on 6th of July, 1979 at 90 x 60 cm spacing in split plot design replicated thrice. Total rainfall of the season was 1135.2 mm distributed in 38 rainy days during crop growth period.

Data in Table 1 revealed that differences in seed cotton yield due to cultural practices were significant. It was observed that, in order to get maximum yield, normal interculturing and handweeding is required. This produced maximum yield of 667 kg/ha of seed cotton. However, this was not significantly different from the treatment with normal interculturing with one handweeding, which produced 645 kg/ha seed cotton. The data in Table 1 indicated that, in present situation the treatment of normal interculturing with one handweeding (H_1I_N) is better than treatment with normal interculturing and handweeding (H_NI_N) as it gave the highest net returns of Rs. 1905/ha with ICBR 1:6.35 as against net returns of Rs. 1812/ha from H_NI_N treatment with ICBR 1:3.09. The need of interculturing was noted since treatment without interculturing gave significantly, low yield whether there is handweeding or not.

The differences in yield due to various herbicides were also significant. The application of Diuron at pre-emergence (483 kg/ha) or post emergence spray (451 kg/ha) alone or pre + post emergence (518 kg/ha) or cobex pre-planting + Diuron post-emergence (440 kg/ha) gave statistically higher yield over remaining treatments. But data on economic of herbicides (Table :1) indicated that pre or post emergence spray of Diuron increased the seed cotton yield significantly resulting in higher net ICBR 1;2.35. Although the pre + post emergence of Diuron gave higher yield of seed cotton it was less profitable as the net

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TABLE 1

Seed cotton yield, net monetary return and incremental cost benefit ratio as affected by different treatments of weed control.

Weed control treatments		Seed cotton yield in kg/ha	Addi. yield over control kg/ha	Addi. income over control Rs/ha	Addi. cost over control Rs/ha	Addi. net income over control Rs/ha	Net ICBR
H_0I_0	(No weeding + No interculturing)	120	--	--	--	--	--
H_1I_0	(One weeding + no interculturing)	265	147	609	140	569	1:3.35
H_1I_N	(Normal W + normal interculturing)	645	525	2205	300	2905	1:6.35
H_NI_N	(Normal weeding + normal interculturing)	667	547	2397	585	1812	1:3.09
S.Em. ±		66	--	--	--	--	--
C. D. (0.05)		227	--	--	--	--	--
C. V. %		5.7	--	--	--	--	--
C_1	(Basaline 1.25 kg. a.i/ha as per planting)	340	-1	-4	533	-	-Ve
C_2	(Cobex 3 lit/ha as pre-planting)	406	45	189	NA	NA	NA
C_3	(Diuron 1 kg. a.i./ha as pre-emergence)	483	142	596	178	414	1:2.35
C_4	(Diuron 0.75 kg.a.i./ha as post-hemergence)	451	110	462	138	324	1:2.35
C_5	(Basaline 1.25 kg.a.i. ha as preplanting + Diuron 0.75 kg.a.i./ha as post-emergence)	417	106	445	671	--	--Ve
C_6	(Cobex 3 lit/ha as pre-planting + Diuron 0.075 kg.a.i./ha as post- emergence)	440	99	416	NA	NA	NA
C_7	(Diuron 1.0 kg. a.i. /ha as pre-emergence + Diuron 0.75 kg.a.i/ha as post -emergence)	518	177	419	316	103	1:0.32
C_0	(Control)	341	--	--	--	--	--
S.Em. ±		33	--	--	--	--	--
C. D. (0.05)		91	--	--	--	--	--
C. V. %		26.9	--	--	--	--	--

NA= Not available.

ICBR was 1:0.32. Diuron was also reported to be effective herbicide for controlling weedflora and increasing the yield of seed cotton (Ahlawat, 1973). Rangiah *et al.* (1975) working with irrigated cotton reported that post emergence application of Diuron was most effective with one hand hoeing. None of the interactions was significant.

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