

Chemical and cultural weed control in irrigated soybean (*Glycine max*)

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A field experiment was conducted to study the effect of chemical and cultural weed control in irrigated soybean [*Glycine max* (L.) Merr.]. Eleven treatments (Table 1) replicated 3 times were evaluated during the rainy season (*khari*) of 1991 in randomized block design under irrigated garden land conditions. The soil was sandy-clay loam having 265, 10.7 and 225 kg/ha of available N, P₂O₅ and K₂O respectively, with pH 7.8. Soybean ('Co. 1') was fertilized with N, P₂O₅ and K₂O @ 20, 80 and 40 kg/ha respectively. The seed @ 40 kg/ha was sown on 5 July and harvested on 1 October 1991.

Table 1. Effect of different treatments on weed growth, and yield and economics of irrigated soybean

Treatment	Weed parameter (30 DAS)		Grain yield (kg/ha)	Net return (Rs/ha)	Benefit : cost ratio
	Intensity (No./m ²)	Dry matter (kg/ha)			
Fluchloralin 1.0 kg/ha	58	62	1,637	8,030	4.05
Metolachlor 1.0 kg/ha	75	85	1,578	7,837	4.25
Alachlor 2.0 kg/ha	50	53	1,756	8,854	4.46
Command 1.0 kg/ha	98	107	1,429	6,829	3.75
Planting at 22.5 cm row space + alachlor 1.0 kg/ha	122	131	1,220	5,620	3.43
Intercropping maize (100% population)	148	159	1,042	4,503	2.98
1 hand-hoeing using intercultivator (30 DAS)	114	128	1,369	6,388	3.54
2 hand-weedings (15 and 30 DAS)	42	41	1,875	8,767	3.56
1 hand-weeding (15 DAS)	126	144	1,279	5,313	2.85
Planting at 22.5 cm x 10 cm spacing	351	407	357	56	1.02
Unweeded control (30 cm x 10 cm)	208	275	655	1,998	1.88
CD (P = 0.05)	21.8	35.7	191.9		

Cost of grains: Rs 6.50/kg

DAS, Days after sowing

All herbicides applied as pre-emergence at 3 days after sowing

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All the weed-control treatments effectively reduced the weed intensity, and the minimum weeds were recorded with pre-emergence alachlor @ 2.0 kg/ha on the third day or with 2 hand-weedings at 15 and 30 days after sowing (Table 1). It was also observed that chemical control was superior to the cultural method of weed control. Hand-weeding at 15 days was not found very effective in reducing the weeds, requiring the second weeding at 30 days. Weed-dry matter showed a similar trend to that of weed intensity.

Hand-weedings (at 15 and 30 days), being

at par with alachlor (pre-emergence) @ 2.0 kg/ha, recorded the highest yield probably because of the minimum weed competition.

The net return and return per rupee invested (benefit : cost ratio) were highest under pre-emergence alachlor @ 2.0 kg/ha, followed by hand-weeding twice at 15 and 30 days.

Thus pre-emergence alachlor @ 2.0 kg/ha on the third day or hand-weeding twice at 15 and 30 days were more effective in controlling weeds in soybean and gave higher yield and net return than the other treatments.

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Effect of herbicide and phosphorus on yield and quality of soybean (*Glycine max*)

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An experiment was conducted during rainy season (*kharif*) of 1992 at Raipur, to study the efficacy of different herbicides under different phosphorus levels on 'Gaurav' soybean [*Glycine max* (L.) Merr.]. The soil was Vertisol having low available nitrogen (235 kg/ha), medium available phosphorus (13.74 kg/ha) and high exchangeable potassium (330 kg/ha), with pH 7.2. Treatments comprised 3 weed-control measures in main plots and 4 P levels in subplots replicated 3

times in split-plot design (Table 1). A fertilizer dose of 20 kg N/ha and 40 kg K₂O/ha was applied uniformly as basal.

The predominant weed species observed in the field were : *Celosia aregentea* L., *Euphorbia hirta* L., *Echinochloa* spp., *Commelina bengalensis* L., *Eclipta alba* L., *Saccharum spontaneum* L. and *Cynodon dactylon* (L.) Pers. Pre-planting incorporation of fluchloralin significantly increased the pods/plant, test weight, grain and protein