

Effect of weed control on yield attributes and yield of clusterbean (*Cyamopsis tetragonoloba*)

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A field experiment was conducted during the rainy season (*khariif*) of 1990 and 1991 at Gwalior, on sandy-loam soil. The soil had 40% sand, 37% silt and 23% clay. The analysis of the soil sample showed pH 8.2–8.4, conductivity 0.6–0.8, organic carbon 0.42–0.67, P₂O₅ 21.5–23.4 kg/ha, K₂O 270–320 kg/ha. The treatments were tested in randomized block design with 4 replications. Uniform dose of 20 kg N/ha and 40

kg P₂O₅/ha was given in all the plots clusterbean or *guar* [*Cyamopsis tetragonoloba* (L.) Taubert] variety 'HG 75' was used in the experiment in both the years. Major weed flora recorded in the field was *Celosia argentea* L., *Cynodon dactylon* (L.) Pers., *Dactyloctenium aegypticum* (L.) Willd., *Digitaria sanguinalis* (L.) Scop., *Echinochola colonum* (L.) Link., *Eclipta alba* L., *Digera arvensis* (L.) Mart., *Leptochloa*

Table 1. Yield parameters as affected by different weed-control methods

Weed control method	Clusters/plant		Pods/plant (g)		100-seed Weight		Grain yield (kg/ha)	
	1990	1991	1990	1991	1990	1991	1990	1991
Control (no weeding)	12.10	8.10	30.15	26.65	3.15	3.43	835.18	1,068.01
Hand-weeding (20 DAS)	12.95	9.35	36.12	34.40	3.60	3.67	1,161.18	1,291.91
Hand-weeding (30 DAS)	15.10	10.45	39.05	40.52	3.58	3.62	1,230.15	1,549.83
Hand weeding (40 DAS)	18.25	10.55	34.95	37.25	3.52	3.59	1,280.10	1,542.00
Interculture (30 DAS)	18.35	11.40	40.55	39.20	3.30	3.54	1,230.50	1,574.27
Pendimethaline (1 kg/ha)	14.35	9.95	42.15	33.45	3.60	3.70	1,240.30	1,487.07
Fluchloralin (1.5 kg/ha)	15.35	10.85	42.40	36.20	3.62	3.72	1,290.70	1,594.20
Weed-free	19.10	12.70	49.60	39.50	3.95	4.13	1,360.45	1,779.12
CD (P = 0.05)	5.36	2.02	7.56	9.58	0.24	0.16	336.00	412.45

DAS, Days after sowing

Table 2. Economics of different treatments of weed control in clusterbean

Treatment	Total cost (Rs)	Gross income (Rs)	Net income (Rs)	Benefit : cost ratio
Control	2,542	6,946	4,404	2.73
Hand-weeding (20 DAS)	2,962	8,954	5,992	3.02
Hand-weeding (30 DAS)	3,238	10,147	6,909	3.13
Hand-weeding (40 DAS)	3,341	10,300	6,959	3.08
Interculture (30 DAS)	3,199	10,235	7,036	3.19
Pendimethalin (1 kg/ha)	3,507	9,954	6,447	2.83
Fluchloralin (1.5 kg/ha)	3,677	10,526	6,849	2.86
Weed-free	4,083	11,558	7,475	2.83

DAS, Days after sowing

sinensis L., *Phyllanthus niruri* L., *Portulaca oleracea* L., *Trianthema portulacastrum* L. and *Tridax procumbens* L.

Weed-control treatments compared control (no weeding), hand-weedings at 20, 30 and 40 days after sowing. Herbicides pendimethalin @ 1.0 kg/ha was applied as pre-emergence 2 days after sowing, while fluchloralin @ 1.50 kg/ha as pre-emergence applied 1 day before sowing.

Yield attributes like number of clusters, pods/plant and test weight were affected significantly by different weed-control treatments (Table 1). Maximum number of clusters/plant were recorded under weed-free treatment, followed by interculture operations and hand-weeding at 40 days. Fluchloralin proved better than pendimethalin in this respect. For pods/plant, the effect of weed control was significant and all the treatments except hand-weeding 30 days after sowing produced significantly more number of pods/plant than the control. Removal of weeds and also interculture operation on crop plants induced better crop development. The 100-grain weight (g) was also appreciably affected by weed-control methods signifi-

cantly.

All the treatments, except interculture at 20 days after sowing recorded significantly 100-grain weight than the control. Maximum weight was found under weed-free treatment, followed by preplanting application of fluchloralin. Grain yield was recorded maximum by weed-free treatment, 8 followed by treatment fluchloralin applied as pre-planting and almost all treatments except hand-weeding 20 days after sowing gave significantly higher grain yield than the control in both the years. Jain *et al.* (1988) and Yadav *et al.* (1991) also found similar results.

On the basis of average of 2 years pooled data, weed-free control scored higher net income/ha, though return over per rupee investment was comparatively lower than other treatments (Table 2). Interculture at 30 days recorded net income of Rs 7,036/ha with a benefit : cost ratio of 3.19, followed by hand-weeding at 30 days recording net income Rs 6,909/ha and benefit : cost ratio 3.13.

It was concluded that where labour is not constraint resource, weed-free control is more beneficial, but when it is a constraint

interculture at 30 days with hand is most profitable.

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Efficacy of pressmud-cake with and without azotobacter seed inoculation for manuring of hybrid cotton (*Gossypium hirsutum*)

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Pressmud-cake is emerging as an important renewable low-cost input for supply of nutrients to different crops, as it contains 0.85% N, 2.42% P₂O₅, 0.90% K₂O and 34% organic carbon (Sonune, 1992). For rapid multiplication of microbes, soils should be rich in organic matter. Application of pressmud-cake may be beneficial in augmenting the microbial population. Hence the present experiment was conducted at Akola during the rainy season (*kharif*) 1992.

An experiment was arranged in randomized block design with 13 treatments (Table 1), replicated thrice. Required quantity of seed of hybrid cotton (*Gossypium* sp.) 'AHH 468' was treated with azotobacter culture. Three seeds (treated/untreated as per the

treatments) were dibbled at 90 cm × 60 cm distance on 3 July 1991. Quantity of pressmud-cake required for particular treatment was calculated on the basis of P₂O₅ content and N and K₂O dose was adjusted with urea and muriate of potash respectively. Required quantity of pressmud-cake was mixed in the plot 10 days before sowing. In case of straight fertilizers half N, complete P and K was applied as basal dose and remaining half N was top-dressed a month after that. In pressmud cake treatments also half N through urea was top-dressed a month after sowing. Seed cotton was plucked on 29 October, 12 November and 5 December 1991.

Seed-cotton yield (Table 1) was significantly affected due to various treatments.