

### Studies on Weed Control in Summer Blackgram (*Phaseolus mungo*)

Vikas Bhandari, Jaspal Singh, J. S. Randhawa and R. S. Randhawa

Department of Agronomy

Khalsa College, Amritsar-143 001 (Punjab), India

Blackgram is a short duration pulse crop grown both as rainy season (**kharif**) and summer season in India. It needs more attention to control weeds during summer as they grow more vigorously due to more sunshine and irrigation and crop growth is slow during initial period (Jain and Jain, 1997). Controlling weeds with use of labour is difficult and time consuming. Most of weed studies have been done in main season (rainy), whereas environmental conditions differ for summer crop. Thus, an effort was made to test different available herbicides for their efficacy on weeds in summer blackgram.

The field experiment was conducted during

summer season of 2000 at Students' Farm, Department of Agriculture, Khalsa College, Amritsar (Punjab), India on a sandy loam soil with pH 7.8, low in available nitrogen and medium in available phosphorus and potassium. The experiment was laid out in a randomized block design with 15 treatments and replicated four times. The treatments consisted of various doses of alachlor, pendimethalin, fluchloralin and one hand weeding at 25 days after sowing (DAS) alone and also integrated with alachlor, pendimethalin and fluchloralin and compared with weed-free and weedy treatment. Herbicides alachlor and pendimethalin were applied just after sowing (pre-

Table 1. Effect of weed control treatments on weeds and blackgram

Treatment	Dose (kg ha <sup>-1</sup> )	Weed density (No. m <sup>-2</sup> )		Weeds dry weight (g m <sup>-2</sup> ) 60 DAS	Pods plant <sup>-1</sup>	Seeds pod <sup>-1</sup>	1000-seed weight (g)	Grain yield (kg ha <sup>-1</sup> )
		20 DAS	50 DAS					
Alachlor	1.0	33	36	3.8	16	4.3	42.76	869
Alachlor	1.5	30	34	2.8	22	4.9	42.41	961
Alachlor	2.0	21	32	2.3	24	5.7	42.74	999
Pendimethalin	1.0	28	33	3.0	19	4.7	42.85	1072
Pendimethalin	1.5	21	29	2.3	26	5.9	42.79	1113
Pendimethalin	2.0	16	21	2.1	26	6.6	42.46	1221
Fluchloralin	0.5	27	33	2.9	19	5.5	42.31	1079
Fluchloralin	1.0	20	26	2.3	27	6.2	42.09	1123
Fluchloralin	1.5	15	22	2.0	26	6.3	42.46	1241
Alachlor+	1.0							
hand weeding 20 DAS	-	36	16	2.2	18	5.1	42.42	973
Pendimethalin+	1.0							
hand weeding 25 DAS	-	27	12	1.8	20	5.7	42.55	1130
Fluchloralin+	2.5							
hand weeding 25 DAS	-	27	11	1.7	21	6.3	42.49	1161
Hand weeding 25 DAS	-	41	21	2.5	19	5.1	42.06	910
Weed-free	-	0	0	0	27	6.7	42.66	1263
Weedy	-	42	47	7.1	9	3.2	42.00	692
LSD (P=0.05)	-	2	2	0.2	3	0.61	NS	180

DAS-Days after sowing.

NS-Not Significant.

emergence), whereas fluchloralin was incorporated into the soil just before sowing (pre-plant incorporation). Important weeds were : *Cynodon dactylon*, *Trianthema monogyna*, *Amaranthus viridis*, *Medicago denticulate*, *Vicia sativa*, *Lapidium sativum* and *Cyperus rotundus*.

All the treatments registered significantly lower number of weeds and dry matter than the weedy check (Table 1). Fluchloralin at 1.5 kg ha<sup>-1</sup> had comparatively better weed control efficiency (WCE) than alachlor and pendimethalin applied at different doses. Minimum WCE of 46.26% was observed due to alachlor (1.0 kg ha<sup>-1</sup>), while integrated use of weed control measures resulted in increasing WCE. Higher doses of alachlor or pendimethalin or fluchloralin reduced weed population and dry matter of weeds significantly. Among herbicidal treatments, fluchloralin recorded the highest grain yield of blackgram. Reduction in grain yield due to uncontrolled weeds was 45.20%. Fluchloralin at 1.5 kg ha<sup>-1</sup> was at par with alachlor at 2.0 kg ha<sup>-1</sup>, pendimethalin at 1.5 and 2.0 kg ha<sup>-1</sup>, one

hand weeding (25 DAS) with either pendimethalin (1.0 kg ha<sup>-1</sup>) or fluchloralin (0.5 kg ha<sup>-1</sup>) and weed-free plots. Higher yield in weed-free and fluchloralin 1.5 kg ha<sup>-1</sup> was due to effective weed control leading to more pods per plant and seeds per pod. Test weight was not significantly affected due to treatments. Similar findings were also reported by Yadav and Srivastava (1998). One hand weeding 25 DAS also produced significantly higher grain yield than weedy check and was at par with alachlor at 1.0, 1.5 and 2.0 kg ha<sup>-1</sup>, pendimethalin at 1.0 kg ha<sup>-1</sup>, fluchloralin at 0.5 kg ha<sup>-1</sup> and alachlor at 1.0 kg ha<sup>-1</sup> + one hand weeding at 25 DAS.

#### REFERENCES

- Jain, N. K. and S. C. Jain, 1997. Effect of cultural and chemical methods of weed management on weeds and yield of blackgram (*Phaseolus mungo*). *Indian J. Agron.* **42** : 661-664.
- Yadav, R. P. and U. K. Srivastava, 1998. Integrated weed management in blackgram. *Indian J. Agron.* **43** : 106-109.