

## Effect of Weed Control Treatments on Weeds and Grain Yield of Late Sown Urdbean (*Vigna mungo* L.) during Kharif Season

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Weeds compete with plants for natural resources during cultivation and reduce the yield of urdbean to a tune of 87% (Singh *et al.*, 2002). The degree of reduction depends upon the density and duration of weed species and fertility status of the soil. The present study was undertaken to study the efficacy of different weed management practices on weed population and grain yield of late sown urdbean.

Field experiment was conducted at Crop Research Centre of Govind Ballabh Pant University of Agriculture & Technology, Pantnagar (Uttaranchal), India during the **kharif** season of 2000. The soil of the experimental site was silty clay loam in texture with neutral soil reaction (pH 7.4), having medium organic carbon (0.66%), available phosphorus (23.2 kg P ha<sup>-1</sup>) and available potash (210 kg K ha<sup>-1</sup>) Nine treatments (Table 1) were evaluated in randomised block design with four replications. The sowing of urdbean variety Pant U 35 was done in rows, 30 cm apart, on August 7,

2000 and harvested manually on November 18, 2000. Herbicides were applied as pre-emergence spray.

The field was infested with *Cyperus rotundus*, *Echinochloa colona*, *Echinochloa crusgalli*, *Cynodon dactylon*, *Eleusine indica*, *Trianthema monogyna*, *Celosia argentea*, *Cleome viscosa*, *Cucumis trigonus*, *Phyllanthus niruri* and *Physalis minima*. In weedy check, *Cyperus rotundus* was the dominant weed accounting for 89% of total weed population.

Two hand weedings at 20 and 40 DAS caused the maximum reduction in total weed population and weed dry weight and were significantly superior to remaining treatment, except weed-free. Next in order were one hand weeding at 40 DAS, alachlor at 1.5 kg ha<sup>-1</sup>+one hand weeding at 40 DAS and metolachlor at 0.75 kg ha<sup>-1</sup> + one hand weeding at 40 DAS, which being on par, recorded significantly lower weed dry weight than that of either alachlor at 2.0 kg ha<sup>-1</sup> and/or metolachlor at 1.0 kg ha<sup>-1</sup>.

Table 1. Population and dry weight of weeds (50 DAS), and grain yield of crop as influenced by different weed control treatments

Treatment	Dose (kg ha <sup>-1</sup> )	Weed population (No. m <sup>-2</sup> )	Weed dry weight (g m <sup>-2</sup> )	Grain yield (kg ha <sup>-1</sup> )
Weedy	-	5.61 (271)	4.73 (113.2)	1344
Weed-free	-	0.00 (00)	0.00 (0.0)	2370
Hand weeding 20 DAS	-	4.90 (135)	2.86 (16.9)	2166
Hand weeding 40 DAS	-	0.00 (00)	0.00 (0.0)	1962
Hand weeding 20 and 40 DAS	-	0.00 (00)	0.00 (0.0)	2259
Alachlor	2.0	4.92 (136)	3.56 (34.3)	2147
Alachlor+Hand weeding 40 DAS	1.5	0.00 (00)	0.00 (0.0)	2240
Metolachlor	1.0	5.10 (164)	3.87 (47.0)	1870
Metolachlor+Hand weeding 40 DAS	0.75	0.00 (00)	0.00 (0.0)	2221
LSD (P=0.05)		0.10	0.11	336

DAS—Days after sowing.

Original values given in parentheses were subjected to log (x+1) transformation before analysis.

Weed-free treatment produced the highest grain yield and was on par with two hand weedings at 20 and 40 DAS, alachlor at 1.5 kg ha<sup>-1</sup> + one hand weeding at 40 DAS, metolachlor at 0.75 kg ha<sup>-1</sup> + one hand weeding at 40 DAS, one hand weeding at 20 DAS and alachlor at 2.0 kg ha<sup>-1</sup>. These treatments produced significantly higher grain yield than one hand weeding at 40 DAS, metolachlor at 1.0 kg ha<sup>-1</sup> and weedy. Weed population and dry weight were found to be negatively correlated with yield.

The treatment having the maximum weed dry weight recorded the minimum yield (Table 1) because of the maximum competition between weeds and crop plants.

#### REFERENCES

- Singh, V., R. C. Gautam and V. K. Singh, 2002. Effect of row spacing and weed management practices on the productivity of late planted urdbean. *Indian J. Pulses Res.* **15** : 185.