

Effect of Weed Management Practices on Urdbean (*Vigna mungo* L.) and Associated Weeds

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Urdbean is the major pulse crop in India and it is a rich source of protein (24%), carbohydrates (60%), fat (1-5%), amino acids, vitamins and minerals. It is being grown in **kharif** and summer seasons throughout northern India. Yield losses in **kharif** urdbean due to weeds are more than in summer crop. Generally, yield losses in urdbean due to weeds varied from 40-85% (Singh and Singh, 1982). The degree of reduction in yield of urdbean due to weeds depends upon the density and duration of weed species and fertility status of

soil. In view of these facts, an investigation was undertaken to assess the effect of weed management practices on **kharif** urdbean and associated weeds.

A field experiment was conducted during **kharif** season of 2003 at Crop Research Centre of G. B. Pant university of Agriculture & Technology, Pantnagar, District Udham Singh Nagar (Uttaranchal). The soil of experimental field was sandy loam, medium in organic carbon (0.58%), available P (21.8 kg ha⁻¹) and available K (160.5 kg ha⁻¹) with pH of 7.7. Experiment with 10 treatments

Table 1. Effect of different weed management treatments on dry matter of weeds (g m⁻²) and grain yield of urdbean

Treatment	Dry matter (g m ⁻²) at 60 DAS			Dry matter (g m ⁻²) at harvest			Grain yield (kg ha ⁻¹)
	C.	T.	Other	C.	T.	Other	
	<i>rotundus</i>	<i>monogyna</i>	weeds	<i>rotundus</i>	<i>monogyna</i>	weeds	
Hand weeding at 30 DAS	1.51 (3.62)	1.90 (6.12)	1.07 (2.10)	1.86 (6.02)	1.66 (4.60)	1.06 (1.93)	1516
Hand weeding at 20 & 40 DAS	1.37 (3.12)	0.99 (1.76)	0.83 (1.37)	0.97 (1.69)	0.00 (0)	0.78 (1.26)	1958
Alachlor at 2.0 kg ha ⁻¹	1.79 (5.25)	2.26 (8.92)	1.36 (2.53)	1.10 (2.06)	1.93 (6.14)	1.53 (3.69)	1828
Alachlor at 1.5 kg ha ⁻¹ fb hand weeding at 30 DAS	1.28 (2.69)	1.58 (4.02)	1.34 (3.20)	0.58 (0.92)	1.85 (5.52)	0.00 (0)	1856
Alachlor at 1.0 kg ha ⁻¹ fb hand weeding at 30 DAS	1.47 (5.02)	1.93 (6.12)	1.61 (3.96)	0.68 (1.06)	2.02 (7.02)	0.00 (0)	1821
Pendimethalin at 1.0 kg ha ⁻¹	2.16 (7.92)	2.12 (7.8)	1.60 (4.02)	1.66 (4.52)	0.89 (1.59)	1.71 (4.62)	1825
Pendimethalin at 0.75 kg ha ⁻¹ fb hand weeding at 30 DAS	2.07 (7.36)	1.21 (3.21)	1.08 (2.06)	1.13 (3.06)	0.00 (0)	1.06 (1.92)	1869
Pendimethalin at 0.50 kg ha ⁻¹ fb hand weeding at 30 DAS	2.47 (10.92)	1.82 (5.26)	1.60 (4.02)	0.65 (1.02)	1.26 (2.26)	1.71 (4.60)	1820
Weed-free	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	2080
Weedy	3.83 (46.20)	3.97 (53.00)	2.46 (17.40)	2.89 (17.31)	3.06 (20.67)	1.83 (7.37)	1214
LSD (P=0.05)	0.58	0.52	0.52	0.49	0.39	0.26	228

and four replications was laid out in randomized block design. The treatments consisted of one hand weeding at 30 days after sowing (DAS), two hand weedings at 20 and 40 DAS, pendimethalin at 1.0 kg ha⁻¹, alachlor at 2.0 kg ha⁻¹, alachlor (1.5 and 1.0 kg ha⁻¹) and pendimethalin (0.75 and 0.5 kg ha⁻¹) each followed by one hand weeding at 30 DAS, weed-free and weedy check (Table 1). Urdbean variety Pant U-35 was sown on July 28, 2003 using seed rate of 18 kg ha⁻¹ in rows 30 cm apart. Herbicides were applied at 1 DAS as spray at a volume of 600 l ha⁻¹. Dry weight of weeds was recorded at 60 DAS and at harvest of the crop. The data on dry weight of weeds were analysed after using log (X+1) transformation.

Trianthema monogyna and *Cyperus rotundus* were the major weeds in experimental field, which contributed 45.4 and 59.6% at 60 DAS and 47.7 and 39.3% at harvest to the total weed dry weight, respectively. Other weeds observed in experimental field with low intensity were *Echinochloa colona*, *Cynodon dactylon*, *Eleusine indica*, *Digitaria sanguinalis*, *Ageratum conyzoides* and *Commelina benghalensis*.

All weed control treatments caused significant reduction in dry matter production of weeds when compared with weedy check at both the stages (Table 1). Alachlor was more effective

against *C. rotundus* while pendimethalin against *T. monogyna*. When alachlor (1.5 and 1.0 kg ha⁻¹) was applied in combination with hand weeding at 30 DAS, it caused lower dry matter of *C. rotundus* as compared to alachlor alone (2.0 kg ha⁻¹) at both the stages. Similarly, when pendimethalin (0.75 and 0.5 kg ha⁻¹) was applied in combination with hand weeding at 30 DAS, it caused lower dry matter of *T. monogyna* as compared to pendimethalin alone (1.0 kg ha⁻¹). Two hand weedings at 20 and 40 DAS caused lowest dry matter of *C. rotundus*, *T. monogyna* and other weeds at 60 DAS. This might be due to the complete removal of weeds by hand weeding.

Grain yield was highest in weed-free treatment which was at par with two hand weedings given at 20 and 40 DAS, pre-emergence application of alachlor at 1.5 kg ha⁻¹ with one hand weeding and pendimethalin at 0.75 kg ha⁻¹ with one hand weeding. This might be due to the better control of weeds by the appropriate combinations of the herbicides and mechanical method of weed control.

REFERENCE

- Singh, G. and D. Singh, 1982. Crop-weed competition in urdbean (*Vigna mungo* L.). Proc. Annual Conference of Indian Society of Weed Science, BHU, Varanasi, India. pp. 39-40.