

Integrated Weed Management in Urdbean during Kharif Season

Shweta and V. K. Singh

Department of Agronomy

G. B. Pant University of Agriculture & Technology, Pantnagar-263 145 (Uttaranchal), India

Weeds are the major constraints of low productivity of urdbean during **kharif** season. Uncontrolled weeds at critical period of crop-weed competition reduce the yield of urdbean to the tune of 80-90% depending upon type and intensity of weed infestation (Kumar *et al.*, 2000). Continuous rainfall during the season makes the manual weeding impracticable. On the other hand, continuous use of herbicides may cause environmental pollution and weeds may also develop resistance to the chemicals. Increasing crop density seems to be an alternative to shift crop-weed competition in favour of crop. Keeping all above points in mind, the present investigation was, therefore, undertaken.

The experiment was conducted during **kharif** season of 2003, in C2 block, at Crop Research Centre of G. B. Pant University of Agriculture & Technology, Pantnagar. The soil of the experimental site was silty clay loam in texture, having medium available

nitrogen (297.6 kg ha⁻¹) and potassium (246.4 kg ha⁻¹) but high available phosphorus (35.8 kg ha⁻¹) with pH of 7.3. The treatment comprising five levels of weed management (weedy, HW 20 DAS, HW 40 DAS, alachlor at 2 kg ha⁻¹ and alachlor at 1.5 kg ha⁻¹ + HW 40 DAS) and three levels of seed rates (normal i. e. 15 kg ha⁻¹, 30% and 50% higher than normal) were set out in randomized block design with four replications. The urdbean variety 'Pant U-35' was sown on July 28, 2003 in rows 30 cm apart, and was harvested on October 30, 2003. The crop was fertilized with 50 kg DAP ha⁻¹ as basal. Herbicide was sprayed by maruti foot sprayer as per treatment using 800 litres of water ha⁻¹. Weed samples were collected by random placing of 50 cm x 50 cm quadrat from the border area of the plot. The data so collected were subjected to logarithmic transformation (X+1) for statistical analysis. N, P and K uptake by weeds was worked out at maximum

Table 1. Effect of weed management practices and seed rates on weed density, weed dry matter accumulation and grain yield of urdbean

Treatment	Dose (kg ha ⁻¹)	Application stage (DAS)	Density of <i>E. colona</i> 70 DAS (No. m ⁻²)	Other weed density matter 70 DAS (No. m ⁻²)	Total weed dry matter 70 DAS (g m ⁻²)	Grain yield (kg ha ⁻¹)
Weed management						
Weedy	-	-	6.3 (39.0)	3.5 (12.0)	17.9 (320.0)	625
HW	-	20 DAS	3.5 (12.0)	0.0 (0.0)	9.1 (80.2)	958
HW	-	40 DAS	2.5 (6.0)	2.3 (5.0)	5.1 (30.0)	917
Alachlor	2.0	PE	3.6 (13.0)	1.7 (1.0)	16.1 (208)	708
Alachlor+	1.5	PE+	1.5 (2.0)	0.0 (0.0)	3.1 (9.0)	1125
HW	-	40 DAS				
LSD (P=0.05)			0.5	0.7	0.9	115
Seed rate (kg ha⁻¹)						
Normal (15 kg)	-	-	3.9 (17.0)	2.3 (6.0)	12.2 (193.0)	792
30% higher	-	-	3.6 (14.0)	2.2 (4.0)	10.2 (138.0)	875
50% higher	-	-	3.0 (12.0)	1.3 (1.0)	8.7 (99.0)	938
LSD (P=0.05)			0.4	0.5	0.7	90

Original values are given in parentheses. DAS-Days after sowing, PE-Pre-emergence.

dry matter production stage i. e. 70 days after sowing.

The important weed species in the experimental field of urdbean were : *Echinochloa colona*, *Cynodon dactylon*, *Eleusine indica* (Grassy), *Trianthema monogyna*, *Commelina benghalensis* (broad leaf weeds) and *Cyperus rotundus* (sedges). *E. colona* was the dominant weed spp. at all the stages and constituted, on an average, 87.3% of total weed population. The density of all other above weeds was 12.7% only. Total weed density was significantly reduced by all weed management practices as compared to weedy check. Application of alachlor at 1.5 kg ha⁻¹ (pre-emergence)+HW 40 DAS recorded the lowest weed density. Increasing seed rate upto 50% lowered the weed density significantly over normal seed rate. Similar trend was

also observed for weed dry matter (Table 1).

Pre-emergence application of alachlor at 1.5 kg ha⁻¹+HW 40 DAS recorded significantly higher grain yield of urdbean (1125 kg ha⁻¹) than remaining weed management practices. Use of 50% higher seed rate than normal yielded significantly higher than normal seed rate but was at par with 30% higher seed rate. Higher grain yield in above treatments might be due to less weed density; which in turn reduced the competition for resources and gave higher yields.

REFERENCE

- Kumar, P., C. S. Saraf, R. Singh and S. Chander, 2000. Effect of weed management and sulphur fertilization on weeds and yield in greengram and blackgram intercropping system. *Indian J. Weed Sci.* 32 : 25-30.