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Effect of Weed Management Practices and Seed Rates on Weeds and Yield of Chickpea

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Chickpea, being slow in its early growth and short saturated plant, is highly susceptible to weed competition and often considerable loss may occur if weeds are not controlled at proper time. It is well established fact that only one weed control method would not be sufficient and an integrated approach may be required. Weed infestation in winter pulses has been reported to offer serious competition and causes yield reduction to the extent of 75% in chickpea. High cost and non-availability of labour at right time make the farmers forcibly to go for alternative, cheaper and easier methods of weed control. Various chemical and cultural methods to control weeds in chickpea have been tried by various workers.

Higher seed rate could be expected to reduce the growth of weeds and increase the yield of chickpea. Keeping these facts in mind, the present study was conducted at Agronomy Farm, B. A. College of Agriculture, Anand Agricultural University, Anand during **rabi** season of 2003-04 to find out the effect of weed management practices and seed rates on weed flora, yield and yield attributes of chickpea.

The experiment was laid out in split plot design with four replications. The main plot treatments consisted of three levels of seed rates (60, 75 and 90 kg ha^{-1}) and sub-plot treatments consisted of six levels of weed management (Pendimethalin, fluchloralin each of 0.5 and 1.0 kg ha^{-1}, weeding at 20 and 40 DAS and weedy) The experiment was sown on November 12, 2003. Herbicides were applied two days after sowing. *Eleusine indica* L., *Eragrostis major* P. Beauv, *Dactyloctenium aegyptium* L., *Cyperus rotundus* L., *Chenopodium album* L., *Amaranthus spinosus* L., *Phyllanthus niruri* L., *Boerheavia diffusa* L. and *Melilotus indica* all were observed in the experimental field.

Less weed density was recorded at 90 kg ha^{-1} than other seed rates (Table 1). Similarly, increasing the seed rate from 60 to 90 kg ha^{-1} decreased the dry weight of total weed. Number of pods per plant was significantly decreased with increasing seed rate. The maximum net realization (Rs. 19692.00 ha^{-1}) and net CBR (1 : 1.61) were recorded at 60 kg seed ha^{-1}. The lowest value of net realization (Rs. 15203.00 ha^{-1}) and net CBR (1 : 0.83) were observed at 90 kg seed ha^{-1}.

Significantly lower number of monocot and dicot weeds was recorded under pendimethalin and fluchloralin each at 1.0 kg ha^{-1} (1.23 and 1.40 m^{-2}), respectively. The least number and lowest dry weight of total weeds were recorded due to weeding at 20 and 40 DAS, whereas significantly the highest count of weeds was observed under treatment weedy check. The treatment weeding at 20 and 40 DAS recorded significantly higher number of pods per plant (34.59), followed by pendimethalin 1.0 kg ha^{-1} (33.68) and recorded significantly higher number of grains per pod (1.62), respectively.

The highest grain yield and yield attributes were recorded due to weeding at 20 and 40 DAS which was at par with pendimethalin 1.0 kg ha^{-1}. Results are in accordance with the findings of Ahalawat *et al.* (1978) and Vaishya *et al.* (1996). Significantly the lowest grain yield of chickpea was recorded under the treatment weedy check.

REFERENCES

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Table I. Effect of weed management practices and seed rate on weed flora and yield of chickpea

Treatment	Weed count at harvest (m^{-2})		Dry weight of weeds at harvest	Av. No. of pods $plant^{-1}$	Av. No. of grains pod^{-1}	Test weight	Grain yield	Straw yield	Net realization
	Monocot	Dicot	(g m^{-2})			(g)	(kg ha^{-1})	(kg ha^{-1})	(Rs. ha^{-1})
Seed rates (kg ha^{-1})									
60	5.09	5.43	121	29.7	1.5	17.3	1814	1800	19692
	27	**30**							
70	4.82	5.17	115	27.6	1.4	16.8	1621	1901	16417
	24	**28**							
90	4.57	4.76	106	25.6	1.3	15.7	1565	2038	15203
	22	**23**							
LSD (P = 0.05)	0.2	0.1	54.8	1.8	0.1	0.7	165	100	-
Weed management practices									
Pendimethalin	5.43	5.86	106	27.4	1.4	16.5	1649	1903	17789
0.5 kg ha^{-1}	**30**	**34**							
Pendimethalin	3.91	4.21	691	33.7	1.5	18.1	1987	2236	22018
1.0 kg ha^{-1}	**15**	**18**							
Fluchloralin	5.58	5.95	128	25.7	1.3	16.7	1503	1727	15979
0.5 kg ha^{-1}	**31**	**36**							
Fluchloralin	4.32	4.72	106	27.0	1.4	16.5	1703	1934	18533
1.0 kg ha^{-1}	**19**	**23**							
HW at 20 and	3.71	3.90	550	34.6	1.6	18.6	2074	2327	24088
40 DAS	14	15							
Weedy check	6.01	6.08	220	17.4	1.1	13.3	1083	1351	10230
	36	**37**							
LSD (P=0.05)	0.3	0.2	57.6	1.6	0.1	0.8	103	95	-

Bold figures indicate original values.
$\sqrt{X}$ Transformation