

Efficiency of Different Weed Control Methods in Greengram

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ABSTRACT

Alachlor, nitrofen, dichlormate, turbutryne and basalin were compared with hand-weeding in greengram. Maximum yield of 752 kg/ha during summer (1974) and 1008 kg/ha during monsoon season (1975) was obtained in the pre-emergence application of alachlor at 1.5 l. a. i./ha.

INTRODUCTION

Several workers have tested the efficacy of weedicides in greengram. Bhan *et al.* (1969) reported that trifluralin at 1.0 kg a.i./ha controlled the weeds and gave the highest yield. Alachlor at 2.0 kg a.i./ha was also found to be effective and resulted in maximum seed yield (Singh *et al.*, 1971), Yogeswara Rao *et al.*, 1973). Chemical weed control in greengram has not been taken up in Tamil Nadu so far and hence the present study was undertaken.

MATERIALS AND METHODS

Field experiments were conducted in two seasons (in 1974 and 1975) each with twelve treatments arranged in a factorial randomised block design with three replications. During the first season, four herbicides *viz.* turbutryn, alachlor, dichlormate and nitrofen were tried and compared with hand weeding twice (Table). During the second season, one more chemical, *viz.* basalin was also included and compared with

unweeded control and hand weeding twice. Pusa baisahi moong was used under irrigated conditions with 20 x 10 cm spacing. The pre-emergence herbicides were applied on the second day of sowing and the life irrigation was given on the fourth day.

RESULTS AND DISCUSSION

The predominant weed flora of the experimental area was *Trianthema portulacastrum* L. *Amaranthus viridis* L. *Euphorbia hirta* L. and *Digera arvensis* L. The grass weeds like *Cyperus* sp., *Cynodon dactylon* L. and *Chloris barbata* were also recorded in small numbers. The same weed species were noticed in both the seasons but the intensity of weed population of varied in summer and monsoon seasons total rainfall of 38.5 mm in two rainy days and 129.7 mm in 11 rainy days respectively was recorded.

Generally, the weed population and dry matter of weeds were more in summer. This was due to the quicker degradation of herbicides which has

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facilitated the growth of weeds. The hot and dry period with long sunshine hours might be responsible for quick degradation of the herbicides. Maximum weed population (766/sq.m) was seen in nitrofen treated plots and the minimum in turbutryn 1.5 kg/ha applied plots (111/sq.m), followed by alachlor at 1.5 l a.i./ha (162/sq.m). The lowest dry matter of weeds was seen in tur-

butryne treated plots (1670 kg/ha) followed by alachlor at 1.5 l a.i./ha (2630 kg/ha). During 1975 monsoon season the weed population was less probably due to the fact that the herbicides might have remained in the soil for a long period when compared to summer. Pre-emergence application of basalin recorded the lowest weed population (24/sq.m) followed by hand

TABLE I Effect of herbicides on the weeds and crop growth

Treatments	Weed population per sq/m	Weed dry matter kg/ha	Crop Plant height cm	Dry matter kg/ha	No. of pods/plant	No. of seeds/pod	Yield kg/ha
1974							
Hand weeding	603 (2.76)	3080	26.2	2150	10.5	8.9	650
Turbutryne 0.5 kg a.i./ha	328 (2.51)	2070	27.2	2510	4.8	6.3	550
" 1.0 "	206 (2.27)	1840	28.1	2075	11.3	9.2	747
" 1.5 "	111 (2.01)	1670	28.2	1850	8.1	8.0	545
Alachlor 1.50 "	162 (2.20)	2630	28.4	2913	11.9	9.3	752
" 2.25 in 2 splits	186 (1.93)	2520	28.1	2810	4.8	6.3	635
Dichlormate 1.50 l. a.i./ha	364 (2.54)	3840	29.8	1925	4.6	5.9	530
" 2.00 "	292 (2.42)	3650	25.1	1883	7.8	7.8	645
" 2.50 "	263 (2.42)	3560	27.7	1840	8.1	7.7	648
Nitrofen 1.00 "	741 (2.89)	3460	28.1	2540	4.1	5.8	533
" 1.50 "	766 (2.88)	3770	27.6	2710	6.5	7.0	535
" 0.75+0.75	707 (2.85)	3200	27.4	2320	8.1	7.7	617
C. D. (P=0.05)	0.44	202.0	N.S.	99	0.8	0.7	67
1975							
Unweeded control	160 (2.20)	1390	43.7	1820	6.3	6.0	459
Hand weeding	28 (1.44)	230	46.1	2672	13.4	9.4	949
Turbutryne 0.50 kg a.i./ha	132 (2.12)	530	49.6	3004	11.2	8.5	777
" 0.75 "	64 (1.80)	410	48.9	2321	11.9	8.8	815
Alachlor 1.50 l a.i./ha	80 (1.90)	490	53.5	3670	13.9	11.0	1008
" 2.25 "	68 (1.83)	460	52.4	3572	12.6	10.5	848
Dichlormate 1.50 l a.i./ha	108 (2.03)	500	47.9	1837	8.3	7.9	705
" 2.00 "	144 (2.16)	610	46.1	2655	8.2	7.9	586
Nitrofen 1.50 "	140 (2.14)	500	49.2	3240	12.7	9.0	848
" 2.00 "	80 (1.90)	490	45.9	3256	11.9	9.0	837
Basalin 1.50 "	24 (1.38)	290	51.2	3854	13.4	9.9	900
" 1.25 "	28 (1.45)	330	50.2	3557	13.0	9.0	887
C. D. P=0.05%	0.07	12.4	N.S.	135	3.9	0.46	236

weeding (28/sq.m). Turbutryne at 0.75 kg a.i./ha and alachlor at 1.50 l a.i./ha recorded 64 and 80/sq.m respectively. In the dry matter of weeds, hand weeding recorded the lowest (230 kg/ha) followed by basalin (290 kg/ha). The unweeded control recorded the maximum weed dry matter (Table).

The plant height did not show any significant variation in both the seasons. The dry matter of crop and number of pods per plant were more in alachlor treatment. The other herbicides did not show any increase. Similar trend was seen in the number seeds per pod also. During 1975, the maximum pods per plant were seen in alachlor at 1.5 l a.i./ha (13.9) followed by hand weeding and basalin (13.4). Number of seeds per pod also showed similar trend. A weed-free environment till the critical period of the crop by these herbicides facilitated good growth of the plants and this might be the reason for the higher number of pods/plant and seeds/pod.

The yield during 1974 summer season was maximum in alachlor at 1.5 l a.i./ha treatment (752 kg/ha),

followed by turbutryne at 1.0 kg a.i./ha (747 kg/ha) and hand weeding (650 kg/ha). In the monsoon season 1975 maximum yield of 1008 kg/ha was obtained in alachlor at 1.5 l a.i./ha followed by hand weeding (949 kg/ha) and basalin (900 kg/ha) (Table). Among the two seasons the yield in the monsoon was more than in the summer season. The increase in yield can be attributed to the decrease in the population and dry matter of weeds, and increased dry matter of crops, pods per plant and seeds per pod.

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