

Weed Control Studies in Chilli

By

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ABSTRACT

The herbicides alachlor and nitrofen at all the levels tested resulted in early weed control on dicotyledenous and seed germinating monolotyledenous weed flora. Treatments received pre-emergence application of alachlor plus one hand weeding on 30th day have recorded numerically higher fruit yield compared to herbicides application only. Pre-emergence application of 2.0 kg a.i./ha of nitrofen followed by one hand weeding on the 30th day was optimum for higher yields.

INTRODUCTION

Among the chemicals used for weed control EPTC has been found to have effective grass control and partial control of board leaved weeds (Huges, 1960). Weed control with diphenamid and trifluralin (Whiting *et al.*, 1970) and chloramben (Chambers *et al.*, 1965) was reported. Krishnamurthy (1971) found that among the herbicides tested on chilli seedlings nitrofen (Tok) granules at 5 kg/ha, propanil or EPTC each at 2.5 lit/ha gave satisfactory establishment and yields. The results of different weed control methods in chilli with alachlor, nitrofen, chemicals + hand weeding and farmers methods are presented in this paper.

MATERIALS AND METHODS

Weed control studies were taken up during monsoon, 1975 with alachlor 1.5, 2.0, 2.5 kg a.i./ha, nitrofen 2.0, 3.0 kg a.i./ha, alachlor 1.5 kg + one hand weeding, alachlor 2.0 kg + one

hand weeding, nitrofen 2.0 kg + one hand weeding besides farmers method and unweeded control as the treatments. The G 4 chilli seedlings were transplanted with a spacing of 30 x 30 cm and a randomized block design with three replications was followed. Data were collected on the weed population, plant biometrics, yield of red riped pods and fruit characters.

RESULTS AND DISCUSSION

Trianthema portulacastrum was the main weed species found in the experimental area constituting 75 per cent of the weed species observed. Other weeds found were *Gynandropsis phentophylla*, *Cynodon dactylon*, *Cyperus rotundus* and other grasses. The data on weed count on 15th day (Table) showed that hand weeding and control recorded significantly higher weed population (809-881 per sq. m) compared to other treatments (75-157 per sq. m). Weed population on the

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30th day indicated that control recorded the maximum population of 915 per sq. m. Hand weeding was completely free from weeds since weeding was given on the 20th day after transplanting. Weed count in other treatments ranged from 293-449 per sq.m. There was no significant difference in weed population in the treatments of different levels of herbicides. Observations on the weed population on 45th day revealed that there was no difference due to treatments except hand weeding (farmers method). Herbicide application alone registered weed population comparable to that of control due to loss of persistence of herbicides. Combination of herbicide + hand weeding was having newly emerged weeds. Farmers' method did not have weed population due to the third weeding given on the 40th day. Dry matter production of weeds on 30th day showed that the treatments received alachlor 1.5-2.5 kg a. i. and nitrofen 3.0 kg a. i./ha recorded lower values (253-507 gm per sq m.) compared to control. There was a trend of higher weed dry matter production in treatments of nitrofen 2.0 kg a. i./ha. The higher dry matter production of weeds on the 30th day in nitrofen 2.0 kg may be due to early loss of persistence of the chemical compared to others. The treatment of farmers' method was omitted from comparison since it was free from weeds after 20th day except newly emerging weeds. Again on the 45th day, dry matter of weeds in control was 483 gm per sq m. compared to 243-304 gm/sq m for herbicide treatments which were on a par. The treatments of combination of herbicides and hand weeding were omit-

ted for comparison since these treatments were free from weeds for sampling. The weed growth and dry matter production showed that alachlor and nitrofen are useful chemicals to control weeds in chilli. There was earlier loss of persistence in the case of nitrofen than that of alachlor. Nitrofen was more effective at 3.00 kg than at 2.00 kg a.i./ha. Alachlor at 1.5 or 2.0 kg or nitrofen 2.0 kg plus combination of one hand weeding was found optimum for better weed control due to loss of persistence of the chemicals used and the presence of perennial grasses.

The seedling establishment was satisfactory in all the treatments. However alachlor treatments exhibited slight set back in the early growth of plant. Plant growth in various treatments as indicated by the plant height revealed that control and herbicides application only have recorded significantly higher value of plant height (73.3-88.9 cm) compared to combination of herbicides and farmers' method (56.1-60.4 cm). This is attributed to weeds competition. Duration from sowing to flowering (Table) indicated that there was no difference due to treatments. It ranged from 81-85 days. Similar trends were observed for duration from sowing to first fruit ripening which ranged from 126-130 days.

The data on the yield of red ripened pods showed that nitrofen 2.0 kg a.i./ha + one hand weeding recorded an yield of 9468 kg followed by farmers' method with an yield of 9144 kg/ha which were on a par. Alachlor 1.5 kg + hand weeding and alachlor 2.0 kg

TABLE. Effect of different weed control methods on weed growth and dry matter production

Treatments (kg a.i./ha)	Weed population/m ²			Dry matter of weeds (gm/sq.m)		Yield of pods (kg)	Plant height (cm)	Duration to first flowering (days)	Duration to first ripening (days)	Weight of 50 dry fruits (gm)
	15 days	30 days	45 days	30 days	45 days					
Alachlor 1.5	75 (8.5)	346 (18.6)	169 (13.0)	253	304	5256	85.1	85	130	37.0
Alachlor 2.0	101 (9.9)	293 (16.7)	141 (11.9)	323	291	5140	73.3	84	126	40.6
Alachlor 2.5	101 (9.8)	342 (18.4)	156 (12.5)	290	243	5650	83.9	82	128	39.0
Nitrofen 2.0	120 (10.6)	449 (21.0)	189 (13.6)	408	293	5700	77.9	83	127	36.0
Nitrofen 3.0	148 (12.1)	426 (20.4)	274 (15.6)	383	256	5309	80.8	81	130	42.0
Alachlor 1.5+one hand weeding	88 (9.4)	374 (19.3)	203 (14.3)	507	—	7104	56.9	85	130	39.0
Alachlor 2.0+one hand weeding	136 (11.6)	371 (19.0)	255 (15.7)	281	—	7062	56.1	85	129	37.0
Nitrofen 2.0+one hand weeding	157 (12.5)	341 (18.5)	193 (13.7)	625	—	9468	60.4	85	130	36.6
Farmers method	809 (28.4)	— (1.0)	— (1.0)	—	—	9144	58.1	84	128	41.0
Unweeded control	881 (29.6)	915 (30.2)	213 (14.5)	772	483	2782	77.8	83	128	36.3
C. D.	3.7	5.4	4.9	209	150	2050	9.1			

Figures within brackets indicate transformed values

+ hand weeding ranked second with the fruit yield of 7104 kg and 7062 kg/ha respectively. The yield for herbicide application only was ranging 5140 to 5700 kg/ha. The high yield in the farmer's method, nitrofen 2.0 kg + hand weeding is attributed to the efficient weed control resulted. Krishnamoorthy (1971) reported that nitrofen granules at the rate of 5.0 kg/ha gave satisfactory establishment and yields. Though there was good early weed control in alachlor treated plots, the slight set back in growth could be attributed to the decrease in yield in alachlor plus hand weeding treatments compared to farmers' method and nitrofen 2.0 kg plus hand weeding treatment.

REFERENCES

CHAMBERS, E. E., G. C. KLINGMAN and T. R. KONSLEK. 1965. Weed control in tomatoes and peppers. Proc. 18th South Weed Control Conf., 281-285.

HUGHES, E. C. 1962. Horticultural crops and Sugar beets. 1960. Res. Rep. W. Sect. Nat. Weed Ctte, Canada, 101-106.

KRISHNAMURTHY, K. 1971. Effect of weed-cides on weeds and establishment of chilli (*Capsicum annuum* Linn). *Mysore J. agric. Sci.* 5: 237-239.

WHITING, F. C., C. F. LIPPERT and J. M. LYONS. 1970. Chemical weed control in peppers. *Calif Agric.* 24: 8-9.