

Influence of Weed Control Measures on Growth, Yield and Economics of Groundnut

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Abstract

In an experiment conducted with variety MH-2 to investigate the effect of five weed control treatments on groundnut yield and economics. The weed control measures (two hand weeding at 20 and 40 DAS) gave highest returns of Rs 26,884/ha closely, followed by application of fluchloralin at 1.0 kg a.i./ha which yielded Rs 24,582/ha. The benefit cost ratio for the two treatments stood at 2.79 and 2.62, respectively.

Key words : Weed, Economics, Cost benefit ratio, Groundnut.

Groundnut is the most important oilseed crop of India. Being a rainy season crop, it faces stiff competition from weeds which come in several flushes during the growth season of the crop. Weed problem in *kharif* season is 50% more than the summer (1). Groundnut is a poor competitor to weeds especially during early growth stage and thus suffers upto 80% reduction in yield (2). The investigation was conducted to study the influence of weed control measures on yield, growth parameters and economics of different treatments in groundnut.

Methods

The variety MH-2 which matures in about 120—130 days was sown in first week of July during all the years of experiment. A total of five weed management treatments viz. weedy check (W_1); one hand

weeding 30 days after sowing (DAS) (W_2); one hand weeding 20 DAS + mulching (W_3); two hand weeding 20 and 40 DAS (W_4); and fluchloralin application at the rate of 1 kg a.i./ha as PPI (W_5) were replicated thrice in a randomized block design in 2002—04. Crop was sown at 20 cm + 20 cm distance. Soil of experimental field was sandy loam. Recommended dose of fertilizer i.e. 20 kg N, 50 kg P_2O_5 , 25 kg K and 25 kg $ZnSO_4$ /ha were applied as basal dose at the time of last ploughing before sowing. Observations were recorded on number of branches per plant, number of leaves per plant, dry matter per plant (g), leaf area index, days to 75% pegging, days to maturity, number of nodules per plant, dry weight of nodules/plant (g), primary root length (cm), dry weight of roots per plant (g), kernal yield (q/ha) and pod yield (q/ha). The pooled data on average of three years are presented.

Table 1. Effect of weed control measures on growth parameters of groundnut.

Treatments	No. of branches per plant	No. of leaves per plant	Dry matter per plant (g)	Leaf area index	Days to 75% pegging	Days to maturity
Weedy check (W_1)	5.33	31.6	30.9	1.73	82.4	129.4
One hand weeding at 30 DAS (W_2)	5.7	33.9	43.0	2.16	80.9	125.5
One hand weeding at 30 DAS + mulching (W_3)	6.1	37.8	50.1	2.46	76.3	127.8
Two hand weeding at 20 DAS and 40 DAS (W_4)	6.4	42.4	57.8	3.16	71.0	119.4
Fluchloralin 1.00 a.i./ha (W_5) as PPI	6.0	38.9	54.8	2.85	72.1	127.6
SE \pm	0.09	0.56	0.8	0.04	1.06	2.41
CD at 5%	0.32	1.95	2.81	0.15	3.69	NS

Table 2. Effect of weed control measures on yield and yield parameters.

Treatments	No. of nodules	Dry wt of nodules (g)	Primary root length (cm)	Dry weight of root (g)	Kernal yield (q/ha)	Pod yield (q/ha)
W ₁	380	189	16.3	4.17	6.62	10.61
W ₂	446	226	16.8	4.70	9.91	14.20
W ₃	480	231	20.4	5.58	14.0	19.39
W ₄	545	239	21.2	6.70	17.51	23.68
W ₅	465	229	17.4	5.51	15.20	22.10
SE ±	5.4	2.0	0.26	0.07	0.11	0.24
CD at 5%	18.9	6.6	0.92	0.26	0.36	0.84

Table 3. Effect of weed control measures on economics of groundnut. *Benefit cost ratio.

Treatments	Yield (q/ha)	Total cost (Rs/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	Returns* (B/C) ratio
Control (W ₁)	10.61	9145	16334	7189	0.78
One hand weeding at 30 DAS (W ₂)	14.20	9384	21947	12563	1.33
One hand weeding at 30 DAS + mulching (W ₃)	19.39	9485	29876	20391	2.15
Two hand weeding at 20 DAS + 40 DAS (W ₄)	23.68	9625	36509	26884	2.79
Fluchloralin at 1.00 a.i./ha (W ₅) as PP	22.10	9397	33979	24582	2.62

Results and Discussion

The data pertaining to the influence of weed control measures on growth parameters and yield, averaged over three years are given in Tables 1 and 2. The results indicated that the treatment comprising two hand weeding at 20 and 40 DAS gave the highest yield and higher values of growth and yield parameters. The only character for which treatments did not differ significantly was days to maturity which implies that irrespective of weed management strategy adopted, the crop matured at almost the same time.

It was also observed that the treatment two hand weeding at 20 and 40 days after sowing recorded significantly higher values of all growth parameters as compared to rest of treatment. The spray of fluchloralin and one hand weeding at 30 DAS were at par with each other in respect of growth parameters. The higher values of growth and yield parameters and ultimately the pod yield with two hand weeding (20 and 40 DAS) treatments might have provided congenial environment to the crop due to early removal of weeds at 20 DAS. In days to 75% pegging and dry weight of nodules, the spray of fluchloraline and one weeding at 30

DAS in case of primary root length were at par with two hand weeding. For all other characters two hand weeding at 20 + 40 DAS gave significantly superior results over all other treatments. Similar results were also observed by Yaduraj et al. (3) and Naidu et al. (4).

The economics of treatments of groundnut with different weed control measures is presented in Table 3. Data revealed that two hand weeding at 20 and 40 DAS gave the highest net returns of Rs 26,884/ha, with benefit cost (B/C) ratio of 2.79. This was closely followed by application of fluchloralin with a B/C ratio of 2.62 and gave net returns amounting to Rs 24,582 per hectare. Two hand weeding gave highest returns, application of fluchloralin can be considered to be more viable and practical recommendation since availability of laborers for hand weeding has become more scarce.

References

1. Shanmugam K. S. 1984. Weed control in groundnut. Pesticides 18 : 52.
2. Kulkarni L. G., S. S. Verma and K. Achota Rao. 1983. Studies on weeding and intercultural in relation to weed control in the yield of groundnut. Indian Oils. J.

- 7 : 126—129.
3. Yaduraj N. T., G. Kulshrestha and V. S. Mani. 1990. Herbicide studies in groundnut. *Indian J. Agron.* 25 : 447—452.
 4. Naidu G. L. K., M. S. Shoundara Rajan, R. Sudhakara Rao and G. H. Sankar Reddy. 1983. Correlation studies in crop and competition in rainfed groundnut. *Indian J. Agron.* 28 : 479—480.