



Effect of herbicides and integrated weed management practices on weed dynamics and weed control efficiency in groundnut

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Groundnut encounters severe problem of weed infestation especially in the early stages of growth, as the seedling emerges 7-10 days after sowing coupled with the slow growth in the initial stages. Weeds emerge fast and grow rapidly competing with the crop severely for resources. On an average the loss of groundnut production in the country due to weeds has been estimated to the tune of 33-70%.

METHODOLOGY

Field experiment was carried out during kharif, 2014 at College Farm, PJTSAU, Hyderabad to evaluate the efficacy of herbicides and integrated weed management practices in Kharif groundnut in sandy loam soil. Herbicidal combinations and IWM practices tested were, pendimethalin at 1 kg/ha (pre) fb cycloxydym at 80 g/ha at 20 DAS, pendimethalin at 1 kg/ha (pre) fb fenoxaprop-p-ethyl at 100 g/ha at 20 DAS, Oxyflourfen 118 g/ha (pre) fb cycloxydym at 80 g/ha at 20 DAS, oxyflourfen 118 g/ha (pre) fb fenoxaprop-p-ethyl at 100 g/ha at 20 DAS, imazethapyr at 100 g/ha at 20 DAS, imazethapyr + imazamox at 70 g/ha at 20 DAS, pendimethalin at 1 kg/ha (pre) fb Hand weeding at 30 DAS, oxyflourfen 118 g/ha (pre) fb hand weeding at 30 DAS, hand weeding at 20 and

40 DAS, unweeded Check. The experiment was conducted in RBD with three replications. The recommended fertilizer dose was 20-40-30 kg of N, P₂O₅ and K₂O ha respectively.

RESULTS

Among the grasses, *Cynodondactylon*, *Digitaria sanguinalis* and *Dactyloctenium aegyptium* were predominant. *Cyperus rotundus* was the only one predominant sedge species observed. Among the broad leaved weeds, *Parthenium hysterophorus*, *Amaranthus viridis*, *Amaranthus polygamus*, *Trianthema portulacastrum*, *Digera arvensis* and *Celosia argentic* were the major weeds in the experimental field. At 20 DAS, the weed density (number/m²) was lowest. Treatments having pre-emergence applications of pendimethalin or oxyflourfen effectively controlled broad leaved weeds and certain grasses due to prevention of weed emergence during germination itself and recorded high weed control efficiency. At 40 DAS, significantly lower weed density was recorded in the treatments oxyflourfen (pre) fb hand weeding at 30 DAS and pendimethalin fb Hand weeding at 30 DAS. Supplementing with hand weeding at 30 DAS has shown effective control of

Table 1. Weed density and weed control efficiency and yield of groundnut as influenced by weed management practices

Treatment	Weed Density (number/sq.m)				Weed Control Efficiency (%)				Pod yield (kg/ha)
	20 DAS	40 DAS	60 DAS	Harvest	20 DAS	40 DAS	60 DAS	Harvest	
Pendimethalin (pre) fb Cycloxydym (post) at 20 DAS	4.76 (22)	7.14 (50)	7.66 (58)	7.8 (60)	49.8	37.3	47.4	47.4	701
Pendimethalin (pre) fb Fenoxaprop-p-ethyl (post) at 20 DAS	4.96 (24)	7.06 (49)	7.40 (54)	7.54 (56)	38.8	39.3	50.9	49.0	764
Oxyflourfen (pre) fb Cycloxydym (post) at 20 DAS	3.57 (12)	6.47 (41)	6.84 (46)	7.20 (51)	71.0	48.4	59.0	53.6	1203
Oxyflourfen (pre) fb Fenoxaprop-p-ethyl (post) at 20 DAS	3.77 (14)	6.55 (42)	6.53 (42)	6.78 (45)	66.1	48.8	62.4	58.5	1314
Imazethapyr (post) at 20 DAS	6.05 (36)	5.37 (28)	7.05 (49)	7.41 (54)	6.5	65.1	55.8	50.7	1060
Imazethapyr + Imazamox (post) at 15-20 DAS 70% WG 70 g/ha.	6.09 (37)	4.16 (16)	5.37 (28)	5.56 (30)	5.2	69.8	74.6	71.3	1486
Pendimethalin (pre) fb Hand weeding at (30 DAS)	5.14 (26)	3.84 (14)	4.99 (24)	5.35 (28)	33.9	83.3	78.6	76.1	1723
Oxyflourfen (pre) fb followed by Hand weeding at 30 DAS	3.87 (15)	3.58 (12)	4.79 (22)	4.97 (24)	62.1	85.7	80.9	77.8	1760
Hand weeding at 20 DAS and 40 DAS	6.39 (40)	4.32 (18)	3.58 (12)	3.98 (15)	5.5	78.5	87.9	84.1	1840
Unweeded check	6.26 (38)	8.99 (80)	10.53 (110)	10.99 (120)	0.0	0.0	0.0	0.0	557
LSD (P=0.05)	0.46	0.5	0.47	0.53					108.8

* Figures in parenthesis are actual numbers which were subjected to square root transformations

all the weeds including sedges and higher WCE of 79-85%. Application of imazethapyr + imazamox (17 /m²), hand weeding at 20 and 40 DAS (18 /m²) and imazethapyr (28 /m²) were next best treatments and were significantly superior in recording less weeds. Significantly higher total weed density (80 /m²) was recorded in weedy check.

At 60 DAS and at harvest, total weed density was significantly lower in the treatments where second hand weeding at 40 DAS was adopted as in case of hand weeding at 20 and 40 DAS. Next best treatment was oxyflourfen fb hand weeding at 30 DAS and was found par with pendimethalin fb hand weeding at 30 DAS and imazethapyr + imazamox treatments with more WCE. Weedy check recorded significantly higher density of weeds at both the stages. Dhadge *et al.* 2014 also reported better weed control with

pendimethalin fb hand weeding in summer groundnut. Efficient weed management was reflected in terms of higher yield and returns.

CONCLUSIONS

Oxyflourfen fb hand weeding or pendimethalin fb hand weeding or sequential application imazethapyr + imazamox were effective weed management options in controlling wide range of weed species in groundnut.

REFERENCES

Dhadge SM, Satpute NR and Patil SR. 2014. Effect of post emergence herbicides on weed and summer groundnut. *Bioinfolet* 11: 915-917.