



Integrated weed management in groundnut

K. Kalaichelvi

Department of Pulses, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu 641 003, India

Email: kalaiaagronomy@gmail.com

Groundnut is an important oil seed crop of India which is cultivated in nearly 6 million ha area with the production of 7.5 mt and average productivity of 1.27 t/ha. Though India ranks first in the world under groundnut area and there is need to import 8.03 mt of edible oil

(Kalhapure *et al.* 2013). This is due to lower productivity. Weeds are the major cause of minimizing production and yield losses in groundnut to an extent of 13-80% (Gosh *et al.* 2000). For groundnut, there should be a weed free condition up to 40 DAS otherwise the reduction in growth and yield can't be compensated at later stage due to severe weed infestation. Thus a field experiment is being formulated to evaluate suitable integrated weed management practices for increasing weed control efficiency and reducing labour usage in groundnut production.

METHODOLOGY

Field experiment has been conducted on integrated weed management practices at Agricultural Research station, Vaigaidam during Rabi'2011-12. The soil of the experimental field was pH (6.5), available N (242 kg/ha), P₂O₅ (11 kg/ha) and K₂O(335 kg/ha). Treatments consisted of pre-emergence

application of pendimethalin at 0.75 kg/ha, alachlor at 1.0 kg a.i./ha and oxyfluorfen at 1.0 kg/ha followed by hand weeding on 20 DAS. To control late emerging weeds after 45 DAS layby application of pendimethalin at 1.0 kg/ha and oxyfluorfen at 0.25 kg/ha has been taken up since hand weeding is impossible due to peg penetration at later stage. The experiment was laid out in randomized block design with three replications. Groundnut variety 'TMV-7' was chosen. Crop was fertilized with 25:50:75 kg NPK ha under surface irrigation. Herbicides were applied using manually operated knapsack sprayer fitted with flat fan nozzle using spray volume of 600 l/ha as per the technical programme. Weed density were recorded at regular intervals of 10, 25, 40 and 60 DAS.

RESULTS

Predominant weeds identified in the experiment were *Chloris barbata*, *Panicum repens* and *Dactyloctenium aegyptium* among grasses. Among the sedges, *Cyperus rotundus* and *Cyperus esculentus* are predominant. Major broad leaved weeds are *Celosia argentea*, *Trianthema portulacastrum*, *Tridax procumbens*, *Euphorbia*

Table 1. Total weed density, weed control efficiency, yield and economics in groundnut as influenced by different weed management practices

Treatment	Total weed density (no./m ²) on 40 DAS	Weed control efficiency (%) at 40 DAS	Weed control efficiency (%) at 60 DAS	Number of pods /plant	Seed pod yield (kg/ha)	B:C
T ₁ - PE alachlor at 1.0 kg/ha (sand application) + HW 20 DAS	3.83 (12.7)	88.5	92.6	22	1489	2.50
T ₂ - PE alachlor at 1.0 kg/ha + HW 20 DAS	3.42 (9.7)	94.6	94.1	38	1856	3.81
T ₃ -PE pendimethalin at 0.75 kg/ha + HW 20 DAS	3.42 (9.7)	95.4	94.3	37	1830	3.63
T ₄ -Lay by pendimethalin at 0.75 kg/ha + 0.75 kg/ha after earthing up on 45 DAS	3.27 (8.7)	95.4	98.7	36	1829	3.65
T ₅ - PE oxyfluorfen at 0.25 kg/ha + HW on 20 DAS	2.31 (3.3)	97.2	96.8	39	1932	3.85
T ₆ - Layby oxyfluorfen at 0.25kg/ha + 0.25 kg/ha after earthing up on 45 DAS	3.06 (7.3)	93.6	97.2	13	978	1.97
T ₇ - PE pendimethalin at 0.75 kg/ha + EPOE quizalofop ethyl at 0.25 kg/ha on 20 DAS	4.32 (16.7)	89.2	92.1	22	1279	2.60
T ₈ - Hand weeding twice at 15 and 30 DAS	4.28 (16.3)	84.1	88.8	38	1845	2.75
T ₉ - Un weeded control	7.57 (55.3)	94.6	91.9	8	927	2.08
LSD (P=0.05)	0.8			9	349	

*Figures in parenthesis are original values. Mention the type of transformation followed.

geniculata, *Digera arvensis*, *Parthenium hysterophorus*, *Portulaca oleraceae*, *Phyllanthus niruri* and *Phyllanthus medraspatensis*.

Total weed density was significantly lowered with pre – emergence application of oxyfluorfen at 0.25 kg/ha followed by hand weeding and layby application of oxyfluorfen at 0.25 kg/ha on 3 DAS and 45 DAS after earthing up over all other treatments. This might be due to consistent control on weeds. Sedge weed density was significantly lowered with pre-emergence application of oxyfluorfen at 0.25 kg/ha on 3 DAS. Weed control efficiency was higher with pre-emergence application of oxyfluorfen at 0.25 kg/ha followed by hand weeding on 20 DAS and pendimethalin at 0.75 kg/ha followed by a hand weeding on 20 DAS at different intervals 10,25,40

and 60 DAS.

Number of pods per plant and seed pod yield was significantly higher with pre-emergence application of pendimethalin at 0.75 kg/ha, alachlor 1.0 kg/ha (hand sprayer) and oxyfluorfen at 0.25 kg/ha followed by hand weeding on 20 DAS . Layby application of pendimethalin at 0.75 kg/ha on 3 and 45 DAS after earthing up is also on par with pre-emergence herbicide followed by hand weeding . This might be due to lesser weed density observed at early crop stage and their consistent control over weeds at later stage. Phytotoxicity symptoms has been observed with layby application of oxyfluorfen at 0.25 kg/ha on 45 DAS after earthing up and crop completely recovered on 7 days after herbicide application (DAHA) and this reflected on lower yield even if this treatment has recorded lesser weed density.



CONCLUSION

Pre-emergence application of oxyfluorfen at 0.25 kg/ha followed by hand weeding on 20 DAS has recorded higher weed control efficiency, yield and economics over other treatments. Phytotoxicity symptoms has been observed with layby application of oxyfluorfen at 0.25 kg/ha on 45 DAS after earthing up and even though groundnut crop recovered from phytotoxicity symptoms at 7 DAHA, but resulted in lower seed pod yield.

REFERENCES

- Ghosh PK, Mandal, KG and Kuntal MH. 2000. Allelopathic effects of weeds on groundnut (*Arachis hypogaea*) in India - A review. *Agricultural Reviews* **21**(1): 66-69.
- Kalhature AH, Shete BT and Bodake PS. 2013. Integration of chemical and cultural methods for weed management in groundnut. *Indian Journal of Weed science* **45**(2): 116-119.

Effect of sulfentrazone in combination with other herbicides against complex weed flora in soybean

Rajendra Lakpale*, Ankita Gupta, Bhumika Patel and Vivek Triptahi

Department of Agronomy, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India

**Email: rlakpale@hotmail.com*

It is very difficult to control a complex weed flora including grasses, sedges and broadleaf weeds in soybean especially under rainfed upland condition with one herbicide or any other single mean.

METHODOLOGY

To test the feasibility of sulfentrazone with other herbicide and cultural practices, a field experiment was conducted during *Kharif* seasons of 2013 and 2014 at the Research Cum Instructional Farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G). The experiment was laid out in Randomized Block Design, comprising four replication and eleven treatments which included Sulfentrazone 48 % F 300 g/ha as pre-emergence (T₁), Sulfentrazone 48 % F 360 g/ha as pre-emergence (T₂), Pendimethalin 30 EC 1.0 kg/ha as pre-emergence (T₃), Sulfentrazone 48 % F 300 g/ha as pre-emergence + Imazethapyr 10 SL as Post-emergence (T₄), Sulfentrazone 48 % F 300 g/ha as pre-emergence + one hand weeding (T₅), Imazethapyr 10 SL at 100 g/ha as PoE (T₆), Metribuzin 70 WP at 750 g/ha as PE (T₇), Odyssey (imazethapyr 35% + imazamox 35%) 70 WG at 100 g/ha as PE (T₈), Sulfentrazone 48 % F 300 g/ha as pre-emergence + hoeing (T₉), hand weeding twice at 20 and 40 DAS (T₁₀) and untreated control (T₁₁).

RESULTS

Results revealed that hand weeding twice at 20 and 40 DAS proved to be best in enhancing number of pods/plant, which was found similar to sulfentrazone at 300 g/ha as PE + imazethapyr at 100 g/ha as PoE *fb* sulfentrazone at 360 g/ha as PE. Hand weeding twice at 20 and 40 DAS, produced the maximum seed yield and stover yield, which was significantly superior to rest of the treatments but it was found at par with sulfentrazone at 300 g/ha as PE and sulfentrazone at 360 g/ha as PE and sulfentrazone at 300 g/ha as PE + imazethapyr at 100 g/ha as PoE, Significantly minimum density of total weeds was recorded under hand weeding twice at 20 and 40 DAS. Highest weed control efficiency noted under treatment hand weeding twice at 20 and 40 DAS. Minimum weed index was registered under sulfentrazone at 360 g/ha as PE and sulfentrazone at 300 g/ha as PE + imazethapyr at 100 g/ha as PoE.

CONCLUSION

Use of sulfentrazone at 360 g/ha as pre-emergence (PE) and sulfentrazone at 300 g/ha as PE *fb* imazethapyr at 100 g/ha as post-emergence gave good control of weeds and resulted in yields similar to farmers' practice of hand weeding.