

## Reference

AGNAL, M. B. 1990, Studies on the response of sweet sorghum (*Sorghum bicolor* (L.) Moench) genotypes to levels of

nitrogen, phosphorus and potassium in black soils under rainfed conditions M.Sc. (Agri) Thesis, submitted to Univ. Agril. Sci., Dharwad (Karnataka) 131 pp.

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## Weed Control in Rainfed Soybean

Soybean (*Glycine max.* (L) Merr) is now a popular crop in Karnataka and is mostly grown in *kharif* season. During this period the weed growth is more prolific due to continuous rains. Weed control is one of the major problems in successful cultivation of soybean. Available methods in control of weeds are not much effective. There is a need to formulate an integrated approach of weed control. The present investigation, therefore, was carried out to find out the suitable weed control methods for soybean grown during *kharif* under rainfed conditions.

The experiment was conducted during *kharif* seasons of 1985 and 1986 at the Agricultural College Farm, Dharwad on vertisol (black soils) under rainfed conditions. Seven herbicides – Fluchloralin, Stomp, Ronster, Dual, Goal and Alachlor as pre-emergent and Fusilade as post-emergent were tried along with hand weeding and closer planting. The design of the experiment was randomised block, replicated three times. All the pre-emergence weedicides were sprayed on the day of sowing, whereas Fusilade was used as post-emergent spray. The seeds of soybean variety Hardee preinoculated with *Rhizobium* culture were sown at 30 cm between rows and 10 cm within the row. Normal recommended doses of fertilizer were applied before sowing. Dry weight of

weeds and seed yield was recorded and given in the Table 1. The weed control efficiency (WCE) was calculated as per the formula suggested by Mani *et al* (1973).

The important weeds observed in the experimental plots were: *Cyperus rotundus*; *Dinebra retroflexa*; *Euphorbia hirta*; *Acalypha indica*; *Phyllonthus niruri*; *Solanum nigrum*; *Commelina benghalensis*; and *Achyranthus aspera*. Various herbicides tried did not affect the germination and emergence of soybean. In general, all the treatments effectively decreased the dry-weight of weeds over unweeded check. Among different weedicides, Goal and Basalin proved superior in controlling weeds as compared to the remaining herbicides. Weed control efficiency was found maximum in case of Basalin (71%) and Goal (69.5%) as indicated by the dry matter production of weeds. Whereas Ronster, Dual, Fusilade and Lasso exhibited lower weed control efficiency and Stomp was least effective. Weedicides coupled with hand weeding were more effective in control of weeds as compared to use of weedicides alone. Soybean planting at 22.5 cm row distance without manual and chemical weeding found relatively less effective in controlling weeds as compared to weedicides alone. Further, it was observed that hand weeding once without herbicides was also

Table 1. Effect of weed control treatments on weed control efficiency, dry weight of weed and grain yield of soybean

Treatment (Weedicides – kg/ha)	Grain yield kg/ha		Mean	Weed dry weight (g/m <sup>2</sup> )		Mean	Weed control efficiency (%)
	1985	1986		1985	1986		
Basalin 0.5	2500	2698	2599	33.0	33.2	33.1	71.0
Basalin 0.5 + one hand weeding at 30 DAS	2766	2677	2671	50.0	30.3	42.0	65.1
Stomp 0.5	1667	1924	1795	75.0	64.8	69.9	35.85
Stomp 0.5 + one hand weeding at 30 DAS	2000	2591	2345	80.0	31.5	55.8	53.6
Ronster 0.5	2367	1311	1839	72.0	58.0	65.0	40.6
Ronster 0.5 + one hand weeding at 30 DAS	2333	1617	1975	42.0	45.6	43.8	58.5
Dual 0.5	2200	1444	1822	88.0	37.3	62.7	47.3
Dual 0.5 + one hand weeding at 30 DAS	1667	1631	1649	58.0	42.9	50.45	54.7
Goal 0.2	2633	2089	2361	37.0	29.7	33.3	69.5
Goal 0.2 + one hand weeding at 30 DAS	3116	2880	2998	43.0	29.0	36.0	67.5
Fusilade 0.25 (Post)	1366	1307	1336	85.0	46.0	65.5	43.0
Lasso 0.2	2383	1640	2011	42.0	61.2	51.6	49.0
Lasso 0.2 + one hand weeding at 30 DAS	2083	1773	1928	47.0	45.4	46.2	56.7
Soybean planting at 22.5 cm row distance without manual and chemical weeding	2250	1600	1925	67.0	110.8	88.9	22.0
One hand weeding at 30 DAS	1750	1675	1712	53.0	39.6	46.3	58.2
Weedy-check	916	1515	1215	143.0	85.0	114.0	—
C.D. (at 5%)	350	280					

not found efficient in controlling weeds. Grain yield of soybean varied significantly between treatments. Goal along with one hand weeding gave higher grain yield (2998 kg/ha) which was followed by Basalin (2671 kg/ha). Fusilade gave lower yield (1336 kg/ha) but

yielded higher than weedy check (1215 kg/ha). Shanthaveerabhadraiah *et al* (1984) reported that Alachlor (Lasso) gave better control of weeds and it resulted in harvesting higher yield of soybean. But in this study Lasso was not effective in comparison to

Basalin or Goal. In general, use of weedicides coupled with hand weeding was found superior to using only weedicides.

The study revealed that the most effective weed control method in *kharif* soybean is the use of weedicides, namely Fluchloralin @ 0.5 kg a.i. per ha or Goal @ 0.2 kg a.i. per ha as pre-emergence combined with one hand weeding 30 days after sowing. These methods not only controlled weeds better as evidenced by higher weed control efficiency but also resulted in higher seed yields.

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## Economics of Weed Control Methods in Rainfed Groundnut\*

Groundnut is an important oil seed crop which is extensively grown in *kharif* season under rainfed conditions. Low yields and high cost of production are common features in *kharif* season owing to severe infestation of weed. The use of herbicides had good promise for cheap and efficient weed control under many situations. The present study was an attempt to find out effective herbicide alone or in combination with intercultivations to control weeds and reduce the cost of production. A field experiment was conducted at Main Research Station, Dharwad during *kharif* 1990-91 in a randomised block design with 11 treatments, replicated thrice. A basal dose of 25kg N, 50kg P<sub>2</sub>O<sub>5</sub> and 25kg K<sub>2</sub>O per ha. was applied in rows.

Row to row spacing of 30 cm and 10cm within the row was maintained. The data on dry weed weight, weed Index, pod yield of crop were recorded at harvest. The economics of different treatments was worked out based on prevailing market rates. The common weeds found in the field were: *Digitaria marginata*; *Parthenium hysterophorus*; *Panicum* spp; *Cyperus rotundus*, *Abutilon indicum*, *Acalypha indica*, *Amaranthus spinosus*, *Celosia argentea*, *Commelina benghalensis*, *Solanum nigrum* and *Phyllanthus niruri*.

Handweeding at 15+30 DAS in combination with intercultivation at 15+30+45 DAS recorded lowest (2.31 q/ha) dry weed weight (Table 1) and it was on par with alachlor, fluchloralin, pendimethalin alone