

Effect of different weed management treatments on growth of groundnut

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ABSTRACT

The present experiments was carried out at Water Management Centre, Marathwada Agricultural University, Parbhani during 2005-2006. Growth of groundnut crop measured in terms of number of branches, number of leaves, leaf area, number of pegs, canopy spread, number of nodes per plant were recorded significantly more in weed free check. This was followed by two hand weeding and hoeing at 15 and 30 DAS. The integrated methods *i.e.* (PE) pendomethelin or (PPI) fluchloralin followed by hand weeding at 15 DAS were also effective. The treatment with hoeing at 15 and 30 DAS and post emergence imazethapyr @ 150 g a.i./ha and POE imazethapyr 100 g a. i./ha at 15 DAS, were next in order of merit for above character.

KEY WORDS : Groundnut, *Arachis hypogaea* L. weed and IWM

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INTRODUCTION

Groundnut (*Arachis hypogaea* L.) is an important oil seed crop in India. The groundnut kernels are rich source of thiamine, riboflavin, nicotinic acid etc. The oil cube of groundnut is the valuable organic manure and animal feed. Groundnut is used for manufacture of soap, hydrogenated vegetable oil and for culinary purpose.

Among all the oil seed crop, groundnut accounts for more than 40% average and 60% production in the country. Its high oil and protein, control ability to withstand water deficient condition and remunerative price in the market make it an attractive crop to farmer. In spite of this crop being so important, it is alarming to note that the average production of this crop has a decline trend. Low productivity of this crop is due to any reason such as, non implementation of proper package of practices, inadequate effects in plant protection measures *viz.*, heavy infestation due of irrigated crop condition and also low yield is the

completion of crop plant with the unwanted associated weed flora. Uncontrolled weed reduced groundnut yield up to 75% (Gananamurthy and Balasubrahmaniyan 1998).

The first 3 to 4 weeks of crop growth period is critical for weed competition in groundnut (Kalaiselven *et al.*, 1991). By considering this view, the present experiment was conducted.

MATERIALS AND METHODS

The field experiment was conducted in plot No. A – 8 of Water Management Centre, Marathwada Agricultural University, Parbhani during *Rabi* season of the year 2005 – 2006 in Randomised Block Design (RBD) with three replications and nine treatments. The application of treatments is given in (Table 1). For recording the observations, five plants were selected randomly from each plot and periodical growth and development characters at different stages were studied.

RESULTS AND DISCUSSION

The data generated (Table 2) indicated that the emergence and final plant population of groundnut was not affected due to various weed control treatments. Maximum height was observed in weedy check (unweeded control) at harvest. This may be due to competition for light with weeds and resulted in increased height. These results are in confirmity with result obtained by Kulandaivelu and Sankaran (1976).

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| Table 1: Comparison of results | | Abbreviation | |
|--------------------------------|---|---------------------|-----|
| Sr. No. | Symbol Treatment | | |
| 1. | (PO1) 1000g a.i./ha at 15 DAS (Days after sowing) | (PO1) 1000g a.i./ha | |
| 2. | (PO2) 150g a.i./ha at 15 DAS. | (PO2) 150g a.i./ha | |
| 3. | Pre plant inoculation @ 1000g a.i./ha and sowing at 30 DAS | (P3) Inoculation | 11W |
| 4. | Pre emergence inoculation @ 1000g a.i. and sowing at 30 DAS | (P4) Pre-emergence | 11W |
| 5. | and sowing at 15 and 30 DAS | 211W | |
| 6. | Two hand weeding and sowing at 15 and 30 DAS | 211W | 211 |
| 7. | Sowing at 15 and 30 DAS | 211 | |
| 8. | Weed free (weeding at 15, 30, 45 and 60 DAS) | Weed free | |
| 9. | Weedy check (unweeded control) | Weedy check | |

| Table 2: An overall comparison of yield of cowpea at different levels of phosphorus and nitrogen | | Inoculation | | Weeding | | Sowing | |
|--|---------------------|--------------------|------------------|--------------------|-------|--------|-------|
| Treatments | (PO1) 1000g a.i./ha | (PO2) 150g a.i./ha | (P3) Inoculation | (P4) Pre-emergence | 11W | 211W | 211 |
| Grain yield (t/ha) | 61.53 | 70.03 | 71.68 | 69.82 | 71.78 | 70.92 | 68.87 |
| Stover yield (t/ha) | 67.96 | 66.28 | 68.57 | 70.76 | 68.96 | 70.57 | 67.25 |
| 3. Maximum yield/ha (t/ha) | 72.50 | 72.87 | 75.53 | 75.62 | 73.30 | 76.26 | 75.67 |
| 4. No. of harvests at harvest | 6.86 | 6.73 | 6.93 | 6.80 | 7.93 | 9.13 | 6.06 |
| 5. Seed yield (t/ha) | 72.73 | 72.90 | 75.50 | 75.72 | 73.30 | 75.80 | 71.60 |
| 6. Green yield (t/ha) | 71.07 | 72.22 | 77.07 | 77.12 | 77.38 | 77.53 | 76.10 |
| 7. No. of days at harvest | 57.6 | 57.3 | 58.05 | 58.26 | 58.80 | 59.16 | 58.60 |
| 8. No. of nodes at harvest | 16.52 | 17.36 | 17.03 | 17.50 | 17.60 | 18.33 | 17.73 |
| 9. Dry matter yield (t/ha) | 67.72 | 67.02 | 67.28 | 67.72 | 67.92 | 67.72 | 67.72 |
| 10. AGR of crop at 55/70 | 0.378 | 0.388 | 0.398 | 0.392 | 0.392 | 0.392 | 0.393 |
| 11. AGR of DM at 70/55 | 1.21 | 1.30 | 1.36 | 1.37 | 1.37 | 1.36 | 1.37 |
| 12. DM at 70 DAS | | | | | | | |

Maximum number of branches per plant recorded in weed free treatment at harvest. Which was followed by the treatment of two hand weeding and hoeing at 15 and 30 DAS, pre-emergence (PE) pendimethalin followed by hand weeding and pre-plant incorporation (PPI) fluchloralin followed by hand weeding.

Maximum number of branches was recorded in weedy check (unweeded control) which was at par with the treatments post-emergence (POE) imazethapyr @ 100 a.i./ha and (POE) imazethapyr @ 150 g a.i./ha. These results confirm with the results obtained by Kamble *et al.* 2003, Kondap *et al.* (1989), Vairvan and Sankman (1995) and Hamada (1988).

Canopy spread of groundnut increased progressively upto 100 days and decreased slightly at harvest. It was maximum in weed free treatment and other herbicide followed by manual operational treatments might be more than weedy check treatments, due to less weed intensity which cause no competition for light, nutrients and increase height. Similar result was obtained by Prusty *et al.* (1990).

Leaf area per plant was significantly more in almost all the treatments except (POE) imazethapyr @ 100 g a.i./ha at 15 DAS over weedy check treatments. However, It was lowest in weedy check treatment as compared to rest of the treatment.

No. of pegs per plant was significantly more in weed free condition which was followed by herbicide followed by hand weeding treatments. No. of nodes was significantly more in weed free treatment than weedy check.

The dry matter per plant was continued to increase upto harvest due to increase in plant height, leaf area and number of branches per plant.

It was maximum in weed free treatments. Which was followed by two hand weeding and hoeing at 15 and 30 DAS, (PE) pendimethalin followed by hand weeding and (PPI) fluchloralin followed by hand weeding treatments at harvest. These results confirm with the findings obtained by Sivannarayana and Bhannamurthy (1990) and Sidhankar and Muniyappa (1990). Thus, studies regarding plant height, number of functional leaves, number of branches, leaf area, canopy spread, number of nodes, number of pegs and dry matter per plant revealed that the

weed free treatment recorded higher value which was at par with two hand weeding and hoeing at 15 and 30 DAS.

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