

RUDRA SHETTY, T.H.(1962) Influence of Mg and P Availability and on Nutrient Element Uptake by Ragi in Three Indian Soils. M.Sc.(Ag.) Thesis, Madras University.

SATHYANARAYANANT., VARADAN., K.I. BADANEER, V.P. and HAVANAGI, G.V.(1977). Note on the effects of secondary and trace elements on sunflower yield. *Indian J.Agric. Res.*, 11: 122-124

(Received : July 1995 Revised : December 1999)

Madras Agric. J., 83(10): 646-647 October 1996
<https://doi.org/10.29321/MAJ.10.A01075>

SEEDING METHODS, WEED MANAGEMENT AND MOISTURE REGIMES ON NUTRIENT UPTAKE BY GROUNDNUT

K.VAIRAVAN AND S.SANKARN

Tamil Nadu Agricultural University
 National Pulses Research centre
 Vamban 622 303.

ABSTRACT

Field experiments were conducted in summer season of 1990 and 1991 at the Agricultural College and Research Institute, Madurai to study the uptake pattern and yield of groundnut. Application of 4.00 cm water through line source sprinkler significantly increased the nitrogen, phosphorus and potash uptake by groundnut. Among the seeding methods, ridges and furrows method of seeding recorded higher uptake of nutrients. Pre emergence application of fluchloralin followed by hand weeding on 30 days after sowing (DAS) significantly increased the uptake of nutrients. Improvement in the uptake of nutrients resulted in increased yield of groundnut.

KEY WORDS : Groundnut, Yield, Nutrient uptake, Seeding Methods

Groundnut (*Arachis hypogaea* L.) is an important oil seed crop. The slow growth and poor coverage of foliage in groundnut at early stage favours more weed population (Kulandaivelu and Morachan, 1981). Weed growth in the early stages affects the nutrient uptake of the crop resulting in poor yield. Hand weeding (HW) is time consuming and uneconomical. Chemical weed control is therefore, gaining importance and also economical. However, information on different seeding methods, moisture regimes and weed management on the uptake of nutrients is lacking. Therefore, the uptake pattern of groundnut was studied under different seeding, moisture regimes and weed management.

MATERIALS AND METHODS

Field experiments were conducted during summer 1990 and 1991 at the Agricultural College and Research Institute, Madurai. The soil was sandy loam in texture having a pH of 7.9 and low in available N and medium in P and K. The experiments were run in split plot design with four replications. The treatment details are as follows. The moisture regimes viz., 4.78 cm (I₁), 4.00 cm (I₂) and 3.18 cm (I₃) under line source sprinkler and 4.00 cm (I₄) by surface flow method were allotted to main plots. In the subplots, seeding

furrows (L₂) and check basin (L₃) methods were studied. Pre emergence (Pre em.) application of fluchloralin @ 1 kg/ha followed by (fb) HW 30 DAS (W₁) was compared with HW 30 DAS (W₂) in sub-sub plots. The plant samples were collected at harvest after recording the yield data and processed. The contents of N,P and K were analysed by standard methods. The uptake values were computed by multiplying the nutrient content with that of dry matter production.

RESULTS AND DISCUSSION

The nutrient uptake by the crop and grain yield are presented in Table 1. In both the years, the uptake of N and P was significantly increased resulting in higher yield under ridges and furrows method of seeding. However, the uptake of K was not significant. Pre em. application of fluchloralin fb. HW 30 DAS increased the nutrients uptake over HW. The increase was 38 and 72 per cent for N and 11 and 25 per cent for P in the first and second year, respectively. The K uptake was increased to the tune of 88 and 95 per cent during 1990 and 1991, respectively. High root volume, root density, root thickness and plant dry matter associated with weed free situation due to fluchloralin might have contributed for higher uptake of nutrients.

Table I. Effect of seeding methods, weed management and moisture regimes on nutrient uptake by groundnut

Treatments	Uptake (kg/ha)						Yield (kg/ha)	
	N		P		K		1990	1991
	1990	1991	1990	1991	1990	1991		
L ₁ = Ridges and furrows	120	107	24	27	66	74	1720	1506
L ₂ = Broad bed and furrows	116	101	24	26	65	74	1495	1439
L ₃ = Check basin method	118	127	22	25	64	73	1313	1278
CD (P=0.05)	2.9	1.8	0.9	0.3	NS	NS	82	83
W ₁ = Fluchloralin fb.HW.30 DAS	134	129	25	29	85	45	1858	1786
W ₂ = Hand weeding on 30 DAS	97	75	22	23	97	50	1150	1096
CD (P=0.05)	3.3	3.2	0.9	0.7	2.1	2.4	91	73
I ₁ = 4.78 cm through line source	113	103	23	25	63	65	1453	1434
I ₂ = 4.00 cm through line source	141	129	25	29	76	88	1898	1899
I ₃ = 3.18 cm through line source	77	63	22	21	53	63	1056	915
I ₄ = 4.00 cm by surface flow	131	114	24	28	69	77	1631	1518
CD P=0.05)	3.9	6.9	2.5	1.6	3.5	3.6	121	155

caused considerable reduction in the uptake of N, P and K by the crop. Maximum uptake of N, P and K was noticed under 4.00 cm water through line source sprinkler irrigation system. This might be due to better efficiency of the applied fluchloralin, less competition for nutrient by weeds and extensive crop root volume. But Muthuvel and Krishnamoorthy (1981) reported that the soil moisture level did not influence the K uptake by ragi. However, Raveendran and Mayalagu (1983) reported that high moisture regime increased the p uptake by ragi.

From the study, it could be inferred that pre em. application of fluchloralin @ of 1 kg/ha fb. HW 30 DAS under ridges and furrows method of

seeding and applying 4.00 cm water through line source sprinkler provides better environment for groundnut crop for higher uptake and better yield.

REFERENCES

- KULANDAIVELU, R. and MORACHAN, Y.B. (1981). Effect of different weed free regimes on weed growth, growth and yield of bunch groundnut. *Madras agric. J.*, 86: 241-245.
- MUTHUVEL, P. and KRISHNAMOORTHY, K.K (1981). Influence of soil moisture regimes and N levels on the content and uptake of K by ragi. *Madras Agric.J.*, 68: 274-280.
- RAVENNDRAN, T. and MAYALAGU, K. (1983). Influence of different irrigation regimes on the uptake of phosphorus by finger miller and its distribution in soil. *Madras agric. J.*, 70: 732-735.

(Received : August 1995 Revised : September 1995).

Madras Agric. J., 83(10): 647-650 October 1996

EFFECT OF LAND MANAGEMENT, IRRIGATION REGIMES AND ORGANIC AMENDMENTS ON GROWTH, YIELD ATTRIBUTES AND YIELD OF IRRIGATED SOYBEAN

P.JAYAPPAUL, B.UTHAYAKUMAR AND A.PALCHAMY

Agricultural College and Research Institute
Tamil Nadu Agricultural University
Madurai 625 104

ABSTRACT

Field experiments were carried out to study the influence of land management methods, irrigation regimes and moisture conservation amendments on growth, yield attributes and seed yield of irrigated soybean (CO 1) during summer (1992-93) and *kharif* (1993-94) at Agricultural College and Research Institute, Madurai, Tamil Nadu. There was a progressive increase in number of pods per plant and seed yield due to BBF, irrigation at 66 mm of CPE and coir pith application at 10 t/ha. By using this method, the highest economic returns in terms of net returns and B-C ratios were obtained during both seasons.

KEY WORDS: Soybean, yield, Land Management, Irrigation Regimes, Organic