

Yield and uptake of micronutrients by groundnut [*Arachis hypogea* (L.)] as influenced by foliar application of seaweed liquid fertilizer under rainfed condition of Jamkhambhaliya, Saurashtra region

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ABSTRACT

A field experiment was conducted at Dry Land Agricultural Research Station, JAU, Jamkhambhaliya, Saurashtra for studying the effect of seaweed liquid fertilizer on yield and uptake of micronutrients by *kharif* Groundnut (cv. G.G.2) under rainfed condition. The groundnut (G.G.2) grown on soils deficient in available Zn and Fe significantly responded higher pod yield and uptake of micronutrients (Fe, Mn, Zn, Cu) and net realization (ICBR 1:3.28) to the spray of seaweed liquid fertilizer (SLF) @ 3.5 % at 15, 30 and 45 days after sowing.

Key words : Seaweed liquid fertilizer, Groundnut, Yield, Micronutrients.

Zinc and Fe deficiency is one of the most frequently encountered micronutrient deficiencies in groundnut. Continuous use of high analysis fertilizers under intensified cropping, and neglect of organic manures manifest the occurrence of wide spread micronutrients deficiencies. Widespread deficiencies of Fe and Zn in light textured soils of India (Singh, 2006) and of calcareous soils of Saurashtra have been reported (Patel *et al.*, 1999). Reports indicated that Zn and Fe deficiency causes remarkable losses in yields of groundnut. Widely prevalent Zn and Fe deficiencies warrants the need for research on different source of Zn and Fe especially on their usage individually and in mixtures as foliar / soil application. Seaweed Liquid fertilizer contains trace elements besides its importance as bio-stimulants. Hence, the trial was undertaken to study the effect of seaweed liquid fertilizer on yield and uptake of micronutrients by groundnut under rainfed condition of saurashtra.

MATERIALS AND METHODS

A field experiment was conducted at Dry Land Agricultural Research Station, Junagadh Agricultural University, Jamkhambhaliya (Dist. Jamnagar) during 2001-2004 for studying the effect of seaweed liquid fertilizer (SLF) on yield and uptake of micronutrients by *kharif* groundnut (cv. G. G.2). The treatments comprised of different levels of SLF spray (0, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5 and 4.0%), multi-micronutrient local formulation (LF) grade spray @ 1 % and soil application of micronutrient

as per Soil Test Value (STV). The local formulation multi-micronutrient mixture grade was prepared in the laboratory on the basis of average removal by crops having composition of Fe- 2.0, Mn-0.5, Zn-4.0, Cu-0.3 and B-0.5%. Foliar application was made at 15, 30 and 45 DAS (Days After Sowing). Rate of soil application as per STV was ZnSO₄ @ 8 kg/ha and FeSO₄ @ 15 kg/ha.

The micronutrient contents of treatment materials are as under :

Sr. No.	Treatment material	Content				
		Fe	Mn	Zn	Cu	B
1.	SLF (water soluble)- ppm	2.8	1.18	0.28	9.60	-
	SLF (Total)- ppm	985	91	28	139	-
2.	LF Grade I (General) – (%)	2.0	0.5	4.0	0.3	0.5

The treatments were repeated three times in randomized block design. The soil of the experimental field was sandy loam in texture and had pH – 8.1, EC_{2.5} – 0.26 dS m⁻¹, Organic Carbon – 4.0 g kg⁻¹, available P₂O₅ – 25.0 kg ha⁻¹, available K₂O – 315 kg ha⁻¹, available S – 14.0 mg kg⁻¹, DTPA extractable Fe – 4.9 mg kg⁻¹, Mn – 15.1 mg kg⁻¹, Zn – 0.34 mg kg⁻¹ and Cu – 2.4 mg kg⁻¹. The plant samples were taken for determination of total contents of micronutrients. The oven dried plant samples were finely ground in a S. S. Wiley mill and were digested with di-acid mixture of HNO₃ : HClO₄ (2:1) as per the procedure outline by Jackson (1973). The soil samples drawn from the experimental field at harvest were analyzed for available micronutrients by extracting with