



Research Article

Zinc and boron application on groundnut yield and nutrient uptake in coastal sandy soils

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Summary

In determining the yield and quality of groundnut, the role of Zn and B is much pronounced. Restricted availability of these nutrients in sandy soil greatly impairs the yield of groundnut. A field experiment was conducted to find out the effect of micronutrients viz., Zn and B on the yield and nutrients uptake by groundnut in coastal sandy soil. The experiment was carried out in a farmer's field at Ponnanthittu village in Cuddalore district, Tamil Nadu during December – March 2007. The initial fertility status of experimental soil was pH 8.39, EC-1.61dSm⁻¹, organic carbon 2.7g kg⁻¹ and represented low status of micronutrients. The various treatments included were T₁- Control, T₂-100% NPK, T₃-150% NPK, T₄-150% NPK + ZnSO₄ @ 30 kg ha⁻¹, T₅-150% NPK + Borax @ 15 kg ha⁻¹, T₆-150% NPK + ZnSO₄ @ 30 kg ha⁻¹ + Borax @ 15 kg ha⁻¹ along with composted coirpith @ 12.5 t ha⁻¹. The experiment was carried out in a Randomized Block Design (RBD) with four replications, using groundnut variety VRI 2 as test crop. The results clearly indicated that, T₆-150% NPK + ZnSO₄ @ 30 kg ha⁻¹ + Borax @ 15 kg ha⁻¹ along with composted coirpith application significantly increased the yield and nutrients uptake by groundnut. This treatment recorded the highest pod yield of 2466 kg ha⁻¹ and haulm yield of 3354 kg ha⁻¹ which represented 31.31 and 25.95 per cent increased in pod and haulm yield, respectively over 100 per cent NPK application.

Key words : Zinc, Boron, Groundnut, Coastal sandy soil

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Introduction

The low status of organic matter coupled with poor texture and structure reduces the nutrient holding capacity and the availability of nutrients. The poor retention and also leaching of nutrients in sandy soil necessitates for the increased rate of nutrients application especially NPK in such soil in comparison to other soils. Among the micronutrients, the deficiency of Zn and B are common feature of coastal sandy soil. Organic matter helps in increasing adsorptive power of soil for cations, anions and micronutrients. These adsorbed ions are released slowly for the benefit of crop during entire growth period. Organic manures improve the organic carbon status, available primary and secondary nutrients and also supply sufficient amount of micronutrients in available forms (Badanur *et al.*, 1990 and Khar, 1993). Realising the key role played, by Zn and B in various growth promoting and

enzyme activities of crop, the present study was undertaken to find out the effect of zinc and boron on groundnut yield and nutrient uptake.

Resources and Research Methods

A field experiment was carried out in a farmer's field during December – March, 2007 at Ponnanthittu coastal village, to find out the effect of micronutrients Zn and B on the growth, yield and nutrients uptake by groundnut in coastal sandy soil. The treatments involving control, 100% NPK, 150% NPK, 150% NPK + ZnSO₄ @ 30 kg ha⁻¹, 150% NPK + borax @ 15 kg ha⁻¹ and 150% NPK + ZnSO₄ @ 30 kg ha⁻¹ + borax @ 15 kg ha⁻¹ were studied in a Randomized Block Design (RBD), with four replications, using groundnut variety VRI 2. Composted coirpith @ 12.5 t ha⁻¹ was applied as common amendment to all the treatments. The experimental soil had sandy texture