

Zinc Biofortification in Groundnut [*Arachis hypogaea*.L]

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ABSTRACT

A field experiment was conducted at Agricultural College Farm, Bapatla during *khari*f 2016 to study the effect of zinc in combination with organic manures on yield and zinc content in different plant parts at different growth stages of groundnut. The experimental soil was slightly acidic in reaction, low in organic carbon, available N, available P_2O_5 , medium in available K_2O , sufficient in available sulphur and all micro nutrients except zinc. The experiment was laid out in randomized block design (RBD) with seven treatments replicated thrice. The treatments consisted of T_1 - RDF (30 kg N-40 kg P_2O_5 -50 kg K_2O ha⁻¹); T_2 - T_1 + 50 kg $ZnSO_4$ ha⁻¹ (soil application); T_3 - T_1 + 0.2% $ZnSO_4$ foliar spray at 30 and 40 days after sowing; T_4 - T_1 + 37.5 kg $ZnSO_4$ ha⁻¹+ Vermicompost @ 5 t ha⁻¹; T_5 - T_1 + 37.5 kg $ZnSO_4$ ha⁻¹ + Poultry manure @ 5 t ha⁻¹; T_6 - T_1 + 37.5 kg $ZnSO_4$ ha⁻¹+ Farmyard manure @ 5 t ha⁻¹; T_7 - T_1 + 37.5 kg $ZnSO_4$ ha⁻¹+ Press mud @ 5 t ha⁻¹. Application of zinc along with organic manures increased groundnut yield. Among all the treatments, the combined application of RDF + 37.5 kg $ZnSO_4$ ha⁻¹ + Press mud @ 5 t ha⁻¹ (T_7) recorded significantly higher pod yield and kernel yield over all other treatments. The highest zinc content was recorded under T_7 and it was on par with all other treatments supplied with zinc alone and zinc in combination with organic manures. The lowest zinc content was recorded in the treatment T_1 at all stages like peg formation, pod development and harvest. At harvest stage significantly highest zinc uptake in kernel was recorded in the treatment T_7 followed by T_5 , T_4 , T_6 , T_2 and T_3 . While the lowest zinc uptake was recorded in the treatment T_1 .

Key words: *Groundnut, organic manures, yield and zinc content, zinc sulphate.*