

Influence of Graded Levels of $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ with Rice Straw Compost and Microbial Consortium on Yield and Zn Uptake in Maize

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ABSTRACT

A field experiment was conducted in sandy loam soil of Agricultural College farm, Bapatla, India to study the effect of graded levels of zinc sulphate with and without rice straw compost and microbial consortium on yield and Zn uptake of maize (var. 30v92) during *rabi* season of 2014-15 by taking the treatment combinations based on graded levels of zinc sulphate, microbial consortium (MC) and rice straw compost (RSC) at fixed fertilizer schedule. The experimental soil (0-15 cm) had pH 7.32; organic C 0.39 %; available Zn 0.46 mg kg⁻¹; available N 174.2 kg ha⁻¹; available P 12.1 kg ha⁻¹ and available K 284.0 kg ha⁻¹. The results of graded levels of zinc sulphate show that all the growth and yield attributes were significantly influenced by Zn uptake. The mean Zn uptake at tasseling, stover and kernel at harvest varied from 57.7-111.6, 151.9-298.6 and 109.8-225.2 g ha⁻¹ respectively, in maize. Kernel yield displayed conspicuous relationships with uptake of Zn by kernel. The highest mean kernel yield of 6695 kg ha⁻¹ was recorded by the addition of rice straw compost with microbial consortium followed by MC (6350 kg ha⁻¹), RSC (6112 kg ha⁻¹) and control (5408 kg ha⁻¹). Application of $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ @ 37.5 kg ha⁻¹ with conjunction with RSC +MC was recorded the highest and significant kernel yield of 7154 kg ha⁻¹ which was 19.2 per cent more over control. The results further show that $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ @ 37.5 kg ha⁻¹ in combination with rice straw compost and microbial consortium have been proved to be superior treatments for best management of zinc in sandy loam soils under maize cultivation.

Keywords: *Microbial consortium, Rice straw compost, zinc and maize, zinc sulphate.*