Influence of Graded Levels of $ZnSO_4.7H_2O$ with Rice Straw Compost and Microbial Consortium on Zinc Release Characteristics of Sandy Loam Soils

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ABSTRACT

An incubation experiment was conducted to study the release characteristics of zinc from native soil and applied sources *viz*, $ZnSO_4.7H_2O$, microbial consortium (MC) and rice straw compost (RSC). The soil for incubation study was collected from Agricultural College farm, Bapatla which is low in plant available Zn and sandy loam in texture. The treatments consisted of graded levels of $ZnSO_4.7H_2O$ *viz.*, 0, 12.5, 25, 37.5, 50.0 and 62.5 kg ha^{-1} of soil with and without MC and RSC. Six sets of plastic containers consisted of 72 numbers in each set were taken to accommodate twenty four treatments with three replications under factorial completely randomized design for 15, 30, 45, 60, 75 and 90 days duration of incubation. Analysed DTPA (pH 7.3) extractable Zn at each 15 days interval. Among the treatments, RSC + MC showed a consistent increase in DTPA extractable Zn contents from 15 to 60 DAI (i.e., 1.98 to 2.45 mg kg^{-1}, respectively) thereafter a slight decline up to 90 days was observed. Whereas, RSC and MC imposed treatments performed well up to 45 DAI (i.e., 2.08 and 1.91 mg kg^{-1}, respectively). DTPA-extractable Zn release in soil was confined to 30 days after incubation in treatments those received graded levels of $ZnSO_4.7H_2O$ alone. Interactions were found significant. Keeping RSC+MC constant, significantly the maximum DTPA extractable Zn was achieved at 37.5 kg $ZnSO_4.7H_2O$ ha^{-1} during the course of incubation.

Key words: *Microbial consortium, Release of Zn, Rice straw compost, Zinc sulphate.*