

Effects of application of different sources of Zn and composts on Zn concentration and uptake by upland rice

ABSTRACT

Global efforts are under way to improve the Zn concentrations in rice to increase Zn in human diets. Therefore, this pot experiment was conducted to examine the effects of Zn sources and different composts on two upland rice varieties. This study was a 3 factors experiment with 3 replications arranged in RCBD. Experimental units include: 2 selected upland rice varieties with highest and lowest Zn uptake, 12 treatments, including 3 types of composts (oil palm compost, vermicompost and poultry compost) and 2 different sources of Zn (ZnSO₄ and Zn-EDTA). Soil samples were analyzed before and after harvest. The plants were harvested 16-20 weeks after planting and analysed. All types of composts showed positive effects on Zn concentration and uptake in all parts of rice. Vermicompost is the most effective compost among these three composts. Both inorganic Zn sources used showed almost the same Zn concentration and uptake by rice in this experiment. The magnitude of Zn uptake response was magnified when zinc sulphate was applied along with organic compost. Application of Zn-amended organic composts increased the percentage distribution of Zn in grain more than the application of ZnSO₄ or Zn-EDTA alone.

Keyword: Compost; Rice; Zinc; Zn concentration; Zn source; Zn uptake