

Interaction effects of phosphorus and zinc on their uptake and ^{32}P absorption and translocation in sweet corn (*Zea mays* var. *Saccharata*) grown in a tropical soil

ABSTRACT

Zinc (Zn) and Phosphorus (P) interact with each other and this interaction can result in impact on the yield of corn plants. This study was conducted to examine the effect of different levels of Zn and P on the yield, Zn and P concentration and uptake, chlorophyll content and percentage of P derived from fertilizer of corn plants in a tropical soil. Sweet corn grown in pot culture containing all combinations of Zn at levels of 0.0, 5.0 and 10.0 mg kg⁻¹ soil and P at levels of 0.0, 50.0, 100.0 and 200.0 mg kg⁻¹ soil as ZnSO₄·7H₂O and KH₂PO₄, respectively and harvested at 28 days after transplanting. Dry matter yield increased with P supply, while Zn application did not show any significant effect on this parameter. The Zn and P uptake by shoots increased with increasing Zn and P application into the soil. The Zn concentration in shoots decreased with increasing P supply but P concentration and uptake enhanced. Phosphorus (P) induced Zn deficiency in this study mostly related to the dilution effect. Chlorophyll a/b ratio increased with P supply. The percentage of P derived from fertilizer reduced with increasing Zn application, although P uptake by shoots was unchanged.

Keyword: Corn; Phosphorus; Radioisotope; Tropical soil; Zinc