

Khawnta Khawmee 2007: Effects of Iron, Zinc and Pineapple Peel Application on Availability of Iron, Zinc and Yield of Sweet Corn Grown on Calcareous Soils. Master of Science (Agriculture), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Associate Professor Jongruk Chanchareonsook, D.Agr. 82 pages.

This experiment studied the effects of iron (Fe), zinc (Zn) and pineapple peel (PP) application on availability of Fe, Zn and yield of sweet corn grown on calcareous soils. Two pot experiments were carried out. In the first experiment, the effects of Fe, Zn and PP on growth, yield, Fe and Zn uptake of sweet corn grown on Takhli soil series was studied. The experiment was carried out in a completely randomized design with 3 replications. The treatments consisted of without fertilizer (C, control), nitrogen (N) phosphorus (P) and potassium (K) fertilizer (NPK), Zn in combination with NPK fertilizer (Zn + NPK), Fe in the form of ferrous ammonium sulfate ($\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$) (FF) and in the form of iron DTPA (Fe-DTPA) (FD) in combination with Zn and NPK fertilizer and PP at the rate of 6 (PP6) and 9 (PP9) g kg^{-1} soil in combination with NPK fertilizer. In the second experiment, the effects of Fe on growth and Fe uptake of sweet corn grown on Lopburi soil series was studied. The experiment was carried out in a completely randomized design with 3 replications. The treatments consisted of without fertilizer (C, control), NPK fertilizer, Fe in the form of $\text{Fe}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ (FF) and in the form of Fe-DTPA (FD) in combination with NPK fertilizer.

The results of the first experiment showed that growth and yield of sweet corn grown on the soil in C were the lowest. Yield of sweet corn grown on the soil amended with Zn + NPK tended to be higher than those of sweet corn grown on the soil amended only with NPK fertilizer. Application of iron in the form FF & FD + Zn + NPK and application of PP6 + NPK significantly increased growth and yield, Fe and Zn uptake of sweet corn as compared with only NPK fertilizer application. Application of iron in the form of FF & FD + Zn + NPK increased available Fe and available Zn in soils. Application of Fe, Zn and PP for sweet corn in Takhli soil series did not change the soil pH and EC of the soil. The results of the second experiment showed that growth of sweet corn grown on the soil in C was the lowest. Application of iron in the form of FF & FD + NPK significantly increased growth and Fe uptake of sweet corn as compared with C. Application of iron in the form of FD + NPK increased available Fe in Lopburi soil series.

Student's signature

Thesis Advisor's signature