

Sunisa Pewrumpai 2010: Effects of Fe-EDTA, Fe-DTPA and Fe-EDDHA on Available Iron Content in Calcareous Soil and Yields of Sweet Corn. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Associate Professor Jongruk Chanchareonsook, D.Agr. 63 pages.

This work was carried out to study the effects of Fe-EDTA, Fe-DTPA and Fe-EDDHA on available iron content and yields of sweet corn grown on calcareous soil, Takhli series, which was high in pH and low in available iron. The investigation was divided into 2 parts. The first part was carried out in the laboratory to study the effects of Fe-EDTA, Fe-DTPA and Fe-EDDHA on available iron content in calcareous soil, Takhli series. The second part was conducted in the greenhouse, using a completely randomized design with 3 replications and 10 treatments. The treatments were 3x3 factorial combinations plus control (no Fe application). The two factors were types of iron fertilizers which comprised Fe-EDTA, Fe-DTPA and Fe-EDDHA and application rates which comprised 4, 12 and 36 mg Fe kg⁻¹ soil were investigated.

The results showed that application of Fe-EDTA, Fe-DTPA and Fe-EDDHA increased available iron content in the calcareous soil. The efficiency of Fe-EDDHA in increasing the amount of available iron in the soil was superior to Fe-DTPA and Fe-EDTA. Sweet corn grown on the calcareous soil, Takhli series was deficient in iron. Application of iron fertilizer significantly increased growth, yield and total iron uptake of sweet corn. The efficiency of iron fertilizer in increasing total iron uptake and yield of sweet corn were in the order of Fe-EDDHA>Fe-DTPA> Fe-EDTA. Application of iron fertilizer in the form of Fe-EDDHA to sweet corn grown on Takhli series is recommended.

Student's signature

Thesis Advisor's signature