Pochara Ariyasakul 2008: Efficiency of Fe-chelated Fertilizer for Alleviating Iron Deficiency of Groundnut Grown on Takhli Soil Series. Master of Science (Soil Science), Major Field: Soil Science, Department of Soil Science. Thesis Advisor: Assistant Professor Chairerk Suwannarat, Dr.agr. 93 pages.

Efficiency of 3 chelated Fe-fertilizers (Fe-EDTA, Fe-DTPA and Fe-EDDHA) in alleviating iron (Fe) deficiency of groundnut grown on Takhli soil series having pH 8.2 and 4.4 mg available Fe kg^{-1} was studied. The investigation was divided into 2 experiments. The first experiment was carried out to study the availability of the 3 fertilizers in soil during incubation for 1, 3, 5, and 7 weeks. The second experiment was conducted in pots with 2 rates of application to compare the efficiency of the Fe-fertilizers in correcting Fe deficiency of hybrid groundnut var. Kalasin 2. The design of the experiment was a Completely Randomized Design (CRD) with four replications. The experimental treatments consisted of: no Fe fertilizer (Control); Fe-EDTA5 (5 mg Fe kg^{-1}); Fe-EDTA10 (10 mg Fe kg^{-1}); Fe-DTPA5 (5 mg Fe kg^{-1}); Fe-DTPA10 (10 mg Fe kg^{-1}); Fe-EDDHA5 (5 mg Fe kg^{-1}); Fe-EDDHA10 (10 mg Fe kg^{-1}); $FeSO_4$5 (5 mg Fe kg^{-1}); and $FeSO_4$10 (10 mg Fe kg^{-1}). The rates of application were based on weight of dry soil.

The first experiment revealed that Fe availability of all of the fertilizers extracted by 0.005 *M* DTPA pH 7.3 and 0.01 *M* $CaCl_2$ decreased as incubation time increased. After 7 weeks of incubation, the amounts of available Fe were in the following order: Fe- EDDHA > Fe-DTPA > Fe-EDTA. The second experiment showed that the 3 chelated Fe-fertilizers increased dry weight of pod, kernel, and total Fe uptake. Fe in the fertilizers taken up by groundnut were in the following order: Fe-DTPA > Fe-EDDHA > Fe-EDTA. The treatments Fe-EDTA5, Fe-EDTA10, Fe-DTPA5, Fe-DTPA10, Fe-EDDHA5, Fe-EDDHA10, $FeSO_4$5, and $FeSO_4$10 gave greater dry weight of pod and kernel than Control with percentage increases of 174, 18, 1100, 1036, 312, 169, 76, and 125, respectively. In addition, kernel dry weight of groundnut in the 3 chelated Fe-fertilizers at low and high rate were similar. Nevertheless, Fe-DTPA at the rate of 5 mg Fe kg^{-1} soil was the best in alleviating Fe deficiency of hybrid groundnut var. Kalasin 2.

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