

Research Title : Potential of bone meal for reducing cadmium accumulation in rice plants grown in Cd-contaminated soil
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In Thailand, cadmium contamination in rice is a major problem in Mae Sod district, Tak Province. The aim of this research was to study the effects of the addition of bone meal and biochar of bone meal for reducing cadmium accumulation in rice plants grown in cadmium contaminated soil. The initial Cd concentration in Cd-contaminated soil used in this study was about 103.68 ± 2.70 mg Cd/kg soil. The rice plants were grown in cadmium contaminated soil with the addition of pork bone (1%w/w), chicken bone (1%w/w), biochar derived from pork bone (1% w/w), biochar derived from chicken bone (1% w/w), pork bone (0.5%w/w), chicken bone (0.5 %w/w), biochar derived from pork bone (0.5% w/w) and biochar derived from chicken bone (0.5% w/w). After harvesting 90 days, the results showed that pork bone (1%w/w) were the best conditions in terms of reducing cadmium accumulation in rice grains when compared other conditions. The cadmium concentration in the grain was 0.18 ± 0.01 mg Cd/kg dry weight for the addition of pork bone (1%w/w). Moreover, the cadmium accumulation in grain was below the standard of the Codex Committee on Food Additives and Contaminant (CCFAC) that the maximum cadmium level permitted was 0.2 mg/kg. The results also found that the addition of pork bone (1%w/w) had higher calcium and magnesium in root, shoot, husk, and grain when compared with other conditions. Therefore, calcium and magnesium compete with Cd to be uptake by rice plants that effect the reducing cadmium accumulation in rice plants. The addition of pork bone (1%w/w) in the Cd-contaminated soil for growing rice plants can be solved the problem contaminated in rice grains.

Keywords: Cadmium, Rice plant, Bone meal, Biochar of bone meal