

Heavy Metal Reduction in Plant Using Soil Amendment

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Abstract : This study investigated the influence of limestone and sepiolite on heavy metals accumulation in the soil and soybean. The soil was synthesized to contaminate with zinc 150 mg/kg, copper 100 mg/kg, and cadmium 1 mg/kg. The contaminated soil was mixed with limestone and sepiolite at the ratio of 1:0, 0:1, 1:1, and 2:1. The amount of soil modifier added to soil was 0.2%, 0.4%, and 0.8%. The metals determination was performed on soil both before and after soybean planting and in the root, shoot, and seed of soybean after harvesting. The study was also on metal translocate from root to seed and on bioaccumulation factor. Using of limestone and sepiolite resulted in a reduction of metals accumulated in soybean. For soil containing a high concentration of copper, cadmium, and zinc, a mixture of limestone and sepiolite (1:1) was recommended to mix with soil with the amount of 0.2%. Zinc could translocate from root to seed more than copper, and cadmium. From studying the movement of metals from soil to accumulate in soybean, the result was that soybean could absorb the highest amount of cadmium, followed by zinc, and copper, respectively.

Keywords : heavy metals, limestone, sepiolite, soil, soybean

Conference Title : ICPTT 2019 : International Conference on Pollution and Treatment Technology

Conference Location : Amsterdam, Netherlands

Conference Dates : May 14-15, 2019