Chemically-Enhanced Phytoextraction of Cadmium-Contaminated Soils Using Wheat. (A05-begonia083024-Poster)

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Abstract:

There is an increasing interest in phytoextraction as an alternative technology to clean up cadmium-contaminated soils. In phytoextraction, an efficient plant species must be able to tolerate toxic metal levels, and accumulate substantial amounts of the metal into the shoots. Phytoextraction also depends upon the availability of the metal for absorption by the roots. This study was conducted to determine the optimum concentration of ethylenebis (oxyethylenenitrilo) tetraacetic acid (EGTA) on shoot accumulation of Cd by wheat grown on a Cd-contaminated soil. Wheat (Triticum aestivum L. cv. TAM-109) seeds were sown in each 150 mL plastic tube containing growth medium composed of sieved soil and peat (2:1; v:v). Desired Cd (0, 500, 1000 mg Cd/kg) and EGTA (0, 1.0, 2.5, 5.0 mmol/kg) treatments were imposed before planting. Treatments were arranged in factorial in a Completely Randomized Design with 4 replications. Results showed that wheat plants were relatively tolerant to Cd and EGTA combinations as exhibited by non-significant differences in their chlorophyll contents and dry biomass. Wheat plants grown in soils amended with a combination of 1000 mg Cd/kg and 5.0 mmol EGTA/kg had the highest root and shoot Cd accumulations.

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