# Uptake of cadmium by cress, lettuce and tomato in Cd-contaminated soil

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## Abstract

Increasing of water consumption and demand for irrigation water in agriculture has led to an increase in reuse of treated, or even raw, municipal and industrial wastewater in many countries. Heavy metals (HMs) in these unconventional waters are one of the sources of pollution of water, soil and plant. HM toxicity in plants may eventually cause disturbances in plant growth. Accumulation of HMs in plants has health problems for human beings and animals which consume these plants. In this research, uptake of cadmium (Cd) by three vegetables (cress (*Lepidium sativum* L.), lettuce (*Lactuca sativa* L.) and tomato (*Solanum lycopersicum* L.) from a contaminated soil was studied. The experimental design was completely randomized. For each plant, two soil treatments (control soil and contaminated soil by 100 mg/L Cd) and five replications were considered. After planting, growing and harvesting, and preparation of the samples, Cd uptake in roots and shoots was measured. Results showed that mean Cd uptake by all three plants was significantly different from the control treatment. Maximum uptake of Cd belonged to tomato, whereas lettuce had the lowest uptake. Transfer coefficient of Cd from soil into cress, lettuce and tomato was 1.3, 0.33 and 0.65, respectively. Although transfer coefficient of Cd to lettuce is lower than the other two plants, but consumption of lettuce per person is much greater than cress. Hence, irrigation management of polluted wastewater is important.

**Keywords:** Irrigation with wastewater, Soil pollution, Transfer coefficient.

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