

عنوان مقاله:

Response of Corn to Cadmium and Drought Stress and Its Potential Use for Phytoremediation

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خلاصه مقاله:

In the present study, the effects of different cadmium (Cd) levels of irrigation water (0, 5, 10 and 20 mg L⁻¹) on corn plants (foliage) under different irrigation intervals (1, 3, and 7 days) were investigated. Clear Cd toxicity symptoms appeared on the plants at the end of the experiment. The results showed that stem dry weight (DW) followed by transpiration (T) and plant height were the measured plant parameters most sensitive to increasing Cd levels of irrigation water. In addition, Cd reduced water uptake by corn and led to more soil moisture. The results also demonstrated that corn might produce more shoot biomass with Cd application, which should be taken into consideration if no visible symptoms of Cd toxicity and considerable amounts of the metal uptake are present. Cadmium application through irrigation did not show a marked impairment in the nutrient status of the plants. Moreover, accumulation of Cd in the leaves was more than the stems by 24, 56, and 27% at 1, 3, and 7-day irrigation frequencies, respectively. Also, corn stem was found to be more sensitive to Cd than leaf. The results showed that corn might be used for phytoremediation of Cd under optimum moisture conditions and light contamination of the soil. Furthermore, shoot Cd concentration followed an asymptote pattern as a function of soil Cd, which was expressed by a plateau-type model under each irrigation interval.

کلمات کلیدی:

Cadmium, Corn, Drought, Phytoremediation, Stress.

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