

عنوان مقاله:

Phytoremediation Potential of Corn and Oat for Increased Levels of Soil Cadmium under Different Irrigation Intervals

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خلاصه مقاله:

The present pot experiment was undertaken to investigate the phytoremediation potential of corn and oat in soil. Treatments consisted of four cadmium (Cd) levels (0, 5, 10 and 20 mg l⁻¹) and three irrigation intervals (1, 3 and 7 days), arranged in the form of a complete randomized design with three replications. Corn and oat were harvested after 75 and 90 days, respectively. Transpiration rates, shoot dry weight and shoot Cd concentration of both plants were measured. Cadmium uptake, Cd bioconcentration factor (BCF), the apparent recovery of Cd and water use efficiency were also calculated. Cadmium had negative, and in some cases stimulating effects on plant growth. Furthermore, the phytoremediation capacities of both plants were higher at the 1 day irrigation frequency. The BCF values for both plants were less than unity, indicating that the phytoremediation potentials of oat and corn were low in this study. Overall, oat was more efficient than corn in phytoremediation of Cd as it accumulated 52, 169 and 132% more Cd than corn at 1, 3 and 7 day irrigation intervals, respectively. On the average, oat also took up soil Cd about 80% more than corn. From the results reported herein, it is recommended to conduct additional experiments with different Cd levels and more irrigation intervals using different types of agronomic and horticultural crops.

کلمات کلیدی:

cadmium, corn, Irrigation interval, Oat, Phytoremediation

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