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Abstract

Studying the resistance, absorption and accumulation of cadmium

in safflower (Carthamus tinctorius L.) plant

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Cadmium is a non-essential and toxic element for the plants which enters into the soil through different activities of the man. This element has several physiologic and morphologic effects on plants. However, some species resisting against cadmium may absorb and accumulate this metal in their tissues. One of the plants which may grow in the cadmium-contaminated soil is the Safflower. In this study, the resistance, absorption and accumulation of cadmium in two populations of this plant collected from two planting of metal contaminated and non -contaminated were examined. In order to do so, the effect of densities of 0, 200, 400, 600 and 800 mg/kg of cadmium on the dry weight of the aerial and root parts, root resistance index and level of accumulation of metal in the aerial and root parts under hydroponic cultivation conditions were tested. The results indicated that by increasing the cadmium density, the dry weight of the aerial and root parts and root resistance indicator in both populations meaningfully decreased ($P < 0.05$). On the other hand, no significant difference was seen in terms of these factors between these two groups. Also the results indicated that there is a direct relation between the metal content in the food solution and level of metal absorption and accumulation in the plant. Considering the results of this study, it may be said that the Safflower has a relatively high absorption and accumulation cadmium ability.

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