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LA RESPUESTA DE HABA (*Vicia faba*, L.) CULTIVADA EN UN SUELO CONTAMINADO CON DIFERENTES CONCENTRACIONES DE CADMIO

Revista Internacional de Contaminación Ambiental, vol. 28, núm. 2, 2012, pp. 119-126

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Available in: <http://www.redalyc.org/articulo.oa?id=37023178002>

Abstract

After 120 days of growth under experimental greenhouse conditions, effect of soil cadmium concentration on some agronomic variables and three growth and development indicators -photosynthetic pigments, root nodule appearance, and nodulation index- of the broad bean (*Vicia faba*) was evaluated; also, the Cd content in soil, root, stem, leaf, and pod were determined. A single-factor experimental design with four replications was used. The cadmium concentration this study started was of the soil, 4.1 mg/kg; then 20 and 40 mg/kg of Cd were added to the soil. The results indicate that agronomic variables showed no statistically significant differences with the controls ($p < 0.05$). Chlorophylls a and b were significantly higher. The color of the root nodules of the plant became dark and this effect intensified with increasing concentration of cadmium in soil; there was a significant relationship between the nodulation index and the cadmium concentration ($p < 0.01$). On the other hand, the root was the organ that absorbed more cadmium, followed by leaf, stem, and pod. As a whole plant, broad bean absorbed cadmium in the range of 8.6 to 65.2 mg/kg, concentrations toxic to humans. From the above, it is possible to set criteria for assessing the effect of Cd on broad bean because the ability to tolerate and absorb this metal is specific to each plant species. Lastly, these biological responses are excellent indicators of toxicity in plants exposed to cadmium and a tool for environmental monitoring.

Keywords

Cadmium, chlorophyll, nodulation.