

عنوان مقاله:

Effect of abattoir waste water on metabolic and antioxidant profiles of cowpea seedlings grown in crude oil contaminated soil

محل انتشار:

مجله بین المللی بازیافت مواد آلی در کشاورزی، دوره 7، شماره 1 (سال: 1397)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Purpose The pollution of agricultural land by crude oil is a wide spread phenomenon in petroleum producing countries of the world. Therefore, there is the need to find effective and eco-friendly means of mitigating the toxic effect of crude oil on crop plants. **Methods** Green house experiment was conducted with cowpea seeds planted in polybags containing crude oil contaminated soil and similar concentrations treated with known amount of abattoir wastewater. The effect of abattoir wastewater (AWW) treatment of the crude oil contaminated soil on the metabolic and antioxidant properties of the leaves of cowpea seedlings was investigated. The concentrations of total sugar, total protein, total amino acid and β -carotene, chlorophyll, starch metabolizing enzymes as well as oxidative stress markers, lipid peroxidation, catalase, xanthine oxidase, aldehyde oxidase and superoxide dismutase were determined using standard methods. **Results** Treatment of the crude oil contaminated soil with AWW resulted in decreases in total sugar, total protein and total amino acid as well as increase in the activities of both α -amylase and starch phosphorylase and total chlorophyll and β -carotene levels compared with those in crude oil alone treated groups. Treatment of the crude oil contaminated soil with AWW also significantly decreased lipid peroxidation and Cu/ZnSOD, but increased MnSOD, catalase, xanthine oxidase and aldehyde oxidase activities. **Conclusion** These observations suggest that abattoir wastewater has the ability to remediate the adverse effects of crude oil polluted soil on cowpea seedlings. Therefore, abattoir wastewater should be harnessed and used in treating crude oil polluted farmland so as to reduce its toxicity on crop plants.

کلمات کلیدی:

Abattoir , Cowpea , Crude oil , Metabolism , antioxidants

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