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Detection of Pollution in the Catchment Area of Baha Region by Using Some Common Plants as a Bioindicators

Authors : Saad M. Howladar

Abstract : Although, there are a little data on the use of littoral plants as heavy metals bioaccumulators over large areas of the wetlands environment. So, soil samples and biomass of the five plant species: Pluchea dioscroides, Pulicaria crispa, Lavandula pubescens, Tarchononthus comporatus and Argemone ochroleuca were collected from two different sites (basin and mouth) of four dams at Baha province, KSA. Nutrients and heavy metals were extracted from plant samples (leaves and stems) for analyzing elements (Na, K, Ca, P and N) and heavy metals (Pb, Cu and Ni). The soils of the mouth of the dam had the highest concentrations of all elements, while that of basin had the highest ones of most heavy metals except Pb. The soil elements in relation to the two sites arranged as: Ca > K > P > Na > N; and the heavy metals as: Cu > Ni > Pb. The present study indicated that Pluchea dioscroides had the highest values of most elements and heavy metals, while Lavandula pubescens had the lowest. In general, leaves attain the highest concentrations of all nutrients and heavy metals in most studied species as compared with stem. It was indicated that Pluchea dioscroides showed a high transfer factor for almost elements and heavy metals such as K, Na, Cu, Ni and Pb, while Pulicaria crispa showed the highest translocation factor of N, P, Ca-Na ratio and Cu. All studied species growing in the basin had almost the highest concentrations of elements and heavy metals as compared with that in the mouth of dam except K in Pluchea dioscroides, Tarchononthus comporatus and Argemone ochroleuca tissues. Otherwise tissues of Tarchononthus comporatus growing in the basin had the lowest concentrations of K and Ni, while that growing in the mouth had the highest of P and N.

Keywords : Baha Region, bioindicators, plant, pollution, dams, heavy metals
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