

IMPACT OF HEAVY METAL POLLUTED WASTEWATER SEDIMENT ON ELEMENT CONTENT AND ENZYME ACTIVITY OF SUDANESE GRASS

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Growth chamber pot experiment was set up with two varieties of Sudanese grass. Plants were grown in uncontaminated (control) topsoil of the former wastewater settling plant from Debrecen, which was amended with 10% (m/m) of wastewater sediment (P: 5125; Fe: 22756, Pb: 287; Cr: 1027; Zn: 888 mg/kg). The elemental composition of soil and leaves of plants and activities of some enzymes in leaves were measured. It can be concluded that the roots and leaves of plant individuals of both varieties consistently took up higher concentrations of each of the elements from the medium "enriched" with wastewater sediment. The elevated element concentrations were found in some cases in the roots, and in other cases in the leaves (K: ~2000 (soil) - ~13000 (root) - ~30000 (leaf) mg/kg; Na: ~350 (soil) - ~2300 (root) - ~20 (leaf) mg/kg). The accumulation of toxic elements was not observed. The activities of four enzymes were measured in the leaves of plants (glucose-6 phosphate dehydrogenase, G6PDH; isocitrate-dehydrogenase, ICDH; peroxidase, POX; catalase, CAT). The enzyme activities of POX and CAT didn't change significantly. As a trend, the specific activity for G6PDH increased by 26% (GK Csaba) and 36% (Akklimat), while values for ICDH became higher by 28% (GK Csaba) and 41.5% (Akklimat), for the two varieties studied, respectively.