

Effect of peat on the uptake of heavy metals by maize from contaminated soils

**Wpływ torfu na pobieranie metali ciężkich przez kukurydzę
z gleb zanieczyszczonych**

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Incorporation of organic materials into soil improves the soil sorption capacity, while limiting the mobility of metals in soil and their availability to plants. These effects can be taken advantage for remediation of soils polluted with heavy metals.

The objective of this study has been to assess the remediatory potential of peat applied to soils with concomitant pollution with Cd, Pb and Zn. Two one-year experiments were run in microplots on which maize was grown as the test plant. The following treatments were compared on two soils (sandy soil and silty soil): 1. control; 2. heavy metals (HM); 3. HM + peat in a single dose; 4. HM + peat in a double dose. Maize was harvested in the maturity stage – the biomass of roots and aerial parts, including grain and cobs, was measured. Besides, concentration of metals in all those plant parts, the net photosynthetic rate and transpiration rate were determined.

The approach of using peat in soil remediation led to satisfactory results on sandy soil only. The application of peat to sandy soil caused significant changes in the accumulation of the metals and their translocation from roots to other parts of plants, which resulted in a higher intensity of photosynthesis and an increase in the maize biomass compared to the HM treatment. In addition, studies have shown that maize growing on contaminated silty soil was characterized by a relatively high tolerance for excess Cd, Pb and Zn and can be considered as a plant to phytostabilization silty soil contaminated with these metals.