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Soil microfungi as bioindicators of the contamination by heavy metals

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Abstract

The aim of this study was to investigate concentrations of heavy metals in polluted soils from selected areas of Upper Silesia and biodivesrity of soil fungi. The generic and species composition of soil fungi isolated from contaminated soils have been comparatively studied.The studied soil fungi belonged to 69 of species and 35 of genera of *Fungi Imperfecti*.

The highest values of the index DII (intensivity of appearance index) were determined for generic composition: *Aspergillus*, *Penicilium* and *Trichoderma*. Biodiversity of species was highest for *Aspergillus* (9 species); *Penicillium* (8) and *Cladosporium* (5). The most isolated species were *Cladosporium herbarum* and *Cladosporium transchelii.* The smaller of species diversity determinated for genera: *Alternaria* (3 species); *Verticillium* (3); *Cephalosporium* (2); *Mucor* (2); *Papularia* (2) and *Trichoderma* (2). It was noticed that some fungi species had strong inclination to appearnace especially in soils with toxic metals.The range of the metal content was: Cd, from 0.5 to 455.0 mg/kg of dry matter; Cu, from 4.0 to 690.0 mg/kg; Pb, from 10.0 to 8493.0 mg/kg; Zn, from 57.1 to 45950.0 mg/kg of dry matter. The concentration of heavy metals in soils on Upper Silesia is much higher than in open places in Poland.

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