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Tree species governs soil macrofauna community – study on spoil heaps after forest reclamation

Pavla Vachová (1) and Alena Walmsley (2,3)

(1) Czech University of Life Sciences, Department of Botany and Plant Physiology, Prague, Czech Republic (vachovap@af.czu.cz), (2) Czech University of Life Sciences, Department of Land Use and Improvement, Prague, Czech Republic (walmsley@af.czu.cz), (3) Monash University, Department of Civil Engineering, Melbourne, Australia (walmsley@monash.edu)

We tested the effect of main soil characteristics and tree species on earthworm community composition and abundance in reclaimed spoil heaps planted with five different tree species. Earthworm abundance and biomass was highest at alder plantation, followed by the oak plantation. It was positively correlated with the total N content (C:N ratio), which was highest in alder plantation. The correlation was stronger for endogeic earthworms (genus Aporrectodea and Octolasion) than litter-feeders. Soil moisture, measured in top 10 cm, affected only endogeic species. Other soil variables (pH, total P, Ca) didn't have a strong effect on earthworms. The earthworm community composition was similar in alder and oak, with most species occurring at both sites, however in alder forest the epigeic species Dendrobaena octaedra was more common, whilst in oak forest the epigeic earthworms form genus Lumbricus were more abundant (L. rubellus and L. castaneus). The anecic species Aporrectodea longa was more abundant at the alder site, but L. terrestris was more abundant at the Oak site. The alder forest was characteristic by a thick humus layer (10 – 15 cm), which at oak and larch site was thinner (4 – 7 cm) and at pine and spruce stands was absent. Soil macroarthropods were most abundant in alder forest and were strongly correlated with earthworm abundance at each specific site. We conclude that the alder plantations have most palatable litter and lowest C:N ratio, therefore support the highest numbers of soil macrofauna.