

ID ABS WEB: 138014

4. Soil health in achieving the Sustainable Development Goals 4.15 133566 - Soil fauna as a tool to improve soil health assessment

SOIL BIODIVERSITY MONITORING IN THE OPEN LANDSCAPE ACROSS AUSTRIA WITH A FOCUS ON EARTHWORMS AND SOIL MICROORGANISMS: OPPORTUNITIES AND CHALLENGES

J. ZALLER ¹, M. MITTMANNSTRUBER ¹, E. GRUBER ¹, E. WIEDENEGGER ¹, D. MONOSHYN ¹, Y. MURAOKA ¹, K. PASCHER ², S. SCHINDLER ³, R. MURUGAN ⁴

¹Institute of Zoology, University of Natural Resources and Life Sciences Vienna, Austria

²Institute of Soil Research, University of Natural Resources and Life Sciences Vienna, Austria

³Department for Knowledge and Communication Management, University for Continuing Education Krems, Austria

⁴Biodiversity and Nature Conservation, Environment Agency Austria

Systematic monitoring of soil biodiversity and soil health is still in its infancy in Europe. In this project (BodenBiodiv) we build on existing biodiversity monitoring programs in Austria that focus on aboveground biodiversity but do not take soil biota into account (such as the BINATS Biodiversity-Nature-Safety or ÖBM-K Austrian Biodiversity Monitoring of the Cultural Landscape projects). The aim of the BodenBiodiv project is to determine the causes of various indicators of soil biodiversity in the agricultural landscape. The project covers three objectives. First, a systematic monitoring of earthworms in the agricultural landscape will be established in 200 quadrants (625 x 625 m) throughout Austria, in which arable and/or grassland areas will be sampled. Lists of the earthworm species present, their abundance and biomass as well as a distribution map will be compiled. In addition, a manual for future surveys on national monitoring of soil biodiversity will be compiled using harmonized terminology as a supplement to the existing monitoring manuals in Austria. Secondly, we will analysis factors that determine the occurrence of earthworms. Therefore, site characteristics (land use, altitude, climatic variables) and soil properties (pH value, nutrient concentrations, moisture content, carbon content, soil microorganisms) will be linked to the recorded earthworm parameters. Thirdly, a Red List of earthworms for Austria will be compiled on the basis of historical and current data and expert opinions. BodenBiodiv also makes it possible to estimate the influence of climatic variables on soil biodiversity. By incorporating data from existing biodiversity monitoring programs, we can expand our understanding of the interactions between below-ground and above-ground biodiversity.

Keywords: earthworms,soil microorganisms,monitoring,long-term