



Microbial monitoring and population dynamics in an AMD affected field site

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Microbial communities in soil are a very important part of the ecosystem and play an enormous role in carbon, nitrogen and many other nutrient cycling. The composition of these living communities are dependent on soil characteristics, and also on natural or anthropogenic disturbances. Contamination with heavy metals is one of the strongest influencing factors. To understand the interdependencies between affecting conditions and to investigate the influence of heavy metals, the current environment at the former uranium mining site in Eastern Thuringia, Germany, was observed by determination of population dynamics, growth characteristics of single isolates including both cultivation-dependent and DNA-based fingerprinting methods to identify microorganisms.

On the investigated site differently treated plots (topsoil or compost) were installed to enhance soil fertility. The treatments brought new, unadapted microorganisms into this heavy metal polluted site which were confronted with high mobile amounts of heavy metals. This adaptation force was addressed by monitoring the changing in number of microorganisms and composition of microbial communities in the topsoil or compost treated plots in comparison to an untreated control. Plating and strain isolation then was used to establish surface profiles at the heavy metal containing field site concerning microbial diversity.

To give an overview on the occurring microbial community, a 16SrDNA genebank was used. For a faster way to identify microorganisms a first Phylo-Chip was developed. This first array layout allows to distinguish between taxonomic classes. These data

were verified by comparison to the cultivation-dependent methods.