



Do reclamation speed up recovery of soil and soil biota on post mining sites along climatic gradient across continental USA?

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Soil biota community (macrofauna, nematodes and microbial community studied by PLFA) was studied together with soil development in post-mining chronosequences along climatic gradient in the USA, covering hardwood forest (TN, IN), tallgrass prairie (IL), or shortgrass prairie (WY). Post mining sites reclaimed according recent regulation which includes topsoil application and vegetation establishment were compared to local climax.

Both young and old restoration sites were much closer to the climax condition in shortgrass prairie than in the other sites. The shortgrass prairie soil community contained abundant root-feeding organisms, which may establish quicker than the saprophagous fauna that was abundant at the other sites. Absence of saprophagous groups, and especially earthworms, resulted in the absence of bioturbation in shortgrass prairie sites while in chronosequences other than the one in shortgrass prairie, bioturbation played an important role in topsoil formation resulting in more complex soil profile development compare to shortgrass prairie. This may contribute to faster recovery communities in shortgrass prairie in comparison with tallgrass prairie and forest as

At the same time sites that were reclaimed according recent regulation (topsoil application and vegetation establishment) were compare to unreclaimed sites both about 30 years old in TN IL and WY. It TN soil and soil biota seems to approach fasted to climax in unreclaimed than reclaimed sites. In IL this differences between reclaimed and unreclaimed sites was not so clear. While in WY reclaimed sites seems to approach to climax community fasted than unreclaimed one. This suggests that effect of reclamation vary along climatic gradient. In drier sites, formation of soil matrix from parent material is probably much slower and topsoil application speed up soil community recovery substantially while this effect is less pronounces in more wet sites, where soil compaction due to restoration may in some cases even slow recovery.