ABSTRACT

This work sums up the knowledge of the currently studied microorganisms capable of degradation of organic compounds contaminating soil and of the impact of biodiversity on biodegradation efficiency. As documented in many studies effective soil remediation can be achieved by mixed-species consortia isolated from polluted soils. However, use of these cultures for bioaugmentation requires further research on their influence on the biodiversity of autochthonic soil microflora. Though bioaugmentation provably affects bioremediation effectivity no ideal carrier for microbes has been found yet that would provide survival of the introduced organisms in the competitive soil environment. Next, selection of suitable bioaugmentation agents should be based on previous analyses of autochthonic microbes in the targeted contaminated soils.

Further, this work shows that the presence of key species might be more important for the biodegradation efficiency than biodiversity of soil microflora. Biodiversity is more related to the functionality of soil ecosystems which can be affected by the presence of contaminants leading to positive selection of taxa capable of pollutant degradation. However, there are just a few studies on the relationship between biodiversity and degradation of pollutants. Its further research is necessary. Combination of NGS methods and Community-level physiological profiling appears to be promising for that investigation.