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Long-term effects of soil compost amendment on functional and structural diversity and microbial activity

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The virtue of compost for agricultural and horticultural use has been shown previously, but long-term studies comparing different types of compost amendment on soil quality and crop yield are needed. Chemical and physical characteristics, as well as bulk microbial parameters such as biomass and activity are important; however, these parameters do not reveal effects on structure or function of the microbial community.

In the present project we studied a long-term (12 year) crop rotation experiment. The plots are annually treated with inorganic fertilisers at different levels, as well as with composts of sewage sludge, organic wastes, green (yard) wastes and manure. We determined structural components of the compost and the soil microflora with 16s rDNA based PCR followed by DGGE, as well as changes of soil functional abilities by community level physiological profiling (CLPPing) using Biolog^{TM} (GN)-plates.

The results indicate effects of the different composts not only on chemical, physical and biological bulk parameters, but also on the microbial functional and structural traits. As far as can be concluded from the data available to-date, the different composts leave a microbial imprint in the soils.