

## **Spatio temporal analysis of microbial habitats in soil-root interfaces**

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Microbial habitats in soils are formed by the arrangement and availability of inorganic and organic compounds. They can be characterized by physico-chemical parameters and the resulting colonization by microorganisms. Areas being preferably colonized are known as microbial hot spots which can be found in (bio)pores within the aggregatusphere or in the rhizosphere. The latter is directly influenced by plants i.e. the growth and activity of plant roots which has an influence on physico-chemical dynamics in the rhizosphere and can even shape plants' root microbiome.

As microbial communities play an important role in nutrient cycling their response in soil-root interfaces is of great importance. Especially in complex systems such as paddy soils used for the cultivation of wetland rice the analysis of spatio-temporal aspects is important to get knowledge about their influence on the microbial dynamics in the respective habitats. But also other spatial variations on larger scales up to landscape scale may have an impact on the soil microorganisms in their habitats.

This PICO presentation will introduce a set of techniques which are useful to analyze both the physico-chemical characteristics of microbial habitats and the microbial colonization and dynamics in soil-root interfaces. Examples will be given on various studies from rice cultivation in different paddy soils up to an European transect representing rhizosphere soils of selected plant species.