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Clubroot and soil biology – from ecology to biocontrol?

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Interactions between plants, soil, and microbiota makes the rhizosphere of central importance for ecosystem functioning. Although non-pathogenic organisms dominate this rhizobiome, plant pathogens have an important functional role for plant performance. In fact, plant pathogens trigger plant defence and alter the metabolism, nutrient flow and survival of the host, leading to changes in overall plant performance which feeds-back to the rhizobiome. However, the links between soil-borne pathogens and the rhizobiome are only starting to be explored. Here we focus on the clubroot pathogen *Plasmodiophora brassicae*, a pathogen that forces farmers to abandon cultivation of *Brassica* species for more than a decade, to decipher pathogen impact on the rhizobiome. Furthermore, we aim to identify potentially disease suppressive and disease conducive microbiome members, including bacteria, fungi, protists and animals. We are performing complex plant and soil physicochemical analyses to decipher underlying drivers of taxonomic and functional changes in the rhizobiome to clubroot infection including the impact of the detritosphere. The results of these studies will give an important insight of the ecological role of plasmodiophorid species on the plants and its rhizobiome. Additionally, by identifying pathogen suppressive and conducive soil biota new biocontrol applications can be developed that will also be useful to control other soil-borne pathogens. In this presentation we will provide the framework of the research and initial findings that provide first ideas on the importance of the plant-clubroot-rhizobiome connections.

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