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The plant microbiome from lab to field

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The plant microbiome is considered as an accessory genome for plant providing complementary functions to their host such as nutrient mobilization and acquisition or functions to better cope with biotic and abiotic stresses. A number of microorganisms has been identified and selected for application as biofertilizer, plant strengthener or biopesticide and benefits seen in lab and greenhouse trials are highly promising. Nevertheless, field application remains a challenge. Reasons for this include the extreme complexity of plant-associated microbiota with which an inoculant strain has to compete or the poor availability of suitable delivery approaches for microbial inoculants. Furthermore, still mechanistic understanding on plant-microbe interactions or on holobiont interactions is missing. Ecological understanding, science-driven product development and smart delivery approaches are likely to improve plant microbiome applications and will pave the way to the integration of microbiome functions in smart agricultural systems. In this talk different aspects on microbiome understanding and the use of seed-based application approaches will be presented.