# **Recurrent inoculation: a strategy for a better survival of *Pseudomonas* *fluorescens* strain in soil**

**M. Papin1**, MC Breuil1, D Bru1, L. Philippot1, N. Rouard1, X. Le Roux2, A. Spor1

1 Agroécologie, INRAe Dijon, France , 2 Laboratoire d’écologie Microbienne, Lyon, France

A growing interest is shown for microbial inoculants as a promising alternative to agrochemicals for sustainable agricultural. However, biotic and abiotic stresses are known to affect their establishment and effectiveness, leading to inconsistent performance in field conditions. At the same time, a poor survival of the strain is often observed, which constitutes a main hamper for bacterial inoculant development. We hypothesize that recurrent inoculations would improve the survival of the strain in soil. For this purpose, we tested different scenarios of inoculation of the plant growth promoting rhizobacteria *Pseudomonas* *fluorescens* in soil microcosms: a single inoculation, two inoculations with a short and long-time interval in between and four inoculations. We also tested two inoculation densities of the strain. We assessed the survival of *P. fluorescens* using qPCR targeting a specific gene and the impact of inoculations on resident microbial community diversity and composition using 16S sequencing. We expect a stronger impact on microbial community as well as a longer lasting detection of the strain in soils with recurrent inoculations compared to single one. Generalization of our results to planted soils will be required to better understand the outcomes of a strain inoculation and identify situation-dependent patterns. A great concern should also be payed to the disturbances induced within the resident microbial community even when the inoculant does not establish because legacy effects may induce lasting changes in diversity, composition and functioning.