

Master thesis at FiBL Soil Sciences

Title	Maize AMF inoculation in the field
Context	<p>For a more sustainable agriculture, we need to reduce fertilizer input. One alternative is to use beneficial microbials that stimulate plant growth, for example arbuscular mycorrhizal fungi (AMF). AMF colonize roots and form a symbiosis with plants where they provide phosphorus in exchange for carbohydrates. AMF increase plant productivity in greenhouse experiments, however inoculation success in the field is highly context dependent.</p> <p>The master thesis will be embedded within a project funded by the Gebert Rűf Foundation called Microbiome Diagnostics for a sustainable agriculture. This project is a collaboration between Klaus Schlaepi (UniBe and Agroscope), Marcel van der Heijden (Agroscope) and Natacha Bodenhausen (FiBL).</p>
Procedure/Method	<p>We will conduct on farm field trials to test AMF inoculation on maize. Establishment of the inocula in the roots will be monitored with next generation sequencing and/or qPCR. We will evaluate whether inoculation affects plant yields and then model these effects as a function of soil physical, chemical and biological properties.</p> <p>The master student will be based at Agroscope Reckenholz.</p> <p>Suitable candidates should have interest in field work, molecular biology and data analysis with R.</p>
Contact	natacha.bodenhausen@fibl.org
Starting Period	To be discussed
Literature	<p>Bender, S Franz, Klaus Schlaepi, Alain Held, and Marcel G.A. van der Heijden. 2019. "Establishment Success and Crop Growth Effects of an Arbuscular Mycorrhizal Fungus Inoculated Into Swiss Corn Fields." <i>Agriculture, Ecosystems & Environment</i> 273 (March). Elsevier: 13–24 .2018.12.003.</p> <p>Schlaepi, Klaus, Franz S Bender, Fabio Mascher, Giancarlo Russo, Andrea Patrignani, Tessa Camenzind, Stefan Hempel, Matthias C Rillig, and Marcel G A Heijden. 2016. "High-Resolution Community Profiling of Arbuscular Mycorrhizal Fungi." <i>New Phytologist</i> 212 (3): 780–91.</p>