

# SEVERAL MASTER

## THESES

SOIL ECOLOGY IN  
SUSTAINABLE AGRICULTURE

**BOKU University, Vienna, AT**



### **1. Evaluation of microbial biomass, microbial physiology and nutrient cycling characteristics in standard farming systems, pioneer farming systems and semi-natural reference soils across several sites under different pedo-climatic conditions**

Evaluation of microbial biomass carbon and nitrogen as well as fungal biomass, heterotrophic respiration, potential carbon-, nitrogen- and phosphorus-acquiring enzyme activities. Includes field and laboratory work; start: from March to April 2025; contact person: Christoph Rosinger, christoph.rosinger@boku.ac.at

### **2. Learning from weeds: comparison of microbial physiology (bacterial and fungal growth rates, microbial community composition and network analysis) and N cycling (potential N-acquiring enzyme activities, $\delta^{15}\text{N}$ ) in roots and rhizosphere soils of weeds and arable crops**

The aim is to better understand N foraging strategies of fast-growing, highly competitive weeds. Includes field and laboratory work; start: from July/August 2025; contact person: Magdalena Bieber, magdalena.bieber@boku.ac.at

### **3. Investigating differences in stable and labile carbon fractions of standard farming systems, pioneer farming systems and semi-natural reference soils across several sites under different pedo-climatic conditions**

Evaluation of dissolved and total organic carbon, inorganic carbon, reactive carbon, and  $\delta^{13}\text{C}$  isotope signatures. Includes field and laboratory work; start: from February 2025; contact persons: Franziska Weinrich, franziska.weinrich@boku.ac.at and Christoph Rosinger, christoph.rosinger@boku.ac.at

The **BOKU research group for Soil Health and Innovative Agriculture (Boden.Pioniere; <https://boku.ac.at/bodenpioniere>)** offers several Master theses in the field of Soil Ecology within the Project “Boden.Pioniere 2050”. In this project, we compare state-of-the-art farming systems with highly innovative pioneer farming systems by using an on-farm research approach at 100 sites in Austria. The **optimization potential of soil health through pioneer farming practices** – compared to current agricultural practices – is captured through comprehensive soil analysis, particularly with regard to efficient carbon, nitrogen, and water cycles. Visit our website for more master thesis topics or propose your own idea! **We offer a refreshing working environment within our research group and look forward to your inquiry!**