

# Summer school

## SOIL BIODIVERSITY AND ECOSYSTEM SERVICES IN AGRICULTURE

17-20 September 2019

USAMV Cluj-Napoca, Romania

Agriculture-Department of Environment and  
Plant Protection



### SoilMan

Ecosystem services of soil biota in agriculture



### **Background / Scope**

Belowground biodiversity is immense. It is comparable to the species diversity of a tropical rainforest. This is surprising since the soil as a habitat looks quite uniform and even disturbed soils like those in agriculture host numerous organisms. It is still a challenge of soil biology and soil ecology research to describe and to explain such a high variety of life forms. We have hardly come to understand what these organisms do in the soil and what they need to thrive well. This is, however, very crucial because soil organisms are the drivers of soil functions and thereby maybe one of the most important actors for maintaining soil fertility and soil quality in agricultural land use.

### **What to expect?**

This summer school aims to explore the interrelation of soil biodiversity, ecosystem services, and agricultural production using an interdisciplinary approach. The school is hosted and organized by the European BiodivERsA-SoilMan-Project which has the hypothesis that biodiversity will support agricultural production under the premises that agricultural practice is 'soil biodiversity-friendly'.

In this framework, the summer school will address three subjects. First, we will explore biodiversity of soil fauna in typical agricultural soils of Transylvania, Romania, and will also give examples for methods to investigate functional microbial diversity. Second, we will focus on the functional impacts of soil organisms. How can we quantify functions and services provided by soil biota? How is soil biodiversity connected to soil quality and fertility? Third, we will place the aspects above in an agricultural context aiming to identify agro-ecological levers that can support both soil biota and farmers' needs.

### **Take home message and course objectives**

The participants will develop a conceptual model for the interaction of soil biodiversity, soil ecosystem services, and agricultural practices. They will increase their competence in soil biota ecology and interdisciplinary and transdisciplinary communication while getting an insight in the concerns of farmers in agricultural production.

**SEPTEMBER 17th: Biodiversity**

9.00 – 9.30	Welcome	Mignon Sandor; Martin Potthoff	
9.30 – 11.00	Lecture	Martin Potthoff	Soil biodiversity: The poor man's jungle
11.00 – 11.15	Coffee break		
11.15 – 12.30	Lecture	Guénola Pérès, Mignon Sandor, Martin Potthoff and more	How to sample and quantify soil biodiversity (presentation of different methods and tools)
12.30 – 14.00	Lunch		
14.00 – 17.00	Practical activity (Sampling and lab analysis)		Identification of several groups Microbial biomass measurements (assessment of soil microbial functional diversity)
Dinner			
After Dinner		Voluntary poster presentations (work activities of the PhD students)	

**SEPTEMBER 18th: Soil functions and Ecosystem Services**

9:00 – 9:30	Feed-back/Presentations from lab analysis from the day before		
9.30 – 11.00	Lecture	Astrid Taylor	Trophic interactions in soil food webs
11.00 – 11.15	Coffee break		
11.15 – 12.30	Lecture	Martin Potthoff, Ilka Schmoock	Ecosystem services belowground: Agriculture for Biodiversity = Biodiversity for Agriculture
12.30 – 14.00	Lunch		
14.00 – 17.00	Practical activity (Field and lab analysis)		Soil function measurements (Soil aggregate stability, soil respiration measurements)
Dinner	Presenting/Discussing pictures from field sites from PhD students		

**SEPTEMBER 19th: Agricultural Practice and Social Ecology**

9:00 – 10:30	Lecture	Guénola Pérès	Which agricultural practices can restore, maintain or improve soil biodiversity and the associated ecosystem services?
10:30 – 11.15	Coffee break		
11.15 – 12.30	Lecture	Rebekka Schütte, Morgane Herve, Annegret Nicolai, Martin Potthoff	Social ecology of soil biodiversity; economic aspects
12.30 – 14.00	Lunch		
14.00 – 17.00	Excursion to field sites/farms		

**SEPTEMBER 20th**

9.00 – 11.00	Student activities		conceptual model of soil biodiversity-soil ecosystem services under agricultural practices
11.00 – 12.00	General discussion and conclusions		

## **Requirements**

The summer school is addressed to Master, graduate and Ph.D. students, early Post-Doc fellows and researchers in the field of soil science and ecology.

## **Fees**

The summer school costs 50 € per participant and should be paid in cash during the summer school. Accommodation can be organized and costs around 120-150 € per person.

## **Location**

University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca  
Biodiversity Center  
Calea Manastur, Nr. 3-5  
400372 Cluj-Napoca, Romania

## **Contact**

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## **Deadline for registration**

August 16<sup>th</sup> 2019, please use the contact email addresses above for registration. You will then receive a registration form.

## **Scientific committee**

Mignon Sandor, Martin Potthoff, Guénola Pérès, Astrid Taylor, Deborah Linsler