Bachelor or Master thesis

Effects of vegetation cover in tractor lanes on soil multifunctionality in vegetable farming

Background and project

In intensive vegetable production, a significant portion of the field is used as tractor lanes, which often remain bare throughout the growing season. This bare soil can have negative effects, such as increased erosion, reduced biological activity, and a decline in essential soil functions. However, maintaining vegetation cover in these lanes throughout the year could help mitigate these negative impacts and improve overall soil quality. This thesis aims to investigate whether year-round vegetation cover in tractor lanes has positive effects on soil properties and ecosystem functions. The study will be conducted on a real vegetable production field at *KoLa Leipzig*, a cooperative organic farm practicing community-supported agriculture. Soil samples will be taken at regular intervals throughout the growing season to compare vegetated and bare tractor lanes. We will assess key soil functions, including microbial respiration and biomass as indicators of biological activity, enzyme activities of four major soil enzymes essential for nutrient cycling, and aggregate stability, which is crucial for soil structure and erosion resistance. From these parameters, we will calculate multifunctionality, which reflects the ability of the soil to support multiple ecosystem functions simultaneously.

Where?

The work will be conducted at the German Center for Integrative Biodiversity Research (iDiv), in the Experimental Interaction Ecology (EIE) group. Sampling takes place at the research site at the KoLa Leipzig in Taucha.

What we offer

You will work in an international, diverse and motivated team. You will learn how to conduct a scientific project: from developing your research question to fieldwork, analyzing your data with different methods, statistical analysis and writing a scientific manuscript.

Contact

The thesis project will be co-supervised by Dr. Marie Sünnemann (marie.suennemann@idiv.de) and Prof. Dr. Nico Eisenhauer (nico.eisenhauer@idiv.de). Please get in touch if you are interested.

