# BayCEER Kolloquium

Lectures in Ecology and Environmental Research

winter 2026/27

UNIVERSITÄT BAYREUTH

Donnerstag/Thursday
**29.10.2026**
**12:30 in H6, GEO**

## Dr. Maire Holz

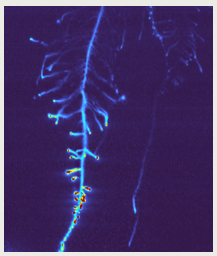
Lebniz-Zentrum für Agrarlandschaftsforschung (ZALF) e.V.


## How do root traits and root-derived organic inputs regulate rhizosphere nutrient cycling and plant nutrient acquisition?

Öffentlicher Vortrag im Habilitationsverfahren (Zwischenevaluation)

Improving plant nutrient acquisition will be crucial for sustaining crop production while reducing fertilizer inputs in the context of global change. Carbon compounds released by the roots into the rhizosphere, the soil directly influenced by plant roots, play a central role in nutrient mobilization. Up to now it remains poorly understood how cultivars of major crops adjust root exudation and nutrient-acquisition in response to water and nutrient limitation, and how these responses vary among soil types and nutrient sources, particularly organic nutrient pools.

In this preasentation, I will show how carbon released by roots influences plant access to soil nitrogen and phosphorus. I will examine rhizosphere priming and microbial necromass recycling as pathways for plant nitrogen acquisition. Addtionally, I will explore how rice genotypes access contrasting organic and inorganic P sources and how drought, rewetting and soil texture affect the quantity and composition of root exudates of modern and landrace maize cultivars. Methodologically, I will introduce stable-isotope tracing to quantify belowground carbon allocation and nutrient turnover, zymography to map nutrient-mobilizing enzyme activity, and soil-based root-exudate sampling to characterize exudate quantity and composition.



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