

Wintersemester / Winter Term 2015/2016

BayCEER Kolloquium

Vortragsreihe Ökologie und Umweltforschung
*Lecture series in Ecology and Environmental Research***Donnerstag 21.01.2016, 12:00 Uhr, H6**

Anschließend Postkolloquium mit Mittagsimbiss im Foyer H6

Dr. Marie Spohn

Soil Ecology, BayCEER, University of Bayreuth

Organic phosphorus mineralization and microbial carbon allocation in soil

Soil element cycling is the basis for many important soil functions and is largely driven by microbial activity. In the talk, I will present recent findings on two aspects of soil element cycling, namely organic phosphorus (P) mineralization and microbial carbon (C) allocation in soil. Special attention will be given to the rhizosphere and in the soil organic layer because these sites are hotspots of element cycling. The rhizosphere is a spatially highly organized microsite in soil. Based on a novel imaging method for exoenzyme activity in soil it was possible to identify the distribution of phosphatase activity that catalyzes organic P mineralization. Further, it was found that microbial and plant phosphatases reacted differently to P availability. Using isotopes, it could be shown that microbial phosphatase activity and organic P mineralization can be stimulated by root exudates. Moreover, it was demonstrated that microbial organic P mineralization can be driven by microbial need for C. The ratios of C-to-nutrients in soil strongly affect microbial C processing. Microbial respiration rates per unit microbial biomass were positively correlated with C-to-nutrient ratios and decreased with soil depth. In order to elucidate microbial C allocation a new method was developed that allows to calculate microbial carbon use efficiency, defined as the ratio of organic C allocated to growth over organic C taken up by the microbial community. The method revealed that microbial carbon use efficiency is not affected by soil depth and organic matter quality but by nitrogen (N) availability. Taken together, the talk will present new insights into the interactions of the cycling of C, N and P, and will discuss the role of stoichiometry for soil element cycling.

Do. / Thu. 12 st
Gebäude/Building
GEO
Hörsaal/Lecture hall
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sind herzlich
willkommen*The lecture series
serves as an
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and senior
scientists.**Guests
are cordially
invited!*