

Soil Biogeochemistry of Agroecosystems (I002491)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size (nominal values; actual values may depend on programme)
Credits 4.0 Study time 120 h Contact hrs 40.0 h

Course offerings in academic year 2020-2021

A (semester 1) English Gent

Lecturers in academic year 2020-2021

Dippold, Michaela GOTTIN lecturer-in-charge
Blagodatskaya, Evgenia GOTTIN co-lecturer

| Offered in the following programmes in 2020-2021 | crdts | offering |
|--|-------|----------|
| International Master of Science in Soils and Global Change (main subject Soil Biogeochemistry and Global Change) | 4 | A |

Teaching languages

English

Keywords

Position of the course

Contents

In the framework of this module, biogeochemical processes of C, N, P, S and Fe cycle in agroecosystems shall be demonstrated and their microbial and molecular basics will be unraveled. It will be shown how agricultural management practices (crop sequences, tillage, fertilization, etc.) will impact the element cycles. In specific molecular, biogeochemical and microbiological methods to assess these effects on element fluxes and cycles will be explained in detail. Isotope-based experiments as well as molecular proxies to assess formation and turnover of soil organic matters as well as the microbiological drivers of these processes will be explained. The module consists of a lecture (3 SWS) and a seminar (1 SWS) where one study of interest will be presented by the students.

Initial competences

Basics in soil science and biology and chemistry

Final competences

Understanding underlying process of C, N, P, S and Fe cycle in agroecosystems
Understanding the impact of agricultural management on these element cycles
Quantification of C-, N- and P-fluxes via isotope based methods (labeling experiments such as pulse labeling, FACE experiments, C-3 and C-4 vegetation changes, autoradiography)
Formation of soil organic matter from plant and microbial residues: Disentangling the composition of SOM by biomarker methods
Application of molecular proxies to describe microbial communities and investigate shifts in communities and functions following agricultural management
Theoretical basics shall be thought and their application shall be demonstrated at distinct examples from literature. After this course, students will be able to understand complex biogeochemical studies published and evaluate potentials and pitfalls of applied methods.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture

Learning materials and price

References

Course content-related study coaching

Evaluation methods

Examination methods in case of periodic evaluation during the first examination period

Oral examination, assignment

Examination methods in case of periodic evaluation during the second examination period

Oral examination, assignment

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

Oral exam of 20 minutes (75% of the overall grade) and evaluation of the 15 min presentation (25% of overall grade)

Calculation of the examination mark