

<b>Module Name</b>	<b>Module Code</b>
Nutrient Cycling and Sustainability	agrarAEF893-01a
<b>Module Coordinator</b>	
Prof. Dr. Karl H. Mühling	
<b>Organizer</b>	
Institute of Plant Nutrition and Soil Science – Plant Nutrition	
<b>Faculty</b>	
Faculty of Agricultural and Nutritional Sciences	
<b>Examination Office</b>	
Faculty of Agricultural and Nutritional Sciences - Examination Office	
<b>ECTS Credits</b>	6
<b>Evaluation</b>	graded
<b>Duration</b>	1 semester
<b>Frequency</b>	Only in winter semester
<b>Workload per ECTS Credit</b>	30 hours
<b>Total Workload</b>	180 hours
<b>Contact Time</b>	60 hours
<b>Independent Study</b>	120 hours
<b>Teaching Language</b>	English
<b>Recommended Requirements</b>	
Basic knowledge of biology, chemistry, plant and soil biology and chemistry Basic knowledge in plant nutrition (fertilization)	

<b>Module Courses</b>			
<b>Course Type</b>	<b>Course Name</b>	<b>Compulsory/Optional</b>	<b>SWS</b>
Lecture	Nutrient Cycles	optional	2
Seminar	Nutritional Ecology	optional	1
Exercise	Nutritional Ecology	optional	1

<b>Examination(s)</b>				
<b>Examination Name</b>	<b>Type of Examination</b>	<b>Evaluation</b>	<b>Compulsory / Optional</b>	<b>Weighting</b>
Nutrient Cycling and Sustainability	Oral	Graded	Optional	100

#### **Further Information on the Examination(s)**

Regular visits of lecture, seminar and exercises are necessary.

QIS:72501 PNR:72510

#### **Course Content**

The student know about:

- Nutrient inputs, nutrient outputs,
- nutrient balance of soils,
- criteria of sustainability,
- roots-soil interaction,
- gas emission (Methan, **NO<sub>x</sub>**),
- heavy metal dynamics,

**adaption strategies of plants to environmental conditions**

#### **Learning Outcome**

The students:

- have knowledge of nutrient dynamics of different agroecosystems and an understanding of the complexity of the interaction of location and plants and are familiar with the criteria of sustainable cultivation. They are able to conceptualize cultivation concepts in humid, semi-arid and arid regions and are able to analyse the effects of changes in nutrient management on different crop-rotations

#### **Reading List**

Lambers et al: Plant Physiology Ecology  
 Larcher: Physiology Plant Ecology  
 Schulze et al. Plant Ecology