University of Natural Resources and Life Sciences Vienna – responsibility for Humans and Nature. We work for the sustainable use and protection of natural resources.

The department of Forest and Soil Science, institute for Forest Ecology is currently seeking a

PhD Research Associate

(Reference code: 85)

Extent of employment: 20 Hours per Week
Duration of employment: 02.01.2014 – 31.12.2017

Work place: BOKU, Peter-Jordan-Straße 82, 1190 Vienna

Gross monthly salary and pay grade in terms of collective agreement for university staff: B1, € 1.281,--

Job description

We offer a four-year PhD position for the topic '**Plant/root phenotyping of European bean resources'** within the EU FP7 project 'EUROLEGUME - Enhancing of legumes growing in Europe through sustainable cropping for protein supply for food and feed'

The project is aimed at improving the sustainable production of leguminous crops and their multipurpose use in a changing climate, ensuring new varieties and new food and feed products, broadening the production area and thus turning EU more competitive and sustainable. The specific objective of the topic is creating the description of pea (*Pisum sativum* L.), faba bean (*Vicia faba* L.) and cowpea/black-eye-bean (*Vigna unguiculata* (L.) Walp) local genetic resources for the development of new varieties for food, feed and further use in breeding; this topic will focus on root systems' phenotype and plant ecophysiology under stress.

1) A greenhouse experiment will be established, determining the genetically determined phenotypes of 100-120 bean varieties under optimal growth conditions (Month 2 to Mo12) and the plasticity of the 10 most extreme phenotypes per species under major environmental constrains (i.e. P, N and water scarcity; Mo 13-24). Single plants will be grown in root observation tubes, at one soil type, and the same/different environmental parameters (first/second year). Root and shoot phenotypes of all accessions will be determined under standardized growth conditions, assessed parameters: Shoot biomass, leaf area, root:shoot ratio, timing of root and shoot development, rooting depth and biomass/area per depth, and root and leaf morphology. Accessions will be classified according to phenotypes in the first year. In the second year, the adaptation of selected accessions to different environments will be identify to find germplasms with superior adaptive plasticity under environmental constrains. Ecophysiology of genotypes will be analysed in terms of water and nutrient uptake efficiency (WUE, NUE). WUE will be measured with a lysimeter approach three times during the growing season.

2) Pot experiments to study the interactions between Rhizobia strains & AMF and plant phenotypes and adaptive plasticity to environmental constrains will be performed during months 25 to 48 (year three and four). Plant and root phenotypes of 5-10 genotypes per species under water, N and P scarcity will be determined if inoculated with different Rhizobia & AMF strains. The accessed parameters include WUE, NUE (in regard to N and P) and leaf nutrition status, plant biomasses and areas above and belowground, root and leaf morphology, and chlorophyll fluorescence as a plant stress indicator.

The PhD student will work in close cooperation with other PhD students and postdoctoral researchers at BOKU and our European research partners in the EUROLEGUME project. Yearly project meeting within Europe will ensure the personal contact between participants; thus, the willingness to travel is required. Main language of communication is English.

The PhD student will be supervised by Dr. Boris Rewald, Universitätsassistent at the Dept. of Forest and Soil Science and Dr. Gernot Bodner, Universitätsassistent at the Dept. of Horticulture.

Desired qualifications

- MSc in Plant Sciences (Botany, Agriculture) or related fields
- Sound knowledge of plant ecophysiology
- Botanical knowledge of root systems and root phenotyping techniques as an asset
- Excellent command of English
- Excellent skills in scientific writing and statistical methods
- Stress resilience, reliability
- Social skills and teamwork abilities
- Driving licence (B) for field work

Application must contain

- Letter of motivation (max. 2 pages)
- CV, incl. list of publications
- Two letters of recommendation
- Copy of best publication (if possible), publication draft (if possible) or MSc thesis (in the order of preference)

Applications can be submitted until: 15.10.2013

University of Natural Resources and Life Sciences Vienna seeks to increase the number of its female faculty and staff members. Therefore qualified women are strongly encouraged to apply. In case of equal qualification, female candidates will be given preference.

Please send your digital job application to Personnel department, University of Natural Resources and Life Sciences to: kerstin.buchmueller@boku.ac.at. **(Reference code: 85)**

Job interviews may be conducted via telephone or Skype.

We regret that we cannot reimburse applicants travel and lodging expenses incurred as part of the selection and hiring process.

www.boku.ac.at

Vice rector of strategic development:
Univ.Doz. DI Dr. Georg Haberhauer, MBA