Long job posting / PHD

PhD fellow in Nitrogen Use Efficiency of Novel Bio-based Fertilisers in Agriculture

Department of Plant and Environmental Sciences
Faculty of Science
University of Copenhagen

Department of Plant and Environmental Sciences, Faculty of Science at University of Copenhagen is offering a PhD scholarship in Assessment of the agronomic nitrogen efficiency of novel bio-based fertilizers, commencing 1 Feb 2020 or as soon as possible thereafter.

Description of the scientific environment
The Soil Fertility research group focuses on soil fertility issues and environmental impacts related to sustainable agriculture with a special focus on nutrient cycling and climate change. Our research aims at a mechanistic understanding of soil nutrient and organic matter dynamics at both the level of micro-scale biogeophysical processes and at eco-system scales, in the pursuit of increased nutrient use efficiency, improved crop productivity and reduced environmental impacts from agriculture in the 21st century.

Project description

The work of the PhD fellow will be closely connected to the EU H2020 funded research project "*Optimizing Bio-based Fertilisers in Agriculture – Knowledgebase for New Policies" (LEX4BIO),* aiming to transform agriculture from using synthetic to bio-based fertilisers in a circular economy context. A prerequisite for such transformation is a profound knowledge about the fertilisation potential of such novel fertiliser materials under varying environmental and agronomic conditions, but also identifying potential environmental impacts of their use. Appropriate compliance methods to predict agronomic efficacy of the materials are furthermore essential for both farmer fertiliser management as well as for future policies and fertiliser regulations.

The PhD project will investigate the effect of different bio-based fertilisers (derived from various organic residues from agriculture, industry and society) on availability and nitrogen use efficiency in trials under lab, greenhouse as well field conditions. Close collaboration with another PhD student working on emissions of nitrous oxides from bio-based fertilisers, and with a postdoc working on modelling of environmental impacts is planned. Data collection will include soil and plant sampling and analysis, as well as remote sensing and spectral imaging of crops and soils. Possibilities to optimize the fertilising effect through a variable rate application according to ground and remote sensing data will also be investigated. Data analysis will include relating the lab and field results in order to develop standard test protocols for novel fertiliser materials which can be used for future compliance testing, as well as using the remote sensing data to optimise the efficacy of bio-based fertiliser use.

Principal supervisor will be Professor, Lars Stoumann Jensen**,** Department of Plant and Environmental Sciences, E-mail lsj@plen.ku.dk**,** Direct Phone: +4521222039

Job description
The position is available for a 3-year period and your key tasks as a PhD student at SCIENCE are:

- To manage and carry through your PhD research project, in collaboration with other project partners
- Attend PhD courses
- Write scientific articles and your PhD thesis
- Disseminate your research, also to stakeholders of the projects
- To stay at an external research institution for a few months, preferably abroad
- Work for the department, incl. some teaching tasks (e.g tutoring exercises, guest lectures)

Formal requirements
Applicants should:
- Hold an MSc degree in a relevant discipline such as agronomy, biology or environmental sciences/engineering, or related disciplines.
- Have a good understanding about nitrogen dynamics in soil and the mechanisms that determine nitrogen losses and the supply of mineral nitrogen for crop uptake and growth.
- Have good technical skills and interest in conducting plant experiments under lab/greenhouse/field conditions and have flair for conducting environmental measurements
- Have experience with and interest for the use of remote sensing technologies in agriculture or related field
- Have experience with chemical characterization of soils and plants
- Have experience with data management and an interest in statistics.
- Have good communicative and interpersonal skills.
- Have excellent English writing and speaking abilities.

Terms of employment
The position is covered by the Memorandum on Job Structure for Academic Staff.

Terms of appointment and payment accord to the agreement between the Ministry of Finance and The Danish Confederation of Professional Associations on Academics in the State.

The starting salary is currently at a minimum DKK 322,642 (approx. €43,015) including annual supplement (+ pension up to DKK 44,567). Negotiation for salary supplement is possible.

Application Procedure
The application, *in English*, must be submitted electronically by clicking APPLY NOW below.

Please include

- Cover Letter, detailing your motivation and background for applying for this specific PhD project, incl. any earlier study or work experience relevant for the topic.
- CV
- Diploma and transcripts of records (BSc and MSc)
- Other information for consideration, e.g. list of publications (if any),
- Full contact details (Name, address, telephone & email) of 1-3 professional referees

The University wishes our staff to reflect the diversity of society and thus welcomes applications from all qualified candidates regardless of personal background.

The deadline for applications is 13 November 2019, 23:59 GMT +1**.**

After the expiry of the deadline for applications, the authorized recruitment manager selects applicants for assessment on the advice of the Interview Committee. Afterwards an assessment committee will be appointed to evaluate the selected applications. The applicants will be notified of the composition of the committee and the final selection of a successful candidate will be made by the Head of Department, based on the recommendations of the assessment committee and the interview committee.

The main criterion for selection will be the research potential of the applicant and the above mentioned skills. The successful candidate will then be requested to formally apply for enrolment as a PhD student at the PhD school of Science. You can read more about the recruitment process at http://employment.ku.dk/faculty/recruitment-process/.

Questions
For more specific information about the PhD scholarship and the contents of the LEX4BIO projects, please contact the principal supervisor Professor, Lars Stoumann Jensen**,** Department of Plant and Environmental Sciences, E-mail lsj@plen.ku.dk**,** Direct Phone: +4521222039.

General information about PhD programmes at SCIENCE is available at http://www.science.ku.dk/phd.

Further information on the Department is linked at http://www.science.ku.dk/english/about-the-faculty/organisation/.