

LEG4DEV PhD fellowship position (SLU & partners)

PhD fellowship in soil science specialising in agricultural water management

Background /contexts

Farmers need precision information about soil moisture in order to maximise nutrient use, and realise production potential in especially rainfed farming systems. Soil moisture measurement and forecasting based on remote sensing, RS, (or other areal finer resolution produce from e.g. drones) is in its infancy, and still in rapid development, but needs to contextualise to local conditions and make knowledge available user –friendly tools for farmers. This PhD will develop understanding of extreme weather, and especially extreme dry and wet spells affecting soil moisture conditions and crop responses in rainfed –cereal systems in southern Africa, combining remote sensing information, with agro-climatic analyses and soil data.

The PhD project will contribute to realise the opportunity for climate adaptive precision information to farmers. The position will be part of the EU LEG4DEV project (<https://leg4dev.org>; led by National University of Ireland Galway) “*Legume-based agro-ecological intensification of maize and cassava cropping systems in sub-Saharan Africa for water-food-energy nexus sustainability, nutritional security & livelihood resilience in Ethiopia, Tanzania, Zambia & Malawi*”. It will also be linked to the planned Soybean Use Case of the CGIAR Excellence in Agronomy Initiative.

This project is carried out in collaboration between IITA, CIMMYT, SLU and national research organizations in southern and eastern Africa.

Research Focus

The PhD will focus on development of decision support for scaling rainfed-legume crop systems, through new empirical data sampling and validating of soil physical properties together with soil moisture regulation and actual evapotranspiration processes. The PhD will work in the project LEG4DEV supporting water efficiency in scaling of legume-based agro-ecological intensification (WP3). The PhD project will specifically work with the knowledge development of remote sensing products for precision soil moisture management in rainfed cereal-legume systems.

The PhD project will study

- Current and future agro-climatic trends for cereal –legume rainfed systems
- Couple soil moisture estimates for cropland with improved soil data analyses
- Explore (validate) how remote sensing applications of evapotranspiration and /or soil moisture operates in applications for rainfed cereal –legume systems

PhD candidate profile requirements

We are seeking an ambitious PhD candidate who aims to pursue his/her academic career in an internationally renowned research environment of the Swedish University of Agricultural Sciences (SLU), Department of Soil and Environment, in collaboration with the International Institute of Tropical Agriculture (IITA) and International Maize and Wheat Improvement Centre (CIMMYT).

- MSc in agriculture –water – soil engineering , agronomy or equivalent relevant degree
- Experience of relevant field data collection and analysis (soil, water, crop/vegetation)

- Advanced soil science or equivalent knowledge
- Basic knowledge of remote sensing and GIS tools for hydrological applications
- Excellent written and spoken English
- Williness and interest in research activity
- Proven ability to pursue tasks as an individual and in a team
- Basic experience –training in GIS, basic programming, basic statistics

Merits

- Advanced skills in GIS, programming and statistical analyses
- Contribution to research projects, publication and proposal development
- We particularly invite candidates from the region of **Southern African Development Community (SADC)** for application

The project is in close collaboration with other researchers at SLU, IITA, CIMMYT and other LEG4DEV partners and institutions within and beyond the project. Hence, you should have a professional, independent and structured working style as well as collaboration skills.

Location of position

You will be PhD Fellow at IITA based in Zambia or Malawi, and registered at Department of Soil and Environment, (Agricultural Water Management), SLU, Uppsala, Sweden, where you will spend parts of your study time ('sandwich model').

Fellowship conditions

PhD Fellowship with IITA, registered at SLU (conditions to be agreed)

Length of fellowship: 100% for 48months

Startdate 2023-03 or as soon as possible

Application

Open for applications latest by 20 November 2022.

Applicants will be selected based on their written application and CV, degree project, copies of their degree certificate and transcript of records from previous first and second-cycle studies at a university or higher education institution, two personal references, and knowledge of English. Copy of passport is required. More information about the English language requirements can be found here: www.slu.se/en/education/programmes-courses/doctoral-studies/new-doctoral-students/english-language-requirements/

More information and submission of application

Professor Jennie Barron, SLU (jennie.barron@slu.se)