

LEG4DEV PhD fellowship position (SLU & partners)

PhD fellowship in crop production science

Background /contexts

The increasing demand of plant-based proteins for human and livestock consumption, combined with the challenges related to the availability/affordability of N fertilizer and low soil fertility calls for increasing the cultivation and use of grain legumes. Soybean could be an innovative solution to reduce the local protein gap, while offering a sustainable agronomic and economic alternative to farmers. This PhD project aims to assess the biophysical production potential for soybean-maize cropping system, as well as the development and testing of economically and environmentally sustainable crop management strategies regarding spatial arrangement, cultivars and nutrients. The pedoclimatic suitability will be assessed in a spatial modelling approach combining soil and climate data. The design and analysis of the crop management strategies will pay special attention on monitoring, prevention and control of insect pests and fungal diseases as well as on nitrogen (N) balance and carry over effects on subsequent crops.

The PhD project will contribute to optimizing management strategies of maize-legume systems in different contexts. 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 work in the LEG4DEV sub-project 'Optimizing management strategies of maize – legume systems based on site-specific conditions and management' (WP3). The PhD project will specifically focus on the testing of cultivars, spatial arrangements of maize-soybean intercropping and the use of inoculants for rainfed cereal-grain legume systems.

The PhD project will study

- the response in yield and the nutrient use efficiency of a soybean x maize intercropping submitted to different spatial arrangements and amounts and types of fertilizer;
- the impact of inoculation on soybean nodulation, nitrogen use efficiency, yield and soil residual N cultivated as sole crop or intercropping with maize
- the residual effects of a soybean x maize intercropping on soil nitrogen and organic matter levels;
- the water use efficiency of different spatial and temporal arrangements of a soybean x maize intercropping?

The PhD will design, deploy, manage and collect data from field experiments and from secondary sources.

PhD candidate profile requirements

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

PhD candidate profile requirements

- MSc in agriculture, agronomy or equivalent relevant degree;
- Experience in the establishment of field experiments, data collection and analysis (e.g. crop/vegetation);
- Excellent written and spoken English ;
- Williness and interest in research activity;
- Proven ability to pursue tasks as an individual and in a collaborative manner;

Merits

- Advanced skills in GIS, modelling, 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 conducted within a research group and requires close collaboration with other researchers in the project at SLU, IITA, CIMMYT and other 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 a PhD Fellow at IITA and based in Zambia or Malawi, and registered at Department of Crop Production Ecology, SLU, Uppsala, Sweden, where you will spend parts of your study time ('sandwich model').

Fellowship conditions

4-year PhD Fellowship at IITA (conditions to be agreed)

Length of fellowship: 100% for 48months

Startdate 2023-03 or as soon as possible

Application

Open for applications latest by 15 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

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