MASTERS OPPORTUNITY

On-farm augmentation of indigenous mycorrhizal inoculum for more sustainable and profitable canola-soybean rotations

Project Background & Rationale:
Background: Funded through the Ontario Agri-Food Research Initiative, the Plant and Soil Ecology Lab (Algoma University) and the Soil Ecosystem Dynamics Lab (University of Waterloo) have an opening for a Masters student. The successful applicant will be part of a multidisciplinary team of international collaborators (Algoma, Waterloo, Guelph, UBC, Western Australia). The applicant will have opportunities to present the research at conferences and to engage in outreach activities. We will consider applications submitted before May 30, 2021.

Project Rationale:
Biostimulants are a large part of agricultural inputs and there is a growing number of commercial microbial inoculants. These aim to restore soil health and enhance crop yields after resource intensive crops or soil disturbance. While farmers may be compelled to apply commercial inoculants, whether they are effective is largely unknown, which perpetuates a sentiment of skepticism toward these products among farmers. Arbuscular mycorrhizal fungi (AMF) establish one of the most important symbiosis with plants and the number of AMF inoculants available on the market is growing. However, these inoculants typically contain a single fungal strain, which may not necessarily establish or, conversely, could displace indigenous taxa. Agricultural systems already contain indigenous AMF that may be used as a natural source of inoculum. As such, our project will determine whether on-farm augmentation of indigenous AMF is a more effective, safe, sustainable, and cost-effective alternative than using commercial inoculants.

General Objectives:
• To determine the agronomic impact of using commercial versus indigenous AMF inoculum on crops.
• To determine which type of AMF inoculant is predicted to be more effective as a means of increasing crop productivity.
• To determine best management practices that maintain soil health while producing indigenous AMF inoculum.
• To quantify early-season physiological impacts of AMF inoculant use on crops.

Qualifications for Admission:
• A Bachelor’s degree with a strong background in the natural sciences, experience in soil/plant sampling is an asset, but not required.
• The applicant must be in good academic standing.
• Valid driver’s license.
• Commitment to and understanding of Algoma U’s special mission and the seven grandfather teachings

This position is open to all qualified applicants, although preference will be given to Canadian citizens and permanent residents of Canada. The successful candidate, as a condition of employment, will be required to provide a Police Records Check. We are committed to an inclusive, barrier-free recruitment and selection process and workplace. If you require any accommodations, please notify us and we will work with you to meet your needs. We thank all candidates for their interest, however only those chosen for an interview will be contacted.

Project Support:
Project funding will be available for a domestic (Canadian citizen/PR) student for two academic years at $26,960. The student will be enrolled through co-supervision at the University of Waterloo (School of Environment, Resources and Sustainability). Course work will be completed in the Fall/Winter 2020/21 and the research will be conducted primarily at the Plant and Soil Ecology Lab at Algoma University in Sault Ste. Marie in the spring/summer 2022. In addition to the project’s funding, Waterloo guarantees a minimum of two semesters at a minimum $6,740 per semester via teaching assistant positions. Entrance and graduate scholarships are offered to students with good academic standing in addition to the above-mentioned funding.

Expected Start Date:

Application:
Submit a motivation letter and a CV with the names of two individuals willing to provide a reference to:
• Dr. Pedro M. Antunes, Algoma University pedro.antunes@algomau.ca
• Dr. Maren Oelbermann, University of Waterloo moelbermann@uwaterloo.ca
• Dr. Joshua Nasielski, University of Guelph nasielsk@uoguelph.ca

School of Environment, Resources and Sustainability (Waterloo) Masters Program: https://uwaterloo.ca/environment-resources-and-sustainability/graduate

Note that the applicant does NOT have to integrate a social component into their thesis research and it can be a purely natural science-based thesis.

Background photo is one of the field sites near Sault Ste. Marie.