

Assessment of waste-based organic biofertilizers for small-size agroecology farm to promote local and circular bioeconomy

Keywords

Organic, Biofertilizer, Biostimulant, Agroecology, Circularity, Bioeconomy, Integrated Pest Control, Soil Health

Summary

The project aims to assess the effects of a waste-based biofertilizer produced in Sweden on crops quality and yield, soil health, and biotic interactions in an agroecology farm.

Location

The entire trial will take place in the municipality of Lomma (Skane, Sweden), around the Swedish Agricultural University (SLU) Campus of Alnarp.

Time

The entire trial will take place from March 2023 to October 2023. We require a minimum thesis/internship duration of 3 months. We prefer application for thesis/internship starting in March and July-August.

Requirements

The applicant must be a university student, either Bachelor or Master level, with at least a basic knowledge of statistics, and plant physiology for WP1G and entomology for WP1B and WP2B.

We encourage student with background in biology or agricultural sciences to apply.

We encourage international student to apply through the Erasmus+ program, either for study or internship, and other international programs.

Training and Supervision

In the first two weeks, the student will receive an explanation of the whole project and be requested to write a short proposal for its part. During the same weeks, the student will be trained in the use of the equipment before the start of the data acquisition will receive complementary data to write a report about its part of the project. The student will receive supervision during the work in the field or laboratory. Additionally, the student will receive supervision during the writing, consisting of 10 h of personal consultation and two feedbacks on submitted drafts before the final submission. Each student will have to perform their own data analysis, under additional supervision.

We're flexible about the cooperation with other universities and their requirements.

Opportunities

WP1G: Photosynthetic efficiency (min. 3 months)

Three measurements will be made every other day: chlorophyll content, chlorophyll a fluorescence, and gas exchange. The chlorophyll content index (CCI) will be measured with a MC-100 Chlorophyll Concentration Meter (Apogee Instruments, USA) according to Parry et al., 2014.

The chlorophyll a fluorescence will be measured from 2 h after photoperiod starts (dawn) until 12 a.m. with a LI-6800 Portable Photosynthesis System (LI-COR Biosciences, UK) according to Murchie & Lawson, 2013. The same instrument will simultaneously measure the gas exchange.

WP1B: Biotic interaction (min. 3 months)

The leaf area index (LAI) and damage ratio would be measured using a camera and subsequent image processing through ImageJ2. In addition, an assessment (species and numbers) of the aboveground arthropods will be carried out periodically and the floral visitation will be estimated.

WP2B: Metabolites extraction and analysis (min. 3 months)

Samples of damaged and healthy tissues will be collected, frozen in liquid nitrogen and lyophilised. Subsequently, metabolites will be extracted from these tissue and those associated with product quality (i.e. vitamins and antioxidants) and biotic tolerance (i.e. alkaloids), will be quantified through GC-MS.

Application process

All application must be sent via e-mail to nivi0002@stud.slu.se.

The application must contain the CV and a letter of motivation. A letter of recommendation from a professor or former employer would be considered, although not requested. The CV does not require full name and photo. However, it must include ways to contact the applicant. The letter of motivation must be one A4 page with text in Calibri 12 with 1.15 interline spacing. The motivation letter should clearly state in which work package(s) and times the student is interested. You can expect an answer within 5 working days.

Housing

Housing could be provided by SLU on campus. However, we cannot guarantee it until one month before the start. If accepted, you'll received instruction and help on how to find housing.

Further Inquiries

All inquiries must be sent via e-mail to nivi0002@stud.slu.se with the object "Inquiry