Postdoctoral position

Postdoctoral Researcher Position at the CBGP (UPM-INIA/CSIC)
(CBGP-Severo Ochoa Centre of Excellence Research Program)

Project Title: Deciphering novel plant responses and plant-microbiome interactions under heat stress and nutrition scarcity" (µNUTRI-HEAT)

Background: The increasing population, the ongoing rise in fertilizers' price, and the unpredictable climate change will negatively hit crop growth and productivity as well as soil fertility. Thus, in the next coming decades, we must provide new solutions to increase crop productivity and ensure food security in a sustainable, cost-efficient, environmental-friendly, and effective way. Climate change acts as a negative factor that will reduce productivity, by strengthening the detrimental effect of many abiotic stresses, such as extreme temperatures, drought, salinity, or nutrient scarcity.
In the nature, during extreme heat, the temperature of the soil-root environment is buffered by the soil thermal-geodynamics properties. However, in vitro or greenhouse experiments, the root growth zone is heated to a similar temperature than the shoot. To solve this experimental limitation, we have engineered a device (TGRooZ, **T**emperature **G**radient **R**oot **Z**one) that generates a soil-temperature gradient similar to the conditions found in the natural soil.
µNUTRI-HEAT is a collaborative project involving 4 groups from the CBGP with different expertise to analyze the combination of two stresses, heat and phosphate starvation, on plant development. Using the TGRooZ, we want to study the effect of combined heat stresses and Pi deficiency on plant growth, nutrition, and yield. We will identify new genes, microorganisms, and proteins involved in the response to heat and Pi starvation and specific fungi that might enhance plant growth under these adverse conditions.

What we are looking: We are looking for a highly motivated researcher to analyze the plant response to heat and nutritional deficiencies using a novel and revolutionary approach. Expertise in phenotyping, metabolomics, metagenomics and plant physiology is preferred. Experience in plant molecular biology is highly desirable. Good command of scientific English is required.

Tasks to do:
- Tomato plant phenotyping during heat stress and phosphate deficiency conditions. Special attention to root phenotyping.
- Physiological analyses (photosynthesis, nutrient content, leaf temperature and transpiration etc.).
- Hormone profile analyses and Metabolomic analyses.
- Screening fungus collection to identify those that confer plant tolerance to heat.
-Metagenomics analyses
- GWAs analyses to identify heat/nutrient-tolerant ecotypes and genes involved in the response.

If you are interested, please contact Carlos del Pozo pozo@inia.csic.es o Stephan Pollmann stephan.pollmann@upm.es

Link for application:

Español: https://www.cbgp.upm.es/index.php/es/?option=com_content&view=article&id=836

Inglés: https://www.cbgp.upm.es/index.php/en/?option=com_content&view=article&id=839

Offer # 5. PLANTADAPT_05_NUTRI-HEAT 1