

Transnational Access Report

1. General Information

Project Acronym (ID):	Abiotic Stress Biobab
Project Title	Measuring salinity and drought tolerance in maize plants inoculated with formulations of plant growth-promoting rhizobacteria from Biobab R&D
Installation used	ABER IPC
Name of Group Leader	Sara García Figuera
Name of organization	Biobab R&D

2. Project summary (max. 250 words)

Plant growth-promoting rhizobacteria (PGPR) are rhizosphere bacteria that can enhance plant growth through various mechanisms, including phytohormone production, nutrient solubilisation and priming of plant natural defences. In addition, they can improve tolerance to abiotic stress by stimulating root development and synthesizing the enzyme ACC deaminase, which prevents ethylene production in the roots, among other mechanisms.

The objective of this project was to measure the effect of different PGPR formulations on salinity and drought tolerance in maize plants. These formulations were developed by Biobab R&D, a Spanish company specialized in the development and commercialization of biological solutions for sustainable agricultural systems.

Previous tests conducted by Biobab R&D had shown that some of its strains helped improving salinity and drought tolerance in plants under stress. Based on these results, a pilot experiment was conducted at the National Plant Phenomics Centre (Aberystwyth, UK) using maize plants that were inoculated with two microbial formulations (K2, K3), a control with the formulating carriers (K1) and a negative control. The results indicated that microbial formulations K2 and K3 had a significant effect on root and shoot dry weight under stress, as well as plant area and height.

Therefore, a second experiment was conducted using four microbial formulations (K2, K3, K4, K5), K1 and the negative control. Preliminary results suggest that these microbial formulations could increase plant area, as well as root and shoot biomass, in the absence of salt or drought stress, but the interaction with the stress treatments is still under investigation.

Biobab R&D plans to use this data to work on the development of a commercial product that could be a biological solution for crop production under salinity and drought stress in many areas of the world.

3. Main achievements (max. 250 words)

Plants grown under low nutrient conditions showed increased growth when inoculated with specific soil bacteria. The growth was measured dynamically by image analysis and confirmed by ground truth at final harvest. The benefits of using the NPPC facility were the target watering, image analysis (visual and thermal i/r) and calculation of water use efficiency.