MASTER THESIS OPPORTUNITY

How do drought stress, insect pollination and magnesium nutrition affect plant traits in faba beans?

Adverse climatic conditions, such as drought, greatly impair plant performance and decrease crop yields. Nutrient supply can mitigate the impact of abiotic stressors in crops. In this context, most studies focused on nitrogen, phosphorous and potassium, while magnesium (Mg) effects have rarely been considered. Proper Mg nutrition is known to enhance plant drought tolerance but how floral traits associated with pollinator attraction and yields are affected has rarely been assessed. Also, it is unknown how Mg availability and insect pollination interact regarding yield traits in flowering crops. No study to date has looked at the interactive effects of Mg supply and drought stress on physiological traits, floral traits, pollination success as well as final yields of a flowering crop plant.

What is the thesis about?

This master thesis aims to explore how drought stress, magnesium nutrition and insect pollination interactively affect plant traits and yield traits of faba beans (*Vicia faba* L.). Specifically, you will answer the following questions: (1) Can adequate Mg supply mitigate the negative effects of drought stress on plant traits and yields? (2) Can insect pollination compensate for low Mg nutrition regarding crop yields?

The thesis is part of the *InterDrop* project (http://interdrop-project.com). The experiment will be carried out in the greenhouse (in Göttingen) and in collaboration with the Division of Plant Nutrition and Crop Physiology at the University of Göttingen.

What will your tasks be?

Your tasks will include growing and watering of faba bean plants, hand pollination of flowers, studying different physiological plant traits (*in-vivo*), and recording of yield data. Afterwards, you will analyze the data set with the statistical software R. The data will be synthesized with the data of another thesis in the project, assessing floral traits (i.e. nectar and pollen) of the faba beans.

What are the requirements?

We are looking for a **highly motivated MSc student**, interested in plant nutrition, plant physiology, and plant-insect interactions. The ability to work independently and precisely is required. Good knowledge of Excel is necessary and basic knowledge of R is beneficial. The thesis should be written in English. The greenhouse experiment will be conducted in **autumn 2024** and the desired start is September/October 2024.

If you are interested, please send your CV and a short motivation letter to:
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Photo: Theresa Brandes