GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN IN PUBLICA COMMODA SEIT 1737

InterDrop
http://interdrop-project.com

MASTER THESIS OPPORTUNITY

How do drought stress and intercropping affect pollen and nectar traits in faba beans?

Adverse climatic conditions, such as drought, greatly impair plant performance, decrease crop yields, disrupt plant-pollinator interactions and threaten important ecosystems services (e.g. food provision and pollination). Diversification measures like intercropping have been shown to provide some natural insurance under extreme conditions. However, knowledge is lacking on how intercropping and environmental stressors interact in their effect on functional crop plant traits that are related to pollinator attraction and thus pollination success and yields.

What is the thesis about?

This master thesis aims to explore how drought stress affects the nectar and pollen production of faba beans (*Vicia faba* L.) grown in sole stands and intercrops with wheat. Specifically, you will investigate how **pollen and nectar traits** are affected by the combined effect of **drought stress** and **intercropping** and will answer the question whether intercropping can prevent negative drought effects on plant traits that determine the crop's attractiveness to pollinators. There is also the option to only focus on pollen or nectar traits in the framework of a bachelor thesis (see call for bachelor theses).

The experiment will take place at the Reinshof experimental farm of the University of Göttingen, where rainout-shelters (for drought stress simulation) will be set up in combination with cages to exclude flower visitors (to study further questions of the project not part of this thesis) - in faba bean sole stands and in faba bean–wheat intercrops in spring 2024.

What will your tasks be?

Your tasks will be the recording of floral traits, the **extraction of nectar samples** from flowers, the measurement of nectar sugar concentration, the collection of flower buds in the field and the preparation and **analysis of pollen samples** (regarding pollen amount and vitality). After recording the field data, you will analyze the data set with the statistical software R.

What are the requirements?

We are looking for a **highly motivated MSc student**, interested in plant-pollinator interactions and in the development of sustainable crop production systems. The willingness to perform intensive field work during the bean`s flowering period (May) is a must, as is the ability to work independently and precisely. Good knowledge of Excel is required and basic knowledge of R is beneficial. The thesis should be written in English. The fieldwork will be conducted in **May 2024** in Göttingen, and the **desired start is beginning of April**.

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

Nicole Beyer
Functional Agrobiodiversity Group, DNPW,
University of Göttingen
nicole.beyer@uni-goettingen.de