GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN IN PUBLICA COMMODA SEIT 1737

InterDrop
http://interdrop-project.com

TWO BACHELOR THESIS OPPORTUNITIES

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 are the theses about?

The theses aim 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. The question whether intercropping can prevent negative drought effects on plant traits that determine the crop's attractiveness to pollinators will be answered. One thesis will focus on **nectar traits** (volume, sugar concentration), while the other thesis will address **pollen traits** (amount, vitality) of faba beans. There is also the option of one master thesis analyzing both, pollen and nectar traits (see call for master thesis).

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 these theses) - in faba bean sole stands and in faba bean–wheat intercrops in spring 2024.

What will your tasks be?

Your tasks will be either the **extraction of nectar samples** from flowers and the measurement of nectar sugar concentration or the collection of flower buds in the field and the preparation and **analysis of pollen samples** (via impedance flow cytometry). After recording the data, statistical analyses with the software R will be conducted.

What are the requirements?

We are looking for two **highly motivated bachelor students**, 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 and basic knowledge of R is beneficial. The fieldwork will be conducted in **May 2024** in Göttingen. The **desired start is beginning of April** in order to ensure good preparation of the experiments and introduction to the field methods.

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

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