

## BSc / MSc thesis or student's job

### Züchtung von Hitze- und Trockenstress-toleranten Ackerbohnen

#### Breeding of heat- and drought-tolerant faba beans

*Sprache entsprechend der im entsprechenden Studiengang gültigen Vorgaben  
Language according to the valid requirements of the respective study program*

Faba bean (*Vicia faba* L., German: Ackerbohne, Dicke Bohne, Saubohne) is a grain legume that produces protein-rich seeds of high protein quality. It has a positive effect on pollinators and soil fertility and provides optimal soil conditions for the subsequent crop. The German Government's protein crop strategy aims to increase the share of protein crops, especially legumes, in crop rotations from <3 % to over 10 %. However, faba bean suffers from abiotic stresses that affect yield levels and yield stability. Combined heat and drought stress during flowering have a negative impact on yield – a scenario that is likely to become more frequent with climate change. Despite its high yield potential, faba bean is currently not sufficiently attractive and increased breeding efforts are needed to develop climate-resilient faba bean varieties.

As part of the multidisciplinary FABALOUS project (expected start: March 2025), we will grow 24 genotypes of faba bean under irrigated and drought stress conditions, and simultaneous heat stress, in rainout shelters.

**The objectives are to optimize phenotyping protocols to assess the response of plants to simultaneous drought and heat stress under field conditions**



#### Tasks include:

- Assessment of agronomic traits, physiological traits and stress-related traits
- Measurement of stomatal conductance and photosynthetic efficiency
- Measurement of soil moisture
- Phenotyping of reproductive traits, determination of flower abortion rate
- Data analysis (R, Plabstat)

The main work period is in May to June at the time of flowering. The field experiment is located at Reinshof near Göttingen.

If you are interested in this thesis, please contact:

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