Ecological intensification in horticulture

Increasing crop quantity and quality by understanding relationships between functional diversity, ecosystem services and genotype-specific traits

Bachelor thesis opportunity

Research question: Do floral traits differ between cherry cultivars? (Can these differences be used to strategically attract pollinators?)

Project significance: Alternatives to conventional agriculture are urgently needed to sustain ecosystem functions and services. Ecological intensification is a promising concept, aiming to improve agricultural system performance and efficiency through actively managing functional biodiversity to sustainably enhance delivery of production-supporting ecosystem services.

The aim of this bachelor thesis is to measure cultivar-specific floral traits, and to assess whether floral-trait differences determine cultivar attractiveness to different pollinator taxa. Specifically, you will measure floral traits of cherry cultivars at two commercial cherry orchards (Springe, Stadthagen), looking at flowering intensity, flower size, colour, nectar volume, sugar concentration, pollen amount and viability of pollen. Your data will then be synthesised with insect visitation data from another Bachelor thesis (taking place simultaneously) to investigate whether the frequency of pollinator visits can be explained with floral traits, and to analyse whether pollinator taxa select cultivars based on specific traits.

Methods to be applied in the bachelor thesis:

- recording floral traits in the field
- collecting samples in the field (e.g. nectar in glass capillaries, flower buds in tubes) for later measurements in the lab
- statistical analysis with R

Requirements: You should be interested in field work and willing to perform an intensive, 4-week-field period in spring to collect your data. A driving license and good physical fitness are necessary for field work. Good management skills, an independent and thorough work ethic and enthusiasm for field work are essential. Experience measuring floral traits, willingness to write your thesis in English, and knowledge of R are desirable. Thesis commencement: 03/2024

If you are interested to contribute to the EU project ECO-INTENS-HORT (https://www.uni-goettingen.de/de/676295.html) with your bachelor thesis, please contact me for further details: Dr Wiebke Kämper (wiebke.kaemper@uni-goettingen.de) at Functional Agrobiodiversity – DNPW, Georg-August-University Göttingen

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Funded by the European Union