

Investigating the influence of light spectra and temperature on flower structure and morphology of different Cannabis sativa L. genetics.

Project description

Development of light concepts methods for cultivating terpene- and cannabinoid-rich cannabis for active pharmaceutical ingredients (DELIGHT).

Plant-based active pharmaceutical ingredients have so far been consumed as fresh, dried or processed plants. The end result is a plant-derived or synthetically produced active ingredient to cure disease. The quality and stability of these active ingredients is crucial for the correct and safe dosage of the drug. This is a challenge because the plants are strongly influenced by their growing environment. This project focuses on improving the use of cannabis as a plant-based raw material for high-quality pharmaceutical products. The technical challenges to be solved relate to the light spectrum (wavelength), light distribution, longevity, stability of the light, as well as finding cannabis varieties that deliver high levels of the desired active ingredients for the final pharmaceutical product.

The Master's thesis involves conducting two experiments. Due to the topic of cannabis, all work is carried out with the constant assistance of the supervisor. This means that the workload of a Master's thesis is only fulfilled by working on both trials. The two experiments are carried out from 01.01.2022 to 31.03.2022 respectively. The start of the cooperation with the supervisor is 01.12.2021. Permanent supervision by a doctoral student is guaranteed throughout the entire trial period. Deadline for the submission of the master thesis is the 30.06.2022.

Your future topics of focus:

- Carrying out a greenhouse trial and a trial in the climate chambers. The focus of the work is on recording morphological data of flower growth (number, size, weight).
- Investigating the interaction between light and temperature in the climate chambers.
- Investigation of the influence of different full spectra LED's on different genetics with their respective characteristics.
- Developing growth curves in SAS.
- If time is available analysis and identification of cannabinoids and terpenes of the flowers.

Knowledge gain:

- Conducting a profound agricultural trial.
- Working with state-of-the-art lightning sources.
- Independent scientific work.
- Working with an interesting crop.
- Fundamental knowledge in SAS.

Requirements profile

- Ability to work with plants.
- Willingness to work weekends during the trial period.
- Basic knowledge of scientific work and willingness to write a thesis in English.
- Current grade point average of study courses so far 1.7 or better.
- English and German knowledge at least B2 level.

If you are interested in this topic, please send us your curriculum vitae and table of notes. In addition, a 5-page written paper is required in which you present based on a literature study current research on cannabis morphology, pharmaceutical relevant compounds, light and temperature that is relevant for your intended study. On the basis of this possible hypotheses for the experiments will have to be formulated.

Project management and supervisor: Philipp Reichel (philipp.reichel@uni-hohenheim.de)