BSc. or MSc. internship

Assessing genetic variation in physiological traits in diverse panels of barley genotypes under field conditions

Institute: Jan Ingenhousz Institute

Theme: Agronomy, Crop photosynthesis

Type of experiment: Field experiments

Location: Unifarm, Wageningen

Period: March – September 2026

Background & aim

One way to improve crop photosynthesis is to exploit naturally occurring genetic variation for photosynthetic traits in crops. To do this, we screen large numbers of diverse panels of genotypes (including elite material, landraces, parental lines etc.) for and assess genetic variation for various photosynthetic traits. However, due to the complexity of the relationship between photosynthesis, the crops physiology and its growing environment, progress in improvement is limited. Traits such as flowering time can have large indirect effects on photosynthesis, making it difficult to study photosynthetic variation in isolation. To overcome this challenge, we aim to develop methods that disentangle true photosynthetic variation from confounding agronomic and physiological influences. This study will assess genetic variation in physiological and agronomic traits including growth, development and flowering traits in large panels of diverse barley genotypes utilized in our project.

This assessment will provide a means for grouping genotypes into various classes based on phenology, maturity type or other traits for a more targeted selection of candidate genotypes for further assessment of photosynthetic variation in future trials. Additionally, genetic loci linked to the various physiological and agronomic traits will be identified to further define genetic classes based on allelic variation.

Jan IngenHousz Institute

The Jan IngenHousz Institute (JII) is an open science research institute dedicated to improving photosynthesis to enhance global crop productivity, sustainability, and climate resilience. JII brings together expertise in engineering, data science, plant biology, biophysics, genetics, and breeding. We develop innovative sensors, research methods, and data analysis platforms that enable collection and interpretation of real-time field measurements of photosynthesis.

Located on the campus of Wageningen University, JII offers a dynamic, interdisciplinary environment where curiosity meets impact. If you're a student eager to apply your knowledge to photosynthetic efficiency challenges, this is your opportunity!

Useful skills

- Basic statistical skills
- Basic skills /knowledge in field data collection
- Basic knowledge / experience in Genetics: QTL mapping

For more information, contact **Olivia Kacheyo** (olivia.kacheyo@jii.org)

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