

# Genetic Diversity in Miscanthus Photosynthesis and Carbon Partitioning

## Background & aim

Perennial grasses, like Miscanthus, play a key role as sustainable biomass feedstock for the upcoming bioeconomy. Reduced photosynthesis during the growing season has been suggested as a potential driver of Miscanthus long-term productivity decline, however, the underlying mechanisms behind these declines are still unknown.

Previous research has identified decreased carbon allocation to belowground storage as a potential limitation to photosynthesis, however, these results are based on only one genotype and limited environmental conditions. We hope to expand this approach to a larger variety of Miscanthus genotypes. Data from this project will help breeding programs to better associate photosynthesis and final yield.

The aim of this project is to **characterize Miscanthus genetic diversity in seasonal photosynthesis and its interaction with development**. Within the project, you will have the opportunity to expand on the physiological and developmental response to the environment, the underlying biochemical limitations, and/or **genetic variability** across genotypes, depending on their own interests.



**Institute:** Jan Ingenhousz Institute

**Theme:** Crop Photosynthesis

**Type of experiment:** Field research

**Location:** Wageningen

**Period:** Summer/Fall

## Tasks

You will conduct field research, lab work, and gain hands-on experience on several techniques used to characterize carbon assimilation and allocation. In collaboration with the JII and Luisa Trindade's group, you will be involved in:

- Field research to quantify photosynthesis and development
- Lab analysis for carbohydrate quantification
- Data analysis

## 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!

## What you will learn

During this project, you will integrate with the engaging research community in the JII. You will gain extensive hands-on experience in **Plant Physiology**, **Field Research**, and lab techniques for **Carbohydrate quantification**. You will also develop skills in **data analysis and visualization using R**, and **scientific communication**.



For more information,  
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