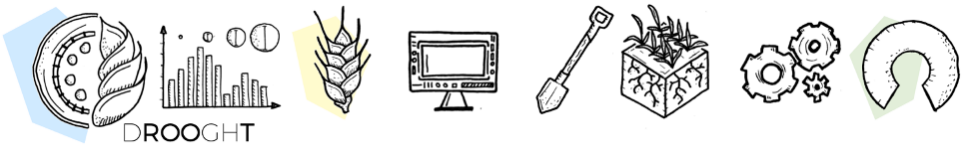
# Postdoctoral researcher in Root/Crop Modelling

**Position**: Postdoctoral researcher (M/F/X)
**Duration**: 3 years funded, starting 1st of September 2025
**Institution**: Earth and Life Institute, UCLouvain, Belgium
**Funding**: ERC Consolidator Grant
**Project**: DROOGHT - Improving cereal yield predictions under drought
www.drooght.github.io




> Do you want to help develop more **robust cropping systems**? Do you want to understand how **plant roots impact water flow** in the soil-plant-atmosphere continuum, at different scales? Are you passionate about Open Science and sustainability?
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> We are pleased to announce that we are opening a **three-year postdoctoral researcher position** at the UCLouvain (Belgium) for the **DROOGHT project**. This position offers an exciting opportunity to contribute to cutting-edge research in plant science and gain valuable experience in the field of **root and crop modelling** and **drought resistance in cereals**, with a particular emphasis on wheat.

## The DROOGHT project:

The project DROOGHT aims to identify **root traits that enhance crop robustness** to drought. The project focuses on understanding below-ground processes in cereal crops, particularly the role of root diameter distribution in water uptake. The project will use both **computational and experimental approaches** to identify dominant structural root traits controlling water uptake under water-limited conditions. The outputs will include a multiscale computational framework, a phenotyping pipeline, and the identification of cereal root properties for robust crop across European conditions and climate change scenarios.

## Your part

Your goal will be to work on the ***in silico prediction* of root ideotypes for drought resistance across Europe.** You will identify spatially explicit root ideotypes to enhance drought resistance across diverse European pedoclimatic conditions. By analyzing organ-scale root properties and their impact on crop-scale variables like yield, you will determine optimal root trait combinations for various conditions, including future climate change scenarios. You will do simulations (SiriusQuality) at high spatial resolutions and perform global sensitivity analyses to understand the influence of root traits on water uptake. Thes simulation will be compared with experimental field data. This work will be co-supervised by Dr. Pierre Martre, INRAE Montpellier. The position will include research stays in Montpellier (several months over the 3 years).

## What you will do:

- Perform simulations using the SiriusQuality modeling workflow, which integrates spatialized soil and weather databases at the European scale.
- Conduct global sensitivity analyses to assess the robustness of results and understand the influence of root traits on water uptake across different environments.
- Collaborate with a multidisciplinary team of researchers and contribute to project meetings and discussions.
- Stay up to date with the latest advancements in plant science research and contribute to scientific literature through publications and presentations.
- Engage in the dissemination of research findings through conferences, seminars, and other scientific events.

## What we are looking for:

- A PhD degree in plant science, biology, agricultural science, or a related field.
- Strong background knowledge and interest in root and crop modeling.
- Experience in modeling pipeline use.
- Proficiency in data analysis and statistical software packages.
- Ability to design and write scientific papers.
- Excellent communication skills and ability to work effectively within a team.
- Because of a specific funding scheme, you must have lived the past 24 months out of Belgium.

Please do not let lack of some skills make you feel you are ineligible for any position here. If some skills are missing, they can generally be taught. It is our role to help you develop your research program with mutual interest.

## Our lab

The Plant Ecology, Eco-physiology and Sustainable Agriculture (PEPA) Lab is currently composed of 20+ lab members. It is part of the Earth and Life Institute and tightly linked to the Faculty of bioengineering of the UCLouvain. We work closely with the UCLouvain university farms and have strong links with the Forschungszentrum Juelich, in Germany.

In our lab we share values of (eco-)feminism, respect for minorities, work-life balance and curiosity. Researchers are encouraged to follow dedicated “soft skills” trainings on related subjects, also including stress relief, non-violent communication, etc. for free during their worktime.

## Louvain-la-Neuve, Belgium

Louvain-la-Neuve is one of the newest cities in Europe, built around the UCLouvain. It is a unique, fully pedestrian city, vibrant with student energy and initiatives. Located in Wallonia, the French-talking part of Belgium, it is at the heart of Europe. It is well connected to many major cities in both Belgium and Europe by train.

## Application Process:

Before applying for the position, we strongly suggest having a look at our values here https://www.guillaumelobet.be/values

To apply for this position, please submit the following documents:

1. Curriculum vitae (CV) highlighting your educational background, research experience, and publications (if any). Narrative CV are welcomed.

2. A cover letter outlining your motivation, research interests, and skills. We also ask you to include a **short description of your proudest achievement**, within science or outside.

3. Feel free to add references who can speak to your academic and/or research abilities if you wish.

Please send your **application** via email to guillaume.lobet@uclouvain.be by **May 15th 2025**. The title of the email should be **"DROOGHT004 – [YOUR LAST NAME]"**. Shortlisted candidates will be contacted for an interview.

For further inquiries, please contact me at guillaume.lobet@uclouvain.be. More information about my research can be found at www.guillaumelobet.be .

UCLouvain is an equal opportunity employer. We encourage applications from individuals of all backgrounds, ages, genders, and abilities.