

Call for 3-year PhD scholarship on the contribution of agroforestry systems to provisioning ecosystem services, climate change adaptation and mitigation in Kenya.

Background

The GALILEO project (Strengthening Rural Livelihoods and Resilience to Climate Change through Innovative Agroforestry Systems, <https://galileo-project.eu/>) is an EU-funded project (01.2025-12.2028) coordinated by CIRAD (<https://www.cirad.fr/en>) that aims to significantly enhance ecosystem services associated with productivity, farm resilience to climate change, mitigation of climate change, biodiversity conservation and cultural interest through context-specific and people-centered agroforestry innovations. The project is established across four Sub-Saharan African countries (Kenya, Senegal, Ghana, and Cameroon) and is centered around agroforestry, agro-pastoral, and agro-silvo-pastoral systems. The University of Embu, Kenya, as a partner of the GALILEO project, will be coordinating a newly-established living lab in the area. The living lab will be organized around different stakeholders (e.g. farmers, researchers, policy makers, etc.) who will co-develop, test, and evaluate agroforestry and agroecology innovations. Within this multi-stakeholder framework, the PhD candidate will primarily focus on work package 3 (WP3), which is dedicated to ecosystem services linked to system productivity, and climate change adaptation and mitigation.

PhD topic

The PhD candidate will explore and quantify biophysical ecosystem services delivered by agroforestry systems compared to conventional farming systems. Special focus will be given to water dynamics, carbon sequestration, microclimate regulation, as well as tree and crop productivity.

The selected candidate will be under the supervision of Dr. Rebecca Yegon, department of Water & Agricultural Resource Management (WARM) at the University of Embu, Dr. Rémi Cardinael (CIRAD, currently based in Zimbabwe) and Dr. Pierre-André Waite (CIRAD, based in Kenya).

Overview of research activities

During the PhD, the selected student will:

- Conduct field assessments to quantify tree and crop productivity (i.e. LAI, aboveground biomass, yield, and yield component).
- Monitor crop / tree phenology and agricultural practices.
- Measure soil organic carbon stocks and greenhouse gas emissions.
- Investigate soil and plant hydrological processes, including soil moisture and infiltration rates, water balance, and plant hydraulic properties.
- Characterize microclimatic conditions across the different sites through continuous and spot measurements of temperature, humidity, and photosynthetically active radiation (PAR).

- Work together with Master student(s) who will focus on some specific WP3 research activities.
- Collaborate and share data with other work packages, notably with modelers of the project who will focus on modelling the potential of AFSPs as adaptation and mitigation strategies to climate change and on multicriteria and multiscale evaluation of performances and trade-offs in agroforestry .

Requirements

- **The PhD candidate must be from Kenya.**
- Master's degree in agronomy, soil science or plant ecophysiology.
- Experience and motivation for biophysical measurements and field experimentation.
- Knowledge on diversified farming systems and especially on practices linked to climate change adaptation & mitigation.
- Familiarity with field and lab techniques used for soil characterization, biomass measurement, microclimate monitoring, and/or for soil and plant water dynamics.
- Students with strong data analysis skills (especially with the R software) will be prioritized.
- Some knowledge about soil-crop modeling is a plus.
- Excellent English (spoken and written).
- Ability to engage in international and multidisciplinary research teams.
- Evidence of a published scientific article will be an added advantage.
- High motivation and strong organizational skills.

Work conditions

The successful candidate will be enrolled at the University of Embu, with research activities in the surrounding area. The scholarship covers tuition fees and a monthly stipend for 3 years.

Application process

A detailed CV, a motivation letter, copies of academic certificates, and recommendation letters from at least 2 professors or previous supervisor must be sent by email to pierre-andre.waite@cirad.fr, remi.cardinael@cirad.fr, yegon.rebecca@embuni.ac.ke with the following title in the object of the mail: "PhD GALILEO".

Application deadline: 31.05.2025

Selected candidates will be interviewed at the end of June or early July. Preliminary registration at the University of Embu is expected in September 2025.