



PhD opportunity - University of Brasilia & CIRAD

Topic

TREE PERFORMANCE AND RESILIENCE IN AMAZONIAN NATIVE SPECIES PLANTATIONS UNDER CLIMATE CHANGE

Context and rationale

Amazonian forests, and their biodiversity and nature contribution to people, are increasingly threatened by deforestation, degradation and climate change. Planted forests with native species represent an alternative to selective logging in natural forests and exotic species monocultures plantations, and can reconcile conservation of biodiversity with a diversified provision of wood products. In the face of climate change, increasing diversity of planted species can improve planted forests resilience. This management practice however suffers from a lack of knowledge on suitable species, on the effect of the mix of planted species on productivity and resilience, but also on the perceptions and constraints of the diversity of stakeholders likely to adopt this practice.

The proposed doctoral study will be part of a broader project aiming to tackle these challenges. Overall, the PlantForAdapt scientific project proposes an interdisciplinary approach to tackle critical research priorities on planted forests in Amazonia. This project will specifically characterise the potential of native species for planted forest (work package 1), study how management choices influence the dynamics and resilience of planted forests (work package 2), and analyse the opportunities and barriers to adoption of this practice (work package 3). PlantForAdapt is based on the hypothesis that leveraging the high biodiversity of native tree species can enhance planted forest productivity and their resilience to climate change. By placing strong emphasis on stakeholder engagement, PlantForAdapt will provide science-based guidelines with an immediate transformative impact on the next generation of tropical biodiverse planted forests to adapt management practices to a rapidly changing context, while also contributing to cutting-edge scientific questions.

Objectives and methods

Within the scientific project PlantForAdapt, the doctoral study will contribute to work packages 1 and 2. Its overall objective will be to model the demographic performance of individual trees and planted forests, and their response to climate change. More specifically, the doctoral study will aim to respond to three main objectives:

- Modeling the demographic performance of Amazonian native species in planted forests
- Assessing the native planted trees species demographic response to climate change
- Characterising the effect of biodiversity on native species plantation performance

Leveraging existing tree census data from experimental sites of planted forests of native species in French Guiana and Brazil, the doctoral candidate will develop hierarchical Bayesian growth and survival models for approximately 50 species, and further examine how these demographic traits respond to observed climate anomalies. At the scale of the planted forests, the doctoral study will explore the effects of tree diversity resulting from planting choices on the dynamics, stability, and climate resilience of forest functioning. Functional traits data will be collected by a team of researchers from the PlantForAdapt project to which the doctoral candidate will participate. These data on functional traits and their sensitivity to climate variability will be used to identify the potential of other candidate species for use in planted forests, and the positive and negative interactions between species underlying the effect of the functional diversity of the planted species mix. The doctoral candidate will also contribute to the curation of pre-existing and newly acquired data.

Thesis setting

The doctoral candidate will be enrolled at the **University of Brasilia**, in the post-graduation program in Forest Sciences (PPG-CFL). They will be supervised by:

- Main-supervisor : Dr Géraldine Derroire (geraldine.derroire@cirad.fr), researcher at CIRAD (French agricultural research and cooperation organization) and Senior Research Fellow at the UnB with the PPG-CFL, based in Brasilia
- Co-supervisor : Dr Sylvain Schmitt (sylvain.schmitt@cirad.fr), researcher at CIRAD and hosted at the INPA (*Instituto Nacional de Pesquisas da Amazônia*), based in Manaus

The doctoral candidate will be fully integrated into the post-graduation program in Forest Sciences (PPG-CFL) of the University of Brasilia, and into the scientific consortium of the PlantForAdapt project. This scientific consortium is international (Brazil and France, both mainland and French Guiana) and interdisciplinary (tropical ecology, functional ecology, wood science, forestry, modeling, geography and sociology).

The doctoral candidate will be mostly based in Brasilia, with visits to Manaus and field work on the three sites of the project (Belterra, Pará ; Fazenda São Nicolau, Mato Grosso and several sites in French Guiana). Mobility to France and/or French Guiana may be considered.

The expected start date is March 2027. The doctoral studies will have a duration of 4 years, hence until February 2031.

Funding

The PhD topic will be part of a broader project funded by the Swiss foundation Velux Stiftung to the CIRAD. This funding will cover a PhD scholarship and all the expenses related to the doctoral work (operating costs and field travels).

The doctoral candidate will receive a scholarship equivalent to 3500R\$ per month over 48 months. However, due to the end date of the PlantForAdapt project, the **scholarship will be paid over 43 months, from March 2027 to September 2030, at a rate of 3900 R\$ per month.**

Required qualifications and skills

- MSc degree in biology, ecology or forest sciences
- Strong skills and interest in quantitative data analyses of large data sets using R
- High motivation and rigor
- Interest for/experience in tropical context
- Strong writing skills
- Good level of written and spoken English, a working level in Portuguese and/or French is also desirable
- Apply and pass the selective process of the post-graduation program in Forest Sciences (PPG-CFL) of the University of Brasilia (with guidance from the supervisors)

The doctoral position is open to any nationality. Non-brazilian citizens will have to apply for a student visa with the help of the University of Brasilia.

To apply

Please send your application as one single pdf file to Géraldine Derroire (geraldine.derroire@cirad.fr) and Sylvain Schmitt (sylvain.schmitt@cirad.fr) **before the 28th of July 2026**, preferentially in English (alternatively in Portuguese). Application must include (1) a CV, (2) a cover letter expressing your interest for this position and expanding on the research objectives of the doctoral work, (3) a written example of your recent scientific work (publication or MSc thesis), (4) name and contact information for two to three references.

A pre-selection will be performed by the supervisors. Applications will be reviewed on a rolling basis. Shortlisted candidates may be contacted for an interview before the application deadline. **The pre-selected candidate(s) will then develop their project proposal and application with the help of the supervisors for the selective process of entry in the PPG-CFL in August 2026.**