

# Multi-trophic crop-weed-insect networks and plant performance (TROPIC)

 21000 Dijon

## INRAE presentation

The French National Research Institute for Agriculture, Food, and Environment (INRAE) is a major player in research and innovation. It is a community of 12,000 people with 272 research, experimental research, and support units located in 18 regional centres throughout France. Internationally, INRAE is among the top research organisations in the agricultural and food sciences, plant and animal sciences, as well as in ecology and environmental science. It is the world's leading research organisation specialising in agriculture, food and the environment. INRAE's goal is to be a key player in the transitions necessary to address major global challenges. Faced with a growing world population, climate change, resource scarcity, and declining biodiversity, the Institute has a major role to play in building solutions and supporting the necessary acceleration of agricultural, food and environmental transitions.

## Work environment, missions and activities

You will be hosted in the Biodiversity, Society and Evolution (BIODIVERSE) team of the "Weeds & Agroecosystems (AdvenSYS 2024-2029)" cluster (formerly "Sustainable Weed Management - GESTAD") of the Agroecology unit at the INRAE Centre Bourgogne-Franche-Comté, whose objective is to understand and manage weeds and their interactions and to develop agroecological cropping systems.

This junior post-doc will examine how networks of antagonistic and mutualistic interactions form and behave as a system in different landscape or agricultural management contexts. They will examine how the degree of functional trait matching and phenological overlap between focal crops and weeds affects the assembly of antagonistic (plant-herbivore, predator-prey) and mutualistic (plant-pollinator) interactions. They will measure the consequences of mutualistic and antagonistic interactions on weed and crop performance across a gradient of agricultural contexts (field or field border in conventional, organic, or agroecological systems). Consideration of species traits will be important for understanding the structure and function of multi-species interaction networks and the implications for the balance of biocontrol and pollination services available to weeds and crops.

You will be in charge of:

- Refining the hypotheses. Planning of experiments (field and greenhouses). Final selection of "phytometer" plants.
- Establishing experimental plots of selected "phytometers" that converge or diverge in plant traits in field sites
- Sampling of insects interacting with the different "phytometers" and measurements of ecosystem services and crop and weed production.
- Taxonomic identification of collected insects.
- Modelling of interaction networks and statistical analyses.
- Conducting a controlled factorial greenhouse experiment using plant-insect microcosms
- Preparation of 1-2 articles for international journals

**Conducting experiments under field conditions with weather (temperature, sunlight) and biological (pollen, insects) risks.**

**Driving license is an advantage.**

**Good relationship with farmers is required.**

**National or international missions are possible (meetings, conferences) may be required.**

# Training and skills

## PhD

Recommended training:

- PhD\*: Ecology (or other relevant biological discipline).

*\*Note: this type of position supports a junior post-doc, so the date of thesis defense must be between September 1, 2020 and September 1, 2023.*

Knowledge required: ...

- Community ecology/Plant-insect interactions/Functional ecology.
- Knowledge of microscopy and species identification (botany or entomology).
- Language abilities (oral and written) in English and French (CERF B1-C2).
- Statistical modelling (e.g. LMM, GLMM, SEM, network modelling).
- Experience working in a team and independently

Appreciated experience: ...

- Knowledge or experience of experimental and/or study design.
- Knowledge or experience of chemical ecology/plant chemical signals/trait-based interactions.
- Experience of scientific publishing and peer review process
- Experience of supervising technicians or students.

Skills sought: ...

- Ability and record of publishing in international journals (Q1), commensurate with early career stage.
- Research presentation and communication skills.
- Proficiency in R
- Flexibility or adaptability to field/laboratory situations.
- Proactive and positive approach to work

## INRAE's life quality

**By joining our teams, you benefit from *depending on the type of contract and its duration*:**

- up to 30 days of annual leave + 15 days "Reduction of Working Time" (for a full time);
- parenting support: CESU childcare, leisure services;
- skills development systems: training, career advise;
- social support: advice and listening, social assistance and loans;
- holiday and leisure services: holiday vouchers, accommodation at preferential rates;
- sports and cultural activities;
- collective catering.

## How to apply

Send a cover letter (2 pages maximum) and a CV explaining how your profile fits the position to: Dr Adam Vanbergen

### OFFER REFERENCE

- **Contract:** Postdoctoral position
- **Duration:** 2 years
- **Beginning:** 01/09/2023
- **Remuneration:** Minimum gross monthly salary of 2 604.47€ dependant on professional experience
- **Reference:** OT-18294
- **Deadline:** 18/06/2023



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## CONTACT

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### **LIVING IN FRANCE AND WORKING AT INRAE**

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