



Post-doctoral position on functional agronomy

Duration: 24 months (+additional months possible)

Location: Laboratoire des Interactions Plantes Microbes Environnement (INRAE, Toulouse, France)

Group: Sunflower-Pests Interaction

Position overview

Context

We are interested in the genetic resistance to *Orobanche cumana* (sunflower broomrape) and in understanding the molecular and cellular mechanisms of the interaction. *O. cumana* is an obligate parasitic plant which attaches to the sunflower roots, leading to strong yield losses. *O. cumana* seeds are spread in the soil. They cannot germinate spontaneously but require the presence of germination stimulants, produced by the sunflower roots. More recently, we showed that some service crops (Brassicaceae) inhibit the germination of *O. cumana* seeds *in vitro*, by mimicking biofumigation. Biofumigation is a farming practice consisting of growing service crops between two cash crops during autumn and winter, grinding them at flowering and then burying the grinded shoots in the soil. We measured the effect of cover crop degradation in the soil and the interaction with *O. cumana*. In previous projects, we identified services species with a strong effect on the germination of *O. cumana* seeds. A publication is under preparation and we patented a new control method. We want to decipher the mechanisms inhibiting the germination of the seeds.

Missions and activities

In the Cotagene project funded by PlantAlliance (<https://www.plantalliance.fr>), we aim at characterizing the effect of the service crops on the germination of *O. cumana* seeds. We want to characterize genes expression in *O. cumana* during the inhibition of *O. cumana* seed germination and to measure the expression of the *kai2* genes (known as strigolactones receptors). The Postdoc will also design and perform *in vitro* experiments and in the greenhouse to screen the effect of services crops on *O. cumana* germination, sunflower roots fixation and emergence. Field experiments in infested fields in different countries (France, Romania...) will complement the analysis.

Qualifications, skills required and working conditions

Skills: molecular biology, metabolomic, agronomy, pathology and genetic.

Experience in scientific publication writing is requested.

Communication: French and/or English.

Collaboration and working environment: the research activity will be in collaboration with researchers, technical staff, research partners, breeders and a private company.

Salary (brut) : from 2604.47€ to 3040.97€ according to experiences.

Required diploma : PhD.

Starting date : 2023/11/01

Application Deadline : 2023/08/31

Interviews : between 2023/09/01 and 2023/09/15

Send your curriculum vitae and cover letter to : stephane.munos@inrae.fr and celia.seassau@purpan.fr