Post-doctoral offer - 24 months - NV2 project (starting January 2019)

Background: the NV2 project

The objective of the NV2 project (October 2016 to September 2020) is to enable supplier companies in the sector of wine production to provide products and services that enable winegrowers and winemakers to meet global expectations in terms of taste.

To achieve this, the NV2 project consortium, made of 3 small and medium-sized companies (ITK, Frayssinet, Nyseos), a large industrial group (Lallemand) and 4 research units from INRA/University of Montpellier (SPO, LEPSE, SYSTEM, MISTEA), aims to propose a new integrated management of nitrogen inputs throughout the grape production and winemaking process.

The specific goal of INRA (LEPSE, SYSTEM), together with the companies ITK & Frayssinet, is to examine the effect of the type of organic fertilization and biostimulation applied to the vine on the dynamics of vegetative growth, nutrient storage and production development. To this end, experiments have been conducted since 2016 on various vineyard plots and have been supplemented since 2017 by experiments in pots under semi-controlled conditions. Data acquisition during 3 viticultural seasons will make it possible to develop algorithms for modelling nitrogen dynamics in the soil and in the various plant organs, and their impacts on must yield and quality, which will then be integrated into a decision support tool.

Post-doctoral fellowships

Main mission: development and evaluation of a vegetative growth and yield model for vines

A coupled C and N model of vine vegetative growth is currently developed by ITK in collaboration with INRA (LEPSE and SYSSSTEM) and programmed in Python language. Before the arrival of the post-doctoral student, a first C and N version will be available and evaluated under potential growth conditions (no nitrogen constraint).

The post-doctoral student will evaluate the model using data collected during the project's field seasons and adapt the model accordingly to notably include the nitrogen constraints.

The post-doctoral student will develop in the model a module corresponding to the elaboration of the vine yield. It will take as inputs the output variables of the coupled C/N model in order to predict the number of bunches, the fruit set rate and the number of berries per vine (vine stock).

This model will then be coupled with existing soil nitrogen and water balance models.

Secondary missions:

- Participation in the data collection from experiments in pots and vineyard plots (Occitanie region)
- Participation in the detailed analysis of data from experiments in pots, particularly for the production of formalisms for vine growth and yield elaboration responses to nitrogen and water constraints.

Required profile:

PhD in Ecophysiology and Modeling.
Expertise in perennial crops, especially vines, appreciated.
High programming knowledge, preferably in Python language.
Interested by teamwork and transfer.

Supervision and reception of the post-doctoral student

The post-doctoral student will be co-supervised by the research units LEPSE and SYSTEM (INRA) and the company ITK. He (she) will also collaborate with the research Unit MISTEA (INRA).

The post-doctoral student office will set partly at LEPSE (Montpellier) and partly at ITK (Clapiers) (periods to be defined).

Period of post-doctoral fellow:

From January 2019 to December 2020.

Remuneration:

Based on the threshold set by French administration and adjusted to the post-doctoral experience of the applicant: 2338 €/m (< 2 years of experience) to 2511€ /m (2 to 5 years of experience).

Contacts:

Anaïs Guaus for ITK (anais.guaus@itk.fr) and Anne Pellegrino for INRA-LEPSE (anne.pellegrino@supagro.fr).