

## Call for PhD Student

### Thesis title:

Crops establishment of rainfed no-till system based on cereal-food legume rotation and Effect of soil-tool interaction on water management and yield gap

### Description of the offer (Summary of the thesis project, global and specific objectives, key words):

Within the context of national program for promoting notill system for adoption in one million hectares, a great effort kept needed to insure adoption of this system in the context of Moroccan arid land. In fact, the switching from conventional cropping system to notill system cannot be easily adopted by the Moroccan farmers. The actual farming practices show that there is a potential of failing to initiate notill in arid land context if the farmers do not pay attention for establishing a good physical soil matrix helping to strength the initiation and the speed up of the biological soil process for a better crops establishment and for attenuating the effect of abiotic stresses.

### Global objective:

This thesis project aims to study options of improving crops establishments under notill system. It consists on testing the effect of soil-tool interaction to solve initial and mid-term problems limiting structuration of the physical soil matrix. The improvement of the crops radial root system development help to increasing soil water capacitance and to limit water stress occurrence for potential reduction of yield gap due to cereal and food legumes production in rainfed cropping systems.

### Specific objectives:

- Effect of no till seeders technologies to establish cereal/food legume crops under notill system
- Soil compactness and chiseling effect on establishing notill soil matrix during the starting of notill system
- Soil compactness and chiseling effect on establishing notill soil matrix during the mid-term cycle of no till system
- Effect of radial root system development for better soil moisture management to limit water stress occurrence and yield gap for cereal and food legumes under notill system

**Key words:** Crop establishment, Soil compactness, chiseling, root system development, water stress, yield gap, no till, arid land

### Host institution and location of work:

INRA, CRRA Settat

### Qualifications:

**Master in Soil Sciences or Soil Physics, Soil Scientist Engineer (IAV and ENA)**

**Eligible candidates:** Eligible candidates are those who have formal pre-registration at the Moroccan Centers for Doctoral Studies (IAV Hassan II, Moroccan Universities). In order to give themselves a chance, candidates must submit their application to these Centers on time.

### Application file:

**How to Apply:** Interested candidates should submit the following documents to [imane.thamialami@inra.ma](mailto:imane.thamialami@inra.ma) and [moha.ferrahi@inra.ma](mailto:moha.ferrahi@inra.ma):

- Curriculum Vitae (CV)
- Statement of Purpose (max 2 pages) outlining your research interests and why you are interested in this project.
- Two reference letters
- Copy of the master or engineer degree

**Application Deadline: 16 October 2024**

**Duration of the contract and amount of the scholarship:** the amount of the doctoral scholarship is approximately 5000 MAD/month for 3 years, subject to the signing of a contract between INRA and the candidate.

**About the host institution:** <https://www.inra.org.ma/>