

## ManTea

### Artisanal manure teas in fertigation practices : co-designing improvement pathways with farmers in North Africa

#### ABSTRACT

The lens of agroecology has, to date, seldomly been used to study farming systems and cropping systems in North Africa, even the more in irrigated zones. Yet, agroecological practices are common within small-scale irrigated farming systems, although often undertaken in combination with more conventional practices. In particular, one innovation that has spread with the use of drip-irrigation and fertigation strategies, is the use of manure-based teas, applied to various fruit and green market products. This bottom-up innovation remains mostly invisible to decision makers and researchers, while questions arise concerning its composition, agronomic effects as well as its interactions with the soil, and in the case of fertigation applications, its role on pipe and drip emitter clogging.

This project aims to conduct original research bridging irrigation science - agronomy- soil science and participatory processes, within the framework of a collaboration between the two research units Eco&Sols and Geau. The team will initiate a PhD-level research work, aimed at improving fertigation practices of farmers, by characterizing and co- experimenting with farmers improvement pathways of this locally existing innovative agroecological practice of artisanal manure-based tea extracts in irrigated agriculture in North Africa.

Three specific questions, in particular, underlie this goal:

- What are the major physico-chemical and biological properties of artisanal manure teas?
  - What are the impacts on soil physicochemical and biological properties, on crop growth and on the irrigation system?
  - How, and in which conditions, can the implementation of participatory processes in co-learning lead to improved fertigation strategies of farmers, and in fine to more virtuous uses of organic liquid fertilizers?
- To bring answers to these questions, the PhD candidate will:

1. Undertake with farmers a participatory co-design process to initiate collaborative reflections on improvement of fertigation strategies, by (i) describing the use of manure tea by farmers, and (ii) implementing a set of workshops with the farmers to co-design novel solutions. This will be implemented in two to three different sites in Tunisia.
2. undertake experimental characterizations of (i) used manure teas, and its impact on the (ii) soil, cropping and (iii) irrigation systems.

**Keywords :** Manure, Teas, Fertigation, Irrigated, Agriculture, Co-design, Processes, Physicochemical and Biological Properties

**Year :** 2020

**Project number :** 2002-237

**Type of funding :** AAP ICL

**Project type :** AAP

**Research units in the network :** G-EAU

**Start date :** 2021-11-01

**End date :** 2024-10-31

**Flagship project :** no

**Project leader :** Chiara Pistocchi

**Project leader's institution :** InstitutAgro

**Project leader's RU :** ECO&SOLS

**Budget allocated :** 67500 €

**Total budget allocated ( including co-financing ) :** 115500 €

**Funding :** Labex

## GOAL

This project aims to conduct original research bridging irrigation science - agronomy- soil science and participatory processes, within the framework of a collaboration between the two research units Eco&Sols and Geau, bringing together soil scientists specialized on nutrient cycles and soil biota, systemic and practice-oriented agronomists and irrigation fluid mechanics specialists. Taking the opportunity of various ongoing projects (described in a following section) and the current call, the team aims at initiating a PhD-level research work on characterizing and co-experimenting with farmers improvement pathways of a locally existing innovative agroecological practice of artisanal manure-based tea extracts in irrigated agriculture in North Africa.