ISFERALDA Project

Using organic amendments (OA) based on date palm residues to enhance soil fertility in oases agroecosystems

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Context

In the arid zones of North Africa, oases are essential for life and economy. In the oases, the date palm is the main source of income for farmers. That crop produces a lot of agricultural waste which are not recovered today. Only a minor part of date palm cultivation by-products is recovered and recycled

Their valorization as bioresources, with a potential effect on soil fertility (and thus on oases ecosystem productivity), has received little attention to date. Therefore, we will try to use this agricultural waste to make an organic amendment (OA) following the principles of circular economy.

Objective

Main objective

Increase agroecosystem resilience to climate change by enhancing soil properties and soil fertility with OA based on date palm residues

Specific objectives

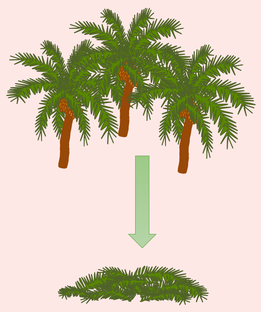
- Develop innovative amendment by recycling local date palm residues
- Enhance soil fertility
- Secrue farmers' income
- Upscale method across Mediterranean Basin

Structure of the project

WP1

WP2

State of the art of OA production



Initial socio-economic impacts

WP4

Optimisation and production processes of organic amendments

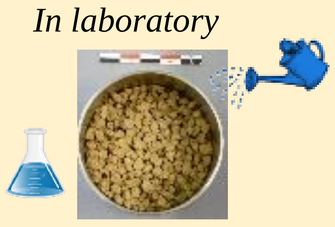
WP3

Initial field characterization

WP5

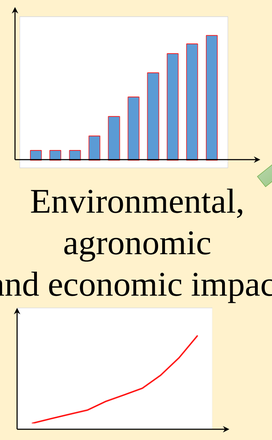
Influence of organic amendments on soil properties

In laboratory



In fields

Environmental, agronomic and economic impact

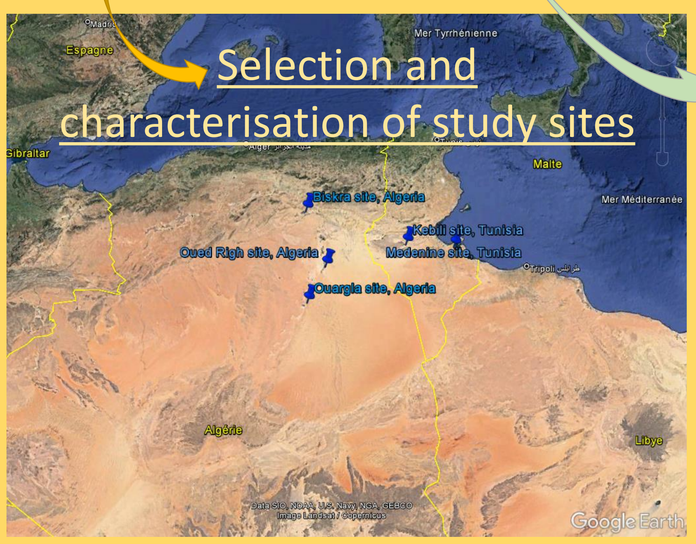


WP6

Communication and results dissemination

Validation and up-scaling of the method

- State of the art of existing literature concerning OA production processes
- Socio economic analysis of the OA benefits based on farmers' interviews



Optimization of OA production process to find the best combination of composts and/or biochar optimizing both soil quality and oases productivity

Assess the influence of OA on soil fertility and on the quality and quantity of harvests through different experiments in laboratory and in field

Expected impacts

- Improvement soil quality by applying OA based on local date palm residues
  - Improvement of soil water water retention properties that will reduce the water supply by irrigation, and therefore the need for groundwater, essential in these regions
  - Improvement of soil fertility with an increase of cation exchange capacity and SOC content, that will improve microbial and fungal life in the soil and help the plant to be more vigorous to defend against attacks
  - Increase of yield and therefore of income for local farmers
  - a more fertile soil, with better water retention properties and with a better microbial life will be better prepared for climate change and will therefore be more resilient to this change.
- Up-scaling of the method that could be used as an example for the future of the Saharan regions where significant climate change may dramatically affect areas.

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