

PORTUGAL

Water use efficiency

Location

Samora Correia

Programming period

2014 – 2020

Priority

P5 - Resource efficiency &
Climate

Measure

M16 - Cooperation

Funding (EUR)

Total budget 464 000

RDP 348 000

Private 116 000

Project duration

2017 – 2020

Project promoter*

TERRAPRO

Contact

Joao.noeme@terra-pro.net

Website

www.terra-pro.net

An EIP-AGRI Operational Group was set up to develop new agronomic tools that will enable farmers to use pivot irrigation more efficiently.

Summary

In pivot irrigation, farmers irrigate an entire field in a homogenous way. This is based on a generic average water consumption value for each type of plant along with the estimation of the environmental condition (e.g. humidity, temperature).



To enable farmers to carry out more efficient irrigation (and fertilisation), an Operational Group (OG) was set up to study the soil and vegetative behaviour in the field, develop and try out irrigation strategies and measure the results using production maps.

Results

The project enables farmers to irrigate and fertilise more efficiently on the basis of information and tailored advice, taking into consideration the soil characteristics, water reserves in the soil and the crop in question (vegetative vigour).

* The Project promoter/beneficiary is an EIP-AGRI Operational Group (<https://ec.europa.eu/eip/agriculture/en>)

Context

In pivot irrigation, farmers normally irrigate their fields homogeneously on the basis of the crop's average water consumption. The volume of water used is decided based on historical irrigation plans for the crop and the region and it is adjusted by the farmers' estimation of the air temperature and humidity. However, the real needs of the plants are not considered.

If the farmers could 'measure' the different conditions across the field (soil) and the needs of the plants at each stage of growth, differentiated irrigation (VRI – Variable Rate Irrigation) would be possible, significantly increasing efficiency. The same approach could be applied for fertilisation.

This EIP-AGRI project is implemented in Portugal's Ribatejo and Alentejo regions where commercial agriculture is practised, requiring increased irrigation. Consequently, this technology could be particularly helpful in these areas.

Objectives

This EIP OG aims to develop new agronomic tools to deal with climate change and the need to use resources more efficiently i.e. to produce more with less. Based on the data gathered using new technologies in the fields (sensors, aerial imagery, etc.), the farmers will be able to take actions only when and where it is needed. This approach will improve the competitiveness of the farms and will have a positive impact on the environment.

Activities

The OG is composed of the SME 'TERRAPRO - Precision Agriculture', four farmers from the two regions, the University of Évora and the farmers' irrigation association 'Associação da Obra Vigia'. The university conducts the analysis and modelling for future implementation, the farmers carry out the field work and the SME coordinates the project and turns the new information into practical advice for farmers.

The project funds 70% of the costs, which includes equipment (soil moisture probes, meteorological stations, technology for pivots); human resources (office and field work to implement and monitor the results); and the dissemination of the project's results.

The main 'feature' of this project is the capacity to significantly improve the efficiency of the crop production process, based on innovative ways to acquire and gather information without any other investment. The project is divided into the following parts:

- 1. Monitoring** – Crop data are collected. The data collection is carried out either as a one-off (the oil heterogeneity mapping for example) or periodically (for example aerial imagery, soil moisture data, agrometeorological info, production maps, etc.). This enables the identification of the parts of the field where actions could be taken to improve the productivity of the crop. This work will be carried out throughout the duration of the project.
- 2. Acting** - On the basis of the data collected, TERRAPRO provides irrigation advice to give the plants the right amount of water, at the right time. Throughout the seasons, several adjustments are made to ensure the maximum efficiency of the irrigation. This part of the project's work will last two years.

Some structural changes can also be made, such as installing equipment to differentiated the functions of the irrigation pivot. Some farmers modify their irrigation pivot to be able to change its speed while in operation and consequently change the amount of water applied to the different parts of the field. Another option is to make corrections to some parts of the soil, for example by adding Celtonita (a natural soil conditioner) or plaster, to address soil salinity problems. Although there are a number of changes made in the course of the project, the only part of the investment financed through the project is the pivot equipment.

- 3. Data interpretation and conclusions** which will be carried out during a two-year period.

Main results

The project will enable farmers to irrigate and fertilise their fields more efficiently on the basis of information and tailored advice on the soil characteristics and water reserves in the soil and the crop being grown (vegetative vigour).

Additional sources of information

n/a