



LIFE+ IRRIMAN - Implementation of efficient irrigation management for a sustainable agriculture

LIFE13 ENV/ES/000539



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Project description:

Background

The Guadalquivir river basin is in the south of Spain, with a surface area of 57,527 km², including parts of four regions: Andalusia, Castilla-La Mancha, Extremadura and Murcia. Rains in the area are often torrential and fall on lands recurrently affected by long periods of drought and high temperatures, and a marked susceptibility to erosion. In the basin, there are numerous protected areas, with designation of the surface water or groundwater, or for the conservation of habitats and species directly depending on the water. In the Guadalquivir basin, there is chronic water scarcity and available supply for the last 20 years has varied from as little as 20% of demand up to 80-100% in the good years (only one out of three).

The Segura river basin is located in the south east of Spain, with a surface area of about 18 870 km², and covering four regions: practically the whole of Murcia and parts of Andalusia, Castilla-La Mancha and Valencia. Average annual rainfall is about 400 mm, with a very irregular pattern and a clear contrast between the headwater areas and the intermediate and lower parts of the basin.

The Segura river basin is the most water deficient in Spain, and one of the most water deficient in the European Union, with a structural water deficit of about 460 hm³ per year. The amount of water is insufficient to meet consumption, even when there is high water-use efficiency. The Segura basin is the most regulated in Europe, with the implementation of the most modern production systems: drip irrigation, hydroponics, greenhouses, automated irrigation demand

and others. However, there is a long way to go to further improve management of the river basin.

Objectives

The project aims to implement an efficient irrigation management schedule for two areas in the Segura Basin and one in the Guadalquivir basin. The project will implement, demonstrate and disseminate a sustainable irrigation strategy for use with woody crops in Mediterranean agro-ecosystems. The strategy will be based on reduction of water supply during non-critical periods, the covering of water needs during critical periods and maximising yields per unit of applied water.

The project will implement demonstration plots where sustainable irrigation protocols will be applied. Different cropping zones will be selected with the most representative fruit trees, including peach, table grapes, citrus, apricot, early apricot and almond.

More specifically, the project will have three phases:

- Installation of sensors to measure soil and water status in different fruit trees;
- Using data from the sensors, the beneficiary will develop a series of sustainable irrigation schedules depending on the type of cultivation and the area;
- Once the sustainable irrigation models have been created, the project will assess:
 - o The environmental effects of sustainable irrigation in terms of water and energy consumption, runoff water quantity and quality, water leaching depth, NO₃ leaching and the capability of the soil to fix carbon;
 - o Vegetative growth and crop yield so irrigation can be adjusted at any time if it is necessary for adaptation to quality standards; and
 - o Crop yields and the final fruit quality at harvest in order to verify the effectiveness of the sustainable irrigation strategy.

Expected results: The project expects to produce the following results:

- Reduction by 30% in water used for irrigation, compared to the current irrigation regime;
- This reduction in water consumption will also reduce the use of chemical fertilisers by 30%, reducing groundwater pollution, and producing an improvement in harvested fruit;
- Reduction in irrigation system energy consumption by 30% because of pressurization; and
- Reduced CO₂ emissions:
 - o By 30% as a result of the reduced energy consumption;
 - o By a further 40% because of the reduction in soil CO₂ flux rates because of the irrigation technique used.

Results

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Environmental issues addressed:

Themes

Industry-Production - Agriculture - Forestry

Risk management - Pollutants reduction

Water - Water resources protection

Water - Water saving

Water - Water scarcity and drought

Keywords

water shortage, agricultural method, water saving, hydrographic basin, water resources management, irrigation

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	UNIVERSIDAD POLITÉCNICA DE CARTAGENA
Type of organisation	University
Description	The Universidad Politécnica de Cartagena (UPCT) is a Spanish public academic institution. It is the main centre for academic research on agriculture, livestock, waste management and soil management in the Murcia region.
Partners	UCO(Universidad de Córdoba), Spain CEBAS-CSIC(Agencia Estatal Consejo Superior de Investigaciones Científicas), Spain FENACORE(FEDERACION NACIONAL DE COMUNIDADES DE REGANTES DE ESPAÑA), Spain CARM(Consejería de Agricultura y Agua de la Comunidad Autónoma de la Región de Murcia), Spain CRGC(Comunidad Regantes Genil Cabra. Colectividad Santaella), Spain

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Administrative data:

Project reference	LIFE13 ENV/ES/000539
Duration	01-SEP-2014 to 31-DEC -2017
Total budget	1,713,654.00 €
EU contribution	840,193.00 €
Project location	Andalucía(España) Murcia(España)

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