Thematic Area

Water Management

Section II

Topic - Low cost, lean solutions for enhancing irrigation efficiency of small-scale farms

Action

RIA - Research & Innovation Action

Budget

897.226 €

Duration

36 months

State and Coordinator Entity

SPAIN

Instituto Valenciano de Investigaciones Agrarias

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Instituto Valenciano de Investigaciones Agrarias

Scientific Officer:
PEREZ-PEREZ, Juan Gabriel

Participating States/ 5

Research Units/ 9

Section II

2. HANDYWATER

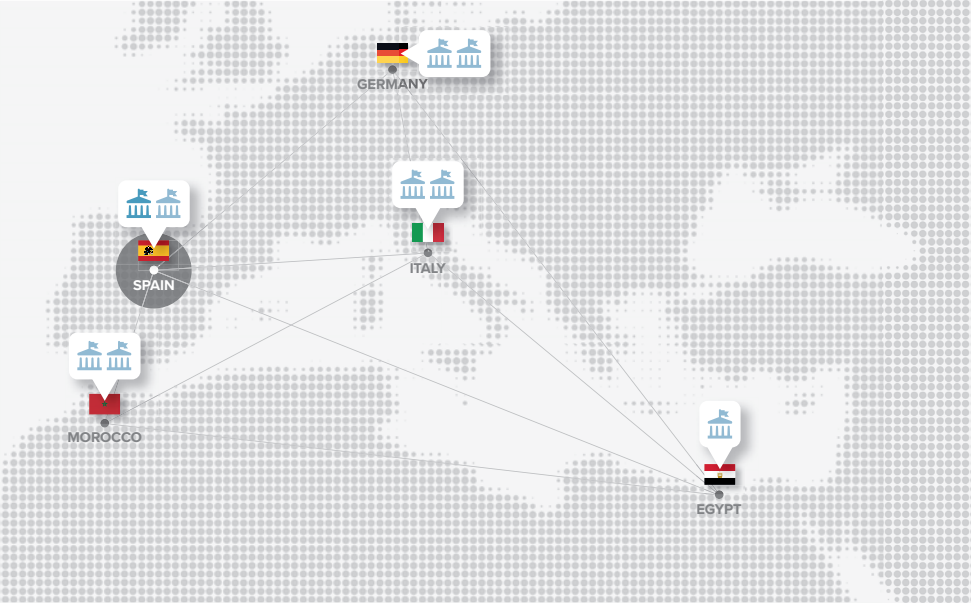
Handy tools for sustainable irrigation management in Mediterranean crops

Context

In the EU agriculture structure, small farms represent two-thirds (67.6%) of the farm's utilised land share. Thus, smallholders act as a crucial part of the Mediterranean agricultural community. The Mediterranean region could save 35% of water by implementing more efficient irrigation and conveyance systems. To achieve a water-efficient agricultural sector, new irrigation technologies and best practices need to be adopted. The challenge is to widen efficient irrigation technologies and practices among small farmers to increase crop production, income, and household food security. Therefore, the HANDYWATER project will develop new solutions focused on a bottom-up approach, better reflecting the quantitative knowledge of farmers' current practices about actual and potential crop water use, allowing to translate water-efficient practices on a case-by-case basin into farmers practices and adapted to the crop needs. In the HANDYWATER project, cooperation with water user organisms and small farmers will be crucial in learning and sharing knowledge. This will open up opportunities to integrate local knowledge and traditional production elements to improve the profitability of irrigation through the adoption of lean irrigation technologies to generate income for smallholders in the Mediterranean area.

Objective and contents

The general aim of the HANDYWATER project is to improve water use efficiency in Mediterranean agriculture. In this sense, the project is focused on gaining new knowledge and offering low-cost and lean solutions for enhancing the adoption of efficient irrigation innovations by small farmers, for increasing the environmental and economic sustainability of two different crop production models, both high waters demanding and widely cultivated in the Mediterranean area, such as citrus (as intensive system) and olive (as a rainfed system). This goal will be primarily achieved by conveying existing and innovative irrigation technologies and water-saving practices to develop a decision support tool (DST) that will consider the soil-plant-atmosphere (SPA) continuum interactions to enhance irrigation efficiency and management.



Other Entities/ 8

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Institut Agronomique et Vétérinaire Hassan II, Morocco
Scientific Officer: EL OMARI, Hicham

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Scientific Officer: FALLAH, Mohamed

SPECIFIC OBJECTIVES

- Identifying and boost low-cost crop monitoring technologies by introducing innovative SPA measuring techniques based on the use of low-cost sensors;
- Quantifying socioeconomic and environmental benefits of the irrigation practices, by analysing their economic and financial aspects in order to evaluate their contribution in the development of the Mediterranean small farmers' context;
- Optimising the management of the crop at farm scale by identifying and boosting emerging soil and plant monitoring technologies and novel techniques based on remote and proximal sensing tools and GIS applications;
- Redesigning new water-saving solutions for improving irrigation efficiency and economic benefits of Mediterranean crops, by introducing innovative irrigation technologies combined and integrated with water-saving practices;
- Developing and easy-to-use DST to offer irrigation recommendations based on a "traffic light", favouring the output interpretation and understandability for the end-users;
- Testing and evaluating the DST tool in different scenarios;
- Overcoming barriers in the adoption of innovative irrigation technologies and practices, by creating a network of cooperation between the farmers and the project consortium by iterative co-learning approaches and farmer-to-farmer learning.

Expected impact and results

HANDYWATER project aims at providing results both at scientific and practical levels. It will develop and promote the most promising innovative irrigation technologies for improving water management for specific crop systems. The performance of the proposed innovative irrigation technologies will be ensured by using handy monitoring protocols and procedures. Implementing these lean monitoring systems will develop a mobile, efficient, and cost-effective exploration strategy while using optimised field sensors technologies. HANDYWATER consortium will strengthen the capacities of small-scale farmers by assisting and guiding them towards the sustainable use of modern technologies for more efficient and effective agricultural production. Specifically, the project will promote close cooperation and co-learning strategies between local stakeholders and the project consortium by valorising the small-scale farmers' experience in "on-field" water-saving activities. HANDYWATER will also promote Euro-Mediterranean multi-level stakeholder/actor networks for improving governance-related capacity in agricultural water and agro-food systems, integrating and bridging different (and opposite) interests and stakes. The environmental outcomes of the adoption of suitable irrigation practices by the small farmers will permit to optimisation of agricultural inputs, reducing the water (up to 20%) and energy consumption. The proposed irrigation solutions will also enable the design of profitable agricultural systems for small-scale agriculture, enabling a sustainable and efficient market capacity for smallholder farmers and the increasing competitiveness of companies. From a social point of view, the HANDYWATER innovative irrigation solutions developed will promote qualified technical jobs and the economic sustainability of small farms in rural areas, contributing to balanced territorial development, especially in the most vulnerable regions, with the higher potentiality of social benefits, including the creation of new jobs.