

SMARTWATER - TECHNOLOGIES FOR THE MANAGEMENT AND EFFICIENT USE OF WATER IN A SUSTAINABLE AND ECO-EFFICIENT CONTEXT IN IRRIGATION

W. Almeida¹, D. Soares¹, M. Marković², N. Čereković², Đ. Hajder², S. Čadro³, M. Todorović⁴, N. Zapata⁵, E. Riezzo⁶, T. A. Paço¹

¹LEAF – Linking Landscape, Environment, Agriculture and Food Research Center, Associated Laboratory TERRA, Instituto Superior de Agronomia, Universidade de Lisboa, Tapada da Ajuda, 1349-017 Lisboa, Portugal, ²University of Banja Luka, Faculty of Agriculture, Bosnia and Herzegovina; ³University of Sarajevo, Faculty of Agriculture and Food Science, Bosnia and Herzegovina; ⁴International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), Mediterranean Agronomic Institute of Bari, Italy; ⁵Consejo Superior de Investigaciones Científicas, Spain; ⁶SYSMAN PROGETTI & SERVIZI SRL, Italy.

The project Promoting SMART agricultural WATER management in Bosnia and Herzegovina (SMARTWATER) has as main objectives i) strengthening networking, research and innovation capacities of the University of Banja Luka (UNI-BL) and other institutions of Bosnia and Herzegovina (BiH) in the field of sustainable irrigation management; ii) the application of smart technologies (technologies based on cloud storage and remote sensing); iii) establishing an effective communication/dissemination strategy for proper promotion of H2020 programme activities (TWINNING instrument) and skills enhancement. Joint activities between the networking institutions have been developed in the project, with field data collection, cooperation with research and scientific exchange on specific themes. These themes are complementary and compatible with the overall BiH research strategy and include the application of smart technologies - using UAVs (Unmanned Aerial Vehicles) and satellite imagery (Sentinel-2) in irrigation management. They also address the optimisation of the water-energy-food nexus, the impacts and related adaptation measures to climate change, and an early warning system for extreme events such as droughts.

The scientific strategy aims at optimizing and stimulating excellence, promoting innovation capacity, and is being designed according to a participatory multi-stakeholder BiH approach involving students, technicians, farmers, policymakers, and consumers. The project is expected to contribute to the Sustainable Development Goals (SDGs) proposed by the United Nations by establishing a set of models - soil water balance (SIMDualKc) and crop growth (AquaCrop). Using these models, information on water needs and plant development is obtained as an output. The project also uses a system to support the farmer's decision-making in the management of water for irrigation (Blueleaf software).

The SMARTWATER project has been disseminated in several national and international congresses and scientific publications based on the experimental work developed during the first year that is currently being prepared. In addition to these forms of dissemination, an advanced training course, participation in a joint master's program, summer schools and practical workshops on research and innovation funding have also been held.

Keywords: Irrigation, remote sensing, Blueleaf, modelling, UAV.