Inspirational ideas

NEWSLETTER JUNE 2019

Efficient and sustainable water use on the farm

Increasing productivity of agricultural production by increasing water use efficiency and sustainability

PRO-PRODUCTION is a Slovenian Operational Group (OG) developing and promoting an irrigation decision support system to increase water use productivity at farm level. "Key factors must be considered to achieve the best results with irrigation: soil properties, plant growing phase, soil water content, weather forecast, timing and quantity of water applied, … Suboptimal irrigation increases water use and therefore also nutrient leaching, cost and environmental impact on water ecosystems" – says Matjaž Glavan, assistant professor in environmental planning at the Biotechnical Faculty of the University of Ljubljana (BF UL) and OG coordinator.

Matjaž Glavan explains that "Low agricultural productivity in Slovenia is often related to low irrigation water use efficiency," in other words, the amount of water used to produce a certain yield is higher compared to compared to other countries with more advanced experience in irrigation. He continues, "Farmers currently lack the professional technology and must rely on their own assessment when they irrigate. This often leads to farmers applying too much water or starting irrigation too late and in too small instalments. This has a negative impact on productivity (quantity and quality) as a whole as it decreases the amount of marketable product and also reduces the market value of the crop (as input costs are high). As a result, average Slovenian farmers are not currently sufficiently competitive in the food market."

Introducing an irrigation decision support system

Operational Group PRO-PRODUCTION (PRO-PRIDELAVA in Slovenian) will increase water use productivity at the farm level by introducing an irrigation decision support system. It is led by the University of Ljubljana and involves the Geological Survey of Slovenia, Institute of Hop Research and Brewing, Chamber of Agriculture and Forestry Novo mesto, BO-MO Information Systems, two agro-business companies, Panvita and Evrosad, and four family farms. The project consortium is also cooperating with the Slovenian Environmental Agency.

The OG will first define the essential soil and plant properties which need to be taken into account when calculating the requirements for irrigation. Then they will use this knowledge to adapt, optimise and upgrade an existing irrigation decision support system (IDSS) "SPON" developed under **LIFE ViVaCCADAPT project**. The system will, therefore, analyse plants' water requirements, soil water retention capacity, real-time soil water content and evapotranspiration and precipitation forecasts. The OG will test the use of this IDSS in several different cultivation systems: fruit production (apples and cherries), grain (maize), hops, vegetables (tomatoes, potatoes, cabbages) and grapes.

Luka Honzak, IDSS "SPON" developer explains "The farmers involved will install real-time soil water content monitoring (TDR probes) on their farms. Irrigation requirements (mm of water per day) will be proposed at the farm level, based on a five-day weather forecast model via the IDSS "SPON" which will be operated by Slovenian Environmental Agency."

funded by European Commission

A useful and educational tool

Use of IDSS aims to facilitate the management of irrigation on the farm. It aims to prepare farms to be more resilient when faced with severe climate conditions. Marina Pintar, professor of land use management at the Biotechnical Faculty of the University and the initiator of the project, says - "The PRO-PRODUCTION project will not only improve the technical equipment of farms but will significantly increase the level of applicable knowledge of farmers in the area of professionally justified water-use for irrigation."

"On the test farms, and then later on other farms as the use of the IDSS "SPON" in Slovenia spreads, we hope to reduce water consumption for irrigation, prevent drought stress, reduce the use of fertiliser, reduce leaching and GHG emissions as well as increase the quality and quantity of harvested crops, lower production costs and therefore increase the competitiveness of farmers in Slovenia." –continues Marina.

"A combination of light sandy soils and repeated summer drought over the last two decades has forced us to install irrigation systems. However, lack of knowledge on irrigation techniques, timings, soil water conditions and plant needs means we must promote digitisation and decision support systems that will enable us to meet the water requirements of plants for optimal growth and quantity and quality of harvested crop" – says Boštjan Ferenčak, a technologist at Panvita.

Sharing with others

Setting up and maintaining an infrastructure for measuring soil water content and transfer of data into the IDSS "SPON" will be done in cooperation with the Slovenian Environmental Agency, and transferred to them after testing. Experiences with the new IDSS will be disseminated to other farmers, and other stakeholders such as students, experts, decision-makers, the general public, through workshops at demonstration farms, public lectures and conferences, with the help of videos and brochures.

Lead partner: University of Ljubljana, Biotechnical faculty

Project dates: 14/12/2018-13/12/2021

Contact: Matjaž GLAVAN **matjaz.glavan@bf.uni-lj.si**

This project on the EIP-AGRI Database

Between 300 and 400 farmers, researchers, advisers, companies, associations and decision-makers will meet in Normandy on 25 and 26 June 2019 for the second European Agri Innovation Summit 2019 (AIS 2019) dedicated to the contribution of EIP-AGRI to the transition to agroecology. This project will be presented as a case-study.
Further information on the AIS 2019

funded by European Commission