Smart sensors to better understand plant growth

Helping farmers produce more with fewer inputs

EU-funded ANTARES project is developing smart sensor and big data technologies that could help farmers produce more food in a way that is sustainable for society, farm incomes and the environment.

"Currently, we do not understand all the complex processes behind plant growth" says ANTARES project coordinator Vesna Bengin of the University of Novi Sad, Serbia. "Meanwhile, climate change is effectively wiping out hundreds of years of farm-based knowledge that's been handed down the generations. Digital agriculture can boost knowledge and yields, reduce inputs and investment and increase resilience to risks like changing weather and price volatility."

ANTARES is a collaboration between the BioSense Institute (in Novi Sad, Serbia) which works across both the ICT and agricultural sectors, Wageningen University & Research (Netherlands) and the Serbian Ministry of Education, Science and Technological Development (MESTD).

As part of the project, they have opened the first Digital Farm in Serbia and they are also developing a comprehensive set of digital solutions for farmers - to support digitalisation of agriculture in Serbia and Europe. "The ANTARES project is at the same time a smart investment into research infrastructure and state-of-the-art equipment, but also into invaluable human potential and scientific excellence, enabling production of safe and adequate food for future generations of Europeans." – says Ms Bengin.

The Digital Farm is an open air show-room that allows farmers to come and see, test and assess innovative AgTech solutions in a real production environment. Each month, during the production season, Digital Farm Open Days are organised for the farming community to exchange know-how with farmers who already use digital technologies and also show it to others. Around 1000 farmers have visited the farm so far: "The precise weather forecast helps me to plan the activities on every parcel, but most importantly, the satellite indices of crops truly helped me to understand better the condition of the crops and to optimise my production" says Djorjde Djukić, one of the visitors.

The innovative farm-based sensing solutions developed within the project, also tested on the digital farm, include sensors mounted on robots that move around the farm on their own, sensors attached to animals and plants,

NEWSLETTER FEB 2020

hand-held sensors and sensors which look like pebbles and are scattered on a field. Remote sensors using satellite imaging, drones and thermal and hyperspectral cameras are also used. "We want to know everything there is to know about a plant, from the soil, air and water that sustain it, to the process of photosynthesis that goes on inside the plant," says Bengin. "To that end, we are constantly developing new sensors, collecting the data and devising artificial intelligence algorithms to analyse and understand it."

All collected data is published through a free Digital Platform AgroSense, also launched by the project as the virtual counterpart of the Digital Farm. It allows farmers to track the real-time development of their crops from a computer or mobile phone, while also helping them plan their crops to maximise yields and profits. For example, a farmer could find out exactly when plants need water, how much fertiliser is needed in any given field, or what crops to plant when and where. More than 10 000 people are already using this platform. "It is truly exciting to see our research results helping farmers to optimise their production and achieve a better quality of life. That is what science is all about – bringing benefits to people and the society we live in. And that is what ANTARES is all about" says Prof. Bengin, project coordinator.

Contact

bengin@biosense.rs
Vesna Bengin of the University of Novi Sad
https://biosense.rs/?page_id=6597&lang=en

Sources

https://ec.europa.eu/research/infocentre/article_en.cfm?id=/research/headlines/news/article_19_10_11_en.html?infocentre&item=Infocentre&artid=50965&pk_campaign=whatsnew_newsletter

Photos: ANTARES project

funded by

European Commission