WAGENINGEN
UNIVERSITY & RESEARCH

100years
1918 — 2018

Education &
Programmes

Research &
Results

Value Creation &
Cooperation

News

Integrated monitoring and control of water, nutrients and plant protection products towards a sustainable agricultural sector

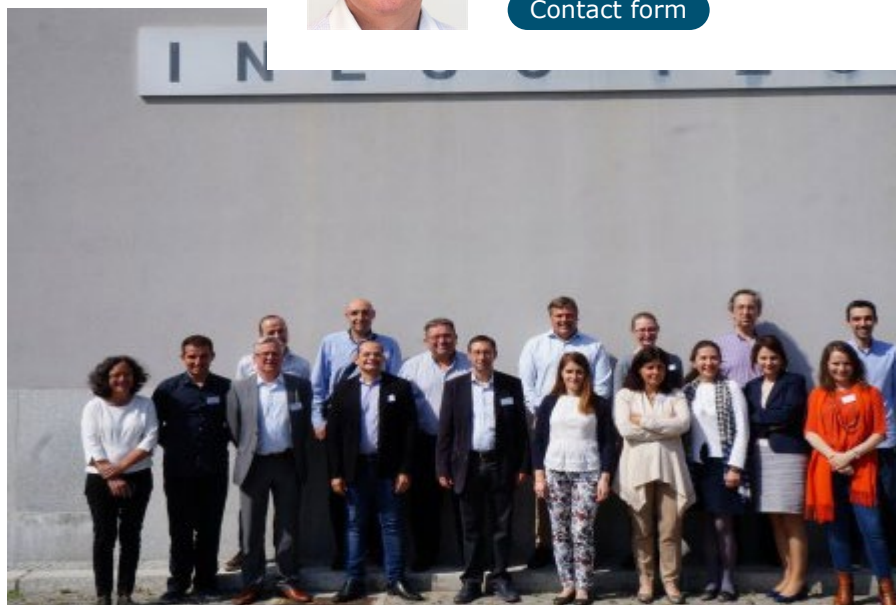Contact
ir. J (Jos) Balendonck

Contact form

June 14, 2017

AGRINUPES will focus on the research and development of an effective integrated and sustainable monitoring and control system with innovative ion selective sensors for nutrients and bio-based sensing of PPP for optimal water and nutrient supply and reuse, minimizing the effects on the environment. In order to validate the developed technologies and demonstrate their applicability, four case studies (demonstrations) covering several types of crop production systems from greenhouses to open-field agriculture in various climatic regions will be addressed. The appropriate handling of these data as inputs in an easy-to-use decision support system fosters the design of an improved fertigation Model Predictive Controller, which incorporates robustness and fault-tolerant features, as it can meet both the crop needs and the grower yield/costs expectations. On April 24, the start signal for AGRINUPES was given for this European project during the kick-off

meeting in Porto.

Sustainability and competitiveness of European agriculture are intrinsically related to the efficient use of water, fertilisers and Plant Protection Products (PPP), for optimizing plants needs while minimizing the environmental impacts. The joint effort of minimizing waste water, and optimizing use of nitrogen-and phosphorus-based fertilizers and PPPs is aligned to the so-called Good Agricultural Practices in the context of the circular economy, where issues such as efficiency and resilience of water use are mandatory. Based upon the premise the more you know the better you can manage, reliable decision-making systems and fertigation and water quality feedback controllers demand cost-effective, robust, low-maintenance and accurate sensor data. It is very important to evaluate the suitability of the circulating water in closed or semi-closed soilless systems and of the irrigation and drainage water in soil grown cultivation, mainly in terms of macronutrient (NPK) concentrations, salinity and contamination by PPP. So far, the available sensors technology does not meet these challenges for on-site monitoring.

AGRINUPES is carried out by a multidisciplinary team of European experts, involving stakeholders of different backgrounds. The project is carried out under the ERA-NET Waterworks 2015 program (Water Joint Programming Initiative) for 3 years. The Dutch knowledge partner (Wageningen University & Research-BU Glastuinbouw) will focus on testing the sensors under Dutch horticultural conditions and disseminating the results from the IDC-Water in Bleiswijk.

The new sensors will lead to new markets for the European water technology sector worldwide, which will strengthen the competitiveness and growth of SMEs and related companies. With the sensors, growers will be provided with information about the water quality of their pour and discharge water and can decide on the basis of concrete reliable information how and when to irrigate and discharge and whether precious purification is recommended for discharge. The result is a significant increase in the efficiency of water and fertilizer administration, which makes economical accountability of water and fertilizers, preventing or significantly reducing contamination of surface and groundwater.

WAGENINGEN
UNIVERSITY & RESEARCH

To explore the potential of nature to improve the quality of life.

Wageningen University & Research on Social Media

Education & Programmes

- University
- Bachelor
- Master
- Online education
- PhD
- Courses for professionals

Research & Results

- Research Institutes
- Chair groups
- Statutory research tasks
- Our research themes
- Library

Value Creation & Cooperation

- Investing in Innovation
- Knowledge for society
- Entrepreneurship
- Facilities & Tools
- Dossiers

Contact   About Wageningen   Career   Privacy & Cookie statement
General Terms and Conditions   Your profile data