

Optimized Management field robots for viticulture and arable farming operations

Gefördert durch:



Bundesministerium für Landwirtschaft, Ernährung und Heimat

aufgrund eines Beschlusses des Deutschen Bundestages

Projektträger



Bundesanstalt für Landwirtschaft und Ernährung

# Project Updates

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APRIL 2026

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**SMART  
FARMING  
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## DEAR NETWORK,

Welcome to the **1<sup>st</sup> edition** of our ISObot newsletter!

**ISObot** is a **research project funded by the German Federal Ministry of Agriculture, Food and Regional Identity** that aims to support the development of autonomous robots for crop production in order to address the pressing challenges posed by climate change, ecological degradation, labour shortages and economic pressures. It does so by integrating science, applied research and industry, and providing it with crucial tools, facilities, and novel services to conduct advanced robotic research.

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# 1 NEWSLETTER PROJECT UPDATES

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## Welcome from the ISOBOT Team!

In November 2024 the **ISObot** project started! The aim is to develop an integrated overall system for optimising the operational management of field robots. What if **ISObot** could become a scalable product? Our work is advancing steadily, contributing with novel insights and tools to the field of agricultural robotics: 2026 has kicked off with some wonderful events and even more exciting opportunities are on the way!

We would like to thank all our partners and the researchers for their great spirit of cooperation and dedication.



Prof. Dr.  
Dimitrios S. Paraforos  
Project Coordinator



Dr.  
Burawich Pamornnak  
Project Manager



PhD candidate  
Syed Shaham Madni  
Research Assistant

## News & Highlights

### Internationale Grüne Woche 2026 - Berlin, Germany

The **100th Anniversary of the Green Week**, was held in the vibrant German city of Berlin from the 16th – 25th January. This world leading event in the fields of agriculture, food and horticulture industries underpinned the continued growth of these exciting sectors through conferences, forums (*Global Forum for Food and Agriculture; Future Forum for Rural Development*) and workshops.

As part of our recent outreach activities, our team was thrilled to present its **ISObot** project at the exhibition booth in the lobby of the German Federal Ministry of Agriculture, Food and Regional Identity, Hall23a. We would like to congratulate once more Professor Dimitrios Paraforos who received the funding certificate for the **iSoBeD** project handed over by **Federal Minister Alois Rainer!**



During the event, our team showcased the project's objectives and current progress, focusing on ISObot's approach to improving the interoperability and coordination of autonomous field robots based on the ISO 11783 standard.

The Green Week provided an excellent platform to engage with farmers, researchers, industry representatives and policy stakeholders, generating valuable discussions on the role of robotics and digital solutions in advancing sustainable and efficient agricultural practices.

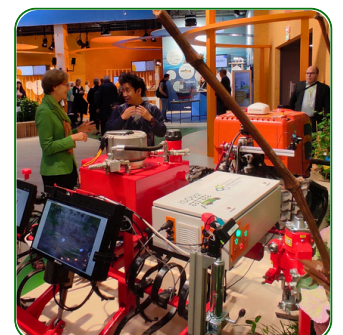
We sincerely thank **Dr. Margareta Büning-Fesel, the President of the Federal Office for Agriculture and Food (BLE)** for her interest in and continued support of the ISObot project.



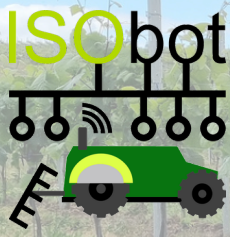
German Federal Minister of Food, Agriculture and Regional Identity, **Alois Rainer**, handing over the funding certificate for the iSoBeD to Project coordinator Professor Dimitrios S. Paraforos at Grüne Woche 2026 (credit: Burawich Pamornnak).



One of our team members, Ms. Sandra Engelmann, presenting ISObot's functionalities and state of the art to members of national and international delegations (credit: Syed Shaham Madni).



The President of the German Federal Office of Agriculture and Food (BLE), **Dr. Margareta Büning-Fesel**, visiting our ISObot stand at Grüne Woche 2026 (credit: Maria Karampoiki).



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## Past Events

### GiESCO Conference 2025 - Geisenheim, Germany

The **23rd International GiESCO Conference**, was held at our own Campus on 27th – 31st July of last year. The conference addressed the most pressing challenges of the present and future viticulture systems. Especially, the program focused on physiological responses to abiotic and biotic stressors, sustainable and organic viticulture, and soil and water management, essential topics for addressing climate change and biodiversity loss.



Our colleague Syed Shaham Madni presenting ISObot's project poster, highlighting the main idea and methodology while engaging with visitors.

### GIL Annual Conference 2026 - Soest, Germany



Our colleague Syed Shaham Madni presenting weed detection and real-time vineyard assessment using the CEOL robot (credit: Björn Poss).

The **46th GIL Annual Conference**, was held on 24th – 25th February and hosted by the University of Applied Sciences of South Westphalia in the German city of Soest. This year's theme was: *"Data spaces in agriculture, forestry and the food industry: future opportunities and current challenges"*.

Over the years, the GIL Annual Conference has become a central platform for exchange among experts from academia, industry and policy. We would like to thank our colleagues **Syed Shaham Madni** and **Björn Poss** who presented their findings on the ISObot project. Furthermore, our deepest congratulations to Syed Shaham Madni, who has just published a conference paper titled *"Real-time visual-inertial approach for assessing weeding operation in viticulture"*. This is an exciting contribution to the project and to the wider research community.

## Upcoming International Events



### International Horticultural Congress (IHC) 2026 - Kyoto, Japan



The **32<sup>nd</sup> International Horticultural Congress**, will take place on 23rd – 28th August at the Kyoto International Conference Center (ICC) in Kyoto, Japan. The theme of IHC2026 has been set to: *"Exploring the Diversity of Horticulture"*. Our colleagues **Dr. Burawich Pamornnak** and **Dr. Nikolaos Tsoulas** will participate as speakers at the **International Symposium on Modeling and Digital Approaches to Explore the Diversity of Crop Physiology and Management in Field Conditions**, showcasing their respective research on the automation of field robots.

### International Federation of Automatic Control (IFAC) 2026 - Busan, Republic of Korea



On 23rd – 28th August, the **23<sup>rd</sup> edition of the IFAC World Congress** will take place in Busan, South Korea. IFAC World Congress aims at bringing together a worldwide audience of scientists and engineers from academia and industry, while showcasing automatic control and its applications in the fields of engineering, science and the impact of control technology on society. Our colleagues **Syed Shaham Madni** and **Joseph Bleser** will present their research results from the 2025 experiments.



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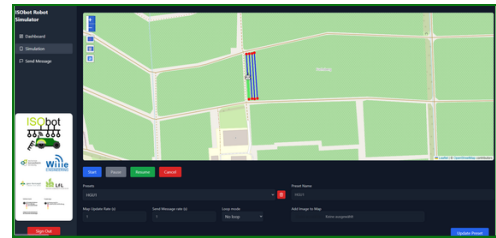
## Working together: Partnership in Action!

The launch of the ISObot-related field experiment in Summer 2025 in Bavaria, highlights the essential role of our partners in advancing innovation within the project. Throughout June and July 2025, the test site was established at the **Bavarian State Research Center for Agriculture (LfL)** in Ruhstorf an der Rott. A sophisticated data acquisition system combining a stereo camera and high-performing processing unit was installed on the **AgXeed** field robot: this setup enabled the collection of large-scale agricultural data that supported the training of AI models designed to evaluate and improve automated weeding performance.



Our partners from LfL at the test site in Bavaria, where joint field testing and refinement activities took place throughout June and July 2025 (credit: Burawich Pamornnak).

The team includes researchers and engineers from HGU and LfL, namely **Dr. Burawich Pamornnak, Syed Shaham Madni, Stefan Köpfinger, Stephan Sighart and Andreas Höfer**. Advanced computer-vision processing has been carried out in collaboration with **Wille Engineering**, with contributions from **Syed Shaham Madni** (HGU) and **Prof. Martin Przewloka** (WE).








Moreover, **Gerrit Haas and Sebastian Wille** from **Wille Engineering** have developed a dedicated robot simulator environment to test GPS-based path navigation, along with a backend infrastructure for data logging developed by **Geokonzept**, under the coordination of **Dr. Tobias Gebauer**. The integration of these components is progressing, with the full system (including real-time data transmission) planned to be fully operational on both CEOL and AgXeed robotic platforms by the end of 2026.

## Latest Publications

J. Dörr et al.: Datenräume in der Land-, Forst- und Ernährungswirtschaft, Lecture Notes in Informatics (LNI), Gesellschaft für Informatik, Bonn 2026 366

### Real-time visual-inertial approach for assessing weeding operation in viticulture

Syed Shaham Madni<sup>1</sup> , Nikos Tsoulas<sup>1</sup> , Burawich Pamornnak<sup>1</sup> , Galibjon Sharipov<sup>1</sup>  and Dimitrios S. Paraforos<sup>1</sup> 

## STAY CONNECTED



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**Digital Agriculture Group - Geisenheim University**

digital agriculture



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