



WORKSHOP PROGRAM

2026 IEEE INTERNATIONAL WORKSHOP ON

Metrology for Agriculture and Forestry

POTSDAM, GERMANY · NOVEMBER 9-11, 2026

IEEE MetroAgriFor

POTSDAM - GERMANY 2026

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IEEE MetroAgriFor 2026 Keynote Speakers

Keynote Lecture - Tuesday, November 10 - H 11:50



Theory and Employment of Optical Methodology in Plant Analysis

Dag **Heinemann**
Leibniz University Hannover, Germany

ABSTRACT

Light is fundamental to plant life, most prominently through its role in photosynthesis and the regulation of plant development. At the same time, the interaction of light with plant tissues carries a wealth of information about their structural, chemical, and physiological properties. Understanding these interactions therefore provides the physical basis for using optical measurements to assess plant condition in a non-destructive and mostly non-invasive manner.

When light encounters plant tissue, the interactions may involve absorption, reflection, transmission, or scattering. Scattering can occur elastically, without a change in photon energy, or inelastically, providing information on molecular composition and dynamics. In addition, the polarization state and spectral distribution are affected by tissue structure and composition. Each of these interactions probes different aspects of the plant and can therefore provide distinct, and often complementary, information on parameters ranging from tissue morphology and water status to biochemical composition and physiological responses.

A broad range of optical methodologies has been developed to access this information. These range from conventional imaging and reflectance-based approaches to hyperspectral imaging, optical coherence tomography, polarimetric techniques, and vibrational and mechanical spectroscopies such as Raman and Brillouin spectroscopy. The physical principles underlying these methods will be outlined, and their potential for deriving biologically meaningful information will be illustrated using selected examples.

Linking fundamental light–tissue interactions with current and emerging measurement technologies provides a framework for understanding both the capabilities and limitations of optical methodology in plant analysis and its potential for future applications in horticulture, agriculture, and plant science.

SPEAKER BIOGRAPHY

Since 2020, Prof. **Dag Heinemann** has headed the Phytophotonics Department at the Institute of Botany and the Hannover Centre for Optical Technologies, Leibniz University Hannover. His research focuses on light–matter interactions for optical sensing and laser processing of plant tissues, with particular emphasis on translating fundamental photonic principles into new approaches for plant analysis and phenotyping. His research interests include optical spectroscopy, optical coherence tomography, polarimetric imaging, and laser-based methods for investigating the structural, mechanical, and physiological properties of plants.

His work is characterized by a strongly interdisciplinary approach at the interface of plant science, horticulture, and optical technologies, ranging from fundamental studies of light–tissue interactions to the development of sensing concepts for laboratory and field applications. He is a member of the Cluster of Excellence PhoenixD – Photonics, Optics, and Engineering – Innovation Across Disciplines, where he serves as Venture Leader for “Photonic Innovations for Environmental Sustainability” and contributes to interdisciplinary research on integrated optical technologies. He also serves as chair of the “Photonic Technologies in Plant and Agricultural Science” conference, fostering the exchange between the photonics, plant science, and agricultural research communities.

Keynote Lecture - Wednesday, November 11 - H 09:30



Entrepreneurial journey, scale-up challenges, and EIC support for the Agrifood Sector

Ivan Stefanic
EIC Ambassador

ABSTRACT

The European Innovation Council is far more than a funding programme — it is a launchpad for bold innovators who want to transform breakthrough ideas into real-world impact. For agri-food startups and scale-ups, the EIC has created a powerful continuum of support, accompanying innovators from the earliest scientific insight to global market expansion.

Whether you are validating a new concept through EIC Pathfinder, turning research into a market-ready solution with EIC Transition, scaling a disruptive company through the EIC Accelerator, or pursuing major growth ambitions with EIC STEP, there is an instrument designed for your stage of development. Open and challenge-based calls provide opportunities for both visionary frontier ideas and solutions addressing Europe's most urgent priorities.

What makes the EIC exceptional is the ecosystem surrounding the funding. Beneficiaries gain access to Booster Grants, Tech2Market services, Business Acceleration Services, Access+, the Service Catalogue, the Scaling Club, public procurement support, the Trusted Investor Network, the Women Leadership Programme, and many other initiatives that connect innovators with investors, corporates, experts, and international partners.

The EIC landscape evolves every year, and choosing the right call can feel demanding. Evaluation is rigorous because it looks beyond technology to the business, market, and societal dimensions of innovation. In agriculture and food systems, success rarely depends on technology alone; it depends on integrating science, economics, infrastructure, regulation, and human behavior into a scalable solution.

For future applicants, the most important message is this: do not let an initial rejection define your journey. Many outstanding projects succeed only after refining and resubmitting their ideas. The EIC rewards not only excellence and ambition, but also resilience, learning, and perseverance.

SPEAKER BIOGRAPHY

Ivan Stefanic is a business development and technology transfer specialist with more than 35 years of international experience in research and business. Ivan is also a Full Professor in economics and entrepreneurship in agribusiness. He is passionate about DeepTech and disruptive innovations, gamification of learning experiences, mentoring students and young entrepreneurs, and enterprising universities.

As an EIC Program Manager for Food Chain Technologies and Novel and Sustainable Food, he brought the Agrifood sector into the EIC's spotlight. His 8 Agrifood-related Pathfinder and Accelerator challenges offer innovation support for the sector and provide a solid foundation for the future of the food supply chain.

IEEE MetroAgriFor 2026 - Farming Perspectives

Pitch Presentations - Monday, November 9 - H 10:10



Agrifood Systems of the Future

Monika **Schreiner**

Leibniz Institute of Vegetable and Ornamental Crops e.V., Germany

ABSTRACT

The profound transformation of agricultural systems represents one of the central scientific, technological, and societal challenges of the twenty-first century. The visionary programme Agricultural Systems of the Future directly addresses these complex and interrelated challenges. Within this initiative, agricultural systems are being conceptually rethought and strategically redesigned to support the transformation towards sustainable, resilient, and responsible agricultural systems that place both people and the environment at their centre.

Particularly promising opportunities for successfully transforming agricultural systems towards greater sustainability and resilience lie in the field of converging technologies. Such transformation can only be achieved through the integration of forward-looking technologies. The greatest potential for disruptive innovation and novel applications emerges at the interfaces between artificial intelligence (AI) and agricultural and food sciences, robotics and ecosystem research, smart technologies in agriculture and plant and animal sciences. These technological convergences enable the development of intelligent, adaptive, and resource-efficient agricultural systems by combining data-driven decision making, automation, advanced sensing technologies, and biological knowledge within integrated system approaches.

The project food4future illustrates the transformative potential of converging technologies. Selected examples from the ongoing food4future project demonstrate how technological convergence can accelerate innovation, foster sustainable food production, and contribute to the resilience and future viability of agricultural systems.



Robotics for Agroecosystem Diversification: Managing Complexity in Future Farming

Paul **Hofmann**

Max Planck Institute for Intelligent Systems & ELLIS Institute Tübingen gGmbH

ABSTRACT

Modern agriculture has been optimized around uniform crops, large fields and specialized machinery. While this has greatly increased labour productivity, it has also reinforced ecological simplification and dependence on external inputs. More diversified agroecosystems could strengthen resilience and provide multiple ecosystem services, but so far they have not scaled widely because their complexity remains difficult to manage competitively with conventional machinery. Recent advances in computer vision and Physical AI open a new pathway. Rather than continuing to simplify ecosystems to fit the limitations of agricultural machinery, we can begin to ask a more ambitious question: how much diversity and complexity is actually optimal for productive and resilient agroecosystems if a new generation of small, highly versatile robots can manage them? Our research explores highly diversified agroforestry systems that can be integrated incrementally as multifunctional strips within existing farms, enabling a gradual transformation. High-resolution sensing and computer vision capture plant performance, soil dynamics, biodiversity and greenhouse gasses. These data can feed digital twins that help interpret ecological interactions. Flexible robotic platforms can then translate these insights into precise, site-specific action at single plant level. This will shift agriculture from uniform toward adaptive robotic precision management in heterogeneous agroecosystems. Co-developed with farmers and stakeholders in living labs and lighthouse farms in Germany, this approach aims to make the ecological complexity of highly diversified systems manageable, economically viable and scalable - and to unlock agricultural systems in which productivity, biodiversity, resilience and ecosystem regeneration reinforce rather than constrain one another.

IEEE MetroAgriFor 2026 Venue



IEEE MetroAgriFor 2026 will take place at the **Leibniz Institute for Agricultural Engineering and Bioeconomy** (ATB) in Potsdam, Germany.
The institute is located about 30 km from Berlin on a site with almost 100 years of history in agricultural research. Today the ATBs vision is a circular, diverse, innovative and sustainable bioeconomy produces healthy food for all, operates on the basis of renewable raw materials and facilitates the realization of One Health for humans, animals and the environment. The ATB is equipped with an efficient infrastructure for both basic and transfer-oriented research. Well-equipped research sites and facilities for biotechnological and chemical-physical conversion processes to produce materials (bio-based chemicals and biochar) and to generate energy (biogas) are used for research questions within the framework of biorefinery and cascade utilisation concepts for biomass.

ADDRESS

Max-Eyth-Allee 100 - Potsdam

HOW TO GET THERE

Getting to Leibniz Institute for Agricultural Engineering and Bioeconomy (ATB), which is in German the Leibniz-Institut für Agrartechnik und Bioökonomie.

1. Get a Ticket called: **Potsdam AB "Regeltarif"**. With this ticket you can change the bus or train until you reach your destination within 90 minutes. You can get tickets at machines at the stations or in the bus.
2. Hop on the bus 692 or select a route with changes:
   Start: Potsdam, „Platz der Einheit/West"
   End: „Institut für Agrartechnik" (this is the venue)

Departure time at „Platz der Einheit/West"	Arrival time at „Institut für Agrartechnik"	Means of transport	
8:04	8:29	Bus 692 to "Institut für Agrartechnik"	recommended 😊
8:24	**8:49**	**Bus 692 to "Institut für Agrartechnik"**	**recommended** 😊
8:27	8:54	Tram 96 to "Campus Jungfernsee", change at "Campus Jungfernsee" to bus 692 to "Klinikum" (2 min for change only)	
9:04	9:29	Bus 692 to "Institut für Agrartechnik"	

IEEE MetroAgriFor 2026 Patronages









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Program Schedule - Monday, November 9

Monday - November 9			
9:00 - 09:45	Registration		
09:45 - 10:10	Saal I - Opening Ceremony - Welcome Addresses		
10:10 - 10:50	Saal I - Pitch Presentations		
10:50 - 11:20	Coffee Break		
	Saal I	A101	Saal II
11:20 - 13:00	S1.1 - Trustworthy AI on Complex Agricultural Data (TACADA) - PART 1	S1.2 - Advanced and Sustainable Sensors and Transducers for Smart Agriculture and Environmental Monitoring - PART 1	S1.3 - Digital technologies and AI for sustainable agriculture: Meeting practitioners' and societal needs
13:00 - 14:30	Lunch		
	Saal I	A101	Saal II
14:30 - 16:10	S2.1 - Trustworthy AI on Complex Agricultural Data (TACADA) - PART 2	S2.2 - Advanced and Sustainable Sensors and Transducers for Smart Agriculture and Environmental Monitoring - PART 2	S2.3 - Proximal Soil Sensing: From Sensors to Decision Making - PART 1
16:10 - 16:40	Coffee Break		
16:40 - 18:00	S3.1 - Building Trustworthiness and Explainability in Robotics and Sensing for Agriculture 5.0	S3.2 - Closing yield gaps in a changing climate: data-driven modeling and digital agriculture approaches	S3.3 - Proximal Soil Sensing: From Sensors to Decision Making - PART 2
18:30	Welcome Reception		

Program Schedule - Tuesday, November 10

Tuesday - November 10			
	Saal I	A101	Saal II
09:00 - 10:40	S4.1 - Autonomous Agriculture: AI Agents, IoT, and Intelligent Measurement Systems - PART 1	S4.2 - Advanced Sensing in Agriculture - PART 1	S4.3 - Precision Horticulture Technologies - PART 1
10:40 - 11:00	Coffee Break		
11:00 - 11:50	Poster Session		
11:50 - 12:30	Saal I - Keynote Lecture - Dag Heinemann, Leibniz University Hannover, Germany Theory and Employment of Optical Methodology in Plant Analysis		
12:30 - 13:40	Lunch		
	Saal I	A101	Saal II
13:40 - 15:40	S5.1 - Autonomous Agriculture: AI Agents, IoT, and Intelligent Measurement Systems - PART 2	S5.2 - Advanced Sensing in Agriculture - PART 2	S5.3 - Precision Horticulture Technologies - PART 2
15:40 - 16:20	Coffee Break / Poster Session		
16:20 - 18:00	ATB Technical Tour		
18:00	Bus departure for the Gala Dinner		
18:30	Gala Dinner - Biosphäre Potsdam		

Program Schedule - Wednesday, November 11

Wednesday - November 11			
09:30 - 10:10	Saal I - Keynote - Ivan Stefanic, EIC Ambassador Entrepreneurial journey, scale-up challenges, and EIC support for the Agrifood Sector		
10:10 - 10:30	Coffee Break		
	Saal I	A101	Saal II
10:30 - 12:30	S6.1 - Advanced Technologies for Irrigation and Water Management	S6.2 - Perception systems and automation in specialty crops	S6.3 - Low-Cost Intelligent Remote Sensing Systems for Precision Agriculture: Satellite, UAV, and Embedded Technologies
12:30 - 14:00	Lunch		
14:00 - 14:30	Saal I - Closing and Award Ceremony		
15:00 - 18:00	A101 - EUFRIN Meeting		

09:00 - 18:00	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **REGISTRATIONS**

09:45 - 10:10	*Saal I* **OPENING CEREMONY - WELCOME ADDRESSES**

WELCOME NOTES

Cornelia Weltzien, *Leibniz Institute for Agricultural Engineering and Bioeconomy*

Martin Atzmüller, *University Osnabrück*

Manuela Zude-Sasse, *Leibniz Institute for Agricultural Engineering and Bioeconomy*

10:10 - 10:50	*Saal I* **PITCH PRESENTATIONS - FARMING PERSPECTIVES** **Chair:** Manuela Zude-Sasse, *Leibniz Institute for Agricultural Engineering and Bioeconomy*

Agrifood Systems of the Future

Monika Schreiner, *Leibniz Institute of Vegetable and Ornamental Crops e.V.*

Robotics for Agroecosystem Diversification: Managing Complexity in Future Farming

Paul Hofmann, *Max Planck Institute for Intelligent Systems & ELLIS Institute Tübingen gGmbH*

10:50 - 11:20	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **COFFEE BREAK**

11:20 - 13:00	*Saal I* **S1.1 - Trustworthy AI on Complex Agricultural Data (TACADA) - PART I** **Chairs:** Martin Atzmueller, *Osnabrück University, Germany* Juan Carlos Saborío, *Osnabrück University, Germany*

11:20 **Bridging Regulations and Practice: RAG-Based Integration of Regulatory Standards and Operational Knowledge in Food Inspection**
Arnab Ghosh Chowdhury (Osnabruck University, Germany); Amos Smith (Universität Osnabrück, Germany); Philipp Loer and Felix Lippert (Lippert Inspection GmbH, Germany); Martin Atzmueller (Osnabrück University and DFKI German Research Center for AI, Germany)

11:40 **A Machine Learning Framework for Predicting Silage Fermentation Quality Using near-Infrared Spectroscopy: Integrating Regression and Classification Approaches**
Sohail Anwar (University of Pavia, Italy); Marica Marchese, Valentina Novara and Antonio Gallo (Università Cattolica del Sacro Cuore, Italy); Chiara Toffanin (University of Pavia, Italy)

12:00 **Observation-Time Uncertainty in the Conformance Assessment of Polled Agricultural Field Gateways: The Assessor's Polling Phase and the Guard Band It Implies**
JoonYong Kim (Research Institute of Agriculture and Life Sciences, Seoul Nat'l University, Korea (South))

12:20 **Modeling and Interpretation of HSI Spectral Data Exemplified on the SpectroFood Mushroom Dataset**
Xiao Wei (Universität Osnabrück, Germany); Martin Atzmueller (Osnabrück University and DFKI German Research Center for AI, Germany)

12:40 **Towards Standardized Plant Point Clouds for Benchmarks in Phenotyping: Plant Point Cloud Format (PPF)**
Andreas Gilson (Fraunhofer Institute for Integrated Circuits (IIS), Germany & University of Bamberg, Germany); Oliver Scholz (Fraunhofer Institute for Integrated Circuits (IIS), Germany); Melissa Kindermann (Friedrich-Alexander-University Erlangen-Nuremberg, Germany)

11:20 - 13:00 *A101*
S1.2 - Advanced and Sustainable Sensors and Transducers for Smart Agriculture and Environmental Monitoring - PART I
Chairs: Olfa Kanoun, *Chemnitz University of Technology, Germany*
Carlo Trigona, *University of Catania, Italy*

11:20 **Sensitivity of Millimeter Wave Radar to Vegetation Health Conditions**
Antonio Sorrentino (Università di Cagliari, Italy); Emanuele Setale (University of Naples Parthenope, Italy); Rosarita Tatè (National Research Council, Italy); Samiullah Yousaf and Andrea Buono (Università degli Studi di Napoli Parthenope, Italy); Alessandro Fanti (University of Cagliari, Italy); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy)

11:40 **Collaborative Agro-Environmental Data Collection Using Low-Cost Sensors and a Shared API Platform: A Summer School Case Study**
Pierluigi Rossi (University of Tuscia, Italy); Dario Autovino (University of Palermo, Italy); Anna Perbellini (University of Padua, Italy); Rosaria Ciotta (University of Palermo, Italy); Giorgia Di Domenico and Elisa Mariotti (Tuscia University, Italy)

12:00 **Lucky Bamboo as a Bio-Inductive Vibration Transducer**
Carlo Trigona, Giuliano A. Salerno, Antonio Ligresti, Elisabetta D'amico, Teresa Claudia Calabrese and Mohamed Khaled Edbey (University of Catania, Italy)

12:20 **Modeling Slow-Fast Dynamics of the Venus Flytrap Using the FitzHugh-Nagumo Framework**
Paolo Arena (Università Degli Studi Di Catania, Italy); Giuseppe Nunnari (Università degli Studi di Catania, Italy); Giuliano A. Salerno and Carlo Trigona (University of Catania, Italy)

12:40 **An Open-Source, Low-Cost and Low-Power LoRaWAN Hub for SENT-Based Fruit Growth and Analog Plant Related Physiological Sensors**
Lorenzo Mistral Peppi (DEI, ARCES - University of Bologna, Italy); Luigi Manfrini and Luca De Marchi (University of Bologna, Italy)

11:20 - 13:20 *Saal II*
S1.3 - Digital technologies and AI for sustainable agriculture: Meeting practitioners' and societal needs
Chair: Chiara Mannari, National Research Council*, Italy*

11:20 **Drivers and Barriers to Low-Impact Innovation Adoption in Northern Italian Micro-Farms: An Economic and Attitudinal Analysis**
Lorenzo Baima, Simone Blanc, Filippo Brun and Valentina Maria Merlino (University of Turin, Italy)

11:40 **Business Process Modelling to Design Drone Services for Sustainable Semi-Natural Grasslands**
Chiara Mannari (National Research Council, Italy); Mino Sportelli, Manlio Bacco and Alessio Ferrari (National Research Council (CNR), Italy); Raul Sampaio de Lima, Joanna Tamar Storie and Vineta Gailite (Estonian University of Life, Estonia)

12:00 **BPM-CBA: A Process-Based Approach for Cost-Benefit Analysis in Digital Agriculture**
Fabio Lepore (University of Pisa, Italy); Mino Sportelli, Chiara Mannari and Manlio Bacco (National Research Council (CNR), Italy); Alessio Ferrari (Trinity College Dublin, Ireland); Gianluca Brunori and Daniele Vergamini (University of Pisa, Italy)

12:20 **Evaluating the Impact of Different Model Input Data Splitting Strategies on Random Forest Based Soil Organic Carbon Estimation**
F. Selin Sevimli (Istanbul Technical University & Insoil, Turkey); Esra Erten (İstanbul Technical University, Turkey)

12:40 **NaturaWatch: A Multi-Source Observatory for Farmer-Centric Agri-Environmental Decision Support in Switzerland**
Eva Thelisson (AI Transparency Institute, Switzerland)

13:00 **AI-Based Apple Starch Index Prediction Shows High Agreement with Reference Assessments**
Nadja Sadar (Laimburg Research Centre, Italy); Patrizia Gufler and Michael Gurschler (AI Research & Software Development, Italy); Angelo Zanella (Laimburg Research Centre, Italy)

13:00 - 14:30	*Foyer and Cantina - ATB* **LUNCH**

14:30 - 15:50	*Saal I* **S2.1 - Trustworthy AI on Complex Agricultural Data (TACADA) - PART II** **Chairs:** Martin Atzmueller, *Osnabrück University, Germany* Juan Carlos Saborío, *Osnabrück University, Germany*

14:30 **Integrating Geospatial Foundation Models into a Federated Architecture for Crop Monitoring**
Paolo Baronti (CNR - Institute of Information Science and Technologies Alessandro Faedo - ISTI, Italy); Mattia Santoro (National Research Council of Italy, Italy); Davide La Rosa (Institute of Information Science and Technologies - National Research Council of Italy, Italy); Antonino Crivello (Institute of Information Science and Technologies - CNR, Italy)

14:50 **Image-Based BBCH-Stage Estimation of Maize Plants in the Leaf Development Phase Using Multi-Task Learning**
Justus Bracke and Jana Kombrink-Lübbe (German Research Center for Artificial Intelligence, Germany); Marcel Storch (Osnabrueck University, Germany); Martin Atzmueller (Osnabrück University and DFKI German Research Center for AI, Germany)

15:10 **ADA 2025: A Multimodal Dataset for Water-Deficit Stress Detection in Sugar Beets**
Piper Powell (Universität Osnabrück, Germany); Robert Franz (DFKI, Germany); Amos Smith and Isaak Ihorst (Universität Osnabrück, Germany); Joachim Hertzberg (Osnabrück University, Germany); Martin Atzmueller (Osnabrück University and DFKI German Research Center for AI, Germany)

15:30 **Inter-Annual Robust Grapevine Yellows Detection Using Patch-Based Deep Learning and Adversarial Year Discrimination**
Daval Tanguy (Université de Reims Champagne-Ardenne, France); Valeriu Vrabie (Universitée de Reims Champagne-Ardenne, France); Eric Perrin (Université de Reims Champagne-Ardenne, France); Guillaume Heller and Solen Le Roux (Segula Technologies France, France)

14:30 - 15:50 *A101*

S2.2 - Advanced and Sustainable Sensors and Transducers for Smart Agriculture and Environmental Monitoring - PART II

Chairs: Olfa Kanoun, *Chemnitz University of Technology, Germany*
Carlo Trigona, *University of Catania, Italy*

14:30 **Metrological and Energy Assessment of a Low-Cost Solar Agroclimatic IoT Node**
Zakaria El Malih, Dogukan Gul, Yasar Ates, Zeynep Akin, Taha Bayindir, Serhan Salihoglu and Meltem Elitas Hartmann (Sabanci University, Turkey)

14:50 **Deployable Pop-Up LoRaWAN Infrastructure for Environmental Monitoring in Agricultural and Forest Areas**
Tom Lücke, Andreas Ligocki and Anja Krauth (Ostfalia University of Applied Sciences, Germany)

15:10 **Ultra-Wide Band Localization Filtering Approach for Agricultural Machinery Under Tree Canopy Conditions**
Pierluigi Rossi (University of Tuscia, Italy); Leonardo Boria and Elisa Mariotti (Tuscia University, Italy)

15:30 **Chitosan/Cobalt(II) Phthalocyanine Modified Screen Printed Carbon Electrode for Electrochemical Nitrate Sensing**
Milaine Jebali and Tianqi Lu (Technische Universität Chemnitz, Germany); Malak Talbi (Technische Universität Chemnitz, Germany & Nanomisene Lab, Centre for Research on Microelectronics and Nanotechnology of Sousse, Tunisia); Mounir Ben Ali (University of Sousse, ISSAT & Laboratoire Nanomisene-crmn, LR16CRMN01, Tunisia); Mohamed Hassen (University of Sousse, Tunisia); Olfa Kanoun (Chemnitz University of Technology, Germany)

14:30 - 16:10 *Saal II*

S2.3 - Proximal Soil Sensing: From Sensors to Decision Making - PART I

Chairs: Robin Gebbers, *Leibniz Institute for Agricultural Engineering and Bioeconomy*
Sebastian Vogel, *Leibniz Institute for Agricultural Engineering and Bioeconomy*

14:30 **Experimental Validation of a Novel Highly Automated Contactless NIR Proximal Soil Sensing Module for Robotic Soil Mapping**
Mohammadreza Hassanzadehtalouki, Cornelia Weltzien and Sebastian Vogel (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany)

14:50 **Initial Landscape-Scale Calibrations of Low-Cost Spectrometer Data for in Situ Predictions of Soil Moisture and Soil Organic Carbon**
Michael Horf and Sebastian Vogel (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany)

15:10 **Addressing Calibration of Analog Soil-Moisture Sensors Through Online Machine Learning**
Nicola Rozzi, Gabriele Penzotti and Stefano Caselli (University of Parma, Italy)

15:30 **Laser-Induced Breakdown Spectroscopy in Precision Agriculture: Quantitative Prediction, Matrix-Effect Compensation, and In-Field Texture Classification**
Jakob von Grünberg and Alexander Erler (Universität Potsdam, Germany); Robin Gebbers (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany); Toralf Beitz (Universität Potsdam, Germany); Sebastian Vogel (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany)

15:50 **Assessment of the Temporal Variability of Soil Electrical Conductivity in Agricultural Fields**
Antti Lajunen and Hella Ahrends (University of Helsinki, Finland)

16:10 - 16:40 *Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy*
COFFEE BREAK

16:40 - 18:00 *Saal I*
S3.1 - Building Trustworthiness and Explainability in Robotics and Sensing for Agriculture 5.0
Chair: Angelo Cardellicchio, *National Research Council, Italy*

16:40 **Y-OLIVE: Improving Image-Based Olive Fruit Detection, Counting and Segmentation in Outdoor Conditions**
Andrea Natile Martino and Angelo Cardellicchio (National Research Council, Italy); Giuseppe Montanaro and Vitale Nuzzo (University of Basilicata, Italy); Vito Renò (National Research Council, Italy)

17:00 **Robust LiDAR Odometry for Agricultural Mapping Through ICP Optimization**
Annalisa Milella (National Research Council, Italy); Rossana Gigotti (Politecnico di Bari, Italy); Arianna Rana (National Research Council, Italy); Rocco Galati and Giulio Reina (Politecnico di Bari, Italy)

17:20 **Explaining Parameter-Free and Global Attention in Custom YOLOv11 Architectures for Plant Phenotyping**
Michele Paradiso, Arianna Rana, Angelo Cardellicchio, Vito Renò and Annalisa Milella (National Research Council, Italy)

17:40 **Explaining YOLOv5 Towards Interpretable Asian Citrus Psyllid Detection**
Stelios Pygmalion Neophytides (Eratosthenes Centre of Excellence, Cyprus & Cyprus University of Technology, Cyprus); Nicos Seraphides (Agricultural Research Institute, Cyprus); Menelaos Stavrinides (Eratosthenes Centre of Excellence, Cyprus); Michalis Mavrovouniotis (Eratosthenes Centre of Excellence & Cyprus University of Technology, Cyprus)

16:40 - 17:40 *A101*

S3.2 - Closing yield gaps in a changing climate: data-driven modeling and digital agriculture approaches

Chairs: Matteo Francioni, *Polytechnic University of Marche, Italy*
Chiara Rivosecchi, *Polytechnic University of Marche, Italy*

16:40 **A Data-Driven Framework to Assess Climate Effects on Pink Lady® Apple Skin Coloration**
Edoardo Adriano Mario Tarpinelli, Mirko Piani, Alexandra Boini, Felix Pinerolo De Septis, Giulio Demetrio Perulli, Ivan Ansaloni, Gianmarco Bortolotti and Luigi Manfrini (University of Bologna, Italy)

17:00 **Automatic Plant-Level Monitoring Using Affordable Sequential Imaging and Fiducial-Marker Referencing: The Case of Nutritional Disorder of Eucalyptus**
Mehran Tarif and Nima Kiavar (University of Verona, Italy); Marcello Militello (Istituto Regionale per la Floricoltura, Italy); Daniele Meli (University of Verona, Italy); Davide Quaglia (Universita di Verona, Italy)

17:20 **Calibration Approaches of DSSAT-CERES-Wheat in Contrasting Mediterranean Environments**
Chiara Rivosecchi, Adriano Mancini and Matteo Francioni (Polytechnic University of Marche, Italy); Michele Denora (University of Bari Aldo Moro); Biagio Di Tella and Marco Fiorentini (Polytechnic University of Marche, Italy); Michele Perniola (Università degli Studi della Basilicata, Italy); Alessio Giampieri, Roberto Orsini, Luigi Ledda and Paola Antonia Deligios (Polytechnic University of Marche, Italy)

16:40 - 18:00 *Saal II*

S3.3 - Proximal Soil Sensing: From Sensors to Decision Making - PART II

Chairs: Robin Gebbers, *Leibniz Institute for Agricultural Engineering and Bioeconomy*
Sebastian Vogel, *Leibniz Institute for Agricultural Engineering and Bioeconomy*

16:40 **Comparison of Measurement Methods for Soil Electrical Conductivity**
Janne Henrik Hellström, Niila-Sakari Keijälä and Antti Lajunen (University of Helsinki, Finland)

17:00 **Soil Mapping and Real-Time Agroclimatic Monitoring for Crop Adaptive Management in Small Mediterranean Islands**
Elena Brunori, Alessandro Rocci, Mauro Maesano and Rita Biasi (University of Tuscia, Italy)

17:20 **Rapid Assessment of Plant Available Phosphate in Soils by Optical Fluorescence**
Sebastian Vogel, José Correa and Sebastian Voss, Pablo Rosso and Robin Gebbers (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany)

17:40 **How Reliable is Munsell-Based Humus Classification? Influence of Soil Moisture on Visual Forest Soil Assessment**

Philipp Koal (Forestry Research and Competence Centre, ThüringenForst AöR, Germany); Patrick Menz (Fraunhofer Institute for Factory Operation and Automation IFF, Germany); Steven Ackermann (Forestry Research and Competence Centre, ThüringenForst AöR, Germany); Paul Gescher (Fraunhofer Institute for Factory Operation and Automation IFF, Germany); Hanna Schmidt and Robert Probst (Eberswalde University for Sustainable Development, Germany); Birgitta Putzenlechner (Competence Centre Landscape Resilience, University of Göttingen, Germany); Winfried Riek (Eberswalde University for Sustainable Development, Germany); Ina Ehrhardt (Fraunhofer Institute for Factory Operation and Automation, Germany)

18:30	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **WELCOME PARTY**

Technical Program - Tuesday, November 10

09:00 - 17:00	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **REGISTRATIONS**

09:00 - 10:40	*Saal II* **S4.1 - Autonomous Agriculture: AI Agents, IoT, and Intelligent Measurement Systems - PART I** **Chair:** Ronaldo Prati, *Federal University of ABC, Brazil*

09:00 **A RAG-Enhanced Multi-Agent System for Precision Coffee Farming**
Warley Junior (Federal University of Southern and Southeastern Pará, Brazil); Ramon Castro Barbosa and Gustavo Paixão Machado (Universidade Federal do Sul e Sudeste do Pará, Brazil); Dener Silva (Federal University of ABC, Brazil); Alexandre Heideker (Federal University of the ABC, Brazil & FEI University, Brazil); Andre Torre, Neto (EMBRAPA, Brazil); Ednaldo J Ferreira (Brazilian Agricultural Research Corporation - Embrapa (Embrapa Instrumentation center), Brazil & Center for Artificial Intelligence - C4AI, Brazil); Carlos Alberto Kamienski (Universidade Federal do ABC, Brazil)

09:20 **Joint Pearson-Spearman Coupling of Vegetation Indices for Lag Estimation in Irrigated Coffee**
Farangis Johari and Ronaldo Prati (Federal University of ABC, Brazil)

09:40 **From IoT Monitoring to Irrigation Support: Deploying a FAO-56 Mobile Application in Real Agricultural Environments**
Ivan Zyrianoff, Andrea Caselli, Andrea Iannoli, Milena Mazza and Federico Montori (University of Bologna, Italy); Enrico Dall'Olio and Alice Baldissara (Agribioservice, Italy); Rocco Enrico Sferrazza, Giovanni Dinelli, Ilaria Marotti and Marco Di Felice (University of Bologna, Italy)

10:00 **From Heterogeneous Agricultural Data to Actionable Reports: An LLM-Enhanced Farmer-Oriented Data Aggregator**
Andrea Iannoli, Davide Battilani, Milena Mazza, Ivan Zyrianoff, Federico Montori and Marco Di Felice (University of Bologna, Italy)

10:20 **Searching the Ground Truth in the Ground: Detecting Soil Sensor Deployment Status in Agricultural IoT**
Milena Mazza, Andrea Iannoli, Ivan Zyrianoff, Federico Montori and Marco Di Felice (University of Bologna, Italy)

09:00 - 10:40 *A101*

S4.2 - Advanced Sensing in Agriculture - PART I

Chairs: Andreas Nüchter, *Julius-Maximilians-Universität Würzburg*
Cyrill Stachniss, *Universität Bonn*

09:00 **A Multi-Sensor Dataset and Classification Benchmark for Vineyard Macronutrient Status Assessment**
Luigi Mazzara (Polytechnic Institute of Turin, Italy); Marco Lecce and Guido Tommaso Tinti (Ias Energy Società Cooperativa, Italy); Marcello Chiaberge (Politecnico di Torino, Italy)

09:20 **Morphospectral Leaf Phenotyping for the Discrimination of Genetically Similar Cultivars: A Case Study on Coffee Plants**
Mateus Sabio Martins (Universidade Federal de São Carlos, Brazil); Ednaldo J Ferreira (Brazilian Agricultural Research Corporation - Embrapa (Embrapa Instrumentation center), Brazil & Center for Artificial Intelligence - C4AI, Brazil); Luis Bassoi (Brazilian Agricultural Research Corporation, Brazil); Ronaldo Prati (Federal University of ABC, Brazil); Carlos Alberto Kamienski (Universidade Federal do ABC, Brazil); Wilson TL Silva (Embrapa, Brazil)

09:40 **3D Multispectral UAV Phenotyping for Stress Quantification in Common Beans**
Meltem Cantürk, Maria Lackmann, Anne Reinders, Henrik Schumann, Annaliese Mason, Heiner Kuhlmann and Lasse Klingbeil (University of Bonn, Germany)

10:00 **Sensor-Based Detection and Active Management of Condensation in Bulk-Stored Apples**
Tuany Gabriela Hoffmann (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany); Reiner Jedermann (University of Bremen & FB1, Germany); Pramod Mahajan (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany)

10:20 **An Object-Based Machine Learning Framework for Vine Disease Detection by Multispectral Images**
Gica Stefanescu Miralles and Valeria Maritano (Università degli Studi di Torino, Italy); Giacomo Bellini, Tormmaso Delfino, Mattia Bracci, Paolo Barge, Chiara Messina and Cristina Tortia (University of Turin, Italy); Paolo Gay (University Degli Studi di Turino, Italy); Lorenzo Comba (University of Turin, Italy)

09:00 - 10:40 *Saal II*

S4.3 - Precision Horticulture Technologies - PART I

Chairs: Lav R. Khot, *Washington State University, USA*
Luigi Manfrini, *University of Bologna, Italy*

09:00 **Rollover Stability Assessment of Mobile Robotic Platforms in Orchard and Vineyard Operations**
Giovanni Carabin (Free University of Bozen-Bolzano, Italy); Angelo Ugenti (Politecnico di Bari, Italy); Francesco Amodio and Luigi Tagliavini (Politecnico di Torino, Italy);

Giovanni Colucci (Politecnico di Torino (DIMEAS), Italy); Andrea Botta (Politecnico di Torino, Italy); Rocco Galati (Politecnico di Bari, Italy); Fabrizio Mazzetto (University of Bolzano-Bozen, Italy); Giuseppe Quaglia (Politecnico di Torino, Italy); Giulio Reina (Politecnico di Bari, Italy); Andreas Gronauer (Free University of Bozen-Bolzano, Italy)

09:20 **An Apple Orchard Digital Twin for Bayesian Modelling of Flower Thinning**
Naftali Slob and Aravind Krishnaswamy Rangarajan (OnePlanet Research Center, The Netherlands); Sarah Kemp (Delphy, The Netherlands); Pieter van Dalfsen (Wageningen University and Research, The Netherlands); Bert Rijk and Elisa Mineo (Aurea Imaging, The Netherlands); Bas Boom (OnePlanet Research Center, The Netherlands)

09:40 **Technical Validation of TreeScout Technology for Precision Orchard Management**
Peter Frans de Jong (Wageningen University, The Netherlands); Pieter van Dalfsen and Abe de Leeuw (Wageningen University and Research, The Netherlands)

10:00 **Multitask Deep Learning for Joint Fruit Detection and Sizing Using Mobile Images with Calibration Reference**
Lucia Arribas-Revilla (Institute of AgriFood Research and Technology (IRTA), Spain); Eduard Gregorio López (University of Lleida, Spain); Javier Ruiz-Hidalgo (Universitat Politecnica de Catalunya, Spain); Ramon Morros (Universitat Politècnica de Catalunya, Spain); Marc Felip-Pomés and Jordi Mateo-Fornés (Universitat de Lleida (UdL), Spain); Marina Llobet-Escabias and Jordi Gené-Mola (Institute of AgriFood Research and Technology (IRTA), Spain)

10:20 **Portable Multi-Channel Optical Sensor for Non-Destructive Assessment of 'Rose Bright' Nectarine Flesh Firmness and Soluble Solid Content**
Alessandro Carella, Pedro Tomas Bulacio Fischer, Roberto Massenti and Gabriele Milazzo (University of Palermo, Italy); Alessio Scalisi (Tatura SmartFarm - Agriculture Victoria, Italy); Riccardo Lo Bianco (University of Palermo, Italy)

10:40 - 11:00 *Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy*
COFFEE BREAK

11:00 - 11:50 *Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy*
POSTER SESSION

PS01 **Tree Species Recognition from Bark for Urban Green Monitoring: A Citizen-Science Pipeline for Custom Species Sets**
Daniele Diodati, Luciano Concezzi and Antonio Natale (TeamDev Srl, Italy); Francesco Crocetti and Gabriele Costante (University of Perugia, Italy); Andrea Cruciani (TeamDev Srl, Italy)

PS02 **Anatomical Segmentation and Pose Estimation of Honeybees in near Infrared Comb Imagery**
Zdenek Rozsypalek (Czech Technical University of Prague, Czech Republic); Tomas Roucek and Jiří Ulrich (Czech Technical University in Prague, Czech Republic); Laurenz Fedotoff, Martin Stefanec and Thomas Schmickl (Karl-Franzens University Graz,

Austria); Farshad Arvin (University of Durham, United Kingdom (Great Britain)); Tomas Krajnik (Czech Technical University in Prague, Czech Republic)

PS03 **Hyperspectral Analysis and Scale Effect Evaluation in Pomegranate (Punica Granatum L.) Orchards**
Cristina Cavone, Raffaella Matarrese, Annarita D'addabbo, Adriana Ottaviano and Ilaria Savino (National Research Council, Italy); Giuseppe Lopriore, Gaetano Alessandro Vivaldi (University of Bari, Italy); Valeria Ancona (National Research Council, Italy)

PS04 **Hydros: A Multi-Agent Model for Explainable Irrigation Decision Support Based on Context Histories**
Deivid de Almeida Padilha da Silva (Universidade Vale do Rio dos Sinos, Brazil); Kleinner Silva Farias de Oliveira and Jorge Luis Victória Barbosa (University of Vale do Rio dos Sinos, Brazil)

PS05 **Multitemporal UAV Multispectral Mapping of Sports Turfgrass Management Zones: SPAD Characterization and Comparison with Player Occupancy**
Stefano Chiappini (Università Politecnica Delle Marche, Italy); Chiara Rivosecchi and Rodolfo Santilocchi (Università Politecnica delle Marche, Italy); Paola Antonia Deligios (Polytechnic University of Marche, Italy); Luigi Ledda (Università Politecnica delle Marche, Italy)

PS06 **Robust Spatial Mapping of Honeybee Combs for Automated Brood Surveillance**
Dominik Eichenberger, Jiří Ulrich and Ondřej Drbohlav (Czech Technical University in Prague, Czech Republic); Laurenz Fedotoff, Martin Stefanec and Thomas Schmickl (Karl-Franzens University Graz, Austria); Farshad Arvin (University of Durham, United Kingdom (Great Britain)); Tomas Krajnik (Czech Technical University in Prague, Czech Republic)

PS07 **Design and Development of an Automated Corn Grain Flow Measurement System**
Gerardo Jaciel Ibarra Garrido (Universidad Autónoma Chapingo, Mexico); Luis Arturo Soriano (Universidad Autónoma de Chapingo, Mexico); Luis Gerardo Chávez Covarrubias and Max Fernando Flores Jimenez (Universidad Autónoma Chapingo, Mexico)

PS08 **Snapshot vs. Pushbroom Hyperspectral Imaging for Tomato SSC Prediction: A Comparative Study**
Benedikt Fischer (Fraunhofer, Germany); Anna Böhringer and Pascal Gauweiler (Fraunhofer IOSB, Germany); Leo Fiedler (Carl Zeiss AG, Germany); Robin Gruna and Jürgen Beyerer (Fraunhofer IOSB, Germany)

PS09 **Model-Based Evaluation of Forest Vegetation Regrowth: Post-Wildfire Recovery Analysis**
Kiril Genkin (The Spectroscopy and Remote Sensing Laboratory, Israel); Tom Avikasis Cohen (The Spectroscopy and Remote Sensing Laboratory, School of Environmental Sciences University of Haifa, Israel); Anna Brook (The Spectroscopy and Remote Sensing Laboratory, School of Environmental Sciences, Israel)

11:50 - 12:10	*Saal I* **KEYNOTE LECTURE** **Chair:** Manuela Zude-Sasse, *Leibniz Institute for Agricultural Engineering and Bioeconomy*

Theory and Employment of Optical Methodology in Plant Analysis

Dag Heinemann, *Leibniz University Hannover, Germany*

12:40 - 13:40	*Foyer and cantina - ATB* **LUNCH**

13:40 - 15:40	*Saal I* **S5.1 - Autonomous Agriculture: AI Agents, IoT, and Intelligent Measurement Systems - PART II** **Chair:** Carlos Kamienski, *Federal University of ABC, Brazil*

13:40 **Neural Network-Based Control Mechanism for Precision Agriculture with a Wireless Sensor Network and FPGA Gateway**
Yağız Emir Tataroğlu (Istanbul Bilgi University, Turkey); Melike Akmandor, Baykal Sarioglu and Yigit Gokdel (İstanbul Bilgi University, Turkey)

14:00 **Architecting Smart Irrigation: Sensing and LLM-Based Reasoning for Water Demand Inference**
Alexandre Heideker (Federal University of the ABC, Brazil & FEI University, Brazil); Dener Silva (Federal University of ABC, Brazil); Andre Torre, Neto (EMBRAPA, Brazil); Lei Xue (Sun Yat-sen University, China); Reinaldo Bianchi (Centro Universitário FEI - São José dos Campos - Brasil, Brazil); Carlos Alberto Kamienski (Universidade Federal do ABC, Brazil)

14:20 **AI-Driven Rice Pest Detection Using CNN and Transformer Based Models Under Real Field Conditions**
Raghu Chaliganti (Fraunhofer -HHI, Germany); Anusha Kethireddy (University of Hohenheim, Germany); Mukesh Ramagoni (AgHub Foundation, India); Shreya Bohini (University of Hohenheim, Germany); Sebastian Bosse (Fraunhofer Heinrich Hertz Institute, Germany)

14:40 **Reinforcement Learning with Rainfall Forecasting for Water-Efficient Coffee Irrigation Under Climate Change: A Simulation Study**
André Ricardo Raucci (Federal University of ABC (UFABC), Brazil); Ronaldo Prati and Fabíola Martins Campos de Oliveira (Federal University of ABC, Brazil); Carlos Alberto Kamienski (Universidade Federal do ABC, Brazil)

15:00 **Mission-Logic Taxonomy for Autonomous Navigation Paradigms in Orchards**
Mohamed Abdelhafez and Thorsten Hermes (Hochschule 21, Germany); Peter Hecker (Technische Universität Braunschweig, Germany)

15:20 **Flow-Through System for Real-Time Monitoring of Fruit Respiration Under Dynamic Temperature Conditions**
Akshay Sonawane (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany); Reiner Jedermann (University of Bremen & FB1, Germany); Pramod Mahajan (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany)

13:40 - 15:40 *A101*
S5.2 - Advanced Sensing in Agriculture - PART II
Chairs: Andreas Nüchter, *Julius-Maximilians-Universität Würzburg*
Cyrill Stachniss, *Universität Bonn*

13:40 **Cross-Site Signal-Conditioned Satellite Vegetation Health Index in a Winter Wheat Breeding Trial**
A K M Tanbir Sazid (Martin-Luther Universität Halle-Wittenberg, Germany); Chun Han-Lee, Michael Drzisga, Muhammad Afzal, Federico Lombardo and Klaus Pillen (Martin Luther University Halle-Wittenberg (MLU), Germany); Mathias Wiegmann and Uta Liesenberg (RAGT 2n, Germany); Andreas Maurer (Martin Luther University Halle-Wittenberg (MLU), Germany)

14:00 **Moisture-Robust Soil Organic Carbon Prediction from Vis-NIR Hyperspectral Imagery Using External Parameter Orthogonalization and Transfer Learning**
Adrija Roy (Leibniz Centre for Agricultural Landscape Research, Germany); Sourabh Meena and Kathrin Grahmann (Leibniz Centre for Agricultural Landscape Research (ZALF), Germany)

14:20 **Towards Non-Destructive Fruit Ripeness Prediction: An Intelligent mmWave Radar Sensing Framework**
Pavankumar D (IIITDM Kancheepuram, India); Amit Swain (TCS Research, India); Smriti Rani (Tata Consultancy Services, India); Anwesha Khasnobish (TCS, India); Chirabrata Bhaumik (Tata Consultancy Services & TCS Research, India); Mohammad Jaleel Akhtar (Indian Institute of Technology Kanpur, India)

14:40 **Multi-Temporal Full-Polarimetric Scattering Analysis of Maize Crops Using Ground-Based Scatterometer Measurements**
Emanuele Setale (University of Naples Parthenope, Italy); Marco Chini and Miriam Machwitz (Luxembourg Institute of Science and Technology, Luxembourg); Andrea Buono (Università degli Studi di Napoli Parthenope, Italy); Maurizio Migliaccio (Universita' Napoli Parthenope, Italy); Julia Kubanek (ESA/ESTEC, The Netherlands)

15:00 **3D Apple Localization for per-Tree Counting in Orchards Using Stereo Vision and Sensor Fusion**
Juri Zach (Hamburg University of Applied Science, Germany); Jiahua Wei (Technical University Hamburg, Germany); Moritz Wilhelm Hentzschel (Obstbauversuchsring des

Alten Landes e.V., Germany); Jana Jost (Technical University Hamburg, Germany); Peer Stelldinger (Hamburg University of Applied Sciences, Germany)

15:20 **A Multi-Sensor Satellite Machine Learning Framework for Estimating Soil Carbon Sequestration Potential in Land Restoration**
Tom Avikasis Cohen (The Spectroscopy and Remote Sensing Laboratory, School of Environmental Sciences University of Haifa, Israel); Shahar Baram and Ran Lati (Agricultural Research Organization, Israel); Anna Brook (The Spectroscopy and Remote Sensing Laboratory, School of Environmental Sciences, Israel)

13:40 - 16:00 *Saal II*
S5.3 - Precision Horticulture Technologies - PART II
Chairs: Lav R. Khot, *Washington State University, USA*
Luigi Manfrini, *University of Bologna, Italy*

13:40 **Weathersonde: A UAS-Based Real-Time Spatiotemporal Atmospheric Profiling for Effective Frost Mitigation in Fruit Crops**
Keshawa Dadallage (Washington State University at Tri-Cities, USA); Khang Bui, Basavaraj Amogi and Lav Khot (Washington State University, USA)

14:00 **An Automated Imaging Workflow for Temporal Canopy Expansion and Heat-Stress Phenotyping in a Bentgrass Hybrid Population**
Yonghyun Kim (U.S. Department of Agriculture, USA); Chung-Hyuk Park (The George Washington University, USA); Jinyoung Y Barnaby (U.S. Department of Agriculture, USA)

14:20 **Evaluating Deep Learning Architectures for Apple Fruit Surface Temperature Forecasting Using Regional and in-Orchard Microclimate Weather Datasets**
Joshua Oliver, Srikanth Gorthi, Dattatray G. Bhalekar, Lav Khot and Bernardita V Sallato (Washington State University, USA)

14:40 **A Python-Based Workflow for Automated Processing and Quality Control of Fruit Gauge Data**
Felix Pinerolo De Septis, Alexandra Boini, Cristiano Franceschini, Ivan Ansaloni, Edoardo Adriano Mario Tarpinelli, Giulio Demetrio Perulli and Luigi Manfrini (University of Bologna, Italy)

15:00 **Concept and Lessons Learned of a Strawberry Harvesting Robot**
Tim Tiedemann (Hamburg University of Applied Science, Germany); Heiner Peters (German Research Center of Artificial Intelligence (DFKI), Germany); Torben Othmerding (Othmerding Maschinenbau GmbH & Co. KG, Germany); Timo Lange (Hamburg University of Applied Sciences (HAW), Germany); Janne Janzen (German Research Center of Artificial Intelligence (DFKI), Germany); Matz Wentingmann (Othmerding Maschinenbau GmbH & Co. KG, Germany)

15:20 **Interpreting Sensor Temperature Data as Continuous Signal by Means of Fourier Series Expansion: Impact of Moderate Temperature Increase on at-Harvest Quality Attributes of Field Tomatoes**

Nicolas Tapia-Zapata, Helene Fotouo Makouate and Manuela Zude-Sasse (Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany)

15:40 **Remote Sensing Based Prediction of Plant Area Index and Stem Water Potential in Citrus and Sweet Cherry Orchards**
El Mehdi Bouchouat, Alicia Lemaire, Esther Carlut and David Allétru (INRAE, France); Amandine Boubennec (CTIFL, France); José Quero Garcia and Laurent Julhia (INRAE, France)

15:40 - 16:20	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **COFFEE BREAK / POSTER SESSION**

16:20 - 18:00	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **ATB TECHNICAL TOUR** **Meeting Point - Registration Desk**

ATB Tour with realtime soil analyses / wind tunnel / phenotyping facilities

18:00	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **BUS DEPARTURE FOR GALA DINNER** **Meeting Point - Registration Desk**

18:30	*Biosphäre Potsdam* **GALA DINNER**

09:00 - 13:00	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **REGISTRATIONS**

09:30 - 10:10	*Saal I* **KEYNOTE LECTURE** **Chair:** Manuela Zude-Sasse, *Leibniz Institute for Agricultural Engineering and Bioeconomy*

Entrepreneurial journey, scale-up challenges, and EIC support for the Agrifood Sector

Ivan Stefanic, *EIC Ambassador*

10:10 - 10:30	*Foyer - Leibniz Institute for Agricultural Engineering and Bioeconomy* **COFFEE BREAK**

10:30 - 12:10	*Saal I* **S6.1 - Advanced Technologies for Irrigation and Water Management** **Chair:** Alessia Cogato, *University of Padova, Italy*

10:30 **A Multi-Task Learning Model for Full-Season Soil Moisture Prediction Across Multiple Soil Depths in Spinach**
Jongwon Kang and Jana Zinkernagel (Hochschule Geisenheim University, Germany)

10:50 **Automated Leak Detection in Drip Irrigation Systems Using RGB Cameras and Deep-Learning Object Detection with a Synthetic Dataset**
Fernando Pujaico Rivera (UFABC, Brazil); Reinaldo Bianchi (Centro Universitário FEI - São José dos Campos - Brasil, Brazil); Ronaldo Prati (Federal University of ABC, Brazil); Andre Torre, Neto (EMBRAPA, Brazil); Ednaldo J Ferreira (Brazilian Agricultural Research Corporation - Embrapa (Embrapa Instrumentation center), Brazil & Center for Artificial Intelligence - C4AI, Brazil); Carlos Alberto Kamienski (Universidade Federal do ABC, Brazil)

11:10 **Closing the Knowledge Gap in on-Farm Irrigation: A Survey from Central-Eastern Veneto, Italy**
Francesco Salmaso (University of Padua, Italy); Alessia Cogato (University of Padova, Italy); Lucia Bortolini (University of Padua, Italy)

11:30 **Monitoring Irrigation Adoption and Vineyard Vegeta-Tion Dynamics in Tuscany Using Sentinel-2 Imagery and Regional Administrative Datasets**
Alessia Cogato (University of Padova, Italy); Niccolò Renzi (University of Florence, Italy); Francesco Marinello (University of Padova, Italy); Giulio Castelli and Elena Bresci (University of Florence, Italy); Lorenzo Villani (University of Firenze, Italy)

11:50 **Climate-Stratified Performance and Reservoir Sizing for Drainage Water Recycling in Subsurface-Drained Maize: A DRAINMOD-Based Framework for the U.S. Upper Midwest**
Tamás Varga (USA); David J. Mulla, Vasudha Sharma and Timothy J. Griffis (University of Minnesota, USA); Ethan E. Butler (University of Illinois, USA); John M. Baker and Jeffrey A. Coulter (University of Minnesota, USA)

10:30 - 12:10 *A101*
S6.2 - Perception systems and automation in specialty crops
Chair: Nikolaos Tsoulias, *Hochschule Geisenheim University, Germany*

10:30 **Adapting NIR Picking-Date Models for Pear Under Domain Shift**
Els Bobelyn and Elisa Driesen (Flanders Centre of Postharvest Technology, Belgium); Bart Nicolaï (Katholieke Universiteit Leuven and Flanders Centre of Postharvest Technology, Belgium)

10:50 **Grapevine Trunk Volume Estimation by Means of 3D Point Clouds**
Marco Bignardi, Nikolaos Tsoulias and Burawich Pamornnak (Hochschule Geisenheim University, Germany); Dimitrios S. Paraforos (University of Geisenheim, Germany)

11:10 **Benchmarking Point-Based Deep Learning Architectures for Grape Cluster Trait Regression from 3D Point Clouds**
Dimitrios-Tilemachos Davarakis (University College Dublin, Ireland); Nikolaos Tsoulias (Hochschule Geisenheim University, Germany); Dimitrios S. Paraforos (University of Geisenheim, Germany); Dimitrios Argyropoulos (University College Dublin, Ireland)

11:30 **UGV Trunk-Based Detection, Classification and Georeferencing of Urban Tree Species**
Francesco Crocetti and Amin Allioui (University of Perugia, Italy); Daniele Diodati and Luciano Concezzi (TeamDev Srl, Italy); Diego Tognelli (Red Lynx Robotics, Italy); Paolo Valigi (Unipg, Italy); Gabriele Costante (University of Perugia, Italy)

11:50 **Looking at the Invisible: Synthetic Dataset Creation to Deal with Heavy Occlusions in Instance Segmentation of Flowers**
Mohsen Saadatpour, Mehran Tarif and Davide Quaglia (University of Verona, Italy)

10:30 - 12:30 *Saal II*
S6.3 - Low-Cost Intelligent Remote Sensing Systems for Precision Agriculture: Satellite, UAV, and Embedded Technologies
Chairs: Wissam Jenkal, *Ibnou Zohr University, Morocco*
Luca De Vito, *University of Sannio, Italy*

10:30 **Using Sentinel-2 Time Series Analysis for Assessing Vegetation Recovery in Post-Conflict Aghdam, Karabakh: A Foundation for Agricultural Land Rehabilitation**
Gunay Hasanli (Alma Mater Studiorum - University of Bologna, Italy); Mehrin Azizli and Turan Hajiyeva (Agroservice OJSC, Azerbaijan)

10:50 **Integration of Grain NIR Spectroscopy and UAV Multispectral Canopy Data for Grain Yield Estimation in Winter Barley**
Milen Chanev, Dessislava Ganeva and Mihaela Tsvetkova (Space Research and Technology Institute Bulgarian Academy of Sciences)

11:10 **Digital Soil Mapping of Alpine Soil Texture: Multi-Sensor Fusion, Compositional Ensemble Learning, and Uncertainty Diagnostics**
Mostafa Saghafi (Fondazione Bruno Kessler, Italy & University of Trento, Italy); Miguel Pincheira (Fondazione Bruno Kessler, OpenIoT Unit & Trento, Italy); Massimo Vecchio (OpenIoT Research Unit at FBK, Italy); Fabio Antonelli (Fondazione Bruno Kessler, Italy)

11:30 **In-Season Yield Prediction for Short-Term Site-Specific Mineral Fertilization Application, Based on Harmonized PlanetScope and Sentinel-2 Timeseries**
Larissa Torney (GFZ Helmholtz Centre for Geosciences, Germany)

11:50 **Assessing the Temporal Consistency of Sentinel-1 and Thermal-Time Indicators for Wheat Emergence Estimation Under Mediterranean Conditions**
Ferdaws Ben Akacha (Laboratory GREEN-TEAM LR17AGR01, University of Carthage, National Agronomic Institute of Tunisia Tunis, Tunisia); Aicha Chahbi Bellakanji (Laboratory GREEN-TEAM LR17AGR01 University of Carthage, National Agronomic Institute of Tunisia Tunis, Tunisia); Nicolas Baghdadi (UMR TETIS, National Research Institute for Agriculture, Food and Environment (INRAE), University of Montpellier); Zohra Lili Chabaane (Laboratory GREEN-TEAM LR17AGR01, Institution of Agricultural Research and Higher Education (IRESA), National Agronomic I); Mehrez Zribi (Université de Toulouse; CNES; CNRS; INRAE; IRD; CESBIO Toulouse, France)

12:10 **Temporal Relationships Between Sentinel-2 Spectral Indices and IoT-Based Soil Moisture Measurements at a Vineyard Site**
Aysima Yildiz and Alp Ertürk (Kocaeli University, Turkey); Esra Erten (İstanbul Technical University, Turkey)

12:30 - 14:00	*Foyer and cantina - ATB* **LUNCH**

14:00 - 14:30	*Saal I* **CLOSING AND AWARD CEREMONY**

15:00 - 18:00	*A101* **EUFRIN Meeting**