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WORKSHOP PROGRAM

Monday, November 6

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Enrique Fernández, Institute for Natural Resources and Agrobiology (IRNAS, CSIC), Spain
María Victoria Cuevas, Institute for Natural Resources and Agrobiology (IRNAS, CSIC), Spain
Antonio Diaz-Espejo, Institute for Natural Resources and Agrobiology (IRNAS, CSIC), Spain
Virginia Hernandez-Santana, Institute for Natural Resources and Agrobiology (IRNAS, CSIC), Spain
Celia Rodriguez-Dominguez, Institute for Natural Resources and Agrobiology (IRNAS, CSIC), Spain
Rafael Romero, Institute for Natural Resources and Agrobiology (IRNAS, CSIC), Spain

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325 **Adaptive Sliding Mode Control With Artificial Potential Field for Ground Robots in Precision Agriculture**
Mauro Mancini, Politecnico di Torino, Italy
Enza Incoronata Trombetta, Politecnico di Torino, Italy
Davide Carminati, Politecnico di Torino, Italy
Elisa Capello, Politecnico di Torino, Italy

331 **A Lightweight and Affordable Method for Canopy Porosity Estimation for Precision Spraying**
Dario Mengoli, University of Bologna, Italy
Gianmarco Bortolotti, University of Bologna, Italy
Michele Bartolomei, University of Bologna, Italy
Gianluca Allegro, University of Bologna, Italy
Ilaria Filippetti, University of Bologna, Italy
Luigi Manfrini, University of Bologna, Italy

Session 5.1 - Precision management of horticultural crops - PART I

Room: Room A - Le Benedettine Conference Center

337 **Mixing Supervised and Unsupervised Learning Algorithms to Solve Human Perception Subjectivity in Internal Fruit Quality Assessment**
Mirko Piani, University of Bologna, Italy
Gianmarco Bortolotti, University of Bologna, Italy
Dario Mengoli, University of Bologna, Italy
Niccolò Raule, University of Bologna, Italy
Francesco Spinelli, University of Bologna, Italy
Luigi Manfrini, University of Bologna, Italy

343 **Plot-Specific Drought Stress Simulation in Vineyards Using a Microclimatic Monitoring System in Combination With a Radiation and Water Balance Model**
Rikard Graß, Helmholtz Centre for Environmental Research GmbH, Germany
Hannah Boedeker, Helmholtz Centre for Environmental Research GmbH, Germany
Marco Hofmann, Hochschule Geisenheim University, Germany
Martin Schieck, Leipzig University, Germany
Silvia Krug (Mid Sweden University, Sweden & IMMS GmbH, Germany)
Tino Hutschenreuther, IMMS, Germany
Hannes Mollenhauer, IMMS, Germany

348 **Fruit Water Stress Index: Case Study on Applying Jones' Equation in Apple**
Arash Khosravi, Università Politecnica Delle Marche, Italy
Nikolaos Tsoulias, Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany
Manuela Zude-Sasse, Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany

352 **Machine Learning Regressor for the Prediction of the SPAD Value of Indoor Basil With RGB Monitoring**
Matteo Landolfo, University of Bologna, Italy
Fabio Perotti, University of Bologna, Italy
Gaia Moretti, University of Bologna, Italy
Giuseppina Pennisi, University of Bologna, Italy
Francesco Orsini, University of Bologna, Italy

357 **Development of a Consumer-Grade Scanning Platform for Fruit Thermal and Position Data Collection**
Gianmarco Bortolotti, University of Bologna, Italy
Mirko Piani, University of Bologna, Italy
Dario Mengoli, University of Bologna, Italy
Cristiano Franceschini, University of Bologna, Italy
Nicolò Omodei, University of Bologna, Italy
Simone Rossi, University of Bologna, Italy
Luigi Manfrini, University of Bologna, Italy

Session 5.2 - Sensing and Data Platforms: what is ahead of us - PART I

Room: Room B - Le Benedettine Conference Center

363 **Preliminary Results for Halyomorpha Halys Monitoring Relying on a Custom Dataset**
Francesco Betti Sorbelli, University of Perugia, Italy
Lorenzo Palazzetti, University of Florence, Italy
Cristina M. Pinotti, University of Perugia, Italy

369 **Remote Sensing and Machine Learning for Riparian Vegetation Detection and Classification**
Nicholas Fiorentini, National Research Council, Italy
F. Manlio Bacco, National Research Council, Italy
Alessio Ferrari, National Research Council, Italy
Massimo Rovai, University of Pisa, Italy
Gianluca Brunori, University of Pisa, Italy

375 **CZU Data Platform: Initial Study**
Michal Stočes, Czech University of Life Sciences Prague, Czech Republic
Vojtěch Novák, Czech University of Life Sciences Prague, Czech Republic
Petr Cihelka, Czech University of Life Sciences Prague, Czech Republic
Milos Ulman, Czech University of Life Sciences Prague, Czech Republic
Martin Havranek, Czech University of Life Sciences Prague, Czech Republic
Lukáš Kovář, Czech University of Life Sciences Prague, Czech Republic
Jiří Vaněk, Czech University of Life Sciences Prague, Czech Republic
Pavel Šimek, Czech University of Life Sciences Prague, Czech Republic

380 **A Drone-Based Automated Halyomorpha Halys Scouting: A Case Study on Orchard Monitoring**
Francesco Betti Sorbelli, University of Perugia, Italy
Lorenzo Palazzetti, University of Florence, Italy
Cristina M. Pinotti, University of Perugia, Italy

Session 5.3 - Robotics for Agro-Forestry and Landscape Applications - PART II

Room: Room C - Le Benedettine Conference Center

386 **Generalization of Reinforcement Learning Through Artificial Potential Fields for Agricultural UGVs**
Petre Ricioppo, Politecnico di Torino, Italy
Davide Celestini, Politecnico di Torino, Italy
Elisa Capello, Politecnico di Torino, Italy

392 **On-Line Real-Time Trunk Detection, Counting and Sizing to Enable Precision Agriculture Tasks on a Single-Plant Basis**
Dario Mengoli, University of Bologna, Italy
Simone Rossi, University of Bologna, Italy
Gianmarco Bortolotti, University of Bologna, Italy
Nicolò Omodei, University of Bologna, Italy
Mirko Piani, University of Bologna, Italy
Luigi Manfrini, University of Bologna, Italy

398 **Field Campaign and Experimental Design for Robot Performance Evaluation (ACRE 2023)**
Sofia Matilde Luglio, University of Pisa, Italy
Mino Sportelli, University of Pisa, Italy
Christian Frasconi, University of Pisa, Italy
Marco Fontanelli, University of Pisa, Italy
Matteo Matteucci, Politecnico di Milano, Italy
Giulio Fontana, Politecnico di Milano, Italy
Enrico Piazza, Politecnico di Milano, Italy
Davide Facchinetti, University of Milan, Italy

404 **Measuring the Operative Performance of Autonomous Mowers on Slopes**
Marco Fontanelli, University of Pisa, Italy
Nicola Del Chiaro, University of Pisa, Italy
Lorenzo Gagliardi, University of Pisa, Italy
Christian Frasconi, University of Pisa, Italy
Michele Raffaelli, University of Pisa, Italy
Andrea Peruzzi, University of Pisa, Italy
Giuliano Sciusco, University of Pisa, Italy
Sofia Matilde Luglio, University of Pisa, Italy

409 **Comparison of Autonomous Mowers Energy Consumption and Working Capacity on a Bermudagrass Turf at Different Cutting Heights**
Giuliano Sciusco, University of Pisa, Italy
Lisa Caturegli, University of Pisa, Italy
Sofia Matilde Luglio, University of Pisa, Italy
Marco Fontanelli, University of Pisa, Italy
Marco Volterrani, University of Pisa, Italy
Simone Magni, University of Pisa, Italy
Mino Sportelli, University of Pisa, Italy

Session 6.1 - Precision management of horticultural crops - PART II
Room: Room A - Le Benedettine Conference Center

414 **Exploring the Potential of Electrical Impedance Spectroscopy for Predicting Internal Browning in Apples**
Sundus Riaz, Free University of Bolzano, Laimburg Research Centre, Italy
Pietro Ibba, Free University of Bolzano, Italy
Nadja Sadar, Laimburg Research Centre, Italy
Ahmed Rasheed, Free University of Bolzano, Italy
Paolo Lugli, Free University of Bolzano, Italy
Angelo Zanella, Free University of Bolzano, Laimburg Research Centre, Italy
Luisa Petti, Free University of Bolzano, Italy

419 **Disease Early Warning and Intelligent Climate Control in the Chinese Solar Greenhouse**
Ran Liu, National Engineering Research Center for Information Technology in Agriculture, China
Ming Li, National Engineering Research Center for Information Technology in Agriculture, China
José Luis Guzmán, University of Almería, Spain
Xinting Yang, National Engineering Research Center for Information Technology in Agriculture, China
Chunhao Zhang, University of Almería, Spain
Juan D. Gil, University of Almería, Spain

424 **Evaluation of Fruit Temperature on Cherries by Means of Thermal Point Clouds**
Marco Bignardi, Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany
Nikolaos Tsoulias, Geisenheim University, Germany
Luigi Manfrini, University of Bologna, Italy
Manuela Zude-Sasse, Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany

429 **Apple Fruit Surface Temperature Prediction Using Weather Data-Driven Machine Learning Models**
Nelson Goosman, Washington State University, USA
Basavaraj Amogi, Washington State University, USA
Lav Khot, Washington State University, USA

434 **Hyperspectral Imaging-Based Monitoring of Apple Fruit in Storage and Shelf Life**
Arman Arefi, Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany
Manuela Zude-Sasse, Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany

Session 6.2 - Sensing and Data Platforms: what is ahead of us - PART II
Room: Room B - Le Benedettine Conference Center

439 **Towards Detecting Brown Marmorated Stink Bug Using Stationary Cameras**
David Niederprüm, Technische Universität Braunschweig, Germany
Shashank Jhansale Anil Kumar, Technische Universität Braunschweig, Germany
Lars C Wolf, Technische Universität Braunschweig, Germany

444 **Uncertainty Model for NDVI Estimation From Multispectral Camera Measurements**
Fatemeh Khalesi, University of Sannio, Italy
Pasquale Daponte, University of Sannio, Italy
Luca De Vito, University of Sannio, Italy
Francesco Picariello, University of Sannio, Italy
Ioan Tudosa, University of Sannio, Italy

449 **Evaluation of Wireless Technologies for an Embedded Camera-Based Pest Monitoring System**
Leonard J Zurek, Tyndall National Institute, University College Cork, Ireland
Amin Kargar, Tyndall National Institute, University College Cork, Ireland
Brendan O'Flynn, Tyndall National Institute, University College Cork, Ireland
David Niederprüm, Technische Universität Braunschweig, Germany
Lars C Wolf, Technische Universität Braunschweig, Germany
Dimitrios Zorbas, Nazarbayev University, Kazakhstan

455 **Enhancing Machine Learning Training Performance in Smart Agriculture Datasets Using a Mobile App**
Temirlan Zarymkanov, Nazarbayev University, Kazakhstan
Amin Kargar, Tyndall National Institute, University College Cork, Ireland
Cristina M. Pinotti, University of Perugia, Italy
Brendan O'Flynn, Tyndall National Institute, University College Cork, Ireland
Dimitrios Zorbas, Nazarbayev University, Kazakhstan

461 **A Model for Simulation of Developmental Instars of Halyomorpha Halys**
Catalin Lazar, National Agricultural Research and Development Institute, Romania
Dan Popescu, University Politehnica of Bucharest, Romania
Lara Maistrello, University of Modena and Reggio Emilia, Italy
Elena Costi, University of Modena and Reggio Emilia, Italy
Loretta Ichim, University Politehnica of Bucharest, Romania
Emil Igor Georgescu, National Agricultural Research and Development Institute, Romania

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Session 6.3 - Technologies and Strategies for Sustainable Livestock Farming - PART I

Room: Room C - Le Benedettine Conference Center

466 **Ankom DaisyII Modifications to Stabilise the Rotation Speed**
Salvatore Barbera, University of Turin, Italy
Chiara Sarnataro, University of Udine, Italy
Sabah Mabrouki, University of Turin, Italy
Sara Glorio Patrucco, University of Turin, Italy
Hatzumi Kaihara, University of Turin, Italy
Sonia Tassone, University of Turin, Italy

472 **Automated Method for Measuring Body Size Parameters of Live Pigs Based on Non-Rigid Registration of Point Clouds**
Zicheng Gao, China Agricultural University, China
Jie Lei, China Agricultural University, China
Jianhuan Wu, China Agricultural University, China
Jialong Zhang, China Agricultural University, China
Alexey Ruchay, Chelyabinsk State University, Russia
Andrea Pezzuolo, University of Padova, Italy
Hao Guo, China Agricultural University, China

478 **Insights From an Oxygen Integrated Monitoring and Control System in Land-Based Aquaculture**
Carlo Bibbiani, Università di Pisa, Italy
Riccardo Tonasso, Cosa - Società Agricola, Italy
Marco Gentili, Cosa - Società Agricola, Italy
Baldassare Fronte, Università di Pisa, Italy
Lorenzo Rossi, Università di Pisa, Italy

484 **Modelling the Spatial Distribution of THI in a Cattle Barn From Data of a Smart Monitoring System**
Carlos Alejandro Perez Garcia, University of Bologna, Italy
Marco Bovo, University of Bologna, Italy
Alberto Barbaresi, University of Bologna, Italy
Patrizia Tassinari, University of Bologna, Italy
Daniele Torreggiani, University of Bologna, Italy
Stefano Benni, University of Bologna, Italy

490 **Laser Methane Smart Detector for Measuring the Reduction of Emissions in Dairy Cows: A Pilot Study**
Elena Senatore, University of Pisa, Italy
Giulia Foggi, University of Pisa, Italy
Alina Silvi, University of Pisa, Italy
Alberto Mantino, University of Pisa, Italy
Giuseppe Conte, University of Pisa, Italy
Marcello Mele, University of Pisa, Italy

Session 7.1 - Optical sensors in Plant Pathology

Room: Room A - Le Benedettine Conference Center

495 **Hyperspectral Detection and Monitoring of Eggplant Verticillium Wilt in Field Conditions**
Ivan Fiaccadori, University of Pisa, Italy
Cosimo Bettiol, University of Pisa, Italy
Gian Piero Ricci, University of Pisa, Italy
Lorenzo D'Asaro, University of Pisa, Italy
Giuseppe Quaratiello, University of Pisa, Italy
Samuele Risoli, University School for Advanced Studies - IUSS Pavia, Italy
Athos Pedrelli, University of Pisa, Italy
Claudia Pisuttu, University of Pisa, Italy
Lorenzo Cotrozzi, University of Pisa, Italy

501 **Hyperspectral Imaging to Oversee the Status of Baby Leaf Vegetable Crops: The Agrofiliere Project Results**
Catello Pane, Council for Agricultural Research and Economics, Italy
Nicola Nicastro, Council for Agricultural Research and Economics, Italy
Gelsomina Manganiello, University of Naples Federico II, Italy
Francesco Carotenuto, University of Naples Federico II, Italy
Federico Pallottino, Council for Agricultural Research and Economics, Italy
Corrado Costa, Council for Agricultural Research and Economics, Italy

506 **Hyperspectral Signatures and Betalain Indicator for Beet Mosaic Virus Infection in Sugar Beet**
Nathan Okole, Institut Für Zuckerrübenforschung, Germany
Facundo R Ispizua Yamati, Institut Für Zuckerrübenforschung, Germany
Roxana Hossain, Institut Für Zuckerrübenforschung, Germany
Mark Varrelmann, Institut Für Zuckerrübenforschung, Germany
Anne-Katrin Mahlein, Institut Für Zuckerrübenforschung, Germany
René HJ Heim, Institut Für Zuckerrübenforschung, Germany

512 **An Experimental Setup for the Study of Plasmopara Viticola on Vine Leaves by Fluorescence**
Manuel Greco, Roma Tre University, Italy
Mariagrazia Leccisi, Roma Tre University, Italy
Giuseppe Schirripa Spagnolo, Roma Tre University, Italy
Fabio Leccese, Roma Tre University, Italy

516 **Detection of Fusarium Head Blight of Wheat From Hyperspectral Images**
Luca Tuzzi, University of Milano-Bicocca, Italy
Ilaria Busi, University of Milano-Bicocca, Italy
Roberto Garzonio, University of Milano-Bicocca, Italy
Lorenzo Cotrozzi, University of Pisa, Italy
Samuele Risoli, University of Pisa, Italy
Giuseppe Quaratiello, University of Pisa, Italy
Roberto Colombo, University of Milano-Bicocca, Italy
Sergio Cogliati, University of Milano-Bicocca, Italy
Laura Sironi, University of Milano-Bicocca, Italy

Session 7.2 - Earth Observation for agricultural water management under scarcity conditions in the Mediterranean area

Room: Room B - Le Benedettine Conference Center

521 **Implementation of Integrated Technologies for Hydrological Modeling in Mediterranean Viticulture: The SOSVITE Project**

Riccardo Rossi, University of Florence, Italy
Camilla Dibari, University of Florence, Italy
Gloria Padovan, University of Florence, Italy
Nicolina Staglianò, University of Florence, Italy
Anna Rita Balingit, University of Florence, Italy
Marco Bindi, University of Florence, Italy
Sergi Costafreda-Aumedes, National Research Council, Italy
Marta Chiesi, National Research Council, Italy
Fabio Maselli, National Research Council, Italy
Marco Moriondo, National Research Council, Italy

526 **Remote Sensing Techniques for Soil Humidity Monitoring in Drought Areas: Case Study of the Wadi Hallouf/Oum Zessar Watershed (Tunisia)**

Amal Hachani, National Research Council, Italy, IRA, Tunisia
Giuliano Ramat, National Research Council, Italy
Simonetta Paloscia, National Research Council, Italy
Emanuele Santi, National Research Council, Italy
Fabrizio Baroni, National Research Council, Italy
Giacomo Fontanelli, National Research Council, Italy
Alessandro Lapini, National Research Council, Italy
Simone Pettinato, National Research Council, Italy
Simone Pilia, National Research Council, Italy
Leonardo Santurri, National Research Council, Italy

531 **PRIMA MAGO Project: Open-Source Applications Based on Copernicus Data for Agricultural Water Management**

Laurent Pouget, CETAQUA, Spain
Albert Serra, CETAQUA, Spain
Francisco Nuñez, CETAQUA, Spain
Miquel Sarrias, CETAQUA, Spain
Samir Yacoubi, INRGREF, Tunisia
Ignacio Gil, AGBAR Agriculture, Spain
Marta Pérez, AGBAR Agriculture, Spain

537 **Remote Sensing Measurements for Efficient Crop Irrigation Management**

Irene Terlizzi, University of Padova, Italy
Federico Toson, University of Padova, Italy
Sebastiano Chiodini, University of Padova, Italy
Carlo Bettanini, University of Padova, Italy
Giacomo Colombatti, University of Padova, Italy
Francesco Morbidini, University of Padova, Italy
Carmelo Maucieri, University of Padova, Italy
Maurizio Borin, University of Padova, Italy

542 **Improving Irrigation Scheduling at Farm Level by Using High Quality Weather Forecasts**

Anna Pelosi, University of Salerno, Italy
Oscar Rosario Belfiore, University of Naples Federico II, Italy
Angeloluigi Aprile, University of Naples Federico II, Italy
Paolo Villani, University of Salerno, Italy
Guido D'Urso, University of Naples Federico II, Italy
Giovanni Battista Chirico, University of Naples Federico II, Italy

Session 7.3 - Technologies and Strategies for Sustainable Livestock Farming - PART II

Room: Room C - Le Benedettine Conference Center

547 **An Integrated Renewable Energy Plant With Smart Monitoring System for Sustainable Farming**
Stefano Benni, University of Bologna, Italy
Francesco Tinti, University of Bologna, Italy
Marco Bovo, University of Bologna, Italy
Alberto Barbaresi, University of Bologna, Italy
Daniele Torreggiani, University of Bologna, Italy
Patrizia Tassinari, University of Bologna, Italy

553 **Algorithms for the Identification of Yield Anomalies in Cattle Dataset Collected by Automatic Milking Systems**
Mattia Ceccarelli, University of Bologna, Italy
Miki Agrusti, University of Bologna, Italy
Claudia Giannone, University of Bologna, Italy
Marco Bovo, University of Bologna, Italy
Alberto Barbaresi, University of Bologna, Italy
Enrica Santolini, University of Bologna, Italy
Stefano Benni, University of Bologna, Italy
Daniele Torreggiani, University of Bologna, Italy
Patrizia Tassinari, University of Bologna, Italy

558 **A Valuable Strategy for Chicken Welfare Management: A Review for Chicken Live Weight Monitoring**
Jing Xie, University of Almeria, Spain
Ming Li, National Engineering Research Center for Information Technology in Agriculture, China
Chunxu Wan, Beijing Vocational College of Agriculture, China

564 **A Mechanisability Index to Evaluate the Potential of Alpine Pastures and Meadows in North-East of Italy**
Daniele Pinna, University of Padova, Italy
Andrea Pezzuolo, University of Padova, Italy
Stefano Macolino, University of Padova, Italy
Cristina Pornaro, University of Padova, Italy
Alessia Cogato, University of Padova, Italy
Francesco Marinello, University of Padova, Italy

569 **Cattle Face Recognition Using Deep Transfer Learning Techniques**
Alexey Ruchay, Chelyabinsk State University, Russia
Ilya Akulshin, Chelyabinsk State University, Russia
Vladimir Kolpakov, Federal Research Centre of Biological Systems, Russia
Kinispay Dzhulamanov, Federal Research Centre of Biological Systems, Russia
Hao Guo, China Agricultural University, China
Andrea Pezzuolo, University of Padova, Italy

Wednesday, November 8

Session 8.1 - Measurements in soil hydrological processes and properties

Room: Room A - Le Benedettine Conference Center

575 **Effect of Rainfall Intensity on the Mechanical Biases of Tipping Bucket Rainfall Measurements**
Daniel Alberto Segovia-Cardozo, Universidad Politécnica de Madrid, Spain
Carlota Bernal Basurco, Universidad Politécnica de Madrid, Spain
Leonor Rodriguez Sinobas, Universidad Politécnica de Madrid, Spain

581 **A New BEST Algorithm for Determining Soil Saturated Hydrodynamic Parameters Without Measuring Soil Water Content**
Dario Autovino, University of Palermo, Italy
Raphael Angulo-Jaramillo, Université Lyon, France
Vincenzo Alagna, University of Palermo, Italy
Simone Di Prima, University of Basilicata, Italy
Massimo Iovino, University of Palermo, Italy
Laurent Lassabatere, Université Lyon, France
Jianbin Lai, Chinese Academy of Sciences, China
Vincenzo Bagarello, University of Palermo, Italy

586 **Hydrological Response of a Volcanic Medium as a Potential Substrate for Green Roofs**
Cristina Bondì, University of Palermo, Italy
Vincenzo Alagna, University of Palermo, Italy
Massimo Iovino, University of Palermo, Italy

591 **Estimating Soil Water Repellency From Infiltration Experiments Conducted With Ethanol and Water**
Gaetano Caltabellotta, University of Palermo, Italy
Vincenzo Bagarello, University of Palermo, Italy
Massimo Iovino, University of Palermo, Italy

596 **Estimating the Saturated Soil Hydraulic Conductivity in a Farm Constructed Wetland From the Borehole Permeameter Infiltration Method**
Vincenzo Alagna, University of Palermo, Italy
Dario Autovino, University of Palermo, Italy
Massimo Iovino, University of Palermo, Italy
Attilio Toscano, University of Bologna, Italy

Session 8.2 - Smart Systems for Operational Forest Monitoring, Automation and Analysis

Room: Room B - Le Benedettine Conference Center

601 **Cutting Systems Evaluation for a Tree-Pruning Robot**
Giovanni Carabin, Free University of Bozen-Bolzano, Italy
Stefan Leitner, Free University of Bozen-Bolzano, Italy
Fabrizio Mazzetto, Free University of Bozen-Bolzano, Italy
Renato Vidoni, Free University of Bozen-Bolzano, Italy
Marco Bietresato, University of Udine, Italy

607 **Stem Sensors for Tree Health/Vitality: Perspectives to Quantify the Synchronization of Environmental Patterns and Plant Response Dynamics**
Alessio Giovannelli, National Research Council, Italy
Negar Rezaie, National Research Council, Italy
Claudia Cocozza, University of Florence, Italy

612 **A Pilot Study to Classify Salt Treated Poplar Plants Using Machine Learning Algorithms**
Bushra Jalil, Scuola Superiore Sant'Anna, Italy
Iqra Sarfraz, Scuola Superiore Sant'Anna, Italy
Lorenzo Della Maggiora, Scuola Superiore Sant'Anna, Italy
Alessandra Francini, Scuola Superiore Sant'Anna, Italy
Luca Valcarenghi, Scuola Superiore Sant'Anna, Italy
Luca Sebastiani, Scuola Superiore Sant'Anna, Italy

618 **Is Handheld Mobile Scanner Data Operational for the Evaluation of Field Performance of Poplar Clones?**
Rodrigo Arevalo, Universidad de León, Spain
Carlos Cabo Gómez, Universidad de Ovideo, Spain
Joaquín Garnica López, Bosques y Ríos, Spain
Fernando Castedo Dorado, Universidad de León, Spain
Carlos Álvarez Cuevas, GARNICA Valencia de Don Juan, Spain
Flor Álvarez-Taboada, Universidad de León, Spain

624 **Development and Application of an Automated System for Early Detection of Stress and Damage in Poplar Clone Plantations Using Eco-Physiological Sensors and IoT**
Isabel Cristina Grisales Sánchez, Universidad de León, Spain
Rodrigo Arthus Bacovich, IDAF SL Córdoba, Spain
Joaquín Garnica López, Bosques y Ríos, Spain
Carlos Álvarez Cuevas, GARNICA Valencia de Don Juan, Spain
Claudia Cocozza, University of Florence, Italy
Flor Álvarez-Taboada, Universidad de León, Spain

Session 8.3 - Metrology to support smart agricultural specialisations for monitoring and controlling pollutants in production environments

Room: Room C - Le Benedettine Conference Center

629 **Chemical Risk Assessment in Agriculture: A New Methodological Approach**
Marco Bietresato, University of Udine, Italy
Rino Gubiani, University of Udine, Italy
Nicola Zucchiatti, University of Udine, Italy

635 **Use of the Logistic Function to Model Cumulative Volumes of Spray Nozzles**
Emanuele Cerruto, University of Catania, Italy
Juan Miguel Ramírez-Cuesta, University of Catania, Italy
Salvatore Privitera, University of Catania, Italy
Simone Pascuzzi, University of Bari Aldo Moro, Italy
Giuseppe Manetto, University of Catania, Italy

640 **Autonomous Navigation Simulation of an Agricultural Robot During Soil Fertilization in Open Fields**
Francesco Paciolla, Polytechnic of Bari, Italy
Nicola Pace, E80Group, Italy
Gianluca Barile, Procmatech srl, Italy
Pietro Patimisco, University of Bari Aldo Moro, Italy
Simone Pascuzzi, University of Bari Aldo Moro, Italy

646 **Nozzle Characterisation to Support Aerosol Spray Drift Measurement in a Semi-Controlled Environment**
Lorenzo Becce, Free University of Bozen-Bolzano, Italy
Giovanna Mazzi, Ca' Foscari University of Venice, Italy
Ayesha Ali, Free University of Bozen-Bolzano, Italy
Mara Bortolini, Ca' Foscari University of Venice, Italy
Andrea Gambaro, Ca' Foscari University of Venice, Italy
Fabrizio Mazzetto, Free University of Bozen-Bolzano, Italy

652 **Enhancing Spray Drift Deposition Analysis: Towards Real-Time Estimation Through Resistive Measurements and Optical Tracers**
Ayesha Ali, Free University of Bozen-Bolzano, Italy
Antonio Altana, Free University of Bozen-Bolzano, Italy
Lorenzo Becce, Free University of Bozen-Bolzano, Italy
Paolo Lugli, Free University of Bozen-Bolzano, Italy
Luisa Petti, Free University of Bozen-Bolzano, Italy
Fabrizio Mazzetto, Free University of Bozen-Bolzano, Italy

Session 8.4 - General Session

Room: Room C - Le Benedettine Conference Center

657 **Early Prediction of Honeybee Hive Winter Survivability Using Multi-Modal Sensor Data**
Yi Zhu, INRS-EMT, Canada
Mahsa Abdollahi, INRS-EMT, Canada
Ségolène Maucourt, Laval University, Canada
Nico Coallier, Nectar Technologies Inc, Canada
Heitor R Guimarães, INRS-EMT, Canada
Pierre Giovenazzo, Laval University, Canada
Tiago Falk, INRS-EMT, Canada

663 **Adapting Self-Supervised Features for Background Speech Detection in Beehive Audio Recordings**
Heitor R Guimarães, INRS-EMT, Canada
Mahsa Abdollahi, INRS-EMT, Canada
Yi Zhu, INRS-EMT, Canada
Ségolène Maucourt, Laval University, Canada
Nico Coallier, Nectar Technologies Inc, Canada
Pierre Giovenazzo, Laval University, Canada
Tiago Falk, INRS-EMT, Canada

668 **Detection of Biodiversity Indicators for Regenerative Agriculture Compliance**
Mohua Haldar, Accenture, India
Priyanka Pandey, Accenture, India
Manali Shyam, Accenture, India
Bharathi Venkat, Accenture, India
Bhushan Gurmukhdas Jagyasi, Accenture, India

674 **Combined Approach for Hillslope Hydrogeological Assessment, in Rainfall-Induced Shallow Landslides Prone Area**
Valerio Vivaldi, University of Pavia, Italy
Patrizio Torrese, University of Pavia, Italy
Massimiliano Bordoni, University of Pavia, Italy
Claudia Meisina, University of Pavia, Italy

679 **Wavelet Coherence Analysis to Assess Cross-Correlation of Mediterranean Vegetation and Drought Condition at Local Scale**
Martina Perez, Sapienza University of Rome, Italy
Danilo Lombardi, Sapienza University of Rome, Italy
Marcello Vitale, Sapienza University of Rome, Italy

Poster Session

Room: Room D-E - Le Benedettine Conference Center

685 **Measuring Fruit Quality Traits in Olive Through RGB Imaging and Artificial Neural Networks: Opportunities and Limitations**
Giuseppe Montanaro, University of Basilicata, Italy
Angelo Petrozza, Centro Ricerche Metapontum Agrobios ALSIA, Italy
Laura Rustioni, University of Salento, Italy
Francesco Cellini, Metapontum Agrobios Research Center - ALSIA, Italy
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689 **Measure of Spray Deposition in a "Tendone" Vineyard Produced by an Air Blast Sprayer Machine**
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694 **Data Integration of Sentinel-1 and Sentinel-2 for Evaluating Vegetation Biomass and Water Status**
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Maurizio Romani, National Research Council, Italy
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Bernardo Lanza, University of Brescia, Italy
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Davide Botturi, University of Brescia, Italy
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Francesco Maita, National Research Council, Italy
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842 **Calibration and Validation of a Model for the Prediction of Biomass and Nutrient Uptake of a Tomato (Cv. Pisanello) Grown in a Greenhouse Soilless Cultivation System**
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