

PLENARY ROOM

9:00 – 11:00 Session 3 – Topic 03/1: Precision Viticulture – Chair: B. Tisseyre


9:00 – 9:20 **Characterising the within-field variability of vine water status with simple visual observations of shoot growth**
L. Pichon, O. Bopp, B. Tisseyre 

9:20 – 9:40 **Validation of a commercial optoelectronics device for grape quality analysis**
M. Sozzi, A. Cogato, D. Boscaro, A. Kayad, D. Tomasi, F. Marinello 

9:40 – 10:00 **Is it relevant to account for grapevine phenology in time series of satellite images?**
C. Laurent, E. Fornieles Lopez, F. Rançon, T. Scholasch, A. Metay, J. Taylor, B. Tisseyre 

10:00 – 10:20 **Assessing number of berries in grapevines using linear methods and machine learning**
F. Palacios, P. Melo-Pinto, M. P. Diago, R. Iñiguez, J. Tardaguila 

10:20 – 10:40 **Fine-tuning and testing of a pre-trained DNN for detecting pruning regions of spur-pruned grapevines**
P. Guadagna, T. Frioni, F. Chen, A. Incerti Delmonte, T. Teng, M. I. Ferreira Fernandes, A. Scaldaferri, C. Semini, S. Poni, M. Gatti 

10:40 – 11:00 **Relationship between foliar composition and the vigor of vineyards in D. O. Rías Baixas-Spain**
M. Rodríguez-Fernández, M. Fandiño, X.P. González, J. J. Cancela 

11:00 – 11:30 *Coffee break*

11:30 – 13:00 Keynote – In plenary Chair: G. Milics

11:30 – 12:00 **Dimitros Moshou, Professor, Aristotle University of Thessaloniki - Deep Learning in Agriculture** 

12:00 – 12:30 **Presentation of Bruno Tisseyre and James Taylor** 

12:30 – 13:00 **Simon Pearson, Director of the Lincoln Institute for Agri-Food Technology, University of Lincoln - Engineering the future of Agri-robotics** 

13:00 – 14:00 *Lunch*

14:00 – 16:00 Session 4 - Topic 03/2: Precision Viticulture - Chair: I. Matecny

14:00 – 14:20 **Grape yield spatial variability assessment using YOLOv4 object detection algorithm**
M. Sozzi, S. Cantalamessa, A. Cogato, A. Kayad, F. Marinello 

14:20 – 14:40 **Are all NDVI maps created equal? – Comparing vineyard NDVI data from Proximal and Remote Sensing**
A. Kasimati, A. Kalogrias, V. Psiroukis, K. Grivakis, J. A. Taylor, S. Fountas 

14:40 – 15:00 **Testing performance of UAV-based hyperspectral imagery in viticulture**
A. Matese, A. Berton, S. F. Di Gennaro, M. Gatti, C. Squeri, S. Poni 


15:00 – 15:20 **Rapid and non-destructive phenolic maturity assessment in vineyard from RGB imagery acquired by UAV platform**
S. F. Di Gennaro, G. Agati, A. Berton, L. Cavigli, L. Fabbri, R. Perria, P. Storchi, L. Tuccio, A. Zombardo, A. Matese 


15:20 – 15:40 **Monitoring of temporal and spatial variability of climate parameters and their impact on vineyard management**
V. Oršulová, A. Šupčík 

16:00 – 16:30 *Coffee break*

TERRA ROOM

9:00 – 11:00 **Session 3 – Topic 18, 24: Economics of Precision Agriculture, Decision support for Precision Agriculture – Chair: A. Nyéki**

9:00 – 9:20 **Predicting the probability that higher profits could be achieved by adopting PA**
A. J. Murdoch, L. Todman, S. Mahmood, J. Petri, T. Engel, M. Karampoiki, D. Paraforos, S. Antognelli, D. Guidotti, E. Ranieri 

9:20 – 9:40 **Decision support in the open service platform Akkerweb FarmMaps for precision agriculture**
C. Kempenaar, T. H. Been, F. K. Van Evert, I. E. Hoving, G. J. T. Kessel, W. Dantuma, J. A. Booij, L. P. G. Molendijk, F. D. Sijbrandij¹, K. Van Boheemen 

9:40 – 10:00 **Cultivar coefficient estimation with multiple in-season LAI and biomass observations for CERES-Wheat - Comparison of LAI time-series trend with NDVI**
E. Memic, G. Röhl, D. Reiser, S. Graeff-Hönninger 

10:00 – 10:20 **Yield maps for everyone - scaling drone models to satellite-based decision support**
M. Söderström, K. Piikki, H. Stadig 

10:20 – 10:40 **A digital twin for arable and dairy farming**
F. K. Van Evert, H. N. C. Berghuijs, I. E. Hoving, A. J. W. De Wit, T. H. Been 

10:40 – 11:00 **In-season Calibration of CERES-Rice Model using Proximal Active Canopy Sensing**
H. Zha, Y. Miao, J. Lu, K. Kusnierek, W. Batchelor 


11:00 – 11:30 *Coffee break*


11:30 – 13:00 **Keynote Speeches in Plenary Room**

13:00 – 14:00 *Lunch*

14:00 – 16:00 **Session 4 – Topic 17: Robotics, Guidance and Automation – Chair: V. Vona**

14:00 – 14:20 **Weedelec: a robotic research platform for individual weed detection and selective electrical weeding**
F. Abdelghafour, F. Raçon, S. Liu, J. Champ, V. De Rudnicki, C. Guizard, H. Goëau, C. Claude, A. Joly, P. Bonnet, G. Rabatel 

14:20 – 14:40 **The Impact of Regulation on Autonomous Crop Equipment in Europe**
J. Lowenberg-DeBoer, K. Behrendt, M. Canavari, A. Gabriel, I. Huang, S. Kopfinger, R. Lenain, A. Meyer-Aurich, G. Milics, K. Oluseyi Olagunju, S. M. Pedersen, D. Rose, O. Spykman, B. Tisseyre, I. Zdráhal 

14:40 – 15:00 **Volume and leaf area calculation of cabbage with a neural network based instance segmentation**
N. Lüling, D. Reiser, H. W. Griepentrog 

15:00 – 15:20 **Deep-Learning-Based Detector in-field tomatoes using a terrestrial mobile platform**
O. E. Apolo-Apolo, D. Andujar-Sánchez, D. Reiser, M. Pérez-Ruiz, J. Martínez-Guanter 

15:20 – 15:40 **RoboSpray SMASH: Proof of concept modular robot platform for crop protection in viticulture**
D. Sarri, R. Lisci, A. Pagliai, S. Lombardo, M. Vieri, M. Pencelli, M. Niccolini, A. Argiolas, A. Cappalunga, L. Bartoli, N. Doveri, F. Tognetti 

15:40 – 16:00 **Approach for modeling single branches of orchard trees with 3D point clouds**
J. Straub, D. Reiser, H. W. Griepentrog 

16:00 – 16:30 *Coffee break*


AQUA ROOM

9:00 – 11:00 Session 3 – Topic 07: Satellite-based applications for Precision Agriculture – Chair: M. Melzer


9:00 – 9:20 **Developing a Remote Sensing and Calibration Strip-based In-season Nitrogen Management Strategy for Corn**
C. Cummings, Y. Miao, S. Kang, K. Stueve 

9:20 – 9:40 **Estimating Tomatoes Water Consumption, Leaf Area Index, and Height Using Sentinel-2 and VENμS Images**
G. Kaplan, L. Fine, V. Lukyanov, V. S. Manivasagam, J. Tanny, O. Rozenstein 

9:40 – 10:00 **Wheat Yield Prediction Using Fused CubeSat and Sentinel-2 Imagery**
Y. Sadeh, X. Zhu, D. Dunkerley, J. P. Walker, K. Chenu 

10:00 – 10:20 **NDVI from satellite images to estimate LiDAR-derived geometric and structural parameters in super-intensive almond orchards**
J.A. Martínez-Casasnovas, J. Llorens, L. Sandonís-Pozo, A. Escolà, J. Arnó 

10:20 – 10:40 **Potential of temporal series of Sentinel-2 images to define zones of vine water restriction**
Lopez Fornieles, E.; Tisseyre, B.; Devaux, N.; Pichon, L.; Brunel, G.; Rancon, F. 

10:40 – 11:00 **Is it possible to delineate wheat yield zones using NDVI index from Sentinel-2 in early phenological stages?**
A. Uribeetxebarria, A. Castellon, M. Aranguren, A. Aizpurua 

11:00 – 11:30 Coffee break

11:30 – 13:00 Keynote Speeches in Plenary Room

13:00 – 14:00 Lunch

14:00 – 16:00 Session 4 – Topic 25+23+10: Data Mining, Software and mobile Apps, Embedded sensing systems – Chair: J. Taylor

14:00 – 14:20 **A conceptual framework for telemetry data use in agriculture**
M. Medici, M. Mattetti, M. Canavari 

14:20 – 14:40 **Estimating Kc on a Plot Level Using Remote Sensing and Artificial Intelligence**
R. Pelta, O. Beeri, T. Shilo, S. Mey-Tal 

14:40 – 15:00 **Blueberry App. A tool for irrigation scheduling on blueberries for the southeastern U. S.**
V. Liakos, E. Smith, J. Andreis, G. Vellidis, D. Pavlou, A. Orfanou, W. Porter, T. Onker, A. Rabia 

15:00 – 15:20 **Functions of commercial Farm Management Information Systems – a demand-oriented analysis in Bavaria**
M. Melzer, M. Gandorfer 

15:20 – 15:40 **The Timing of Smartphone Adoption in German Agriculture**
M. Michels, O. Mußhoff 

15:40 – 16:00 **A human-borne sensor device to foster participatory sensing in precision orchard management**
K. Tamminga, S. De Jong, J. Valente 

16:00 – 16:30 Coffee break

SOLAR ROOM

9:00 – 11:00 Session 3 – Topic 05/2: Proximal and Remote Sensing of Soil and Crop – Chair: V. Vona

9:00 – 9:20 **Robust Vegetation Segmentation for Image-based Field Survey**
Y. Moriuchi, K. Nakamura, H. Mihara, T. Sasaki, A. Ito, E. Itakura, H. Mori, J. Murayama



9:20 – 9:40 **VIs-image segmentation method for the estimation of agronomic traits in durum- and winter-wheat cultivars**
S. Marino, U. Ahmad and A. Alvino



9:40 – 10:00 **Testing the potential of a new low cost multispectral sensor for decision support in agriculture**
S. Moinard, G. Brunel, A. Ducanhez, T. Crestey, B. Tisseyre



10:00 – 10:20 **A Sensory System for Adaptive Distribution of Plant Protection Agents**
P. Lepej, M. Lakota, J. Rakun



10:20 – 10:40 **Multi-beam LiDAR-derived data analysis for optimal canopy 3D monitoring in super-intensive almond**
J. Llorens, A. Alsina, J. Arnó, J. A. Martínez-Casasnovas, A. Escolà



10:40 – 11:00 **Distortion and mosaicking of close-up multi-spectral images**
A. M. Krus, C. Valero, J. J. Ramirez, C. Cruz Ulloa, A. Barrientos, J. Del Cerro



11:00 – 11:30 Coffee break

11:30 – 13:00 Keynote Speeches in Plenary Room

13:00 – 14:00 Lunch

14:00 – 16:00 Session 4 – Topic 05/3: Proximal and Remote Sensing of Soil and Crop – Chair: J. Llorens

14:00 – 14:20 **Improving In-season Nitrogen Status Diagnosis using an Active Canopy sensor and ancillary data Machine Learning**
X. Wang, Y. Miao, R. Dong, Z. Chen, H. Zha, K. Kusnierek



14:20 – 14:40 **Cotton N-uptake estimation for in-season fertilizer management based on digital image analysis**
G. Portz, T. R. Tavares, S. Reusch, J. Jasper, J. P. Molin



14:40 – 15:00 **The Use of Remote Sensing for Variable Rate Irrigation in Cotton**
L. N. Lacerda, J. Snider, Y. Cohen, V. Liakos, G. Vellidis



15:00 – 15:20 **Remote sensing estimates of crop water use for improved irrigation water management**
R. Madugundu, K. A. Al-Gaadi, E. Tola



15:20 – 15:40 **Detecting water status of wheat canopy using spectral reflectance in the 400-900 nm range**
K. Kusnierek, A. Korsaeht



16:00 – 16:30 Coffee break