Hort Forum

Hyperspectral Remote Sensing in Agriculture: Needed Breakthrough or Unnecessary Complexity?

Monday
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Hours: 17:00 – 19:00
Central European Time (CET)

Registration link:
https://us02web.zoom.us/j/82383651172?pwd=jZNKSbE4XpyMqtaYbbGirGbxppkOGb.1

ISHS
International Society for Horticultural Science

The International Society for Horticultural Science invites you to the tenth episode of Hort Forum:

Hyperspectral Remote Sensing in Agriculture: Needed Breakthrough or Unnecessary Complexity?

Speaker: Pablo Zarco-Tejada,
QuantaLab Remote Sensing Laboratory,
Institute for Sustainable Agriculture (IAS),
Spanish Council for Scientific Research (CSIC)

Abstract
Advanced technologies based on hyperspectral imagers now enable detailed estimation of crop biochemistry, fluorescence emission, plant functioning, early stress detection, and disease monitoring through physiologically-based spectral traits. This technology offers a depth of insight far beyond what traditional remote sensing systems can provide. In contrast, commercial multispectral sensors deliver only a limited set of spectral indicators relevant to agriculture, but their simplicity and the widespread availability of drone and aircraft mounted multispectral cameras make them far easier to deploy operationally. Although new machine learning and advanced AI based algorithms are rapidly reducing the computational limitations of hyperspectral data processing, promising faster, more accurate, and more automated analysis workflows, global adoption remains slow due to the persistent gap between technical capability and practical implementation. This ISHS HortForum focused on Remote Sensing Technologies will discuss about these issues in depth: complexity versus operationality, performance versus ease of use, and ultimately whether hyperspectral imaging represents a genuinely needed breakthrough for agricultural monitoring or an overstated innovation still seeking its operational role.

Short Bio

Dr. Pablo J. Zarco-Tejada is expert in remote sensing, currently leading the QuantaLab Remote Sensing Laboratory at the Institute for Sustainable Agriculture (IAS), part of the Spanish Council for Scientific Research (CSIC). He is also Honorary Professor at the University of Melbourne, Australia. His research centers on the development and application of advanced remote sensing technologies for detecting biotic and abiotic stress in crops, with a strong focus on hyperspectral and thermal imaging. These technologies are employed through the use of piloted aircraft and aerial vehicles (UAVs or drones), enabling high-resolution monitoring of agricultural and natural ecosystems.

Dr. Zarco-Tejada earned an Agricultural Engineering degree from the University of Córdoba (UCO) in Spain, followed by a Master of Science in Remote Sensing, Image Processing and Applications in Scotland, United Kingdom, and later completed a PhD in Earth and Space Science at York University, Canada. His international academic and research career includes appointments as a faculty member at the University of California, Davis (USA), where he contributed to groundbreaking work in precision agriculture and imaging spectroscopy with funding from NASA. He also served as Director of the IAS-CSIC (2008-2012) and as a Senior Scientist at the Joint Research Centre (JRC) of the European Commission, based in Ispra, Italy (2012-2018), and a full professorship in Remote Sensing and Precision Agriculture at the School of Agriculture and Engineering at the University of Melbourne, Australia (2018-2024). Recognized for his scientific contributions, Dr. Zarco-Tejada has been consistently named a Highly Cited Researcher since 2019, reflecting the significant impact of his work in the fields of remote sensing and agricultural sciences. He has authored more than 200 peer-reviewed scientific publications in leading international journals.

Organizers

Theodore DeJong,
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USA

George Manganaris,
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of Technology,
Cyprus

Panelists

Manuela Zude-Sasse,
Leibniz Institute for
Agricultural
Engineering and
Bioeconomy (ATB),
Germany

Spyros Fountas
Agricultural
University of
Athens, Greece

Lammert Kooistra
Wageningen
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