Special Issue

Applications of VIS-NIR-SWIR Spectroscopy in Crop Health Monitoring and Nutrient Diagnosis

Message from the Guest Editors

We invite contributions that address fundamental and applied aspects of VIS-NIR-SWIR spectroscopy across various agricultural systems, including open-field farming, greenhouse production, and controlled environment agriculture. Emphasis will be placed on the development and validation of spectral indices, chemometric and machine learning models, sensor fusion strategies, and the integration of spectroscopy with remote sensing platforms. Topics of interest include, but are not limited to, the following:

- Development and validation of spectral indices and chemometric models for nutrient estimation (e.g., N, P, K, micronutrients);
- Detection and quantification of biotic and abiotic stresses using spectral signatures;
- Integration of spectroscopy with machine learning, radiative transfer modeling, and digital twin frameworks:
- Hyperspectral and multispectral imaging in controlled and open-field environments;
- Real-time (on-the-go) decision support systems;
- Sensor fusion and data assimilation for real-time decision support systems;
- Remote and proximal sensing platforms (UAVs, satellites, ground-based systems) for large-scale crop monitoring.

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Message from the Editor-in-Chief

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