Special Issue

Advances in Soil and Water Sensor Technologies for Precision Agriculture and Environmental Monitoring

Message from the Guest Editors

Recent advancements in soil and water sensor technologies have revolutionized precision agriculture, providing vital tools for efficient resource management and sustainable farming. Historically, precision agriculture has aimed to optimize water use, crop health, and soil conditions. Today, cutting-edge technologies—ranging from soil property estimation sensors to UAV mounted spectral imagers and automated irrigation systems—offer unparalleled insights that can enhance crop yield, reduce water waste, and minimize environmental impact. Key themes include, among others, advanced sensor development for soil and water quality/quantity, the integration of remote sensing and UAVs for large-scale precision agriculture, IoT-enabled sensor networks, automated precision irrigation systems aimed at optimizing water use, data fusion from multiple sensors, machine learning- and AI-driven analytics for sensor data interpretation, and sustainable agriculture practises that leverage sensors to minimize environmental impact.

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