Special Issue

Strategic Automation and Crop Management for Climate-Smart and Resilient Agriculture

Message from the Guest Editors

Ensuring sustainable agricultural production in the face of increasing climate variability, resource constraints, and ecological degradation is one of the foremost challenges of our time. Traditional cropping systems are becoming increasingly vulnerable to erratic weather, declining soil health, pest and disease pressure, and inefficiencies in input use. To build resilience in modern agriculture, we need a strategic shift from reactive practices to proactive, data-informed crop management. This Special Issue aims to advance the scientific and engineering discourse on how sensor-based automation, intelligent decision support, and innovative crop management practices can collectively foster more adaptive, efficient, and resilient agricultural systems. We invite original research articles, reviews, and case studies that explore the development, testing, and application of automation systems, sensing technologies, and modeling tools, especially in the context of diversified cropping systems such as cover cropping and intercropping. A particular focus is placed on solutions that are accessible and scalable for smallholder and resource-constrained farming operations.

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