Boosting Food Security in the World With Multispectral Drones

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Global food security is increasingly threatened by climate change, soil degradation, and water scarcity, with regions like Jordan facing acute challenges due to limited arable land and freshwater resources. Advances in precision agriculture offer innovative solutions, and multispectral drones are at the forefront of this transformation. These unmanned aerial systems provide high-resolution spectral imagery that enables real-time monitoring of crop health, soil conditions, and resource distribution, ensuring more efficient and sustainable farming practices. A critical aspect of this study is the integration of ethylene gas detection—an essential plant hormone that regulates growth, stress response, and ripening—to refine agricultural decision-making. By correlating ethylene emissions with plant development stages, stress tolerance, and nutrient uptake, farmers can optimize irrigation, fertilization, and harvesting schedules to maximize yield and reduce waste. This fusion of remote sensing and biochemical analysis enhances predictive analytics in agriculture, allowing for data-driven interventions that mitigate the effects of environmental stressors. The global implications of this technology are profound, offering scalable solutions to enhance food production, improve climate resilience, and support sustainable farming in regions facing resource constraints. As population growth and environmental challenges intensify, leveraging multispectral drone technology with ethylene-based crop monitoring represents a paradigm shift in modern agriculture—one that is essential for securing the future of food production worldwide

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