



AI

an Open Access Journal by MDPI

CiteScore: 6.9

Impact Factor: 5.0

Special Issue Reprint

Artificial Intelligence in Agriculture

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Artificial intelligence (AI) and machine learning are playing an increasingly central role in advancing smart, efficient, and sustainable agricultural systems. As modern agriculture faces growing challenges related to food security, climate variability, resource efficiency, and environmental impact, AI-enabled methods are emerging as essential tools for data-driven monitoring, prediction, and decision support across the agricultural lifecycle.

This Reprint collates recent research contributions that explore the application of AI in diverse agricultural contexts, spanning soil and environmental sensing, crop stress and disease detection, yield prediction, post-harvest quality assessment, controlled-environment agriculture, and livestock welfare monitoring. The published works highlight methodological advances in computer vision, spectral and multimodal sensing, robotics, predictive analytics, edge and federated learning, and Internet of Things (IoT)-based systems. Collectively, the articles in this Special Issue demonstrate how AI-driven approaches are transitioning from experimental studies to practical, deployable solutions capable of supporting precision agriculture, autonomous operations, and sustainable resource management. This collection provides a structured overview of current research directions and technological innovations shaping the future of intelligent and resilient agricultural systems.

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