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Survey on Optimal Crop Prediction using Soil and Weather Analysis

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Abstract: *This survey paper provides a comprehensive overview of methodologies, technologies, and approaches for analyzing soil environments to optimize crop production. It covers traditional soil sampling, advanced techniques like remote sensing, and real-time monitoring using sensor networks. The integration of sensor data with IoT and machine learning for decision support is explored. Soil health assessment and site-specific management strategies enabled by precision agriculture are emphasized. Challenges such as data integration and sensor accuracy are addressed, along with future research directions including low-cost sensing solutions and improved data analytics. Overall, the paper serves as a valuable resource for optimizing crop production sustainably, contributing to efficient agricultural practices in a changing climate*

Keywords: Crop production optimization, IoT integration, Machine learning, Precision agriculture, Sensor accuracy Low-cost sensing solutions, Efficient practices