

Nutrient Monitoring System for Pak Choy Hydroponics Using Fuzzy Method

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ABSTRACT

This IoT-based hydroponic nutrient monitoring system was developed to facilitate real-time monitoring of pak choy plants. Utilizing TDS, pH, and temperature sensors connected to ESP32, the system automatically measures nutrient levels, acidity, and water temperature. Data is displayed through a web interface accessible remotely.

Fuzzy logic method is implemented to automatically control nutrient pumps and pH based on real-time conditions. Test results demonstrate the system's effectiveness in maintaining nutrient stability and simplifying plant maintenance. This system provides a practical solution for hydroponic cultivation with good accuracy and user-friendly operation.

Keywords: *hydroponics, IoT, fuzzy logic, pak choy, nutrient monitoring.*