

Potato Crop Yield Optimization in Smart Agriculture Using Data Mining and IoT Techniques

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Abstract:

Enhancing crop yield prediction and resource efficiency is essential in modern smart agriculture. This study presents an integrated approach for optimizing potato crop yield using data mining techniques in conjunction with IoT-based monitoring systems. IoT sensors deployed in agricultural fields collect real-time data on soil moisture, temperature, humidity, and nutrient levels. These data are processed using data mining algorithms such as Decision Trees, K-Means Clustering, and Association Rule Mining to uncover patterns and correlations that impact crop productivity. The system enables precision farming by identifying optimal planting conditions, detecting stress factors, and recommending data-driven irrigation and fertilization strategies. Experimental results demonstrate improved yield forecasting accuracy and reduced input costs, showcasing the potential of intelligent systems to support sustainable potato farming practices.

Keywords:

Smart agriculture, potato yield, IoT, data mining, precision farming, crop optimization.

REQUEST FOR FULL TEXT

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