Sistem Rekomendasi Fertigasi Berbasis Internet of Things Dengan Metode Random Forest

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Abstract
In melon cultivation, nutrient management and optimal soil conditions are essential to improve crop yield and fruit quality. Factors such as pH, moisture, temperature, as well as nitrogen (N), phosphorus (P) and potassium (K) content in the soil play a key role in melon plant growth. Nutrient imbalances can stunt plant growth, while excessive fertilizer use can damage soil quality. Therefore, an efficient system is needed to monitor and manage soil conditions properly.
This research proposes an Internet of Things (IoT)-based fertigation system equipped with Soil NPK sensors to measure the N, P, and K content in the soil. The data collected by these sensors is used to train a machine learning model with Random Forest and Fuzzy Logic algorithms. The model is designed to analyze soil conditions and provide appropriate fertilization recommendations. The system is implemented in web form, so that users can monitor soil conditions and receive real-time fertilization recommendations easily. With this application, users can obtain relevant information regarding the content of N, P, and K, and get accurate fertilization recommendations to increase efficiency and crop yields.

Keywords: Melon, Random Forest, Fertigation, Internet of Things (IoT)