AUTOMATIC WATERING SCHEDULING SYSTEM USING THE THRESHOLD METHOD ON CHILI PLANTS ROOTS AND LEAVES BASED ON IOT

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ABSTRACT

The main problem in chili cultivation in Indonesia is the manual watering system, which is inefficient and can cause irregularities in water distribution. This impacts the quality and quantity of the harvest. This study aims to develop an Internet of Things (IoT)-based automatic watering system that can regulate chili plant watering through two approaches: automatic scheduling and a threshold method based on soil moisture. This system is expected to improve time and labor efficiency, while maintaining optimal soil moisture. The method used in this study involves designing a hardware system using a NodeMCU ESP8266, a YL-69 soil moisture sensor, and two relay-controlled water pumps. The system is controlled and monitored through the Blynk application for automatic watering scheduling and using a threshold method for watering based on soil moisture threshold values. Watering data will be sent and stored automatically in a database using phpMyAdmin, with a separate table structure for each watering method. Test results show that the system successfully performs automatic watering based on both the scheduled time and soil moisture values. Watering of leaves and fruit can be controlled by the user through Blynk Automation, while root watering works automatically when soil moisture is less than 60%. This system is also able to record watering activities into a database in real-time. In conclusion, this IoT-based automatic watering system is effective in improving water efficiency and management in chili plants.

Keywords: IoT, automatic watering, soil moisture, ESP8266, Blynk, threshold, scheduling, chili plants.
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