

ABSTRACT

DESIGN AND IMPLEMENTATION OF AUTOMATIC IRRIGATION SYSTEM FOR TOMATO PLANTS BASED ON IOT (CASE STUDY: TOMATO PLANTATION IN SINDANG VILLAGE SINDANG DISTRICT INDRAMAYU REGENCY)

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This research aims to design and develop an automated watering system based on the Internet of Things (IoT) for tomato plants to enhance the efficiency of plant care and growth. The main problem faced by tomato farmers in Indramayu, West Java, is the manual watering of plants, which may result in suboptimal maintenance of the required soil moisture levels for the plants. The study employs the ESP8266 microcontroller along with humidity, temperature, and light sensors to monitor real-time plant conditions. The research follows a quantitative experimental method with calibration to validate the accuracy and effectiveness of the sensors used. The calibration results indicate that the soil humidity sensor has an accuracy of 98.09%, the temperature sensor 98.73%, and the light sensor 99.71%. Furthermore, the study conducts endurance tests by assembling the device 30 times, achieving a success rate of 90% with an error rate of 10% for the automated watering system. The benefits of this research lie in increasing the efficiency of tomato plant watering, reducing water wastage, and minimizing negative environmental impacts. Additionally, plant owners can effectively monitor and control their plants through the Blynk application on their smartphones. Consequently, this research contributes to the development of efficient and sustainable agricultural technology, and it is expected to aid tomato farmers in Indramayu in ensuring optimal plant conditions for better growth.

Keyword: *Tomato, Internet of Things, Lux, Blynk*