

ABSTRACT

The growth and development of plants in Indonesia have played a significant role in maintaining biodiversity and food sustainability. However, the necessary care to achieve optimal growth involves various factors, including air temperature, soil moisture, and light intensity. Unfortunately, traditional manual cultivation often results in uneven and inefficient growth. This study proposes the implementation of Internet of Things (IoT) technology using Wireshark perangkat lunak to analyze network performance, as the foundation for the development of a more advanced plant control system.

This study proposes the implementation of Internet of Things (IoT) technology utilizing an ESP32 device with a Wi-Fi module. This setup aims to connect the device to a database to retrieve prediction data, fertilization timing, and the status of both the water pump and fertilizer, triggering the relay actuator accordingly based on time or relevant statuses. The device includes a power supply component in the form of a solar panel battery, enabling continuous 24-hour operation. The device design incorporates several additional features, including portability and the capability to withstand rainy conditions.

Comprehensive testing yielded satisfactory outcomes, including efficient data retrieval from the database, uninterrupted 24-hour operation, and good functionality on the website and mobile application, receiving positive responses from users. These testing results reinforce the strong performance in both hardware and software aspects, demonstrating the potential adoption of this tool by farmers to streamline NPK fertilizer control in chili plants.

Keywords: Internet of Things (IoT), Control, Agriculture, Chili plants.