DESIGN OF MONITORING AND AUTOMATIC WATERING OF RED CHILLI PLANTS USING MICROCONTROLLER ESP32 IOT-BASED

Ivan Arzaqi

Program Studi Teknik Elektro, Fakultas Sains & Teknologi
Universitas Teknologi Yogyakarta
Jl. Siliwangi Ringroad Utara, Jombor, Sleman, Yogyakarta
Email : ivanarzaqi20@gmail.com

ABSTRACT

The rapid development in agriculture in the current era is not balanced with the application of technology in it, in the stage of maintaining and caring for horticultural plants, especially red chili (Capsicum annum L.) in the watering process. Red chili plants require soil moisture ranging from 26-40% or humid conditions (in sensor measurements) and temperatures ranging from 25°C - 27°C during the day and 18°C - 20°C at night in order to grow optimally. To assist in watering the red chili plants, this study designed an automatic watering system with the method of adjusting the value of soil moisture and ideal watering time. By using the ESP32 microcontroller as the main controlling brain of the system, the RTC (Real Time Clock) module to determine the time, the DHT11 sensor to determine the air temperature value and the YL-69 soil moisture sensor to determine the value and data of soil moisture. The data will be developed by the ESP32 microcontroller which will be connected to the server using the Internet of Things (IoT) method and will be displayed in the Telegram Application. The automatic watering system works when the YL-69 soil moisture sensor value is below 25% and is at less than 07.00 or more than 17.00. From the results of the tests carried out, the system can perform automatic watering at a predetermined time.

Keywords: red chili plants, watering, microcontroller ESP32, IoT