ABSTRACT

Dry soil and lack of nutrients can result in rice crop failure. Lack of nutrients in the soil can cause stunted growth of rice plants, yellow to yellowish green leaves, decreased number of grain grains in panicles, and decreased number of tillers. Therefore, soil conditions must always be in good condition so that rice plants can grow well. Therefore, regular soil monitoring is needed so that the soil can be maintained in good condition.

To solve this problem, this research has designed an automatic monitoring system using a temperature sensor, a humidity sensor, and an NPK sensor. Sensor data that has been processed on the Arduino Mega microcontroller is sent via serial communication to the ESP8266. Then, it is sent to the Blynk cloud server via a WiFi connection and displayed on the Blynk application. A notification will be sent to the user if the sensor detects dry soil conditions, soil lacks fertilizer, or soil is excess fertilizer. The results obtained are based on tests and analyzes carried out, namely the IoT-based soil state monitoring system can retrieve NPK data at Low, Medium, and High levels, temperature data with an average error of 0.3%, and humidity data with an average error of 3 %. The average delay in sending data is 2.05 seconds. And can provide notification of soil conditions to users.

Keyword: *Monitoring, Soil, IoT, Temperature, Nutrients, Humidity.*