ABSTRACT

Paper is a material made from cellulose fibers taken from wood and made into thin sheets. Paper is very functional in daily life. One type of wood used in papermaking is Acacia Mangium wood. One company engaged in large-scale paper production spends 2.8 million tons of pulp per year taken from Acacia Mangium trees and produces 850,000 tons of paper per year. To keep the production process running stably, it is necessary to create production forests. To keep the mangium Acacia production forest running stably, of course it cannot be separated from the quality of the soil.

This Final Project introduces the work to monitor soil parameters including soil pH level and soil moisture based on Internet of Things. Proper growth of plants is insured if the pH level and soil moisture are maintained at certain values. Further, these values depend on the type of crop under consideration. This balance of pH and soil moisture can lead to higher productivity levels. In this design the tool uses the lESP32 module, SoilMoisture sensor, soil pH sensor, 20X4 I2C Liquid Crystal Display (LCD) and can be controlled through the Blynk IoT application as well as the results of the measurements will be sent via Telegram so that users can find out the pH value and soil moisture to see the results online.

The results of the implementation of the device that has been made obtained that the device is able to detect pH values of 4.6-7.79, temperature of 25 ℃-27 ℃ and humidity of 57%-60% (WET +) From these results it can be concluded that the soil indicates a problem in the quality of the soil. As for the pH, humidity and temperature sensors, it shows that the sensors used have satisfactory performance when tested on soil samples.
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Keywords: Internet Of Things, pH, Humidity, Acacia Mangium, ESP32, Telegram, Paper, Soil Moisture, Liquid Crystal Display (LCD), BlynkIoT Application.