ABSTRACT

Hydroponic crops are a method of crop cultivation that is gaining widespread attention due to its potential to improve resource use efficiency and sustainable crop production. In the face of limited agricultural land and environmental challenges, hydroponic crops are emerging as a promising alternative in meeting food needs.

This research analyzes the development of a hydroponic multi-plant irrigation monitoring system supported by Internet of Things (IoT) technology. The system uses DS18B20 temperature and pH sensors pH-4502C on mustard and lettuce plants to monitor growth conditions in real-time. These sensors measure the temperature and pH level of the water, and the collected data is sent to the IoT platform for analysis. Through a web-based interface and mobile application, users can monitor temperature and pH data.

Based on the results of testing the tool, the sensor used shows a good level of accuracy. The DS18B20 Sensor provides quite good reading results by comparing the reading results from a thermometer, with an average percentage error of 0.23% in mustard plants and 0.23% in lettuce plants. The test results of the PH-4502c sensor on the pH meter showed a difference that is not too significant, with an average percentage of error of 0.16% in mustard plants and 0.27% in lettuce plants.

Keywords: Hydroponics, smart farming, internet of think, temperature sensors, pH sensors