

ABSTRACT

Hydroponics is one of the effective methods to grow crops without having to think about large areas of land. Hydroponics is a planting technique that utilizes water without soil media and emphasizes the need for nutrients for plants. Hydroponic plants require extra supervision in order to get maximum results in their growth. Red spinach vegetable plants are one of them that can use the hydroponic method.

In this Final Project research, an internet of things-based monitoring system is designed on hydroponic red spinach to determine parameters, air temperature, water temperature, nutrient solution, water level remotely and in real time. Data obtained from sensor readings is then sent to the database or Antares IoT platform. The data can be viewed or accessed through a mobile app.

The test results obtained for the average value of air temperature on the DHT11 sensor is 28,08 ° C, the average water temperature on the DS18B20 sensor is 26,49 ° C, the average water nutrients on the TDS sensor is 1657 ppm (parts per million) and the average water level on the Ultrasonic sensor is 22,14cm. Then the results of testing the communication system obtained an average value of the speed of sending sensor data to Antares of 2860 bps, the average delay in sending sensor data to Antares of 0,06 seconds or 60 ms, and no packets were lost in transmission, The data can be viewed or accessed through MIT APP Inventor, an Android mobile app.

Keywords: *Hydroponics, Nutrients, Red Spinach, Monitoring, IoT, Mobile app.*