

ABSTRACT

Simple vertical hydroponic planting can use baskets and trays as planting containers. The planting container is integrated with an automatic nutrient flow system that can be monitored via the Andorid Application. The system use an on-off control with two sensors are pH sensor and TDS sensor. Set value that the actuator can work are pH value < 6 and TDS value $< 1200\text{ppm}$. The calibration results of the pH sensor get an accuracy value of 94.10% and the TDS sensor of 93.5%. if one of the sensor values is not above the set value then the actuator will be active. While the actuator will turn off if the value of the two sensors is above the set value. the process of sending sensor data to the Antares platform using NodeMCU, the value on Antares will be sent to the Monitoring Application. delay reading the sensor value on the application for 1-2 seconds, so that the monitoring application can work well. The results of the comparison of the growth of water spinach using the system and manual obtained on the 25th day are: in tray 1 there is a difference in plant height of 6-11 cm while the difference in leaf width is 0.2-1 cm. in the second tray, there is a difference in plant height of 2-4 cm and a difference in leaf width of 0.2-0.5 cm. in the third tray, there is a difference in plant height of 2 cm and a difference in leaf width of 0.3 cm. From the comparison of plants, it was found that planting using the system had better results than planting manually.

Keywords :Vertical Garden, Simple Hydroponics, IoT, Monitoring System, Water Spinach Plant