

ABSTRACT

People cultivate outdoor hydroponic plants because of the light intensity that needed by hydroponic plants themselves. Plants cultivation with hydroponic system requires a good handling by including the measurement of EC, pH, temperature, humidity and light intensity parameters periodically so it requires effort and time.

The used method in hydroponic system is Deep Flow Technique (DFT). Deep Flow Technique is a type of hydroponic plants cultivation. DFT is widely used by hydroponic farmers in order to increase crop productivity. Therefore, a hydroponic system is created that can control the needs of hydroponic plants such as nutrition level, pH, temperature, humidity, and light intensity, and send the data through *Internet of Things* as well.

The result of hydroponic control system make some differences compared to common form of hydroponic plants. It is physical form, such as the process of growing pakcoy plants is 0.2 cm higher and the leaves are 0.3 cm wider. The result process of growing kale is 1.3 cm taller and the leaves are 0.4 cm wider. The result process of growing mustard is 0.8 cm taller and the leaves are 0.4 cm wider. The result process of growing lettuce is 0.4 cm taller and the leaves are 0.2 cm wider. The pH sensor which created results an increased accuracy after calibration on the acid parameter to 93.12%, on neutral parameters to 97.37%, and on the base parameter to 97.29%. The EC sensor also results an accuracy of 86.09% acid parameter, 79.16% neutral parameter, and 83.81% base parameter. The increase of pH obtained by test result. It is 6,70% of 6.43 pH as intial value to 6.88 pH. The increase of EC also obtained by test result. It is 101.1% of 0.91 mS/cm as initial value to 1.83 mS/cm.

Keyword: Hydroponic, *Deep Flow Technique*, *Internet of Things*, Modular System