

## ABSTRACT

*Melons are fruits rich in vitamins and minerals. This plant is annual and has high commercial value. The global climate changes are reducing the productivity and quality of melon harvests, so alternative technologies like hydroponics are needed to improve the quality and production of melons. In the growth process of hydroponic melons, in addition to using planting media, providing effective water and nutrients is crucial, especially in areas with dry land. To control the use of water and nutrients in hydroponic melon cultivation, technology is needed that can monitor the nutrients in the water provided and track the moisture levels of the hydroponic plants.*

*This hydroponic control system uses several components to monitor and control water conditions. Some of the components used in this system include a pH sensor, a TDS sensor, NodeMCU ESP32, a relay, a power supply, a breadboard, a 5V USB charger, and a step-down DC to DC converter. Data obtained from sensors that read water conditions are sent to the NodeMCU and then displayed on the Blynk application. In this app, users can turn on the pump to adjust the amount of water and nutrients according to the needs of the hydroponic melon plants.*

*Testing of the pH sensor, TDS sensor, and temperature sensor shows that they are working well. The pH sensor 4502c has an error of 0.2 compared to a digital pH meter. The TDS sensor RDD-AFE-007 has an error of 42.6 ppm compared to a TDS & EC meter. The temperature sensor DS18B20 has an error of 0.917 compared to a conventional thermometer. The Blynk application can connect to the microcontroller via Wi-Fi, and data transmission works well.*

*Keywords: Hydroponics, Blynk application, Automatic, Melon, Water, Technology.*