ABSTRACT

Lettuce cultivation (Lactuca Sativa L.) using the NFT (Nutrient Flow Technique) hydroponic method is widely practiced by farmers due to its efficient use of nutrients and relatively easy maintenance. In this method, nutrients must be tailored to the plant's growth stage, and nutrient levels must be regularly monitored. However, farmers often face challenges such as insufficient monitoring and inconsistent nutrient supply, especially when circumstances require them to leave their hydroponic farm. These issues can lead to various plant diseases and disruptions in the harvest production cycle. The implementation of IoT (Internet of Things) in hydroponics offers a real-time monitoring solution via a smartphone using Blynk as the interface application and a nutrient control system that can be adjusted according to the age of the hydroponic lettuce plants in this study. The use of ultrasonic sensors and TDS in this implementation helps determine the nutrient level in the container and the ppm of nutrients in the plants. This study was conducted over 30 days until harvest, with data collection performed every three days in the morning and evening to present concise data and significant changes while minimizing monthly message limits on Blynk. The accuracy testing results for the ultrasonic and TDS sensors achieved values of 94.75% and 92.49%, respectively. The network service quality analyzed using Wireshark is classified as GOOD, with a throughput of 162 kbps, packet loss of 0.00%, delay of 115 ms, and jitter of 103 ms. The implementation of IoT with monitoring and an automatic nutrient control system for hydroponic lettuce plants can be considered effective and the plants are growing well.

Keywords: *Blynk, Hydroponics NFT, Internet of Things, Lettuce*