

ABSTRACT

Agriculture in Indonesia is still dominated by conventional methods that require manual supervision and management. This becomes a particular challenge in urban areas where agricultural land is decreasing due to infrastructure development. Hydroponic systems offer an effective solution for farming in confined spaces by allowing plants to grow without soil. However, traditional hydroponic methods often require manual observations that are inconsistent and time-consuming for measuring and evaluating plant conditions. The main problem faced is the inaccuracy and inefficiency of manual nutrient management, which can hinder plant productivity and quality.

To address this issue, we developed the Automatic Water Nutrition Detection System (AWNDES) for Hydroponic that can monitor the nutrient and environmental conditions of hydroponic plants in real-time. This system uses various sensors and Internet of Things (IoT) technology to ensure more accurate and efficient nutrient management. These sensors are integrated into a platform that allows remote monitoring and control through a mobile application. By using AWNDES, human error can be minimized, and optimal conditions for plant growth can be continuously ensured.

Testing results show that AWNDES can provide accurate data on plant nutrient and environmental conditions. The implementation of this system results in increased efficiency in the management of hydroponic plants, as well as significant improvements in crop yields and plant quality. In conclusion, AWNDES has great potential to support modern and efficient agriculture in Indonesia, and to overcome various challenges faced in hydroponic plant cultivation.

Keywords: hydroponics, water nutrition, automatic, Internet of Things (IoT), modern agriculture.