

ABSTRACT

There are opportunities in the use of urban farming because the level of community participation in Indonesia in urban farming is 10%. One of the uses of urban farming is aquaponic. But in the application of aquaponic there are several variables that affect plant growth, namely water pH and EC water. So that a system is needed to make it easier for humans to monitor and control variables that affect plant growth. Aquaponic is an integration of aquaculture and hydroponics. This is considered sustainable agriculture because it is a closed loop system and reuse contaminants as nutrients (Goddek et al., 2015). The application of the Internet of Things (IoT) requires a connection between objects and everyday devices with all types of networks such as corporate intranets, peer-to-peer networks and even global internet networks (ITU, 2005). The fuzzy logic method in this study serves to evaluate water quality before the system is automatically applied after the system is automatically applied. This research aims to design a monitoring system for water pH, EC, water temperature, and water level and controlling water pH, water level and IoT-based fish feeding on an vertical system aquaponic, designing a system to determine water quality using the fuzzy logic method. Vertical system aquaponic testing by planting plants in the aquaponic vertical system and measured for the first 15 days obtained an average growth of plant height of 0.361 cm compared to plant growth in conventional systems to get an average growth of plant height of 0.282 cm. Based on data processing using fuzzy logic obtained water quality before the system is automatically applied is bad with and water quality after the system is automatically applied is good. In this study the source of electricity is still dependent on electricity sources from PLN.

Keywords: Vertical system aquaponic, Internet of Things, automation, fuzzy logic method, Raspberry Pi 3 B