

## **ABSTRACT**

*Limited land is one of the main problems in improving community welfare. The high conversion of agricultural land in Java caused the share of the harvested area to decline while food needs continued to increase along with an increase in population. With the impact caused by that, humans develop a technology called smart farming in the form of aquaponic. Aquaponics is a combination of aquaculture with hydroponics by utilizing fish manure as nutrients in plants that carry water circulation. Because aquaponics does not require a large land, so it is suitable for use in areas that have limited land. In this research, raspberry is used as a microcontroller as a sensor controller in the aquaponic, and the sensors used are EC sensors, pH sensors, temperature sensors, and ultrasonic sensors. Because the pH and EC values are ambiguous, the fuzzy decision method is used. In aquaponic systems, there are several variables that must be considered, namely pH and water level. At pH must be in the range of 6.5 - 7, then at the height of the water must be at an altitude of 18 cm. By using the Matlab application, it is found that the water quality before applying the automatic system is in a bad category, and after applying the automatic system is in a good category. With an average growth in the conventional system of 0.2817 and growth in the media-based aquaponic system of 0.3544.*

*Keywords: Media-based aquaponic system, Internet of Things, Fuzzy Logic, Raspberry pi B, Sensor, Automation.*