

ABSTRACT

AUTOMATIC WATER PH ACIDITY CONTROL SYSTEM IN GURAME FISH PONDS USING IOT USING THE FUZZY MAMDANI METHOD (CASE STUDY: BEJI, BANYUMAS)

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19102025

In Indonesia, the most important sector is aquaculture. The large population in Indonesia has no objections to fish, both as consumers and producers. One of them is carp. Due to the high consumption of carp in Indonesia, cultivating carp requires monitoring of water quality and water acidity for the health of aquatic ecosystems. Gourami has an optimal temperature range for growth between 24°C - 28°C, water pH ranges from 6.5 – 7.5 and water turbidity should be around 180 NTU. Therefore, this study will design an automatic control system to adjust the degree of acidity (pH) of water to suit the needs of gourami and implement a fuzzy logic method in the system. This study involved three sensors, namely a water pH sensor (sensor SKU: SEN0160), a water turbidity sensor (turbidity sensor), and a temperature sensor (DS18B20 sensor) with an Arduino Nano microcontroller applying Mamdani fuzzy calculations. Using the Mamdani fuzzy to detect the movement of changes in water quality. Water quality will improve when Mamdani's fuzzy calculations become more accurate in processing system output results, and vice versa. The test results show that the error percentage for reading the pH sensor SKU: SEN0160 is 1.6%, the percentage error for the DS18B20 temperature sensor is 0.373% and the percentage error for turbidity temperature is 3.09%. Testing the water pH control system automatically in carp ponds using fuzzy mamdani was carried out 10 times, and the results had an accuracy of up to 100%.

Keywords: *Internet of Things, Arduino Nano, Blynk, Gurame Fish, fuzzy mamdani*