PROTOTYPE OF A REAL-TIME WATER TEMPERATURE AND PH MONITORING DEVICE FOR SHRIMP PONDS BASED ON THE INTERNET OF THINGS

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ABSTRACT

Vannamei shrimp farming relies heavily on environmental quality, particularly water temperature and PH levels. Significant fluctuations in these parameters can drastically affect shrimp growth, health, and survival rates. This research aims to design a prototype of an Internet of Things (IoT)-based water temperature and PH monitoring system capable of providing real-time data and automatic alerts via the Telegram application when parameter values exceed normal limits. The system utilizes a DS18B20 sensor for temperature measurement, a PH-4502C sensor for PH measurement, a NodeMCU ESP8266 as the microcontroller, Firebase for data storage, and an LCD for local display. Testing was conducted in a shrimp farming pond located in Penebal Village, Bengkalis. The results show that the device can deliver data and send notifications within 30 seconds when water conditions fall outside the ideal range. This system is to assist shrimp farmers in maintaining water quality stability and improving farming productivity.

Keywords: NodeMCU, DS18B20, PH-4502C, Firebase, Telegram.