MONITORING THE QUALITY OF SALT CONTENT AND WATER LEVEL IN VANAME SHRIMP POND IN PENEBAL VILLAGE, BENGKALIS DISTRICT IN REAL-TIME BASED ON IOT

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ABSTRACT

Whiteleg shrimp farming is a fisheries sector that is highly dependent on water quality, particularly salinity and water level. In Penebal Village, Bengkalis District, water monitoring methods are still carried out manually, resulting in delayed responses to changes in water conditions. Therefore, this study aims to design and implement a real-time Internet of Things (IoT)-based salinity and water level monitoring system. This system uses a TDS Gravity sensor to detect salinity levels and an HC-SR04 ultrasonic sensor to measure water levels. Data from the sensors is sent to Firebase and displayed via a website, and stored as a monitoring history. The system is also equipped with a buzzer that will activate if the salinity level drops below 10 ppt or if the water level is outside the safe limit, which is 5–12 cm in a 15.8 cm container for simulated whiteleg shrimp ponds, and 8–16 cm in a 22.3 cm container for simulated seawater. Test results show that the system is able to monitor water conditions accurately and provide information directly to users, thus supporting the management of whiteleg shrimp ponds. With this system, farmers can anticipate less than ideal water conditions quickly and increase overall pond productivity.

Keywords: Vaname, IoT, TDS, Ultrasonic, Real-Time.