ABSTRACT

MONITORING SYSTEM OF TEMPERATURE, PH, AND TURBIDITY OF WATER IN KOI FISH CULTIVATION BASED ON IOT (Internet of Things)

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Ornamental fish, including koi, are key economic commodities in Indonesia. Koi thrive in freshwater environments with moderate climates. Adult koi can grow up to 100 cm in length and weigh 13 kg. Their growth depends on high-quality feed and good water quality. Excessive feeding can degrade water quality, leading to waste accumulation and contamination, which may cause diseases or even death in koi. A major challenge for fish farmers is the lack of filtration systems and limited knowledge of water quality. Monitoring typically requires daily visits to ponds, using tools to measure parameters, and recalibrating devices—an inconvenient process. To solve this issue, a water quality monitoring system was developed, utilizing an Android application that sends notifications when parameters are outside the acceptable range. The system design employs the prototype method for development. Research compared koi growth in ponds with and without the system. Over three months, sensor accuracy rates were high: 98.71% for temperature, 99.2% for pH, and 98.42% for turbidity. Ponds with the monitoring system showed significantly better koi growth in length and weight. Survival rates also improved, with 80% in monitored ponds compared to 40% in unmonitored ponds. The system proved effective in enhancing koi growth and survival.

Keywords: koi, growth, monitoring, technology, system, length, weight