

# TEMPERATURE AND HUMIDITY CONTROL SYSTEM FOR OYSTER MUSHROOM CULTIVATION BASED ON IOT

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## ABSTRACT

Indonesia is an agrarian country where oyster mushroom cultivation remains a significant livelihood. However, many local farmers still rely on manual estimation for temperature control and perform routine watering of the mushroom house manually in the morning, afternoon, and evening. Given that the optimal environmental conditions for mushroom growth require a temperature range of 25–29°C and humidity between 70–90%, the lack of precision poses productivity challenges. This study presents the development of an Internet of Things (IoT)-based monitoring and control system designed to optimize environmental conditions in oyster mushroom cultivation. IoT refers to the integration of internet connectivity into physical devices, enabling them to collect data and perform autonomous operations through interconnected sensors and actuators. The system utilizes Raspberry Pi Zero as the core microcontroller, programmed to monitor environmental parameters and relay real-time data to farmers via the Telegram application. Experimental results indicate an average sensor error rate of 2.1% for temperature and 2.4% for humidity, demonstrating the system's effectiveness in enhancing cultivation precision and reducing manual workload.

**Keywords:** Mushroom cultivation, Internet of Things, Oyster mushroom, Monitoring.