

ABSTRACT

DESIGN AND DEVELOPMENT OF AN AUTOMATED TEMPERATURE CONTROL SYSTEM FOR OYSTER MUSHROOM CULTIVATION ROOMS

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This study aims to design and implement an automated temperature and humidity control system for oyster mushroom cultivation rooms using Internet of Things (IoT) technology. The system employed an ESP32 microcontroller as the central controller and a DHT22 sensor to monitor temperature and humidity levels in real time. Environmental conditions were automatically regulated through a heating element, which increases temperature when it drops below the optimal range, and a mist maker, which stabilizes humidity. A relay module serves as an interface between the microcontroller and actuators to enable automatic operation. The experimental setup used a miniature mushroom cultivation room with *Pleurotus ostreatus* (white oyster mushroom) as the research object. The DHT22 sensor continuously monitors environmental conditions, while the system adjusts the heater and mist maker to maintain temperature and humidity within the optimal growth range. Real-time data is displayed through the Blynk application, allowing users to remotely monitor environmental conditions. Experimental results indicated that the system effectively maintains temperature within 24–27°C and humidity between 80–90%, meeting the standard parameters for oyster mushroom cultivation.

Keywords: Internet of Things (IoT), Oyster Mushroom, DHT22 Sensor, Temperature Control, Humidity Regulation, Blynk Application

