ABSTRAK

Budidaya jamur tiram (*Pleurotus ostreatus*) memerlukan kondisi suhu dan kelembaban yang stabil untuk mendukung pertumbuhan optimal. Penelitian ini bertujuan merancang dan membangun *prototype* sistem kontrol suhu dan kelembaban berbasis *Internet of Things* (IoT) yang dapat membantu petani memantau dan mengendalikan lingkungan budidaya secara *real-time*. Sistem menggunakan sensor DHT22 untuk membaca suhu dan kelembaban, serta mikrokontroler NodeMCU ESP8266 yang terhubung ke platform IoT dan dapat diakses melalui web. Sistem ini dilengkapi kipas dan atomizer yang bekerja otomatis berdasarkan ambang batas tertentu. Hasil pengujian selama tiga hari menunjukkan kipas menyala 56 kali dan mati 17 kali, dengan durasi 10–30 detik. Atomizer menyala 51 kali dan mati 22 kali, rata-rata menyala 20–60 detik, lebih sering pada siang hari. Penyebab umum kegagalan panen jamur tiram adalah suhu tinggi dan penyiraman yang tidak tepat. Dengan adanya penelitian ini, sistem berhasil membaca suhu dan kelembaban secara *real-time* menggunakan sensor DHT22. Logika kerja alat: jika suhu >25°C dan ≤30°C maka kipas *OFF*, jika suhu ≥30°C maka kipas *ON*; jika kelembaban <80% maka atomizer *ON*, dan jika >80% maka atomizer *OFF*. Sistem ini efektif menjaga kestabilan lingkungan budidaya.

Kata Kunci : Budidaya Jamur Tiram, Internet of Things (IoT), Suhu, Kelembaban, DHT22

ABSTRACT

Oyster mushroom (Pleurotus ostreatus) *cultivation requires stable temperature and humidity conditions to support optimal growth. This study aims to design and build a prototype temperature and humidity control system based on the Internet of Things (IoT) to assist farmers in monitoring and managing the cultivation environment in real-time. The system uses a DHT22 sensor to measure temperature and humidity, along with a NodeMCU ESP8266 microcontroller connected to an IoT platform accessible via the web. The system is equipped with a fan and an atomizer that operate automatically based on predetermined threshold values. Testing over three days showed the fan turned on 56 times and off 17 times, with durations of 10–30 seconds. The atomizer turned on 51 times and off 22 times, with an average running time of 20–60 seconds, more frequently during the daytime. Common causes of oyster mushroom crop failure include high temperatures and improper watering. This research demonstrates that the system successfully reads temperature and humidity in real-time using the DHT22 sensor. The device's logic operates as follows: the fan is OFF when the temperature is >25°C and ≤30°C, and ON when the temperature is ≥30°C; the atomizer turns ON when humidity is <80% and OFF when it exceeds 80%. The system effectively maintains a stable cultivation environment.*

Keywords :Oyster Mushroom Cultivation, Internet of Things (IoT), Temperature, Humadity, DHT2