

ABSTRAK

RANCANG BANGUN SISTEM KONTROL DAN MONITORING KANDANG MAGGOT *BLACK SOLDIER FLY* (BSF) BERBASIS *INTERNET OF THINGS* (IOT)

(2025: X Halaman + X Gambar + X Tabel + Daftar Pustaka + Lampiran)

NASYWA ADAWIYAH

062230320610

JURUSAN TEKNIK ELEKTRO

PROGRAM STUDI DIII TEKNIK ELEKTRONIKA

POLITEKNIK NEGERI SRIWIJAYA

Sampah organik masih menjadi persoalan lingkungan yang belum tertangani secara optimal. Salah satu cara pengolahannya adalah dengan memanfaatkan maggot *Black Soldier Fly* (BSF). Budidaya maggot memerlukan kondisi lingkungan yang stabil, agar pertumbuhannya berlangsung optimal. Sistem kontrol dan monitoring kandang maggot berbasis *Internet of Things* (IoT) dengan ESP32 sebagai mikrokontrolernya, bertujuan untuk mengatur dan memantau kondisi lingkungan kandang maggot secara *real-time*, khususnya parameter suhu, kelembaban, dan ketinggian penyimpanan air. Pengujian alat dilakukan selama 14 hari, dengan pengambilan data pada 3 waktu setiap harinya. Hasil pengujian menunjukkan bahwa sistem mampu mengendalikan kipas angin dan *humidifier* secara otomatis berdasarkan nilai suhu dan kelembaban yang terbaca, serta memantau ketinggian air dalam wadah *humidifier* untuk memastikan ketersediaan air untuk proses pelembaban udara. Maggot terlihat lebih aktif bergerak dalam media, serta tidak menunjukkan kemunculan prepupa secara cepat, sehingga maggot masih dalam fase pertumbuhan dan konsumsi pakan secara optimal.

Kata Kunci: *Black Soldier Fly*, maggot, IoT, ESP32, DHT22, HC-SR04, Blynk, kontrol otomatis, monitoring

ABSTRACT

DESIGN AND IMPLEMENTATION OF AN IOT-BASED CONTROL AND MONITORING SYSTEM FOR BLACK SOLDIER FLY (BSF) MAGGOT ENCLOSURE

(2025: X Pages + X Figures + X Tables + Bibliography + Appendix)

NASYWA ADAWIYAH

062230320610

STUDY PROGRAM OF ELECTRONIC ENGINEERING

ELECTRICAL ENGINEERING

SRIWIJAYA STATE POLYTECHNIC

Organic waste remains an environmental problem that has not been optimally addressed. One way to process it is by utilizing maggots. Black Soldier Fly (BSF). Maggot cultivation requires stable environmental conditions for optimal growth. The maggot cage control and monitoring system is based on Internet of Things (IoT) with ESP32 as its microcontroller, aims to regulate and monitor the environmental conditions of the maggot cage. real-time, specifically temperature, humidity, and water storage height parameters. The device was tested for 14 days, with data collected three times per day. The test results showed that the system was capable of controlling the fan and humidifier automatically based on the temperature and humidity values read, and monitors the water level in the container humidifier to ensure water availability for the humidification process. Maggots appear to be moving more actively in the medium and do not show rapid prepupae emergence, indicating they are still in the optimal growth and feed consumption phase.

Keywords: Black Soldier Fly, Maggot, IoT, ESP32, DHT22, HC-SR04, Blynk, automatic control, monitoring