ABSTRAK

IMPLEMENTASI SISTEM MONITORING SERTA KONTROL SUHU DAN KELEMBABAN PADA RUANG *GREENHOUSE* TANAMAN SAWI BERBASIS INTERNET OF THINGS (IOT)

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Tanaman sawi merupakan salah satu tanaman semusim yang tergolong subur terhadap kondisi lingkungan yang baik. tanaman sawi di lahan terbuka memiliki banyak kendala seperti seperti serangan hama, angin, banjir, suhu lingkungan dan kelembaban tanah yang tidak sesuai dengan syarat pertumbuhan tanaman. Dampaknya adalah terganggunya pertumbuhan tanaman sehingga mempengaruhi produktivitas. Budidaya tanaman tanaman di *greenhouse* merupakan alternatif yang baik untuk mengontrol kendala tersebut. Dengan mulai berkembangnya teknologi pada sektor pertanian maka terciptanya gagasan untuk membuat sistem monitoring serta kontrol pada *greenhouse* berbasis IoT. Sistem ini menggunakan *nodemcu esp8266* sebagai pengatur jalannya alat, serta menggunakan sensor DHT21 dalam mengukur suhu dan kelembaban udara serta sensor *soil moisture* membaca kelembaban tanah yang kemudian data tersebut ditampilkan melalui website, Alat ini memiliki tiga output yang terdiri dari pompa air (nozzle), pompa air (selang drip), dan kipas angin. Dari hasil pengukuran sistem terdapat selisih *error* pada suhu dan kelembaban udara sekitar 1 sampai 2% dan Kelembaban tanah mengalami selisih antara 1 sampai 3%. Selanjutnya hasil penelitian pada tanaman yang berada di dalam *greenhouse* memiliki tinggi dan lebar daun lebih baik dibandingkan dengan yang diluar *greenhouse*.

Kata kunci **—**Tanaman Sawi, Greenhouse, ESP8266, Sensor DHT21, Sensor Soil Moisture, Website, *Internet of Things (*IoT*).*

ABSTRACT

IMPLEMENTATION OF A MONITORING AND TEMPERATURE AND HUMIDITY CONTROL SYSTEM IN THE GREENHOUSE SPACE OF THE SAWI PLANT BASED ON THE INTERNET OF THINGS (IOT)

By

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The mustard plant is one of the annual plants that is classified as fertile in good environmental conditions. Mustard plants in open fields have many obstacles such as pest attacks, wind, floods, environmental temperature and soil moisture that are not in accordance with plant growth requirements. The impact is disruption of plant growth, thereby affecting productivity. Cultivating plants in a greenhouse is a good alternative to control these problems. With the development of technology in the agricultural sector, the idea was created to create an IoT-based monitoring and control system for greenhouses. This system uses a nodemcu esp8266 as a tool controller, and uses a DHT21 sensor to measure air temperature and humidity as well as a soil moisture sensor to read soil moisture which then displays the data via the website. This tool has three outputs consisting of a water pump (nozzle), pump water (drip hose), and a fan. From the system measurement results, there is a difference in error in temperature and air humidity of around 1 to 2% and soil moisture has a difference of between 1 and 3%. Furthermore, the research results showed that plants in the greenhouse had better leaf height and width compared to those outside the greenhouse.

***Keywords*—**Mustard Plant, Greenhouse, ESP8266, DHT21 Sensor, Soil Moisture Sensor, Website, Internet of Things (IoT).