

PEMANTAUAN SUHU DAN KELENGASAN TANAH SERTA SUHU DAN KELEMBAPAN UDARA DI LAHAN KERING BERBASIS IoT

Monitoring of Soil Temperature and Moisture, and Air Temperature and Humidity in Dryland Based on IoT

M. Abul Auni Annawawi¹, Joko Sumarsono², Ida Ayu Widhiantari²

¹Mahasiswa Program Studi Teknik Pertanian, Fakultas Teknologi Pangan dan Agroindustri, Universitas Mataram

²Staf Pengajar Program Studi Teknik Pertanian, Fakultas Teknologi Pangan dan Agroindustri, Universitas Mataram

ABSTRAK

Kecamatan Sambelia merupakan salah satu kecamatan di Kabupaten Lombok Timur yang merupakan daerah dengan lahan kering. Untuk mengatasi masalah pertanian pada daerah tersebut, diperlukan suatu tindakan penanganan. Salah satunya dengan cara memanfaatkan teknologi komputer dan internet untuk memonitor suhu dan kelembapan udara serta suhu dan kelengasan tanah. Tujuan dari penelitian ini yaitu merancang dan menguji kinerja sistem pemantauan suhu dan kelengasan tanah serta suhu dan kelembapan udara di lahan kering berbasis IoT (*Internet of Things*). Metode penelitian yang digunakan yaitu metode eksperimental percobaan simulasi yang dilakukan melalui tahapan penelitian meliputi persiapan, perancangan rangkaian sistem dan pembuatan bahasa program sistem pemantauan suhu dan kelengasan tanah serta suhu dan kelembapan udara di lahan kering berbasis IoT (*Internet of Things*). Berdasarkan hasil analisis data, didapatkan bahwa sensor DHT22 yang digunakan bekerja dengan akurasi terbaik pada hari ke 21 dengan persentase *error* sebesar 0% dan akurasi terburuk terjadi pada hari ke 31 dengan persentase *error* sebesar 18,5%. Pada sensor SHT10(1) nilai persentase *error* tertinggi didapatkan pada hari ke 15 yaitu sebesar 5,4% dan nilai *error* sebesar 0% terdapat pada hari ke 6, hari ke 16, dan hari ke 19. Sedangkan untuk sensor SHT10(2), persentase *error* tertinggi didapatkan pada hari ke 17 dengan nilai *error* sebesar 5,9% dan nilai *error* sebesar 0% didapatkan pada hari ke 25. Sementara untuk kelengasan tanah, nilai rata-rata *error* yang didapatkan cukup tinggi yaitu nilai 14,8% dan 25,5%.

Kata kunci: internet, kelembapan, suhu, tanah, udara

ABSTRACT

Sambelia District is one of the sub-districts in East Lombok Regency, an area with dryland. A handling action is needed to overcome agricultural problems in the area. One of them is by utilizing computer and internet technology to monitor the temperature and humidity of the air and the temperature and humidity of the soil. The purpose of this research is to design and test the performance of a monitoring system for temperature and soil moisture as well as air temperature and humidity in dryland based on IoT (Internet of Things). The research method used is the experimental method of simulation experiments carried out through research stages, including preparation, design of system circuits, and programming language for monitoring systems for temperature and soil moisture and temperature and humidity in dryland based on IoT (Internet of Things). Based on the results of data analysis, it was found that the DHT22 sensor used worked with the best accuracy on day 21 with an error percentage of 0% and the worst accuracy occurred on day 31 with an error percentage of 18.5%. On the SHT10(1) sensor, the highest error percentage value was obtained on the 15th day, which was 5.4%, and

the error value of 0% was found on the 6th day, 16th day, and 19th day. As for the SHT10(2) sensor, the highest error percentage was obtained on day 17 with an error value of 5.9%, and 0% was obtained on day 25. As for soil moisture, the average error value obtained was relatively high, namely 14.8% and 25.5%.

Keywords: *air, humidity, internet, soil, temperature*