

"ERROR ANALYSIS OF TEMPERATURE AND HUMIDITY SENSORS IN A 200-EGG CAPACITY DUCK EGG INKUBATOR"

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ABSTRACT

*The success of duck egg incubation is highly influenced by stable temperature and humidity inside the incubator. This study aimed to analyze the accuracy of DHT22 and DHT11 based duck egg incubator with a capacity of 200 eggs. The research method consisted of system design, sensor testing, data collection, and data analysis using the (RMSE) and (MAPE) methods. The measurements obtained from both sensors were compared with a Hygrometer as the reference instrument. The results showed that the DHT22 sensor achieved an **RMSE of 0.259°C** and a **MAPE of 0.515%**, while the DHT11 sensor obtained an **RMSE of 0.680°C** and a **MAPE of 1.725%**. These results indicate that the DHT22 sensor has lower measurement errors than the DHT11 sensor, providing more accurate and stable readings. In conclusion, the DHT22 sensor is more suitable for use as the primary sensor in a duck egg incubator monitoring system due to its higher accuracy and stability. The based monitoring system can effectively maintain temperature and humidity under optimal incubation conditions.*

Keywords: *duck egg incubator, DHT22, DHT11, RMSE, MAPE.*