

## **ABSTRACT**

*In the cultivation of red earthworms, the live media of worms must be considered. Optimum soil moisture for the propagation and growth of red earthworms is 42% - 60% and the optimum air temperature is 23 ° C -28 ° C. Then made a tool that can optimize the temperature and soil moisture in accordance with the conditions of the red earthworm live media and can monitor the state of the live media remotely.*

*This tool is designed using a microcontroller Wemos D1 R1, Sensor SEN0193 to detect soil moisture, DHT-22 to detect air temperature, Telegram to display air temperature and soil moisture information, as well as fans and water pumps controlled by relays in order to produce temperatures and humidity that are according to the setpoint. the temperature setpoint used was 24 ° C-27 ° C and the soil moisture setpoint used was 44% -58%.*

*Based on the results of tests that have been done, the DHT 22 sensor has an accuracy of 95.19% and the SEN0193 Sensor has an accuracy of 95.57%. In optimizing the air temperature and soil humidity adjusted to each setpoint, the tool works very well in the indoor because it has an average temperature error of 0.01% and a soil humidity of 0.16% smaller than in outdoor which has an average average temperature error is 0.02% and soil moisture is 0.30%. And also the data delay in the internet communication of things Telegram at 13.53 seconds and 13.4 seconds of soil moisture and both have 100% delivery accuracy.*

*Keywords: Red earthworms, telegram applications, Internet of Things (IoT).*