## DESIGN AND BUILD MONITORING AND CONTROL TOOLS FOR EARTHWORM CULTIVATION VIA TELEGRAM

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## ABSTRACT

Earthworms are not alien to us, animals that do not have a spine (invertebrates). Worms have many benefits, such as animal feed, medicine, cosmetics, used worms (vermicompost) can also be used as organic fertilizer. The process of cultivating earthworms is not difficult, maintenance and feeding are easy to find. The soil media used as a location for worm cultivation must be in accordance with its natural habitat. In earthworm cultivation, extra monitoring is needed because there are often obstacles that can affect its growth and development. Weather factors are also very influential on the development of earthworms. During a long dry season with hot temperatures, earthworms cannot reproduce properly. This is because excessive heat greatly affects the production and hatching of worm eggs. From the problems above, a tool is needed that is able to monitor and control the temperature and humidity of the cultivation area as well as provide information on the age of earthworms that have been cultivated automatically and can be done through the telegram application. In making this tool using a DHT11 sensor as a room temperature gauge, Soil Moisture Sensor as a soil moisture meter, a fan and water pump as a regulator if the temperature and humidity are not appropriate, NodeMCU ESP8266 as a controller and using the telegram application for remote monitoring and control.

Keywords: Worms, DHT11, Soil Moisture Sensor, NodeMCU, Telegram