DESIGN OF GREENHOUSE TEMPERATURE AND HUMIDITY CONTROL SYSTEM FOR CHILI PLANTS USING FUZZY LOGIC METHOD

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ABSTRACT

Indonesia is a tropical rainforest which makes Indonesia grow a lot of various kinds of plants. In addition, Indonesia is very suitable as a place to grow various kinds of plants. With so many Indonesian people cultivating crops, Indonesia has the biggest livelihoods in the agricultural sector, one of which is chili farmers. Chili has a spicy taste that makes chili much in demand. Based on data from the Central Statistics Agency (BPS), total chili production in 2018 was 2.30 million tons. High export demand needs to be balanced by high production as well, but chili production has decreased due to high rainfall. Therefore, we need a greenhouse that can control the temperature and humidity needed by chilies. Thus, improving the quality of chilies, increasing the production yields harvested and making the work of chili farmers easier. In this research a greenhouse will be made that can control air temperature and humidity using the fuzzy logic method, an Arduino device as a processor, and a DHT 22 sensor as input that will read the temperature and humidity. Arduino Uno will process the input which will later be used to turn on the output in the form of peltier and mist maker until the temperature and humidity are in optimal conditions. Based on the results of accuracy and precision testing on air temperature readings of 98.3% and 99.03%. Accuracy and precision values for air humidity readings are 97.58% and 98.47%. In testing the fuzzy system tool with the Matlab comparison value, the Peltier time error value is 0.618% and the mist maker time error is 0.599%. In testing the success rate of the tool, a value of 90% was obtained. From the results obtained, it can be said that the performance of the tool is good.

Keywords: *Arduino, DHT 22, Fuzzy, Humidity, Temperature*