

PROTOTYPE OF TEMPERATURE AND HUMIDITY CONTROL SYSTEM IN POTATO PLANTS INDOOR USING FUZZY LOGIC

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ABSTRACT

Potato plants are annual plants that are generally planted in highland areas. In the application of planting potato plants indoors, more effective care is needed to get quality plants with high selling prices. This study aims to develop a prototype of a temperature and humidity control system for indoor potato plants using the fuzzy logic method. This system is designed to optimize environmental conditions to support the growth of potato plants efficiently and effectively. This system utilizes Arduino Uno as a microcontroller, for input data which uses the DHT22 sensor as a room temperature gauge and the Soil Moisture sensor as a soil moisture gauge, the data obtained is then processed using a fuzzy logic algorithm to regulate the actuator or output device, namely fans and pumps. The fuzzy logic algorithm is used to regulate actuator devices such as fans, heaters, and humidifiers, so that they can maintain temperature and humidity at optimal levels. Based on the tests that have been carried out, the results of the DHT22 temperature sensor test showed a percentage error value of 0.66% and a percentage error value for the Soil Moisture soil moisture sensor of 2.92%. In the comparative test of the implementation results on Arduino with simulation using MATLAB, the percentage error value was obtained at 1.0%, and from this test, the value for the success rate of the design of the temperature and humidity control system tool was also obtained at 96.67%.

Keywords: *Potato plants, Fuzzy Logic, Temperature and Humidity Control*