

ABSTRACT

Temperature is the main factor in the tempeh fermentation process. If the temperature in the tempeh fermentation room is too hot, the tempeh will become unhealthy and rot easily. If it is too cold, it slows down the growth of mushrooms and also impacts the texture of the tempeh, which is still soy. Rainfall is the most influential factor in changes in room temperature. For this reason, optimizing the tempeh fermentation process during the rainy season based on a microcontroller is really needed. In this research, it consists of a DHT-11 sensor as a room temperature and humidity sensor detector, a NodeMCU microcontroller which functions as a data processor from sensor input, managing the work of the relay and blynk as a medium for displaying data from the sensor. In this study the author used a temperature of 30 °C. When the temperature is below 30 °C, the room heater that uses lights will turn on automatically, likewise, when the temperature is above 30oC, the room cooler that uses a fan will turn on automatically too. The fermentation process is carried out in a special room, namely using a which aims to minimize the influence of external temperature. In this research, the accuracy value for the temperature of the DHT-11 sensor in the fermentation room was 97.06%, then the accuracy value for humidity was 98.29%. All these numbers were obtained through the DHT-11 sensor calibration process using three variables, namely room temperature (), cold temperature (ice) and hot temperature (hot water). During the fermentation process, when the weather is rainy, fungal growth slows down. This is different from the fermentation process in sunny weather and the fermentation process using tools.

Keywords: *DHT-11 sensor, Humidity, Temperature, Tempe*