ABSTRACT

Coffee is one of the main commodities that are widely developed in Indonesia, the demand for it is no doubt, the very rapid selling power of coffee makes many people to try the coffee business, but the increase in coffee production in Indonesia is still hampered by the low quality of coffee beans produced. There are many factors that affect coffee growth. To produce quality coffee, where the most important factor is soil suitability.

In this Final Project, the design of an automatic soil match measurement system for coffee plants has been carried out using NodeMCU ESP32 with the mamdani inference fuzzy method which will then be displayed the percentage of match and coffee recommendations in accordance with the fuzzy requirements that have been designed on the web-based interface. The measurement parameters include air temperature, soil moisture, and soil acidity with NodeMCU ESP32 which then data from sensors are sent and processed fuzzy inference using the mamdani method.

The result of the Final Project that has been created is to be able to display the data of each sensor on a web interface, measure the level of automatic soil match using a fuzzy inference system which can increase the production of quality coffee, helping farmers minimize crop failures. the average delay value of the experimental results 30 times is 10.5ms, which is a very good value.

Keywords: *NodeMCU*, *Fuzzy, Web, Coffee.*