ABSTRACT

The tea plant is a common plant in Indonesia but due to the rapidly growing pest population, many tea plant productions fail. Therefore, the purpose of this final project is to design a tool that can read rainfall parameters as a way to predict the development of tea plant pests.

The author designs a tool that can calculate the amount of rainfall that occurs and uses the Artificial Neural Network method to be able to identify potential attacks of the pest empoasca sp. that happened. Then, the results of the analysis and monitoring from the field will be forwarded to the user.

In this final project, it was found that the sensor for rainfall used the tipping bucket method with a resolution of +-1 mm with an error value of 2.83% and the method used produces an accuracy value of 92.56%. The communication module used is Long Range (LoRa) with an optimal value at a distance of 100 m with Telkom University as the reviewed area and ESP32 as a Wi-Fi module with an average index value of 3.5. Users can also view monitoring results using the mobile app. The prediction results generated by the Artificial Neural Network method are in the form of "Potential" or "No Potential" against the attack of the pest empoasca sp. that happened in the tea plantations.

Keywords: Rainfall, Tipping Bucket, Pests, LoRa, Artificial Neural Network, Internet of Things (IoT)