

ABSTRACT

The tea plant (Camellia sinensis (L.) O. Kuntze) is an annual plant, originating from the subtropics. The physical environment that most influences the growth of tea plants is climate and soil. Thus, the weather conditions in the tea plantations greatly affect the growth of these plants. Weather conditions that have almost the same characteristics as the area of origin of tea plants, namely subtropical areas will make the growth of tea plants more optimal. Observation of weather parameters is important in forecasting the weather and conducting analysis to find out the weather phenomena that occur. This research was conducted at a Perkebunan Teh dan Kina (PPTK) Gambung.

Climate change has an impact on changes in microclimate and air content in Gambung tea plantations. With these problems, we need a device that can be used to find out the weather phenomena that occur. This device is an Automatic Weather Stations device which is made by combining several sensors so that an Automatic Weather Station device can be formed that can be used for weather monitoring. The design of the Automatic Weather Stations tool is realized by using Arduino Uno and several sensors including air humidity and temperature sensors, soil moisture sensors, light intensity sensors, wind speed sensors and rain sensors and using batteries as a power supply source. Access data transmission using wireless NRF24L01 which can function as a transceiver. data transmission using wireless NRF24L01 which can function as a transceiver.

The devices made are three AWS Node Sensor devices that can be used as a weather monitoring system with specifications for electricity consumption of 64.2 mA with a battery voltage of 8.2 V. From the test results, this device is able to read values every 100% and can work well. Temperature sensor with an error range of 2%, humidity sensor with an error range of 0.851%. Rain sensor with 0% error range, soil moisture with 0% error range, Anemometer sensor with 2% error range and light sensor with 13% error range. The average delivery time of this AWS Node Sensor is 0.316152 seconds. The communication performance of NRF24L01 which is used in non-lost conditions can reach 170 meters at the PPTK Gambung.

keywords: *Automatic Weather Station, transceiver, wireless, sensor nodes.*