ABSTRACT

Cayenne pepper is one of the vegetable commodities whose existence cannot be abandoned by the Indonesian people in their daily life. The need for cayenne pepper is quite high, around 4 kg/capita/year. One of the disadvantages of cultivating fruit and vegetable plants in polybags is that they require a lot of air. To overcome this, drip irrigation can be applied. Gravity irrigation system is irrigation that used the force of gravity in the transmission of air from the source. With the existence of IoT technology, it can change a chili plant cultivation without having to be in the location where the device is installed. In this thesis use tools and materials such as soil moisture sensor yl69 to unite soil moisture, dallas ds18b20 sensor to handle multiple temperatures, ultrasonic sensor hcsr04 to unite the volume of drip irrigation water, nodemcu esp8266 as a microcontroller, servo motor SG90 to control gravity drip irrigation sprinklers, an android application to unify the condition of chili plants, a google spreadsheet to store data, and a wireshark application to view the quality of service (QoS) of the internet network used. The gravity drip irrigation method used can be an alternative to help save water in chili cultivation which can be monitored remotely using internet of things technology. The test results for the whole system for plant humidity can be stable at 60%-80% humidity with an average water use of 26.67 milliliters/minute and air reduction of 0.067cm/minute for 30 minutes of testing. The results of the sensor and servo motor calibration tests used have a good average error value. The results of testing the QoS parameters for the delay value are 177.99ms, the jitter value is 114.37ms, the throughput is 4127.33bit/s, and the packet loss is 0.02%.

Keyword: Cultivation of chili plants, Polybags, Gravity Drip Irrigation, IoT, QoS