ABSTRACT

Water is the main need for photosynthesis apart from the sun. Apart from that, water is also useful for maintaining soil moisture to suit what plants need. This water is really needed by plants because water greatly influences the survival of plants, including grapes. A greenhouse is a method of growing plants in a building that is transparent to light. Apart from that, this greenhouse can protect plants from extreme climatic conditions that are detrimental to plants. However, in general, greenhouses still apply conventional methods such as manual care and watering of plants, so it takes quite a lot of time in the process of cultivating a plant. Apart from that, soil moisture must always be maintained so that plants get sufficient water intensity. Therefore, technology is needed to help the process of cultivating plants using the greenhouse method.

In this final project, a system will be created to provide convenience in the process of cultivating grapes. By utilizing a LoRa32 microcontroller, soil moisture automatic watering and LoRa-based greenhouse monitoring can be carried out. Implementing LoRa is useful so that users can carry out remote monitoring so that it is faster and more efficient.

Based on the results of research, the plant watering control system created can work well and successfully. The test results of soil moisture sensor readings in dry, damp and wet conditions carried out with 10 data loops can be taken as an average value from each sensor to be used as a reference for dry, damp or wet values. This system can carry out automatic watering and can display data and relay control to be active for 3 minutes via the Blynk application or automatically based on 4 dry sensors with a success rate of 100% based on tests that have been carried out. Then the use of LoRa in this research was also successful because the data from the sender could be received quite well by the recipient and could be processed to carry out automatic watering. The results of the LoRa test show that the highest value obtained is -112 and the lowest is -118, data reception continues to run well with the values obtained.

Keywords: *Greenhouse, LoRa32, Soil Moisture.*