ABSTRACT

Agriculture is the backbone of Indonesia's economy. However, due to the COVID-19 pandemic, the country's economy becomes very troublesome. Food supply is one of the main necessities during this pandemic, the crop prices nowadays are increasing which made some people restless and prefer to eat unhealthy cheap foods. In other cases, water resources on our planet efficiently decrease due to various reasons like population growth, rapid urbanization, and climatic change. The emergence of modern agriculture through Smart Urban Farming using the IoT helps people to reduce the usage of natural resources, grow plants easily, and optimize the water consumption.

This Final Project discusses about Drip Irrigation for Smart Urban Farming which focuses on controller design. Using drip irrigation systems have the potential of saving the water and nutrients directly to the plant's root zone, in the right amounts, at the right time, so each plant gets exactly what it needs to grow optimally. This irrigation system provides pH and soil moisture sensors. The system can water the plants automatically and semi-automatically by using the parameters of the sensors. The sensor's data can be monitor and seen through the smartphone.

The results of the drip irrigation testing on the plants, the system can properly perform automatic and semi-automatic scheduling according to the specified time, it can generate a 100% success rate for the scheduling scenarios. The system requires 66.412 L of water in 60 seconds to produce approximately 165.2 mL water droplets for each plant.

Keywords: Drip Irrigation, Smart Urban, Agriculture, COVID-19 pandemic