



SEMAR SANDY-APP: MONITORING SYSTEM FOR SANDY SOIL IRRIGATION BASED ON ANDROID APPLICATION

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INTRODUCTION

Indonesia's population increase leads to the increase in food needs and requires national food security ensurement. The country faces the problem of agricultural land diminishing. Sandy soil is one of the suboptimal land that can be solution for agricultural cultivation. Sandy soil also leads to problems such as low water-holding capacity. The low of water-holding capacity will result in low levels of soil moisture. Soil moisture content is a very important factor in plant growth. Accordingly, we need an alternative solution to solve the problem. One of technology used in agriculture is an application developed subsurface drip irrigation system. Subsurface drip irrigation is an irrigation system with a small and constant flow of water which is very efficient because of the low evaporation and run-off processes. The irrigation has the advantage of giving the water more precisely and evenly around the plant and discharge arrangements and operating time. Utilization of irrigation technology that effectively and efficiently as a tool for monitoring and automatic watering can be used as a control to determine the water content in the soil.

METHOD

The method used in the Semar Sandy-App idea are literature study and the research and development. Method of literature study was collecting by literature comes from a source of primary literature and secondary literature sources on sandy soil, irrigation, monitoring technology, and android. The research and development method is a research method used to develop ideas by designing a prototype in laboratory scale Semar Sandy-App.

DISCUSSION

Semar Sandy-App is a system that provides irrigation directly to plant root zone. Provision of proper irrigation (goals, timing and amount) would be beneficial in improving agricultural productivity. Semar Sandy-App uses subsurface irrigation through drip irrigation with a perforated pipe, so the water out of the hole discharge specified according to moisten the soil in the plant root zone. According to Hussein and Mohamed (2012) subsurface irrigation is the best irrigation which has an efficiency level higher than other irrigation

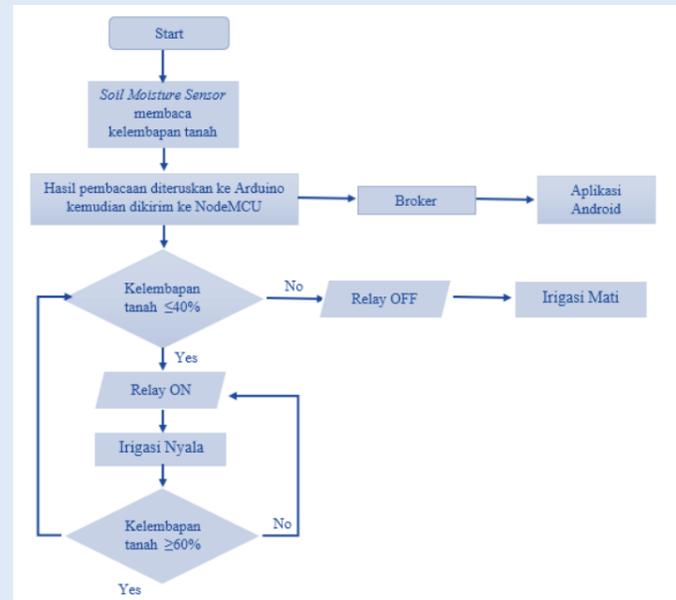


FIGURE 1. Flowchart Semar Sandy-App

The system can control and monitor plant water requirements through the use of a microcontroller that connected directly to the Android system on a smartphone. Singh Kushwaha, Taram, and Taram (2015) state the monitoring process can improve the effectiveness of irrigation to support agricultural production.



FIGURE 2. Display of Semar Sandy-App

The application will display the data on the calculation of the sensor immediately so the data will update and monitor the calculation in real-time

CONCLUDING COMMENT

Semar Sandy-App is a monitoring system for plant water requirements and a subsurface drip irrigation system through the use of a microcontroller that directly connected to the Android system on a smartphone

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