

AUTO WATERING AND FERTILIZING PLANT SYSTEM

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ABSTRACT

An automatic watering system has been designed to facilitate the automatic supply of adequate of water from a reservoir to field or domestic crops in all agricultural season. One of the objectives of this work is to see how human control could be removed from irrigation and also to optimize the use of water in the process. The irrigation system is the key to a successful garden or paddy field. Long gone are the days of manual watering or relying on a friend to water when you are on vacation or away on business. The project presented here waters your plants regularly when you are out for vacation. It also helps farmers to fertilize and water their crops. The project can reduce labour cost and watering or fertilizing plants punctually. The project need water pump to watering the plants.

Keywords: fertilizer, water, plants, timer, automatic

1. INTRODUCTION

In the world of advance electronic, life of human beings should be simpler. Irrigation and fertilization is the key to a successful garden and crop field. Long gone are the days of manual watering or relying on family member even a friend to water the plant when you are on vacation or away on business. The plants require the owner to always sensitive with it needs. Watering plants at the appropriate rate for the plant is important. However, many people forget this watering routine. Busy people always forget to water the plants due to the tight schedule. Beside, people are not able to predict the essential amount of water needed by the plant to restore the soil moisture needed by plant. Fertilize enhance the growth of plants. The farmers are fertilizing their plant every week, but it need some labour and take time to fertilizing. People nowadays are too busy with their work. Most of them tend to focus on something until they neglect their home task such as watering the plant. This is because people do not know how to manage their time properly. Here by, the effective solution to this problem is to design an automatic watering and fertilizing system. By using this system, the water uses to watering plant is more efficient. Then it also will minimize the cost of labour. To solve the problem, we come out to design an Auto Watering Plant with Fertilizing System.

2. LITERATURE REVIEW

This project is made by several parts which is Arduino, solenoid valve, water pump, motor, LCD, button and etc. This project is using Arduino UNO as a controller. For example, we can set the time or the date to watering or fertilize the crops. The Real-time clock, DS1307 is used for this project to count the time. Next, the LCD displays the days, months, years, times and the operation. After that, power window motor is used to open and close that control the amount of fertilizer. Next, The solenoid valve is used to control the amount of water. After that, motor was used to mix the fertilizer with water. Moreover, this project also can manually waters or fertilizes the crops by using push button. Furthermore, the water pump is used to pump the water or mixed fertilizer to the crops. The relay is connected the Arduino and all output driver. When the Arduino sends a 5V voltage to the relay, the relay will trigger and the output driver will on. The project is designed for automatic watering and fertilizing the plants. We expect the project can reduce cost for labour to water and fertilize the plants. Lastly, the project helps the people to water and

fertilize their plants and crops with more convenient and efficient. In market, they have only watering plants but we have watering and fertilizing plants.

3. METHODOLOGY

This project is developed in two phases. The first stage is the project planning starting from August to November 2017. The second stage involves the construction of the project from January to March 2018. Gantt chart in Table 1 shows the activity that has been implemented.

Table 1 : Gantt Chart of project

ITEMS \ WEEK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Casing Design, PCB Layout, Buy component	■															
Make Modified Blender, Find hardware online		■														
Buy hardware, Add Ultrasonic sensor			■													
Make model for blender storage				■												
Find wood					■											
Cut and install the wood to our model						■										
Install power window motor, make Control Gate							■									
Modified program, install all storage and component								■								
Make PCB Layout, troubleshooting arduino program									■							
Add roler, repair casing, buy hose and pipe										■						
Etching, install component											■					
Soldering												■				
Install PCB, Wiring, buy LED													■			
Troubleshooting, adjust program, synchronous program with project														■		
Troubleshooting, buy water solenoid, water pump, Casing, fertilizer															■	
Presentation project																■
Submit log book and report																■

4. RESULTS AND DISCUSSIONS

This project works successfully. It automatically waters and fertilizers the plant based on the timer setting. However this project is more efficient if the humidity sensor is used to detect the humidity of the soil.

5. CONCLUSIONS

As a conclusion, in developing this project, we work as a team to complete the task given. This project, Auto Watering and Fertilizing Plant System is a potential project to be commercialized in the market. In future, the humidity and ph sensor will be used to detect exactly amount of water or fertilizer needed by the plant.

REFERENCES

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