

3rd EDITION

E-EXTENDED

ABSTRACT

**INTERNATIONAL
AGROTECHNOLOGY
INNOVATION
SYMPOSIUM (i-AIS)**



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INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

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Program Logistic		Muhammad Nuruddin Mohd Nor
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ABOUT FACULTY OF PLANTATION AND AGROTECHNOLOGY

The Faculty of Plantation and Agrotechnology was established in 2010 at Universiti Teknologi MARA (UiTM). The mission of the faculty is to play the vital role of producing well-trained professionals in all areas of plantation and agriculture-related industries at national and international levels.

Bachelor of Science (Hons) Plantation Technology and Management is a three-year program that strongly emphasizes the various aspects of Production Technology, Management, and Information Technology highly sought after by the agricultural and plantation sectors. Students in this program will be fully trained to serve as professionals in the plantation sector and related industries. They will have ample opportunities to fulfill important positions in the plantation industry such as plantation executives. This program provides a strong balance of technology and management courses essential for the plantation industry such as management of plantation crops, soil fertility, plantation management operation, plantation crop mechanization, and agricultural precision. As an integral part of the program, students will be required to undergo industrial attachment to gain managerial skills in the plantation industry.

The faculty is highly committed to disseminating, imparting, and fostering intellectual development and research to meet the changing needs of the plantation and agriculture sectors. With this regard, numerous undergraduate and postgraduate programs have been offered by the government's intention to produce professionals and entrepreneurs who are knowledgeable and highly skilled in the plantation, agriculture, and agrotechnology sectors.

PREFACE

International Agrotechnology Innovation Symposium (i-AIS) is a platform to be formed for students/lecturers/staff to share creativity in applying the knowledge that is related to the world of Agrotechnology in the form of posters. This virtual poster competition takes place on the 1st of December 2022 and ends on the 8th of January 2023. This competition is an assessment of students in determining the level of understanding, creativity, and group work for the subject related to agrotechnology and being able to apply it to the field of Agrotechnology. The i-AIS 2022 program takes place from December 1, 2022, to January 8, 2023. The program was officiated by the Dean of the Faculty of Plantation and Agrotechnology, namely Prof. Madya Ts. Dr. Azma Yusuf. The program involves students from faculties of the Faculty of Plantation and Agrotechnology (FPA) and HEP participating in i-AIS 2022, namely, the Faculty of Education and Pre-Higher Education. This program involves the UiTM student and some of the non-UiTM students which come from the international university and the local university. Two categories are contested, namely UiTM and non-UiTM. To date, students from these programs have shown remarkable achievements in academic performance and participation in national as well as international competitions.

This competition is an open door for the students and lecturers to exhibit creative minds stemming from curiosity. Several e-content projects have been evaluated by esteemed judges and that has led to the birth of this E-Poster Book. Ideas and novelties are celebrated, and participants are applauded for displaying ingenious minds in their ideas.

It is hoped that such an effort continues to breed so that there is always an outlet for these creative minds to grow.

Thank you.

Dean
On behalf of the Organizing Committee
Conference Chair
Universiti Teknologi MARA
Faculty of Plantation and Agrotechnology
<http://fpa.uitm.edu.my>

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SMART WATER TANK FOR SUSTAINABLE IRRIGATION

Mohamad Nadzrin Bin Norisam¹, Muhammad Ridhwan Afiq Bin Sunsuki¹,
Nur 'Amira Binti Hamid¹

¹*Faculty of Plantation and Agrotechnology, Universiti Teknologi Mara (UiTM), Malaysia*
Corresponding author e-mail: nadzrinerin@gmail.com

ABSTRACT- The plant's development, germination, and productivity are all influenced by water. Water availability for irrigation has become increasingly vital as agricultural production has increased to fulfil global food demand. Previously, conventional agriculture was the most common method among farmers due to its great productivity in generating the product. However, over the last decade, traditional farming practices have been replaced with more sustainable ones. This is because, despite their high production, traditional practices can harm the environment and generate social disturbance. In terms of generating high-quality products without polluting the environment, sustainable agriculture is now playing a key role in the agricultural industry. One of the sustainable agriculture practices is to use rainfall as a source of water for irrigating crops. It's because it recycles rainwater and reuses it for agricultural purposes. At the same time, it has the potential to shift the use of clean water to more expensive treated water. One of the choices and productive strategies for storing rainwater for irrigating the crop is to use a rainwater collecting tank as a storage tank

Keywords: plant , rainwater , harvesting, tank

INTRODUCTION

By utilizing nature's free resources, the rainwater harvesting system makes the most of rainfall patterns. For use in flushing the toilets, watering gardens, and other purposes, rainwater is collected, filtered, stored, and recycled. With the help of our rainwater collecting system, you may use the collected rainwater without any problem. Being environmentally conscious while saving money on water costs. During moments of high demand, your rainwater storage tank will automatically switch back to the main water supply without any interruptions. (Group, 2022). Rainwater harvesting is a technology for capturing rainfall as an additional source of water supply for homes, businesses, and industrial facilities, as well as for landscape irrigation, livestock watering, and agricultural irrigation. Planning and developing rainwater collection systems must follow certain rules and regulations.

MATERIAL AND METHOD

Material:

PVC pipe reducer socket, PVC pipe, PVC elbow & PVC tank connector

Method:

1. Install the extension of new overflow parts
2. Create system layout based on design. To design the dynamic fluid mechanism for controlling the quality of water in the rainwater harvesting tank that has a connection with the manual flushing and overflow system
3. Testing the functionality of each user requirement to meet the objectives
4. Ensure that all the requirements have been matched with prototype development
5. Test the water quality of each system requirement for ensuring the project is giving benefits to the user

RESULTS AND DISCUSSION

Dynamic fluid mechanism is the combination of two process which is fluse and overflow technique. This process is the explanation why the level of turbidity in the smart water tank or rain water harvesting tank are able to control and maintain at the clean or non-turbid level. The technique of cleaning or "scouring" the interior of water distribution mains (pipes) by delivering a rapid flow of water through them is known as water main flushing. Water is delivered to from the rain as the main source than flow to the storage tank. Water tank for wasting water or water from rain is the part of collecting and efficiently storing rainwater from various basement areas such as residential building rooftops, ground surfaces, rock catchments, and so on. These techniques are extremely diverse. They can be very rudimentary techniques, such as collection and storage with readily available, low-cost utensils. They can also be very intricate techniques, such as the construction of check dams. These methods are mostly used to conserve water. Surface runoff harvesting and rooftop rainwater harvesting are the two most common types of rainwater harvesting. Rainwater that falls on the ground is collected in an underground tank in the first method. Rainwater is collected from a roof catchment system and stored in a tank in the second method. Harvested rainwater is the purest form of water available. As a result, it can be consumed.

DISCUSSION

The encouragement on the use of these smart water tank need to be make through information spreading with the content that related with the benefit of these smart water tank. These recommendation was purpose due to low percentage of implication among the farmer. The farmer with high dependency on filtered water in their irrigation system was huge problem that will result on higher cost. Next is, any related agency that involved in agriculture industry need to join hand to develop this smart water tank with the new outflow system for the use of future generation on these technologies. The related agency will need to make the product and commercialized this technology in the local and global market. The advancement of these rain harvesting technology need to be improve such as development of new portable smart water tank to meet the preferable of the use not only limited use for the irrigation but also can be consume by the household. Lastly, the new invention needs to be purpose to solve the smart water tank problem that involved with huge dependency on rainfall rate.

CONCLUSION

Development of smart water in mainly purpose to collect the rain water for sustainable irrigation in agriculture. The future of smart water tank was able to benefit a lots of people especially the farmer. When dealing with the production of crop, water might be one of the major component that most important. Implementation or used of this smart water tank or harvesting tank were expected to meet the current need preferable of farmer. Dependency of the farmer to the filtered water can caused major problem for their budget and also will affect their monthly costing. The invention of new outflow system is able to influence the water quality in the existed rain harvesting system. Therefore, new outflow system that work to flow out the water from the bottom level of the tank were estimated to improve the cleanliness level in the rain harvesting storage. The development of new outflow system involved with planning, information gathering and requirement, information analysis and design, implementation and performance evaluation.

REFERENCES

- [1] online, w. w. (28 jun, 2022). *Muar Climate Weather Averages*. Retrieved from Muar Climate Weather Averages: <https://www.worldweatheronline.com/muar-weather-averages/johor/my.aspx>
- [2] Services, U. D. (11 october, 2016). *Irrigation vs. Rain-Fed Agriculture*. Retrieved from Types of Agricultural Water Use: <https://www.cdc.gov/healthywater/other/agricultural/types.html>
- [3] SWISTOCK, B. (31 may, 2016). *pennstate extension*. Retrieved from Basic interpretation of how various water quality parameters can influence plant growth during irrigation.: <https://extension.psu.edu/interpreting-irrigation-water-tests>
- [4] Tong, P. (2016). Colocasia esculenta (taro, yam, keladi) as a small farm crop in Malaysia.
- [5] Colocasia esculenta is one of the iconic farm products of the Kinta Valley., 49-50.
- [6] Waterworth, K. (6 jun, 2022). *gardening know how*. Retrieved from What Is Acid Rain: Tips For Safeguarding Plants From Acid Rain Damage: <https://www.gardeningknowhow.com/plant-problems/environmental/acid-rain-damage.htm>
- [7] Wyk, V. (1996). Food plant of the world. Times edition-Marshall Cavendish Singapore.
- [8] PROSEA(plant resource of South-East Asia) No 9: Plant yielding non-seed carbohydrate, 70-81.

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