

4TH EDITION

**E-EXTENDED  
ABSTRACT**

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



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

19 June 2023

Faculty of Plantation and Agrotechnology UiTM Cawangan Melaka Kampus Jasin

Published 2023

Faculty of Plantation and Agrotechnology

Universiti Teknologi MARA Cawangan Melaka Kampus Jasin

77300 Merlimau Melaka.

E-EXTENDED ABSTRACT of the INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS) (4<sup>th</sup> EDITION)

Mode of access Internet

<https://sites.google.com/view/ais2023/publication>

Perpustakaan Negara Malaysia Cataloguing -in – Publication Data

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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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# FRUIT SANITIZE POSTHARVEST

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**ABSTRACT** - Postharvest management begins with disinfecting fresh fruits and vegetables. Disinfection techniques eliminate fungal postharvest pathogens and bacterial human pathogens to improve food safety. Disinfection directly reducing postharvest microorganisms that build on fruit surfaces before and during harvest helps avoid storage rot. This overview covers the history, chemistry, and regulations of some key disinfectants. Chlorine, chlorine dioxide, ozone, ethanol, hydrogen peroxide, organic acids, and electrolyzed water. Some of the disinfectants in this review have been used for years, while others are 'alternative' and new. Experimental reports, practical application, phytotoxicity, residues, advantages, disadvantages, and mode of action of chemicals and technologies are discussed. Due to their untapped potential, vapor and gas phase applications and several associated technologies are highlighted. Disinfection is a key strategy for managing postharvest degradation of fresh fruit, according to this review. In some circumstances, disinfection is a precondition for important postharvest technologies, and it can become the dominant technology. This review found that chemical disinfectants' poor reputation is unwarranted because they leave no or non-toxic residues and their environmental impact is modest compared to their benefits.

**Keywords:** Fruit sanitizes, Fruit washing, Postharvest of agriculture fruit and Postharvest applicator.

## INTRODUCTION

### IMPORTANCE OF PRODUCE SANITATION

Sanitation after harvest is crucial for all fresh foods, since it can reduce spoiling losses by at least 50 percent. This is accomplished by the sanitation of wash water, produce surfaces, equipment, and storage rooms, as opposed to the direct control of decay-causing bacteria within the produce. Chlorine, applied as a spray or dip, is the most frequent disinfectant. Sanitation may be followed by treatment with one or more fungicides, which leave a residue on the product that inhibits decay bacteria that attack later or survived the sanitizers' effects. Sanitizers are also commonly used to reduce contamination of products with viruses of concern to human health. Human infections and fungal decay pathogens differ in a number of ways. In contrast to *Salmonella* spp., *Listeria* spp., *Escherichia coli*, and other human diseases and viruses, plant pathogens may develop fast within the host tissue and digest it since plants are their primary food source. Populations of human diseases are made up of single cells, hence their control is measured as a decrease in colony forming units. In contrast, postharvest fungal infections exist as separate propagules, which eventually coalesce into an interconnected mass within the host. Their control is best measured as a decrease in the proportion of infected individual produce items. Sanitation of harvest bins, wash solutions, rotating brushes, belts, grading equipment, and other processing equipment is a key requirement when working with fruits and. All sanitizers that deactivate pathogen propagules are capable of achieving this. Disinfecting agents for controlling postharvest fruit and vegetable diseases, if employed correctly. However, pathogens persist if they reside in the host's wounds or if they are present as incipient, latent, or quiescent infections in host tissue. Some gases may be exceptions to this rule. Sanitizers vary from postharvest fungicides in two essential ways. Sanitizers result in the speedy demise of germs with which they come into contact and leave no antimicrobial residue on treated items.

### OBJECTIVE OF FRUIT SANITIZER

#### Postharvest water alone is not sufficient

In light of all these outbreaks, simply washing and rinsing vegetables with water is insufficient to eradicate bacteria. This issue can be resolved by using disinfectants and sanitizers. Disinfectants and sanitizers are two distinct chemical types used to ensure the safety of food. A sanitizer is used to lower the amount of bacteria on

a surface to an acceptable level, whereas a disinfectant is capable of eliminating a broader spectrum of microorganisms. Since a single cleaning agent cannot be effective against all infections, it is essential to understand the operation of numerous cleaning agents.

## **Fruit sanitize product**

The product is simply the product that can easily wash the fruits after been harvest wash evenly. This product makes the operation postharvest easier and time efficient then the traditional ways. The product is called "Sanifruity" are operate with mechanical way didn't use any electricity just use the water from hose and attach the hose to the attach part and the product are ready to go. This product are use in the middle of operation harvest and pick up to the transportation. This product also can consume the waste of water that use in order to wash the fruit. If the farmer wants to put the solution to the water, there can put the water with the solution they want first then they directly put hose to our product then wash it directly.

## **METHOD & MATERIALS**

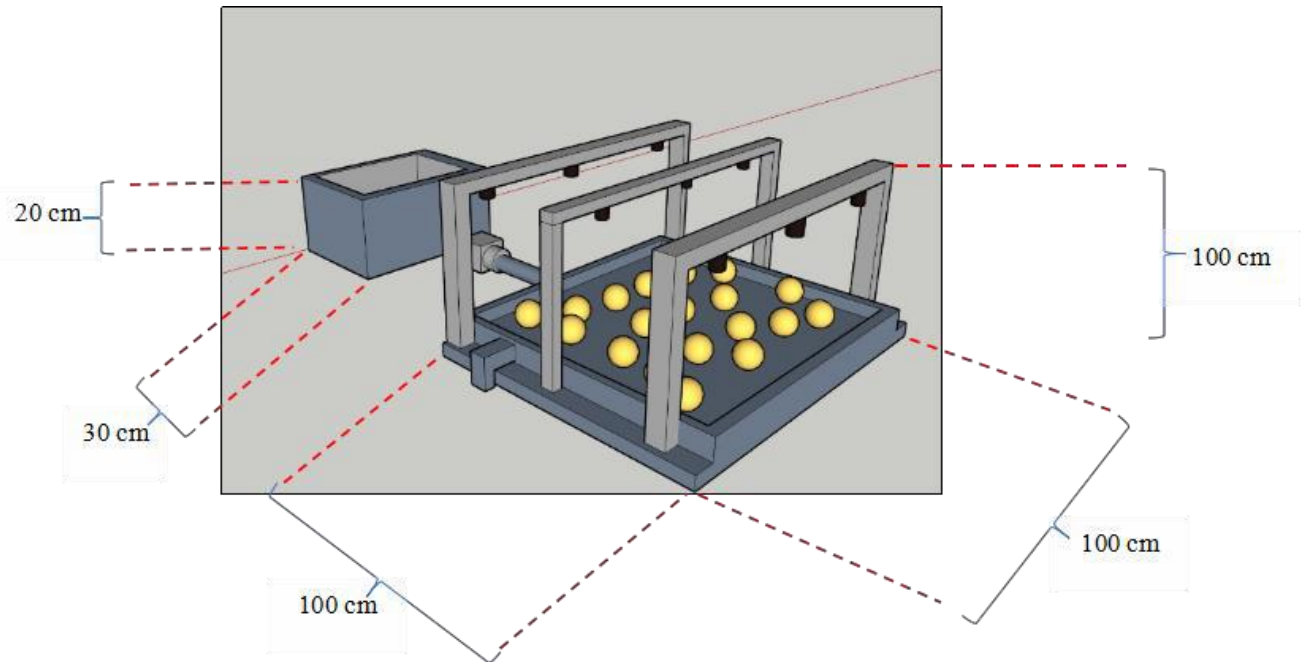
After the process of harvesting fruit, it is necessary to put the fruit through a cleaning procedure to remove any debris or potential microorganisms that may be found. The Fruit Sanitizer machine will ensure the fruits that are selected are clean and ready to be serve. The process of cleaning and sanitizing might potentially be quickened, which will benefit both the producers and the sellers. It is designed with specifications of 25cm x 60 cm x 90 cm, and it also has an aluminum tray that will a platform for the fruits to be cleaned through three pillars of liquid sprayer. Having the water pump can easily supply the water through the 3 pillars of sprayer and make it easier to use. It will spray water and with a specific disinfectant on the fruit in the appropriate amounts and from the precise angles.

The Fruit Sanitizer Machine is constructed out of stainless steel and aluminum to avoid rust. This will ensure that the machine can be used for an extended period of time, will be safe to the operator, and will prevent the fruits from being harmed. Because the machine uses liquid in its cleaning procedure, every gear and component that goes into it is designed to be water resistant.

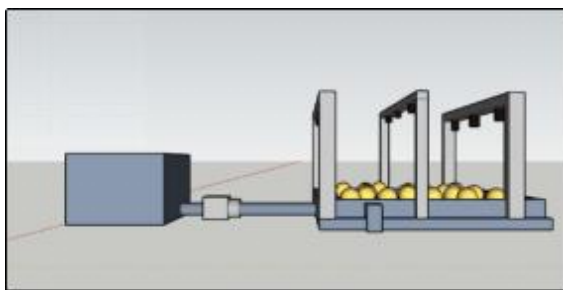
## **RESULTS AND DISCUSSION**

The main advantage of washing fruit is that it can aid in the removal of any dangerous pollutants that may be present on the fruit's skin. This is especially critical if you intend to consume the fruit raw. Washing fruit can also improve its flavor. It is a beneficial habit to develop to reduce the intake of possibly dangerous residues and bacteria. Before you buy fresh produce from the grocery store or farmers market, it is handled by many individuals. Furthermore, utilizing the "Sanifruity" will expedite the cleaning and sanitizing process. Sanifruity can wash and clean more fruits in less time than it takes to wash and clean them by hand. Cleaning with your hands may take longer because each fruit must be cleaned individually. With dimensions of 25cm x 60cm x 90cm, the Sanifruity can hold up to 30 oranges in a single wash. The method may only take around 2 minutes per wash but washing it by hand may take significantly longer. Using this technology, the need for labor can be reduced while also saving money and energy.

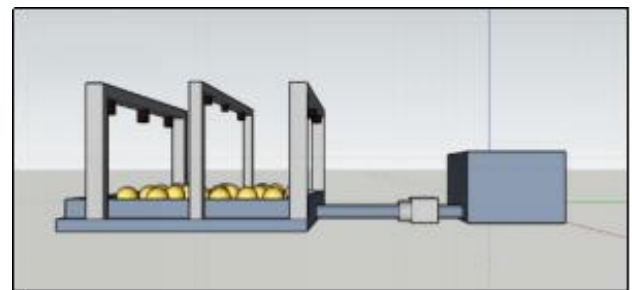
As The Sanifruity aims to facilitate the cleaning and sanitizing fruits and vegetables, it must be built from a long-lasting material which is aluminum, stainless-steel, heavy-duty plastic for water tank, HDPE piping and 15watt water pump. All of the materials are easy to get in the market and has less maintenance later on. The Sanifruity operations is very simple, and the design of the body meets the requirements of environmental preservation whereby no danger materials being used to build it.



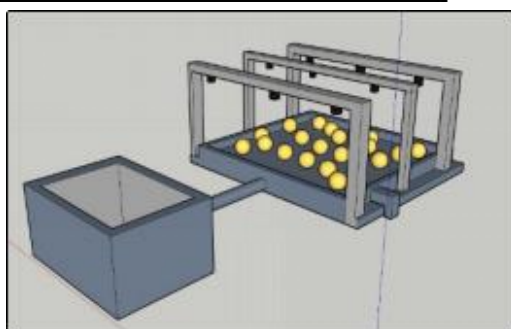
**Figure 1: Specification Of Sanifruity**



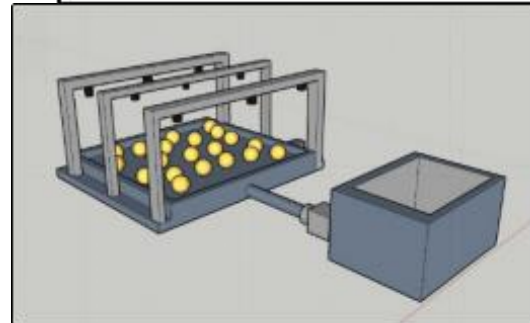
**View 1: Right view**



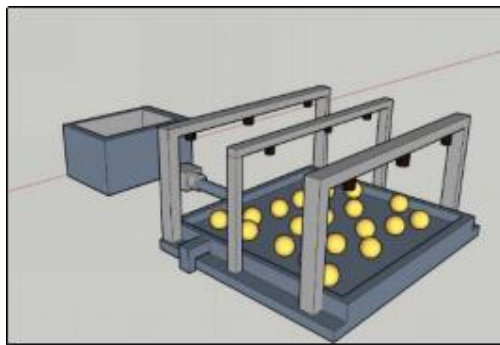
**View 2: Left view**



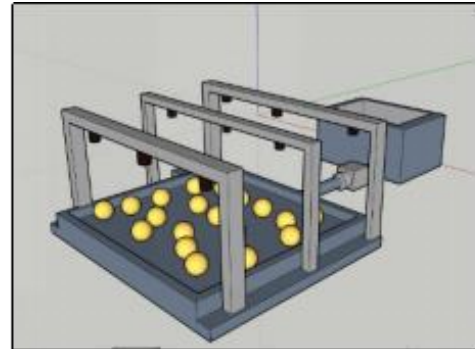
**View 3: Right back view**



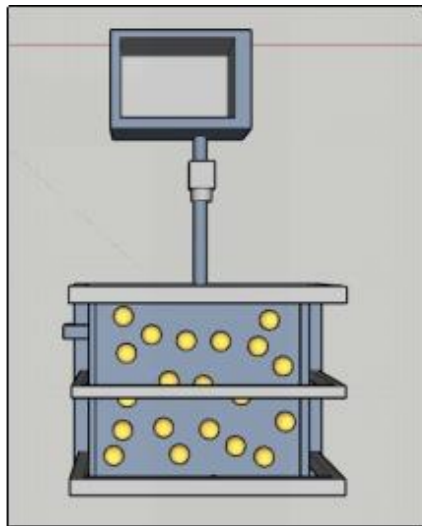
**View 4: Left back view**



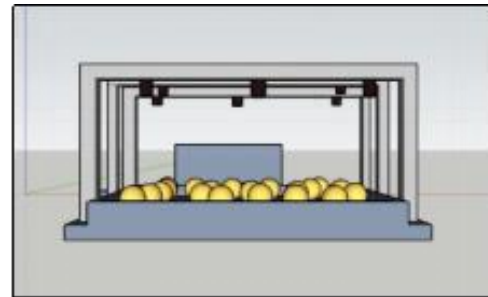
View 5: Front right view



View 6: Front left view



View 7: Aerial view



View 8: Front view

**Figure 2 : Views and perspectives of Sanifruity**

## CONCLUSION

The Sanifruity was designed based on requirement and needs for the farmers to ease their product cleaning including washing the fruits and vegetables. By adding disinfectants and sanitizers in the water, the safety and cleanness of the farm product can be surely confirmed. Therefore, inventing this cleaning machine will add an impact for the product produced such as fruits, vegetables and others farming produce. The Sanifruity will be one of the important machines inline to post harvest operations.

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