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E-EXTENDED
ABSTRACT

INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

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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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AUTO BANANA WRAPPER WITH SPRAYER

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ABSTRACT - The aim in this review is to explore the effect of the handling by using better wrapping method to get the quality on the banana and the other one is by using the organic sprayer. Bananas will be wrapped in plastic wrap as a whole bunch of fruit and then tightly tied to prevent pest attack. the method use in this research is wrapping plastic includes some air holes to allow the banana fruit to grow properly. The second one is organic sprayer had been completed homemade to follow the sustainable agricultural that focus on the environment friendly. Organic spraying is to provide natural protection for endangered crops. Scientists are searching for biological replacements for chemical pesticides to improve crop and human health. the observation, wrapping the banana by manual such an old method that takes time to complete the handling. Using banana fruit wrappers with sprayer saving time and energy which we complete the works in a mean time. In conclusion, auto banana wrapping can improve the management of handling and organic spraying is an agricultural method that adheres to the principles of sustainable development. It's an agricultural production method that does not utilize pesticides, chemical fertilizers, industrial synthetic products, or genetically modified organisms.

Keywords: organic spraying, homemade, banana fruit wrappers with sprayer.

INTRODUCTION

Banana (*Musa spp*) is a popular crop among farmers in Malaysia. The reported area of banana plantations includes 31,500 hectares with an estimated yield of 340,000 metric tons (Department of Agriculture 2011). The main areas of banana cultivation are in Selangor, Perak, Johor, Pahang, and Sabah. Most banana plantations are grown commercially using tissue culture. Bananas that are attacked by pests will affect the physical quality of the bananas. Wrapping and Spraying is a method used to help protect bananas from pest attacks. So, it is important to wrap banana bunches and spray organic pesticide to provide banana protection from enemies and pests, improve the quality of the fruit and ultimately provide optimal returns. We need to use organic pesticide because it is effective in managing resistance to pesticides and does not pollute the environment and does not harm human health. Bunches of bananas that have been suitable for wrapping are bunches that are suitable after the heart of the banana is cut or in other words when the formation of the banana radius has been perfect. How to wrap banana bunches starts by inserting banana bunch wrapping plastic that can be obtained from agricultural stores. Most banana bunch wrapping plastic is blue in color, rather thick, strong to resist tearing when blown by strong winds. If the bunches are not wrapped, they will be exposed to pests such as fruit flies (*Bactocera spp)*, birds, squirrels and so on. The base of the umbilical cord needs to be tied tightly so that the plastic does not easily come off on its own or when blown by the wind. To do the wrapping and spraying work, we have made an innovation tool that makes it easier and no longer needs to use a ladder. This tool not only help wrap fruit but it can also spray pesticide or fertilizer. The tool is called Auto Banana Fruit Wrapper with Sprayer.

Banana Blue Wrapping Plastic. Bananas will be wrapped as a whole bunch of fruit with plastic wrap and then tied tightly so that no pest will attack. The wrapping plastic include some air hole for the banana fruit grow well. Organic Sprayer. The sprayer uses organic ingredients such as lemongrass, kaffir lime leaves, water, andsoap. These ingredients will be finely ground and filtered to separate the water and the dregs. Plastic wrap aids in the containment of ethylene gas, which bananas naturally produce as they ripen. When the fruit is not wrapped in plastic, the ethylene gas spreads to other parts of the fruit, causing it to ripen faster. Pesticides are used to control various banana pests, including Black Sigatoka, which can reduce banana yields by 35% to 50% in banana plantations. The physical observations were made once every 2 week. So organic pesticides have effects that are specific to certain pests. Only targeted pests will be affected.

MATERIAL AND METHOD

Banana Blue Wrapping Plastic

Bananas will be wrapped as a whole bunch of fruit with plastic wrap and then tied tightly so that no pest will attack. The wrapping plastic include some air hole for the banana fruit grow well. For banana fruit, full shade gives a dull yellow peel colour whereas partial shade leads to a bright yellow peel colour. Low light intensity retards development of carotenoids (Caussiol, 2001). An important determinant of banana fruit quality is row spacing and the associated plant population. Plant density consists of selecting the most vigorous suckers located in the best places and eliminating undesirable ones. This method can increase the number of leaf and fruits exposed to sunlight. Removal of leaf can also help prevent fruit scaring. Bunch thinning reduces inter- fruit competition and improves fruit size.

Organic Sprayer

The sprayer uses organic ingredients such as lemongrass, kaffir lime leaves, water, and soap. These ingredients will be finely ground and filtered to separate the water and the dregs. Then, the filtered water is ready to apply on the banana fruit or leaves, and the dregs can be placed at the base of the banana tree. This organic pesticide can prevent banana fruit from insect attacks such as fruit flies, birds, squirrels, bacteria (*ralstonia solanacerum*) and others.

RESULTS AND DISCUSSION

Based on the observation,there is the different effectiveness between using Auto Banana Wrapper and using manual method. The different shows in aspects of effectiveness such as time and energy. For organic sprayer , we observed based on causes by using organic sprayer and pesticides. The differences between Auto Banana Wrapper with using manual method and Organic sprayer with pesticides are shown in table 1 and table 2 below.

Table 1: Banana Fruits Wrapper

Effectiveness	Auto Banana Wrapper	Manual
Time	< 1 minute	> 5 Minutes
Energy	Less	More

Table 2 : Organic Sprayer

Causes	Organic Sprayer	Pesticides
Harmful	No	Yes
Environmental friendly	Yes	No

Plastic wrap aids in the containment of ethylene gas, which bananas naturally produce as they ripen. When the fruit is not wrapped in plastic, the ethylene gas spreads to other parts of the fruit, causing it to ripen faster. In essence, you trap the gas to prevent it from hastening the cooking process. Peeling bananas serves the same purpose. When bananas are linked together by their stems, bananas that are further along in the ripening process will spread their ethylene gas to those that are connected to them. This method will not completely prevent your bananas from ripening, but it will slow the process and may save a lot of bananas from going to waste. Pesticides are used to control various banana pests, including black sigatoka, which can reduce banana yields by 35% to 50% in banana plantations. Contamination from the intensive use of agrochemical in monoculture production is still a problem. The physical observations were made once every 2 week. So organic pesticides have effects that are specific to certain pests. Only targeted pests will be affected.

1. CONCLUSION

In Malaysia poor management in handling of banana causes the postharvest losses because of the pest. Banana is one of the most common and widely grown fruit crops. It is a delicate and highly perishable fruit, and the production is subject to poor handling and storage practices and postharvest diseases. As a result, banana fruits wrapper and sprayer can properly protect banana's condition. Plus, using an organic as the pesticides as double protection to maintain the quality may easy the banana ripe in the proper way Traditionally, farmers use knapsack to protect banana from the pest will loss of their time instead of the banana fruits wrapper that easily refill plus saving time and energy. Finally, there is a need to conduct research not only on preharvest but also on postharvest approaches to reduce losses and maintain quality.

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