1ST EDITION

E-EXTENDED
ABSTRACT

INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

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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) (1st 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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ORGANIC COCO PEAT POT SUPLEMENTED WITH BLACK SOLDIER FRASS (BSFF)

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ABSTRACT - The purpose of this research was to generate innovations that are connected to the process that occurs post harvesting. Examine the results of using coco peat as the primary component in the production of organic pots, along with black soldier fly frass, and report your findings (BSFF). When compared to the use of NPK fertilisers in plants, previous research has shown that the use of (BSFF) may result in an increase in biomass. The usage of coco peat as a growing medium for plants may assist in keeping the soil's moisture level stable.

Keywords: Cocoa peat waste, black soldier fly frass (BSFF), pot

INTRODUCTION

Pots are now one of the necessary obligations for someone who wants to plant, no matter on a large or small scale. In the market today there are many types of pots sold, and most of these pots are not environmentally friendly and user-friendly who do not have time to take care of their plants. Most people out there are interested in gardening but don't have enough time to take care of their plants, due to work or other unavoidable circumstances. Apart from that, with the development of the agricultural industry in Malaysia, many issues have arisen related to waste from the post-harvest process, especially coconuts.

Waste from coconuts such as coir, coconut shell, shell and others, there are not many end products that can be produced. This can be solved by turning this waste into Black soldier fly frass (BSFF). (BSFF) is a waste product from Black soldier fly larvae that decompose organic waste. The larvae of black soldier flies (BSFL) eat a wide range of organic waste, including dung, rice straw, food scraps, distillers' grains, faeces, animal offal, and kitchen garbage. They create waste known as frass and lower the weight of the waste by at least 50%. From here came the idea to make an innovation, produce organic coco peat pot supplemented with black soldier frass (BSFF).

MATERIAL AND METHOD

Materials needed to produce organic pots

Coco peat is available at a nearby convenience store. The amount of coco peat used to produce this pot is 200g. (BSFF) is available on the online purchase platform that is shopee. According to previous studies, the amount (BSFF) used is as much as 23.3g because it gives the best results. For tapioca starch, it will be used as a binder or glue to hold all the ingredients in the pot. The amount of tapioca starch that will be used is 100g. A pot with a diameter of 15 cm and a height of 10 cm is used as a pot mold.

Figure 1: Materials Need to Make The Organic Pot

Organic pot production method

Weigh all the ingredients according to the measurement first. Put the tapioca starch into the container and mix it together with 50ml of hot water. Stir the tapioca starch mixture until it becomes clear in colour and becomes viscous. Next, add the coco peat and mix until combined and leave for 5 minutes to cool the mixture. Then add BSFF with the mixture and mix well. Prepare the pot mold for the printing process, the mixture will be put into the mold, flattened according to the pot mold and left in the mold for 12 hours. After 12 hours remove the printed mixture and dry it in the sun for 12 hours. Finally, the packing process is done, the uneven coco peat will be packed, and the pot is ready to use.

Figure 2: Process Making the Pot

RESULT AND DISCUSSION

The use of plastic-based materials is undeniably beneficial, especially in terms of cost because it is cheaper. But it can have a bad effect on the environment for a long period of time as well as a short one. Making this organic pot that use organic materials, to some extent can give a good effect on the environment even if it is not significant. Coconut coir needs a short period of time to decompose compared to plastic. The use of cocoa peat as the main ingredient in the manufacture of the pot can replaces materials that are not environmentally friendly such as plastic.

In addition, the use of BSFF as an organic fertilizer can help reduce the disposal of organic waste, this is because BSFL helps to break down organic waste such as livestock farm waste, kitchen waste and other organic waste into fertilizer. The BSFL feeds voraciously on a variety of organic wastes, including manure, rice straw, food waste, distillers' grains, faecal sludge, animal offal, and kitchen waste; when the weight of these wastes is reduced by at least 50%, a residue known as frass is produced. This residue can be used as compost because it contains

nutrients like phosphorus (60% to 70%) and nitrogen (30% to 50%). While BSFL includes about 40% protein and 35% fat in a dry matter, making it a particularly good feed for fish and fowl (Kabir Ahmad et al., n.d.).
Based on previous studies, it is proven that the use of (BSFF) as an organic fertilizer for trees can improve quality and yield. This is because BSFF contains macronutrients and micronutrients that are necessary for trees to grow healthily. With a tendency towards alkaline pH values, limited short- term nitrogen availability, and high dry matter contents that result in high macronutrient contents when compared to typical manures, BSF frass is a promising organic compound fertilizer (Gärttling & Schulz, 2022). According to a study conducted by (Agustiyani et al., 2021) found the wet weight of the upper plants (canopy) and roots was strongly influenced by the application of compost and BSF frass.
Other studies also show that BSFF can help the use of coco peat as the main ingredient in making these pots can help maintain moisture in the soil, this is because coco peat is able to absorb and store water to supply the plant. Coco peat has the unique quality of storing water for an extended period and permitting good aeration around the roots of plants grown over it ("Studies on the Moisture Retention Capacity of Coir Pith, as a Function of Time," 2014).

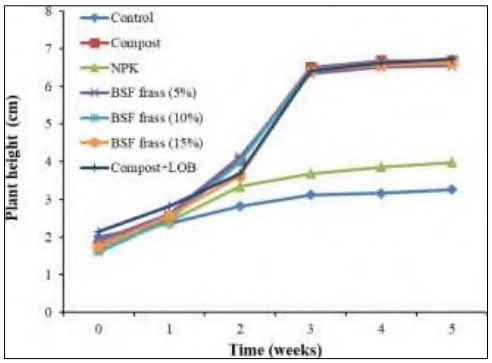

Figure 3: The Results of The Hight of Pak Choy Using BSF

Figure 4: Adult BSFigure 5: BSF larvae

Figure 6: BSF Frass Application

CONCLUSION

This innovation project, we are able to observe how important it is to process waste, particularly waste that is a by-product of the post-harvest process. This is because processing waste results in innovation, which results in a new end product. By carrying out these sorts of processing, we may contribute to the reduction of waste-related issues, particularly those of an environmental nature. It is anticipated that this procedure will also have a role in the occurrence of additional post-harvest-related issues.

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