

2ND EDITION

E-EXTENDED
ABSTRACT

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



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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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LATEX NANO SIFTER

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ABSTRACT - Rubber tree has been cultivated for more than a centennial in Malaysia. However, there is a problem that rubber farmer had to deal with ever since the early cultivation of rubber. The rubber scrap or latex that are collected from the field need to be filtered and sifted first to ensure there is no residues and unwanted things. Hence, we made an innovation named 'latex nano-sifter' that has the ability to filter out all residues from latex and provide clean latex or rubber scrap that can be directly processed after collection. This product will facilitate farmer during harvesting and processing of rubber scrap or latex.

Keywords: Rubber, Latex, Nano, Technology, Process.

INTRODUCTION

Natural rubber is produced worldwide from the commodity crop rubber (*Hevea brasiliensis*) (Priyadarshan, 2017). The automotive industry consumes more than 60% of natural rubber, primarily for the production of tyres (Carr, 2012). Southeast Asian nations are the main producers of rubber due to the favourable climatic conditions for rubber trees. Southeast Asia's contribution to the world's rubber output started to rise dramatically between 1912 and the end of World War I in 1918, and by the 1930s, Southeast Asia was responsible for 98% of the world's rubber production (Hurley, 1981). Based on the top producing nations, worldwide rubber production increased by 1.4 billion tonnes between 1990 and 2019, growing by an average of 3% year. However, production fell by 46% in Malaysia, from 1.3 million tonnes to 0.6 million tonnes, during the same time period (MRB, 2020). In order to meet the industry's rising demand, Malaysian Rubber Board (MRB) has paid particular emphasis to improving production through breeding and innovative latex harvesting techniques. Additionally, in order to increase productivity and guarantee favourable net returns from rubber manufacturing, the MRB has developed new clones and technologies (MRB, 2020). While this paper focus on the innovation of product to avoid any waste on rubber when tapping process occurs. Dense of latex usually left residues in collecting cup. To avoid it from happen latex nano sifter is a collecting rubber cup that will be made from silicon coating will ensure that fresh latex will not left any residues in the cup. Meanwhile the cup will be provided with filter to ensure that the latex is not mixed with debris.

MATERIAL AND METHOD

The material used to make the sifter for filtering the residue from latex collection is galvanized steel. As we know, galvanized steel has a high corrosion resistant from red rust because of the presence of zinc which acts as a barrier to prevent the steel from being exposed towards oxygen and water which led to rust. Due to that, this material is suitable to be used since this innovation product will be exposed to rain. Next, the collection cup part is made of plastic because of low cost and it is durable. After that, the inside of the cup will be coated using Nano-coating spray.

Nano coating is defined as the process of applying a layer of surface which will helps to repel the dry particles as well as water, dirt and oil. The method that will be used in the making of this product is by using Nano-coating spray. The spray contains Silicone Dioxide (SiO₂) which is derives from glass and has grayish in colour. This chemical will be sprayed on the inside of the collection cup as well as the sifter. This is because it will help to prevent residue formation of the latex around the cup.

RESULTS AND DISCUSSION

A lot of residues, unwanted things and small particles are often mixed together with the latex or rubber scrap. Improper sifting and filtering process of the particles will reduce the quality and price of the rubber end product. Hence, with the use of nano filter that is equipped to the latex cup, the residues and small particles can be filtered and strained while the latex is flowing into the rubber cup. This will ease the filtering process and increase efficiency during rubber processing stage.

IMAGE AND FIGURE

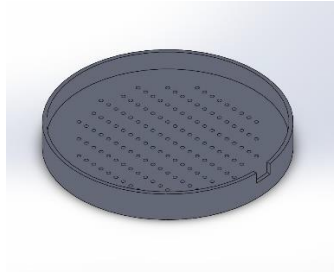


Figure 1: Galvanized steel sifter



Figure 2: Plastic cup sprayed with Nano coating

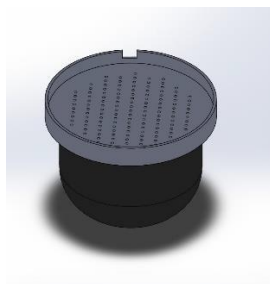


Figure 3: Latex Nano Sifter

CONCLUSION

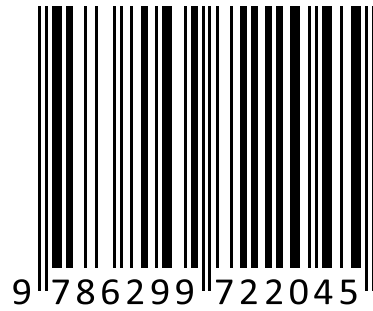
As a conclusion, our innovation product that we intend to create is named as 'Latex Nano Sifter'. The purpose of the designation of this product is because of the problem highlighted by the rubber smallholder and farmer regarding the collection of latex which contains residue and unwanted things. The residues contained causes contamination which affects the quality of the latex. Last but not least, we hope that the production of 'Latex nano sifter' will help our customer especially towards the farmer for a better handling in latex collection and fulfill their needs.

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