

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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Program Technical		Khawarizmi Mohd Aziz

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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>

## TABLE OF CONTENTS

1.	COPYRIGHT .....	ii
2.	ORGANIZING COMMITTEE.....	iii
3.	STUDENT COMMITTEE.....	iv
4.	EDITORIAL BOARD .....	v
5.	ABOUT FACULTY OF PLANTATION AND AGROTECHNOLOGY.....	vi
6.	PREFACE.....	vii
7.	TABLE OF CONTENTS .....	ix
8.	GOLD AWARD .....	11
9.	POTENTIAL OF COCOA POD AS SUPPLEMENT FOR SEED GERMINATION MEDIUM OF DWARF PAK CHOY ( <i>Brassica rapa</i> ).....	12
10.	UTILIZATION OF RICE STRAW AS A PAPER.....	16
11.	PRODUCTS MADE FROM PINEAPPLE LEAVES .....	20
12.	CSAVA PULL .....	23
13.	LATEX NANO SIFTER.....	25
14.	BANANA BARK FIRE STARTER .....	28
15.	PORTABLE FLOWER POT .....	32
16.	PRODUCTION OF PINEAPPLE BOBA FROM PINEAPPLE PUREE: MD2 VARIETIES, BUBBLE PINE.....	34
17.	AUTO BANANA WRAPPER WITH SPRAYER .....	44
18.	ORGANIC FOOD PRESERVATIVES.....	47
19.	GLUTINOUS RICE BALL FILLED WITH BANANA AND CHOCOLATE AND COATED WITH NUTS .....	51
20.	SILVER .....	54
21.	INNOVATION TAPPING MACHINE.....	55
22.	FOOD CONTAINER BY CORN STARCH .....	61
23.	ERGONOMIC FERTILIZER BAG.....	65
24.	SUPPLEMENT OF CORN SILK.....	68
25.	SOIL CONDITIONER DERIVED FROM BANANA STEM .....	72
26.	BIODEGRADABLE PLASTIC BAG FROM CORN STARCH.....	75
27.	USED OF SEMI-MANUAL HARVESTER IN HARVESTING CASSAVA.....	81
28.	FRUIT HANDLING AND ERGONOMIC PRACTICES IN FRUIT INDUSTRY .....	84
29.	BEE HIVE HEATER.....	87
30.	LUFFA ( <i>Luffa cylindrica</i> ) AS A MATERIAL FOR SHOES OR SLIPPER MIDSOLE .....	93
31.	MUSHROOM BLOCK FROM CRUDE PALM OIL (CPO) DREGS.....	97



32.	BRONZE.....	100
33.	OIL PALM MOTORIZED CUTTER.....	101
34.	DEVELOPMENT OF PLANT-BASED MEAT FROM JACKFRUIT ( <i>Artocarpus heterophyllus, Lam</i> ) .....	103

# INNOVATION TAPPING MACHINE

Ahmad Firdaus, Hadri<sup>1</sup>, Mohamad Faiz Aiman, Ahmad Saharin<sup>1</sup>, Muhammad Faez, Othman<sup>1</sup>

<sup>1</sup> Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA (UiTM), Melaka, Malaysia

Corresponding author e-mail: [muhammadfaezothman@yahoo.com](mailto:muhammadfaezothman@yahoo.com)

**ABSTRACT** - Intelligent technologies have evolved quickly in the last ten years, especially as a result of advancements in automated control, which have had a substantial influence on forestry, animal husbandry, and the administration of farms in the future. However, natural rubber plantations have low levels of production and management mechanization, particularly because the techniques of tapping still primarily rely on manpower. The automation of rubber-tapping operations has evolved as a result of the shortage of trained rubber tappers and the rise in labor expenses. To increase the potential productivity of natural rubber, applying new intelligent agriculture technology might be an alternative.

**Keywords:** Rubber tapper, Motorized rubber tapping, tapping cycle time

## INTRODUCTION

Natural rubber produced by *Hevea Brasiliense* trees, which are widely cultivated in Southeast Asia, America, and Western America, is superior than synthetic rubber generated from polyreactions of petroleum by products (Muhammad Faez Md Kamil et al, 2020). The design and development of motorized rubber tapping and the reduction of tap process time and energy consumption are key factors in the success of motorized tapping systems. Additionally, the project is concentrating on smallholders who are over 50 years old. They could save energy and run the tap more quickly thanks to it. Reality Smallholders in the rubber industry in Malaysia are retirees who live in villages. 36.6% of workers are between the ages of 51 and 60, 10.8% are beyond the age of 71, and 1.1% are between the ages of 30 and 24. ( Hairol Anuar, Nor Azli, Mansor, Norazmi, 2020). This is taken from their journal of critical review, to which 1501 participants' questionnaire responses were submitted.

## Objective




1. To develop new innovation rubber tapping using a motorized system
2. To identify the efficiency of the innovation machine to the workers.

## MATERIAL AND METHOD

In the process of making the prototype, there are several steps to make the machine works. The machine is divided into two parts which is the body and the implement. The body consists a few components including battery, motor, gear and wire. The other part which is the implement that are the blade.

The body is taken from a multipurpose oscillating machine. Originally, the machine is to do the any kind of work that need motion and movement. Therefore, the machine is used in this innovative research to build the motorized rubber tapper. The blade is made from steel. The material is chosen because it is easier to shape it and unlikely to be broken. The blade is weld from two pieces of steel and the edge is sharpen to make it possible to tap the rubber tree.

**Table 1: Material requirement**

NO	TYPE MATERIAL	QUANTITY
1.	 Battery 18v	1
2.	 Motor RPM 16000	1
3.	 Tapping Blade	1
4.	 Wires	4



**Figure 4: Process Making Innovation Tapping Machine (Before)**



**Figure 5: Process Making Innovation Tapping Machine (After)**

## DISCUSSION

Based on the result and the experiment in making the prototype of the tapping machine, it shows that the motorized rubber tapper is functioning well. The machine has few different speed to match the skill of the user/operator and as well the condition of the rubber tree. The blade that is used at the machine is working quite good in tapping the bark of the tree.

However, there are few problems found when testing the product. Firstly, the vibration that the machines produce is quite a problem. It is because it can affect the work quality of the rubber tapper process. Second problem found is the battery cannot last long. If bigger battery is used, it can make the machine heavier and will affect the person using it.

Despite the problems that occur when using this machine, it can be used and ready to be given some improvement before it ready to enter the market.

## CONCLUSION

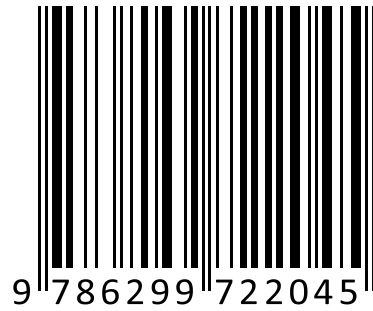
As a conclusion, motorized rubber tapping is still under progress to make sure the tapper comfort with the technology as simplify them to use motorized tapping compare to the traditional method. This method need to expand more in rubber application to identify more problem that should become the solution in future.

## REFERENCES

- [1] Joseph, P.V. 2012. Automated rubber tapping machine - auto tapper. Patent No.WO2012017450A2.
- [2] Available: <http://www.google.com/patents/WO2012017450A2>
- [3] Huang, H., Li, M., Cui, Z. De., and Zhang, J. 2011. Several measures to improve the mechanical properties of hand-pushing tapping knives. Adv. Mate. Res. 287-290: 1424–1427
- [4] Thomas, K.K. and Panikkar, A.O.N. 2000. Indian rubber plantation industry: genesis and development. In: George, P.J. and Jacob, C.K. (Eds.), Natural Rubber: Agro-management and crop processing. Rubber Research Institute of India, Kottayam, India, pp.1-19.

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