

4TH 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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LOOSE FRUITS REMOVER

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ABSTRACT- Oil palm loose fruits (LF) on the ground indicate the Fresh Fruit Bunch (FFB) is ready to harvest. LF fall on the ground while harvesting, and these fruits must be gathered to maximize oil content before processing. After a century of commercial planting in Malaysia, LF collection has still not changed much. The LF are hand-picked or collected and placed in a bag or container or trailer. The worker has pain from frequent bending. From mechanical picking mechanisms to vacuum-type collecting devices, numerous instruments and equipment were created to reduce this difficulty and boost collection productivity. As a result, the Loose Fruits Remover will assist LF collecting. The overripe fruit bunches are brought in and stored in the Loose Fruit Remover, where the LF is extracted which, the machine powered by fuel. In addition, the Loose Fruits Remover will help you save time and labor energy since it can quickly and easily remove LF from overripe fruit bunches of varying sizes. The extraction or collection process utilizing the Loose Fruits Remover will take 20-30 seconds. The goal of this innovation is to make the process of collecting loose fruits shorter while also making it simpler and less labor intensive for the user.

Keywords: oil palm, loose fruits collection, fresh fruit bunch, loose fruits remover, machine

INTRODUCTION

Toward a significant extent, palm oil is exported from Malaysia, which is the world's second-largest producer of palm oil. Palm oil producers and ranchers in Malaysia are advocated for by the Malaysian Palm Oil Council (MPOC). 40% of Malaysia's Palm Oil plantations are owned or cultivated by small farmers. One of the main reasons why poverty in Malaysia has decreased from 50% in the 1960s to less than 5% now is the production of palm oil. More than 570,000 people are directly employed in the palm oil business, while a further 290,000 are working in related industries. That is why it is crucial to enhance current agricultural producing practices. (Malaysian Palm Oil Board)

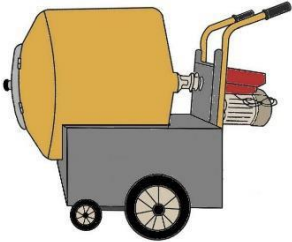
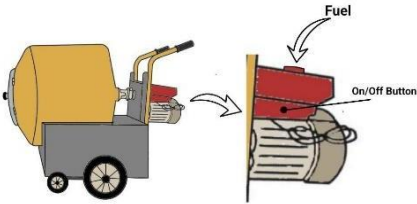
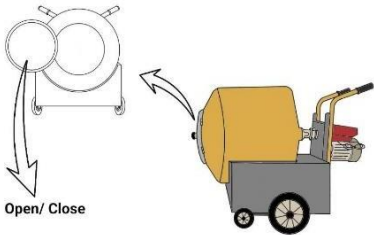
Since they have the most oil, oil palm loose need to be collected. The new technology changes the way oil palm loose fruits are picked in the field. Previously, this was done by hand, and the picked fruits were put into basket or bags. This method is not only hard to do and takes a long time, but it is also bland. On average, it took the worker about 28% of the time it took to harvest to pick up loose fruit. The invention is a practical solution for the oil palm industry, which collects loose fruits by hand and needs a cost-effective, mechanized loose fruit collection system straight away. The technology makes it easier to pick up loose fruits, which usually have more oil than most of the fruits that are still attached to the bunches. To simplify the process of collecting loose fruits simpler and easier, we developed the Loose Fruits Remover. The most crucial is the outcomes is efficient and satisfied the users.

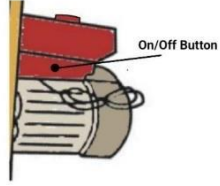
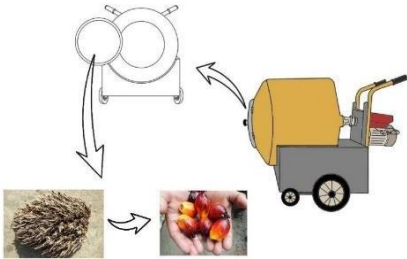

MATERIAL AND METHOD

The material that used in producing this innovation are: -

1. Engine
 - Brand: Hisaki
 - Engine type: Hisaki 7.0hp,
 - Horsepower: 7HP Petrol Engine
 - Engine type: 4-stroke, single cylinder, air cooling, OHV, horizontal
 - Fuel tank capacity: 4.2 L
 - Oil capacity: 0.6 L
 - Starting System: Button on/off
 - Capacity Drum Steel Plate Per Bunches: 3

- Max. Output (hp/rpm): 7/4000
- 2. Drum Steel Plate
 - Thickness (Drum Steel Plate): Side 3.5mm Base 3.5mm
 - Transmission: From driving shaft to drum by bevel gear
 - Gross Weight: 60kg
- 3. Tyres
 - Cast iron wheel with polyurethane tyres
 - Shielded roller hub bearing
 - Load Weight 300kg
 - Hub Material: Iron Core
 - Weight :4.5 kg per pc
 - Wheel Diameter: 150mm / 6"
 - Load Height: 190mm

Picture Demonstration	Description Of Method
	<p>1. The Loose fruits Remover Machine placed in ready mode. Flat area should be recommended.</p>
	<p>2. Petrol fuel filled to fuel tank not more than 4.2 L.</p>
	<p>3. Open the drum steel plate lid and put in 3 bunches that has loose fruit on it and after that close the drum steel plate and lock the lid.</p>

	<p>4. Switch on the button start spinning and wait for 20-30 second. After done, push the switch off button to make the machine stop and open the drum steel plate.</p>
	<p>5. Remove the 3 bunches from the drum steel plate and by using hand, collect all the loose fruit and put into the prepared sack.</p>
	<p>6. Repeat the step 3 to 5 until no more loose fruit left on bunches that over ripe.</p>

RESULTS AND DISCUSSION

Base on our discussion, it was found that loose fruits removal machine helps farmers and smallholder to remove looses fruit from over ripe bunches of oil palm. This not only help farmer to reduce their time consuming on harvesting practice but also can be one of component used in plantation to fasting their activity in term of collecting loose fruits of oil palm. Compared to manual collecting, this innovation provided opportunity to smallholder and farmers to increase their yield through collecting more looses fruits of oil palm in over ripe bunches. This machine capable to collect loose fruit in 3 bunches of over ripe oil palm around 20-30 second thus in hour their can finish around 40 bunches can be done. In addition, this innovation also can reduce energy requirement and human power to collect loose fruit due to implementation on machine rather than manual by hand. Time consuming reduce and easy to use make advantage to the owner of plantation and farmer in oil palm.

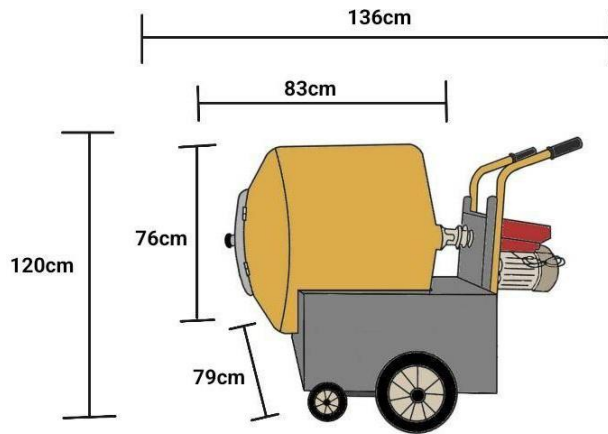


Image 1: Measurement of Loose Fruits Remover

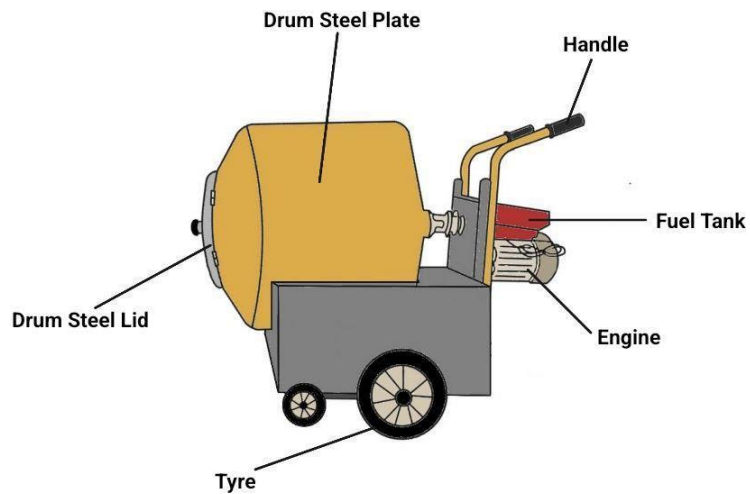


Image 2: Part of Loose Fruits Remover

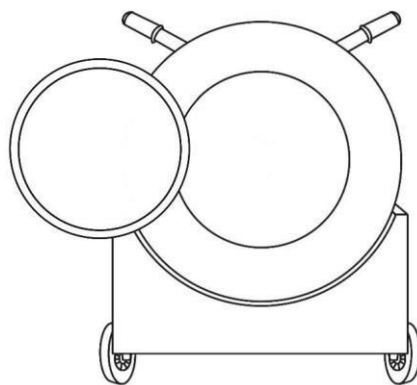


Image 3: Front View of Loose Fruits Remover

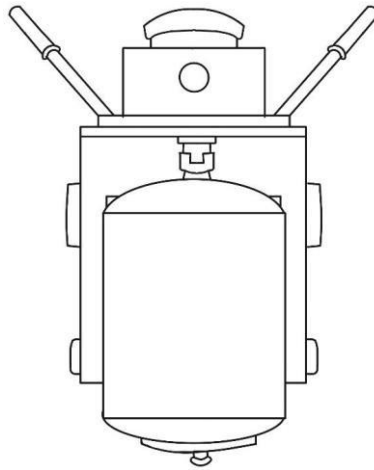


Image 4: Upper View of Loose Fruits Remover

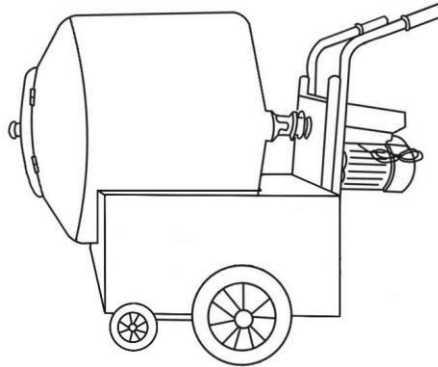


Image 5: Side View of Loose Fruits Remover

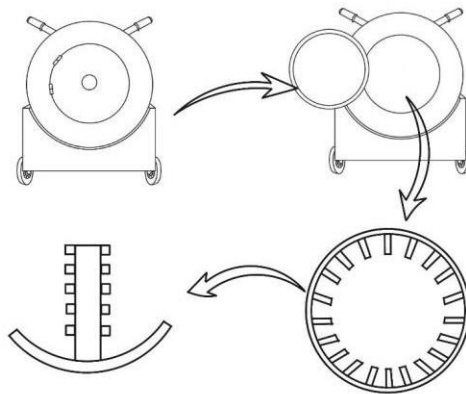


Image 6: Inside View of Drum Steel Plate

PART	COST
ENGINE	RM550
DRUM STEEL PLATE	RM600
TYRE	RM55
OTHER STEEL COMPONENT	RM500
TOTAL	RM1705
SELLING PRICE	RM2000

Table 1: Cost of Product

CONCLUSION

A conclusion, this innovation very important to boost our oil palm yield and economic through fully utilized loose fruit that stay on over ripe oil palm bunches. Furthermore, this innovation give a lot of advantage in term of time and energy consuming to all farmer, smallholder and plantation ownership in oil palm industry. In my opinion, Malaysia industry should focus on Research and Development R&D in term of engineering mechanization to preventing hire more labour that led to high cost of wages and salary. This innovation very useful to all of us and I hope Malaysia can be a nation that prioritize technology and acknowledge by another country that has skill full/ expert on R&D.

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