

3rd 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 Logistic		Muhammad Nuruddin Mohd Nor
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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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TECHNOLOGY OF SCAN REMINDER PRO IN COOLING ROOM

Mohammad Afif Akma bin Azmi¹, Siti Nur Shahida², Nur Laila Adila binti Che Abdul Majid³

¹Faculty of Plantation & Agrotechnology, UiTM Jasin, Malacca ² Faculty of Plantation & Agrotechnology, UiTM Jasin, Malacca ³ Faculty of Plantation & Agrotechnology, UiTM Jasin, Malacca

Corresponding author e-mail: stnurshahida@gmail.com

ABSTRACT - The harvested fruit should be stored in a cooling room to prevent the fruit from rotting. The purpose of this study is to examine the easy way workers operate the cooling room without any problems. Scan Reminder Pro is one of the technologies created from the combination of QR code and Calendar Reminder. It will also be automatically connected to an Android TV set up in front of the cooling room to give reminders about the temperature, the amount of fruit according to the maturity index, and the date the fruit will be removed from the cooling room. It makes it easier for workers to record the entry and exit dates of fruit stored in the cooling room. When the employee scans the QR code that has been placed on the side of the fruit collection basket, the data will be saved and will automatically be used as a reminder in the employee's phone. There are a few parties after the fruit is harvested and put into the cooling room without recording the fruit maturity index or mixing ripe and unripe fruit. In addition, some are not aware of the temperature or the date the fruit enters the cooling room. This step ensures that workers will know better the date the fruit is taken out of the cooling room. This technology can make it easier for workers in handling matters and can reduce damage to fruit if time management can be overcome well.

Keywords: Cooling room, Temperature, Maturity Fruit, Calendar Reminder, and QR code.

INTRODUCTION

Mangifera indica, better known as mango. The *Mangifera indica* tree grows quickly and upright and has a broad or rounded canopy. Dry weather during the flowering period is the best time for fruit production. Mango trees are best suited for areas with varying dry periods (2-4 months) and temperatures of 24-30°C. Mango peel and fiber account for 7-24% of the total weight of the fruit. Millions of tons of solid waste are generated by the mango processing business, accounting for 40-50% of the raw material.[1] So, to reduce mango products, our SS team is considering developing Scan Reminder Pro which can be used during pre-cooling in the cold room. Scan Reminder Pro is one of the technologies created from the combination of QR code and Calendar Reminder. It will also be automatically connected to an Android TV set up in front of the cooling room to give reminders about the temperature, the amount of fruit according to the maturity index, and the date the fruit will be taken out of the cooling room.

A functioning packing house should include running water, power, places to wash and dry fruit, and storage space. The fruits will be processed in several steps, including selection, washing, fungal treatment, drying, grading, labeling, packaging, and temporary storage. Picked mangoes can be stored at 9 - 10°C for 4 to 9 weeks, while ripe fruit can be stored at 18-21°C for 4 to 7 days.[2] So, using our Scan Reminder Pro, we can input and output information about mangoes, such as how long and how many fruits have been kept in cold storage. All data stored in our SS app is available for download on Android and iOS. So, the scope of our study is to help the manager to know the profit easily and reduce the wastage of mangoes.

MATERIAL AND METHOD

After the mangoes are harvested, the results are put into fruit collection containers for the cleaning and sorting process. Fruits will be cleaned of dirt. Unnecessary stalks and leaves should be removed so as not to damage other good fruits. Diseased fruit will be thrown away and good ones will be separated according to the ripeness index which is from unripe fruit, semi-ripe fruit, and ripe fruit. It is easier when it is separated according to maturity when put in the cooling room.

Separation and Grading of fruit according to maturity

Mangoes that have been harvested are separated according to the degree of maturity. Changes in the density or specific gravity of fruit during growth and fruit formation are related to fruit maturity. Fruit density can be measured using the flotation method by floating the fruit in water. Submerged fruits have a density greater than one and are considered ripe, while unripe fruits have a density of less than one and rise to the surface of the water. Ripe fruit can then be separated to the degree of maturity by floating the fruit in a brine solution (sodium chloride) at different concentrations [3] (Table 1).

Group of mature	In the water	In the brine solution
1%	2%	3%
Mature 1	Rise	Rise
Mature 2	Fall	Rise
Mature 3	Fall	Rise

Table 1. Grading Of Fruit Maturity

Mature 1: Unmatured

Mature 2: Semi-ripe

Mature 3: Matured

Scan Reminder Pro

Scan the QR code provided on the side of the fruit collection basket that has been sorted according to the set maturity index before being put into the cooling room. The employee who handles the fruit to enter the cooling room must fill out a form when scanning the QR Code. The purpose is to record the date of entry and exit of the fruit from the cooling room. Using a new technology method, Pro Scan Record, can store data and record the mango maturity index, temperature, and total fruit in the cooling room. This technology will alert workers to know when they need to take the fruit out of the cooling room. This system will also be automatically channeled to Android TV to display all reminders and information.

Storage

Unripe-picked mangoes can be stored for 4 to 9 weeks at a temperature of 9-10°C, while ripe fruit can be stored for 4 to 7 days at a temperature of 18-21°C. It needs to record in the QR Code scanner provided at the fruit collection basket.

RESULTS AND DISCUSSION

The result of the use of Scan Reminder Pro, for the temperature and total fruit according to the ripeness index in the cooling room can be recorded. Then all notifications will be shown on the Android TV in front of the cooling room. Employees can also check the date the fruit was put into the cooling room by simply scanning the QR Code that has been provided on the side of the fruit collection container. All information about the fruit maturity index will be shown. Next, a reminder will be given directly to the mobile phone of the employee who handles the entry of fruit storage into the cooling room. Android TV will also automatically give reminders. When finished bringing out the fruit, the employee will scan the QR Code to place the total fruit remaining in the cooling room. Finally, it will connect to Android TV to save data on the amount of fruit left in the cooling room.



Figure 1. Scan QR Code for information



Figure 2. Information is automatically shown on Android tv

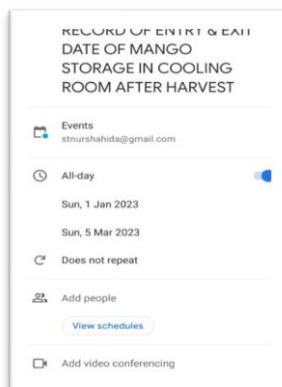


Figure 3. Calendar Reminder at handphone employees

Figure 4. Form for employees to fill in all information

Index of maturity	Temperature	Entry	Exit	Total
Unmatured	9-10°C	1 January 2023	1 February 2023	30 Fruit of Mango
Matured	18-21°C	1 January 2023	5 January 2023	30 Fruit of Mango

Table 2. Data of the fruit in the cooling room

CONCLUSION

In conclusion, the use of Pro Scan Record technology is proven to help workers in facilitating the handling of fruit stored in the cooling room. Without realizing it, this technology can have a positive effect on good fruit care according to the fruit maturity index that has been separated. It can also help workers in reminding workers to bring out ripe enough fruit from the cooling room when using the reminder system from Pro Scan Record. Therefore, this technology should be highlighted by all entrepreneurs to avoid any management problems being solved.

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