

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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FRUIT HANDLING AND ERGONOMIC PRACTICES IN FRUIT INDUSTRY

Muhammad Imran, Roslan¹, Azeerul Zharif, Sarip², Muhammad Faris, Mohd Nor³

¹Faculty of Plantation and Agriculture (FPA), Universiti Teknologi MARA (UiTM), Malaysia

²Faculty of Plantation and Agriculture (FPA), Universiti Teknologi MARA (UiTM), Malaysia

³Faculty of Plantation and Agriculture (FPA), Universiti Teknologi MARA (UiTM), Malaysia

Corresponding author e-mail: farissnor013@gmail.com

ABSTRACT - Malaysia is a major producer of tropical fruits such as durian, mango, pineapple, banana, and papaya. The fruit industry is important to Malaysia's economy, with many farmers and businesses involved in production and export. Malaysia produces high-quality fruit that is in demand globally. Proper fruit harvesting and handling techniques are important for preserving the quality of the fruit. Back pain is common among agricultural workers due to the physical demands of the work. Factors that can contribute to back pain include heavy lifting, repetitive movements, and poor ergonomics. Agricultural workers can use proper lifting techniques and ergonomic equipment to help prevent back pain.

Keywords: Backpain, fruit harvesting, fruit industry, agricultural worker

INTRODUCTION

Fruit damage can occur due to various factors such as poor handling during transportation, storage, and distribution. In Malaysia, fruit damage may be caused by rough handling, exposure to extreme temperatures, and lack of proper packaging or storage facilities. These poor handling practices can result in physical damage to the fruit and reduced shelf life. To prevent fruit damage in Malaysia, it is important to follow proper handling procedures.

Ergonomics plays a significant role in fruit handling because it helps to ensure a safe and efficient work environment that is also comfortable and easy to use. By designing equipment and work spaces that are ergonomically sound, it is possible to reduce the risk of injuries and other health problems caused by repetitive motions and awkward postures. Ergonomic design can also improve productivity by making it easier and more comfortable for people to perform their tasks. In addition, by making new innovation in fruit handling during harvesting can increase quality of fruit and decrease back pain injury among the agriculture workers.

MATERIAL AND METHODS

JustLift used to handle the fruit works using a hydraulic that merges with a fruit lifting truck. A hydraulic lift truck, also known as a forklift, is a machine used to lift and move heavy materials in warehouses and other industrial settings. It has a hydraulic system that powers the lift mechanism and other functions of the truck. The main function of a hydraulic lift truck is to help workers efficiently and safely move large amounts of materials around a work area.

Materials

JustLift is made of a combination of metal and plastic components. The hydraulic system uses fluid to transmit power and generate motion, and it is made up of pumps, cylinders, hoses, and other components. Other materials used in the construction of a hydraulic lift truck may include tires, wiring, and electrical components, as well as fasteners, seals, and other hardware.

RESULTS AND DISCUSSION

There are several benefits to implementing good fruit handling practices and good ergonomic practices in the workplace. Good fruit handling practices, such as proper packaging, avoiding rough handling, and storing fruit at appropriate temperatures, can improve fruit quality and increase its shelf life. These practices can also lead to higher prices for the fruit as buyers are more likely to pay a premium for high-quality produce. In addition, good handling practices can reduce the risk of contamination and other health risks associated with fruit.

Good ergonomic practices in the workplace, such as designing equipment and workspaces that are ergonomically sound, can improve safety and increase productivity. When work environments are ergonomically designed, employees can work comfortably and accurately, leading to improved quality of work. In addition, employees are more likely to be satisfied with their jobs when they can work in an ergonomically sound environment, resulting in increased job satisfaction and retention. JustLift is an innovation that can be an effective way to help relieve back pain among agricultural workers and improve overall well-being and productivity. By implementing ergonomic equipment in the workplace, agricultural employers can help to ensure the health and safety of their workers.



Figure 1: Show the Design of Our Renovation (Just Lift



Figure 2: Show Activities of Post Harvesting That to Back Pain.

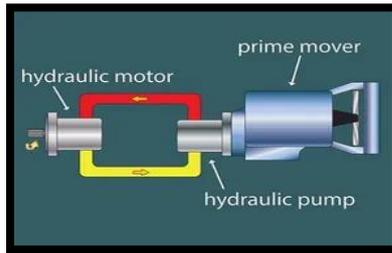


Figure 3: Show Hydraulic System That We Apply in Our Innovation

Table 1: Table Header

	Rarely (0–24%)	Sometimes (25–49%)	Usually (50%)	Often (51–74%)	Always (75–100%)	p-value [†]
1 Lifting or pushing and pulling heavy objects	1	0.963 (0.647–1.433)	1.243 (0.803–1.925)	1.259 (0.831–1.907)	1.288 (0.846–1.960)	0.509
2 Shoveling, pickaxing, and hammering	1	1.045 (0.733–1.489)	0.670 (0.377–1.188)	1.174 (0.700–2.970)	1.422 (0.837–2.417)	0.363
3 Using vibrating agricultural machinery	1	0.800 (0.530–1.207)	1.114 (0.707–1.755)	0.949 (0.589–1.528)	1.130 (0.712–1.793)	0.692
4 Repetitive use of particular body parts	1	0.650 (0.388–1.087)	0.840 (0.523–1.351)	1.400 (0.932–2.104)	1.515 (1.012–2.267)	0.002
5 Stretching or twisting the forearm	1	0.899 (0.568–1.425)	1.345 (0.890–2.035)	1.066 (0.696–1.632)	1.667 (1.112–2.498)	0.053
6 Constant elevation of the arm above the head	1	0.877 (0.566–1.361)	1.400 (0.914–2.144)	1.297 (0.841–1.999)	1.337 (0.891–2.007)	0.214
7 Bending, twisting, or reclining your back	1	0.607 (0.366–1.007)	1.246 (0.798–1.945)	1.103 (0.713–1.707)	1.527 (1.020–2.288)	0.003
8 Neck flexion or neck twisting	1	0.669 (0.417–1.073)	1.075 (0.704–1.641)	1.199 (0.789–1.823)	1.374 (0.931–2.028)	0.049
9 Kneeling and squatting on the ground	1	1.175 (0.771–1.791)	1.312 (0.850–2.026)	1.048 (0.676–1.625)	1.551 (1.045–2.300)	0.218
10 Using hands or knees to apply impact like a hammer	1	0.830 (0.563–1.223)	1.306 (0.819–2.083)	0.825 (0.439–1.551)	0.699 (0.340–1.436)	0.432
11 Uncomfortable posture on the ramp	1	0.762 (0.506–1.148)	1.099 (0.726–1.663)	1.028 (0.618–1.709)	0.955 (0.542–1.684)	0.693

CONCLUSION

To sum up, fruit handling is very important since it will determine either the company will face profit or loss and for sure will affect the belief of the customers in buying their own product afterwards. In addition, this came out product which is JustLift will surely helping the workers in handling the fruit properly and at once giving them the best working environment that can avoid any kind of accident and injury during handling the fruit in the field.

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