2ND EDITION

E-EXTENDED
ABSTRACT

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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ERGONOMIC FERTILIZER BAG

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ABSTRACT - An ergonomic fertilizer bag is one that minimizes back pain and prevents musculoskeletal disorders among workers during the fertilization process. This innovation is designed in the style of an ergonomic backpack and includes new features such as a herbal organic sponge that provides workers with extra comfort and acts as a heat absorber. We developed this ergonomic fertilizer bag and conducted research on it because it was not yet available on the market. According to a survey and experience on the plantation, the majority of workers prefer this ergonomic fertilizer bag to maintain their bodies health. For future action, this innovation must be addressed with other authorities.

Keywords: Ergonomic, Agriculture, Shoulder pain, Musculoskeletal disorders

INTRODUCTION

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Ergonomics is an applied science concerned with designing and arranging things people use so that they interact most efficiently and safely; defined by Merriam-Webster. The goal of the science of ergonomics is to find a best fit between worker and job conditions. Nowadays, during the fertilization procedure on the plantation, workers need to carry heavy weights with 25kg of fertilizer using a gunny bag with one strap. They will do the fertilization process in awkwards positions, kneel often, work with their arms and shoulder level, or move their hands and wrists repetitively. To avoid the back pain, we created a new innovation which is an ergonomic fertilizer bag that can be used to carry fertilizer during the fertilization process. With this new alternative bag, it will help workers to slow down the back pain that leads to musculoskeletal disorder in long periods and also help in chronic body posture. Another aim is to make sure workers are not injured, safe, and comfortable, as well as productive. Work-related musculoskeletal disorders are the leading cause of disability for workers in their working years, according to the US National Institute on Occupational and Related Illness (NIOS).

MATERIAL AND METHOD

The method, to identify recent journal papers related to " ergonomics in agriculture," the search engines Google Scholar and ScienceDirect were used. Combinations of the terms "agricultural," "ergonomic," "shoulder pain," and "musculoskeletal illnesses" were used to accomplish this. Second, the inspiration for this innovation came from working on a plantation. Then, utilizing ergonomics concepts, we create the tools and the work process. Ergonomic modifications, as well as worker training on how to operate properly, should be implemented.

1. First, open the zip of the bag.
2. And then, pour the fertilizer into the bag. The bag can carry the fertilizer up to 70kg.
3. Zip the bag and try it on. If the strap not fit enough to the shoulder, you can adjust the strap to based on your comfort.
4. Carry the bag like a backpack. Make sur the hose is on the upfront position to avoid the fertilizer suddenly out.

Materials

Figure 1: Canvas fabric

Generally constructed of cotton and, to a lesser extent, linen, canvas is a plain-woven synthetic fabric. It is well known that canvas cloth is strong, resilient, and heavy duty. Canvas may be made weather resistant or even waterproof by combining cotton with synthetic fibers, making it a wonderful outdoor cloth.

Figure 2: PVC duct hose

PVC duct hose are used because they are flexible, lightweighted and strong. The hose will be a channel to flow the fertilizer through it. The worker needed to push down the hose and let the gravity push out the fertilizer through the hose. To stop the fertilizer from going down, pull the hose up.

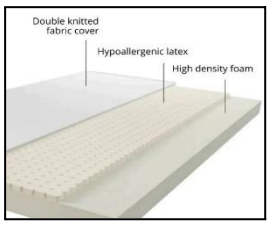

Figure 3

To encourage excellent posture and make the worker feel comfortable while carrying the bag, we chose this alternate material as a comforter. The heat absorber, which helps the worker release while carrying the bag, is another feature. As a result of conducting the work for extended periods of time, it will lessen the risk of musculoskeletal disorders and slide discs.

RESULTS AND DISCUSSION

Through the survey respondents from internship students, who do the fertilization process by using a gunny bag with one strap. They were having difficulty with that technique, a new technique needed to minimize back and shoulder pain for future activity. One of the students suggested that plantations must provide proper care for their workers. By the survey in Felcra Lembah Kesang, we also have the number that showed the majority of workers did not like the equipment that they used to do the fertilizing work. Heavy work is common on plantations, but we must help workers prevent musculoskeletal disorders. The ergonomic fertilizer bag's design and features allow it to straighten the worker's body posture and let the worker feel comfortable while carrying the bag. This is because the herbal organic sponge acts as a heat absorber as well as a comforter. Then, comes full-body support that surrounds and supports the shoulders and back of the body. Injuries are avoided as a result of better work posture, less force, or less repetition.

CONCLUSION

Finally, if the ergonomic fertilizer bag is commercially available, it will assist workers. People or workers must be aware about back pain and consider it seriously as long as the plantation requires labor to complete the fertilization process. The design and characteristics will help humanitarian workers during the fertilization process by reducing back and shoulder pain. For future recommendations, we can utilize technology and methods such as Pascal's law. MPOB should take this action if it is economically feasible for the plantation market because it may benefit workers in the future and also help to minimize the number of persons suffering from musculoskeletal pain.

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