

1ST EDITION

E-EXTENDED
ABSTRACT

**INTERNATIONAL
AGROTECHNOLOGY
INNOVATION
SYMPOSIUM (i-AIS)**



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INTERNATIONAL AGROTECHNOLOGY INNOVATION SYMPOSIUM (i-AIS)

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Faculty of Plantation and Agrotechnology UiTM Cawangan Melaka Kampus Jasin

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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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MANAGING WASTE PRODUCT OF AVOCADO (SKIN & STONE) AS INK/DYE

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ABSTRACT - Since there is an increase in avocado consumption worldwide, whether it be fresh or in the form of processed goods, several nations have made significant investments in avocado cultivation. Avocado industrial- isation produces a significant quantity of trash, including the peel and stone. These biomasses might be transformed into raw materials to produce various co-products. We need to maximise the amount of the agricultural waste coming from the avocado industry. By saying that, the avocado stone and peel can be turned into natural ink/dye that have no chemical inside it. The methods that being used are easy without needing any special tools. The avocado peel will be boiled with water on the stove for about an hour to bring out the colour from it. We can find that the colour that comes from the avocado peels are dark pink. This colour can be use as ink or dye that is non-toxic to the environment. Nowadays, a lot of people will prefer sustainable product over any synthetic because this can be refer in kind's garment due to its anti- allergy and non-toxicities properties (gopalakrishnan et al., 2021). We can conclude that it is feasible to create more environmentally friendly goods that add value to the waste created during the processing of avocados by utilising components with high biological value. This natural dye has a potentialto utilize avocado waste and reduce environmental pollution.

Keywords: Avocado, dye.

INTRODUCTION

Avocado (*Persea americana*) commonly known as the "alligator pear," this tasty fruit is found on a tree in the Lauraceae family. Avocados are extensively produced in warm climates and are native to the Western Hemisphere from Mexico south to the Andean highlands. Fruits from avocado trees contain green or yellowish flesh that is buttery in texture and flavour. According to the Food and Agriculture Organization FAO Statistical Database, global avocado production in 2021 reached 8.6 million tonnes with a cultivable area of up to 858 thousand hectares. With 6 million tonnes, the American Continent continued to dominate the avocado production world. Africa, Asia, and Europe came in second, third, and fourth, respectively, with output of 1 million, 1.2 million, and 151,000 tonnes. There is an abundance nutrition and benefit in avocado that can be put to good use. For example, the avocado skin can produce pink colour or specifically millennial pink which is good to be an ink or dye that is natural. It can help to us to minimise the use of chemical product in our daily life which is good for us.

MATERIAL AND METHOD

Material

1. White t-shirt. Any old t-shirt will do, just make sure it's made of mostly (90% or above) natural fibres — think cotton, linen, silk or wool
2. 3-6 avocado seed and skins.
3. Large pot (big enough so your shirt can float in the water)
4. Laundry detergent or any clear unscented soap
5. Soda ash (sold at drug stores and grocery stores as laundry detergent)
6. Metal or plastic utensil for stirring
7. Alum (often found in the spices section at grocery stores)
8. White Vinegar

Methodology

Methodology consists of 3 main part. First, prepared t-shirt. Next, extraction of dye. Lastly, dyeing process and the procedure as follow:

1. Prepare t-shirt

Step 1: Fill up the pot with water and add ¼ teaspoon laundry detergent (or neutral soap) and ⅛ of a cup of soda ash. Bring the water to a boil and submerge the clean, dry t-shirt in the water. Turn the heat down to a simmer.

Step 2: Stir shirt constantly for the first two minutes, and then every 10 minutes for one hour. Notice the colour will turn yellow, it's called colour-shifting process.

Step 3: Remove shirt from the pot of water. Wring out your shirt and let it dry.

2. Extraction of dye

Step 1: Mix 600 g vinegar, 60 g alum, and 30 g soda ash for a medium to big t-shirt. adjust accordingly. The ratio is 10:1:5, if you want a bigger or smaller shirt. Make sure your dry clothing is completely soaked by dipping it into the saucepan. Hang the clothing up to dry after giving it a gentle push.

Step 2: Place the avocados seed and skins into a pot and fill it with water. Start with a high heat and bring to a boil before reducing to a simmer. Keep at a low boil for an hour. There needs to be a colour change in water, it needs to go from blue to a pinkish red. When dye bath has sat for an hour, turn off the heat and leave it alone for overnight this will create a brighter dye.

3. Dying process.

Step 1 : The next day, remove the avocado from the dye water.

Step 2 : Bring your dye bath back to a boil. While you're waiting for the dye to come to a boil, fill a separate pot with water, Get the dye bath to boil again. While waiting for the dye to boil, fill a separate pot with water and put shirt in it to prepare it for the dyeing process. Submerge shirt in the water. This will help your shirt take the dye evenly when you submerge it in the dye bath.

Step 3: Once the dye is boiling, squeeze the shirt to get rid of any extra water and put it in the dye bath. Again, keep stir the shirt around for another two minutes. For the next hour, stir the shirt every 10 minutes.

Step 4: Remove the shirt from the dye bath and rinse in water or with a bit of laundry detergent and let your shirt air-dry.

RESULTS AND DISCUSSION

The result from this study indicates that the colour from avocado waste is millennial pink. A study from Dabas et al., (2011) state the colour pigment or dye concentration can be control by pH, content time and temperature. pH can be manipulated by adding soda ash into the dye extract, thus increase colour concentration. In additional, open a new target customer who prefer sustainable product over synthetic product because this can be refer in kind's garment due to its anti- allergy and non-toxicities properties (Gopalakrishnan et al., 2021). Lastly, natural dye has a potential to utilize avocado waste and reduce environmental pollution. Hance, avocado has a potential to substitute the synthetic fabric dye to reduce pollution.

TABLE, IMAGE, AND FIGURE

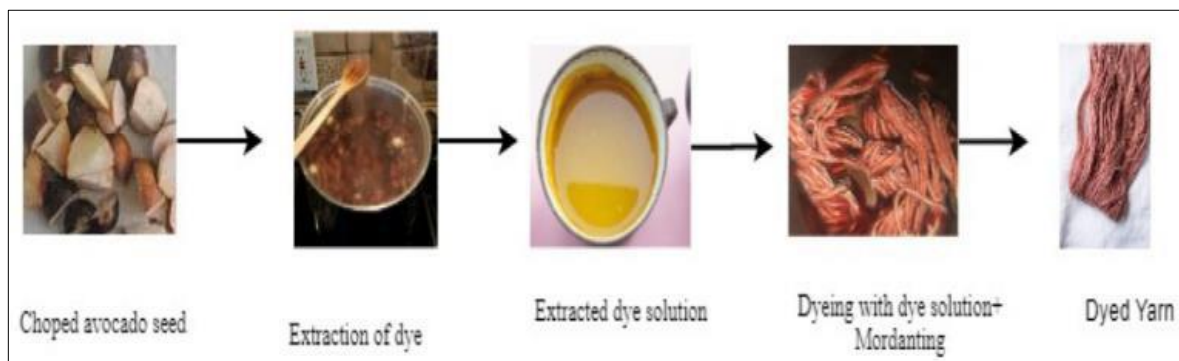


Figure 1: The dying process.



Figure 2: The result of successful dye shirt and yarn.

CONCLUSION

In conclusion, according to Tamrat Tesfaye's article, "The art of colouring textile material is as old as human civilization, and interest in using it is growing on a regular basis since it is environmentally benign, biodegradable, and has favourable health advantages for consumers." The colouring material can be obtained from a variety of natural sources, including microbial, mineral, plant, and animal origins. The most popular one is plant sources, and numerous plant components are utilised to make natural dyes. Considering that it can impart an orange and pink colour spectrum and is stable over time against elements like light and pH, the dye made from avocado seeds has a lot of promise for usage in the soap business. Additionally, the given colourant exhibits antioxidant properties. It is feasible to create more environmentally friendly goods that add value to the waste created during the processing of avocados by utilising components with high biological value.

REFERENCES

- [1] Y. Wang and A. Hu, Carbon quantum dots: Synthesis, properties and applications, *J. Mater. Chem. C*, 2(34) (2014), 6921–6939.
- [2] J. Zhou, G. Liu, Z. Sui, X. Zhou, W. Yuan, Hydrogenolysis of sorbitol to glycols over carbon nanofibers-supported ruthenium catalyst: The role of base promoter. *Chin. J. Catal.* 35(5) (2014) 692-702.
- [3] C. Cai, H. Wang, H. Xin, C. Zhu, Q. Zhang, X. Zhang, C. Wang, Q. Liu, L. Ma, Hydrogenolysis of biomass-derived sorbitol over La-Promoted Ni/ZrO₂ catalysts. *RSC Adv.* 10 (2020) 3993–4001.



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