

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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## ***Amaranthus viridis* - BASED GRAIN SNACK BAR**

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**ABSTRACT** - *Amaranth* (*Amaranthus* spp.) plant commonly refers to the sustainable food crop for the 21st century. It is a relatively well-balanced food for people who want diet. Amaranth continues to be listed as an ignored and underused crop despite its nutrient-rich profile. Among culinary uses, amaranth can be used as a vegetable and its grain as cereal in several food products such as whole-meal amaranth flour, bread, cookies, pancakes, pasta, tortillas, and candies. The materials used are green amaranth seed, roasted almond, butter, honey, peanut butter, baking paper, pan, baking pan, spatula, and bowl. The steps are heat amaranth seeds over medium-high, melt it and combine it with the peanut butter, honey, and peanut butter. Then, press the mixture into a baking pan that has been covered with parchment paper until dense. Before cutting the mixture into bars, let it chill in the refrigerator for two hours. Due to its great seed output, *Amaranthus viridis* is typically thought of as the amaranth species. For result, four gluten-free snack bar flavors are available for snackers to eat. One of the plant foods with the highest protein content is *Amaranth viridis* seed. There are many benefits of *Amaranth viridis* which are lower cholesterol level, normalize blood pressure levels, good source of protein, fibre helps with digestion and darkens grey hairs. This weed is easy to find in Malaysia and PKS can market this product to get another income.

**Keywords:** well-balanced food, culinary uses, *Amaranthus viridis*, snack bar, many benefits, easy to find

### **INTRODUCTION**

Currently, there is a great interest in *Amaranthus*, a third-millennium tropical food plant in recent years due to its high nutritional value and agronomic advantages. Infrageneric classification focuses on inflorescence, flower characters and whether a species is monoecious/dioecious in the Sauer (1995) where it consists of approximately 70 species, which can be classified into grain and vegetable amaranths. The plant is adapted to grow under different agro-climatic conditions and reported to be heat, drought, and pest tolerant. *Amaranthus* spp. can be found in subtropical, tropical, and temperate climate zones around the world. The crop demonstrated its capacity to cultivate both as a grain and leafy in those areas and seasons where other crops are unable to flourish. Amaranth grain is gluten-free, making it an ideal food crop for millions of people worldwide. In addition, amaranth has tremendous potential in the processing of gluten-free products rich in nutrients such as bread, pasta, and confectionery. Cooked amaranth leaves are an excellent source of vitamin A, vitamin C, calcium, manganese, and folate. It also supplies a good amount of minerals, including iron, phosphorus, magnesium, and manganese.

### **Innovation of Weed**

Amaranth seeds were utilized as both a food and a sacred plant. Other amaranth species, such as *A. viridis*, *A. tricolor*, *A. retroflexus*, and *A. hybridus*, are mostly known as vegetables. These *Amaranthus* species thrive in hot, humid climates around the world (Baraniak & Kania-Dobrowolska, 2022). The objective from this study is as follows:

To innovate *Amaranthus viridis* known as weed to become beneficial plant due to its high nutritional value. Other purpose is to acknowledge people that not all weeds were supposedly to be banish and harm to our crop.

### **MATERIAL AND METHOD**

Green amaranth seed, roasted almond, butter, honey, peanut butter, baking paper, pan, baking pan, spatula, and bowl.

1. Heat a pan over medium-high heat. Use a pan cover to ensure the seeds from popping all over the kitchen. Add the amaranth in the pan and it should begin to pop almost instantly.
2. After amaranth is ready, just mix puffed amaranth with roasted almond (or any of your other favorite nuts or seeds).
3. Then heat the peanut butter, honey, and peanut butter in a small pan until melty and pour it over the amaranth mixture. Give it a good stir, spread the mixture into a baking pan that cover with baking paper and press the mixture until dense.

4. Lastly, let the mixture chill for 2 hours in the fridge before can cut it into bars. It can be stored in an airtight container in the fridge for up to a week.

## RESULTS AND DISCUSSION

The results are our group success to make snack bar from *Amaranth viridis*. Our flavor that we have make is honey and almonds. We also have taste it and it was very good combination with butter, honey, and roasted almonds. There are around 125 calories in each bar. It was also one of the plant foods with the highest protein content, and the quality of its lysine-rich, complete protein rivals that of dairy products like cheese. Additionally, compared to wheat or rice, *Amaranth viridis* has higher levels of iron, calcium, manganese, and fiber. In contrast, the typical snack bar has 240 calories by adding the additional ingredients like sugar, nuts, pistachio and many more, but by eating this snack bar, it will adding more nutritious foods and decreasing daily calorie intake by around 5%. It may not seem like much, but it will add up to 10 pounds of weight reduction annually, even if nothing else changes. Green amaranth surely has many benefits started from its stem, leaves, and seeds. The seed was chosen in this study it is because the potential of nutritious that have in the seed can be replace with other grains to make any kind of product. Currently in America amaranth seeds widely use as another alternative to eat in their diet compared to rice and maize. Usually, the amaranth species is *Amaranthus caudatus* because of the yield of seeds is higher than *Amaranth viridis* to produce. From that, it is a little bit challenging to commercialize this weed because yield of seeds *Amaranth viridis* in about 10% of yield of seeds *Amaranthus caudatus*. Also, it is limited to find the plant because of this plant is treat as weed and mostly died due to herbicide application. To make this more practical in our country, any researcher can make a hybrid from these two genes. The resistant toward the environment as a weed and high in yield of the seeds can be combined to make a new amaranth species that can be one of the crops beneficial to economy in Malaysia.



**Figure 1:** *Amaranthus viridis* seeds



**Figure 2:** Grain snack bar

## CONCLUSION

In the conclusion, there are many benefits of *Amaranth viridis* which are lower cholesterol level, normalize blood pressure levels, good source of protein, fibre helps with digestion and darkens gray hairs. In additional, it

also has vitamins and minerals to keep your body healthy plus it won't have any trouble discovering delectable dishes that call for amaranth such as pumpkin porridge because it has great and adaptable nutty flavor that you can add to practically any meal. This weed can be beneficial to us because this weed is easy to find in Malaysia and PKS can market this product to get another income.

## REFERENCES

- [1] Park, S.-J., Sharma, A., & Lee, H.-J. (2020). A Review of Recent Studies on the Antioxidant Activities of a Third- Millennium Food: *Amaranthus* spp. *Antioxidants*, 9(12), 1236. <https://doi.org/10.3390/antiox9121236>
- [2] 13 Health Benefits Of The Superfood Amaranth. (2019, November). Retrieved December 28, 2022, from Sunwarrior website: <https://sunwarrior.com/blogs/health-hub/11-health-benefits-of-amaranth#:~:text=Amaranth%20is%20also%20a%20good,hormones%2C%20and%20do%20much%20more>
- [3] Marcarelli, R. (2016, June 8). Achieve Superfoods Introduces Amaranth Snack-Energy Bar. Retrieved December 28, 2022, from Winsight Grocery Business website: <https://www.winsightgrocerybusiness.com/wellness/achieve-superfoods-introduces-amaranth-snack-energy-bar>
- [4] Baraniak, J., & Kania-Dobrowolska, M. (2022). The Dual Nature of Amaranth—Functional Food and Potential Medicine. *Foods*, 11(4), 618. <https://doi.org/10.3390/foods11040618>



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