

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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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>

TABLE OF CONTENTS

1. COPYRIGHT	i
2. ORGANIZING COMMITTEE.....	ii
3. STUDENT COMMITTEE	iii
4. EDITORIAL BOARD	iv
5. ABOUT FACULTY OF PLANTATION AND AGROTECHNOLOGY.....	v
6. PREFACE.....	vi
7. TABLE OF CONTENTS	1
8. CHIRETTA CREAM	2
9. SMART WATER TANK FOR SUSTAINABLE IRRIGATION.....	5
10. PURPLE SWEET POTATO ICE CREAM	8
11. ORGANIC PLANT FOLIAR AS AN ALTERNATIVE WAY TO SAVE FERTILIZER COSTS.....	12
12. NATURAL LIQUID SOAP	17
13. SUGARCANE AND CORN COB PARTICLE BOARD	20
14. NUTRITIOUS PAPAYA CHIPS WITH ZERO SUGAR AND PRESERVATIVE.....	23
15. INFLUENCE OF SOYBEAN RESIDUE FLOUR IN WHEAT BATTER FORMULATION ON PHYSICAL PROPERTIES OF FRENCH FRIES	27
16. FLAKES INCORPORATED WITH BOTTLE GOURD POWDER (<i>Lagenaria leucantha rysby</i>).....	31
17. VARIOUS PROTEIN-BASED COATING TOWARDS POSTHARVEST QUALITY OF PAPAYA (<i>Carica papaya</i>)	36
18. SMART SHALLOW MACHINE	41
19. Utilization of Eco-enzyme promoting growth and production of Kembang Telang plant (<i>Clitoria ternatea L.</i>).....	43
20. COCOA PULP: AN AGRO-INDUSTRIAL WASTE THAT BECOME A JAM PRODUCT.....	47
21. ANANAS COMOSUS LIP BALM	50
22. TECHNOLOGY OF SCAN REMINDER PRO IN COOLING ROOM.....	57
23. EFFECT OF SALINITY ON MICROBIAL POPULATION AND ITS CHARACTERIZATIONS IN PADDY SOIL.....	61
24. EFFECT OF CHEMICAL FERTILIZER ON THE BACTERIA POPULATION AND ITS CHARACTERIZATION IN PADDY SOIL.....	64
25. PINEAPPLE FIBRE PELLET AS BIODEGRADABLE CAT LITTER.....	68
26. EXTRACTION OF SILICON CARBIDE PARTICLES FROM RICE HUSK	72
27. BRAZILIAN SPINACH FISH PATTIES (IKAN PATIN).....	75
28. PAPER FROM PINEAPPLE LEAF FIBRE	79
29. COCOA BUTTER KERNEL BODY SCRUB	83

EFFECT OF SALINITY ON MICROBIAL POPULATION AND ITS CHARACTERIZATIONS IN PADDY SOIL

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ABSTRACT - Soil and its health is very critical especially in agriculture sector. Major problems occurred in Malaysia is saline soil as it disturbs the natural processes and microbes activities. Purpose of the study is to observe the microbial population and their characteristics with presence of salts, sodium chloride (NaCl). Few methods been used to collect the data which are serial dilutions, spread plate method, CFU calculations, microscope observation, and Gram-staining. bacteria do favor saline-free soil environment. This proved through most number of populations with percentage 66.32% lives in non-saline soil while balance of 36.68% lives in saline soil. Shapes characterizations also shows similar results with 55% were found in non-saline soil and remaining of 45% in salts control soils. As for colors, 48% in clear, 38% in milky, 4% in orange, 3% in red and 7% in yellowish color. 70% of bacteria are Gram-positive while another 30% are Gram-negative. These can be solved through irrigations and proper management in field.

Keywords: Bacteria populations, bacteria characterization, shape, color, Gram-staining, colony forming units

INTRODUCTION

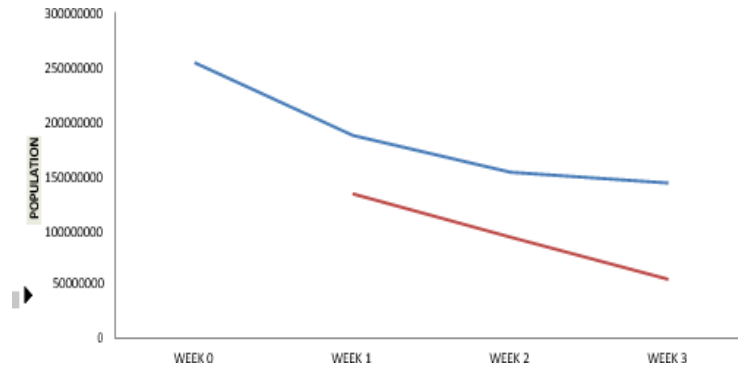
Soil and its health is very critical especially in agriculture sector. Major problems occurred in Malaysia is saline soil as it disturbs the natural processes and microbes activities. Purpose of the study is to observe the microbial population and their characteristics with presence of salts, sodium chloride (NaCl). Few methods been used to collect the data which are serial dilutions, spread plate method, CFU calculations, microscope observation, and Gram-staining. bacteria do favor saline-free soil environment. This proved through most number of populations with percentage 66.32% lives in non-saline soil while balance of 36.68% lives in saline soil. Shapes characterizations also shows similar results with 55% were found in non-saline soil and remaining of 45% in salts control soils. As for colors, 48% in clear, 38% in milky, 4% in orange, 3% in red and 7% in yellowish color. 70% of bacteria are Gram-positive while another 30% are Gram-negative. These can be solved through irrigations and proper management in field.

MATERIAL AND METHOD

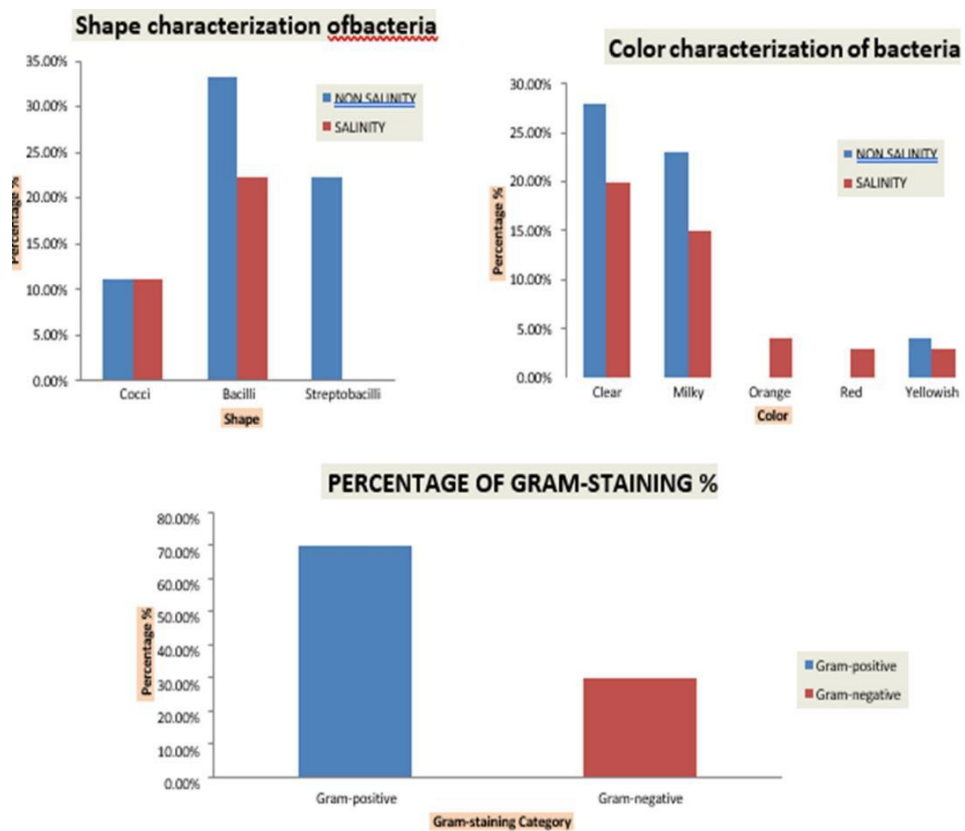
The soil sampling was taken in completely randomized design (CRD) which located in Kg. Lebak Seberang, Temerloh, Pahang. The soil sample then used to planted paddy by some of them were controlled with salts, NaCl. For certain period, soil samples then taken for serial dilution method and grown on nutrient agar (NA) media. After that, the microbes on plates then been purify by spread plate method. To characterize the microbes, microscope observation and Gram-staining procedure been applied. The data were analysed using Analysis of Variance (ANOVA) by using SPSS version 9.3.

RESULTS AND DISCUSSION

In most of the graphs, non-saline soils are giving higher number compared to saline soil. For example, in shape characterization, there were about 66.67% found in the non- saline soil compared to 33.33% in saline soil. As for the color, there was a small twist in the result as there were more variations of color found in the soil with saline control. Though the results are shown as mentioned, shapes identified from the samples are contrast. It does means that the colors of the bacteria did not prove that soils are having different types of bacteria.[1-3]



Graph 1. Microbial Population On Non-Salinity Vs Salinity. Blue: Non-Salinity; Red: Salinity.



Graph 2. Compilation Of Bacteria Characteristics Such As Shape, Color And Gram-Staining

CONCLUSION

In conclusion, soil organisms like bacteria do play important role in ensuring the plant growth goes well. Most of the bacteria also having similar characterizations due pore spaces which has been proven by the [4,5] studies. From the studies conducted, we may also conclude that microbes are unfavorably live under salinity soil condition. Due to that, proper irrigations are required to improve the soil health [6]. Lesser human activities on the land also may avoid the soil compaction as well as resulting in diversifications number of microbes in soil content

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