BIOACTIVITIES OF MYCELIAL BIOMASS OF NATURALLY OCCURING MUSHROOM *Pycnoporus sanguineus*

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An Undergraduate Thesis Submitted to the Faculty of the Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines
in Partial Fulfillment of the Requirements
for the Degree of

BACHELOR OF SCIENCE
(BIOLOGY)

JUNE 2018

ACCEPTANCE SHEET

This undergraduate thesis entitled "**NANOSTRUCTURED SOIL CONDITIONER ENRICHED WITH *Lactobacillus plantarum* UTILIZING GARLIC (*Allium sativum*) AS SOURCE OF PHOSPHORUS AND SWEET POTATO (*Ipomoea batatas*) AS SOURCE OF POTASSIUM**" prepared and submitted by **NIÑA KRISTEL S. MORADA**, in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN BIOLOGY (MICROBIOLOGY)**, is hereby accepted.

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BIOGRAPHICAL SKETCH

Niña Kristel Sumangil Morada is the third and youngest child of Mrs. Medgemma S. Morada and Mr. Gomer R. Morada. She was born on March 19, 1998 in Cabanatuan City. She currently resides in Guimba, Nueva Ecija. She started schooling at the age of 5 in Lennec Elementary School (2003-2006) and transferred to Pacac Elementary School (2006-2010) where she graduated as Salutatorian. She did her secondary education at Our Lady of the Sacred Heart College (OLSHCO) consistent with honors. For college, she took up Bachelor of Science in Biology major in Microbiology at the Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University. She completed her internship in the Faculty of Science, Maejo University, Chiang Mai, Thailand where she did a study about the Antibacterial property of some Thai herbs.

ACKNOWLEDGMENT

First of all, I would like to thank the almighty God for giving me wisdom, courage, strength, and protection throughout the writing process and conduct of this study. Also, for giving me the best parents.

To my ever supportive and loving parents (Gemma and Gomer Morada), thank you for all your help in the accomplishment of this study. I wouldn't be able to do all this if not because of both of you. You are the greatest blessing in my life. Also to my siblings, for their support in everything that I do.

To my friends, for their moral support and help in the conduct of this study. Special thanks to Bianca Enrile for teaching me how to use SPSS, and for answering my thesis-related questions.

To Sir Federico Pineda (thesis adviser), Sir Juvy Monserate (thesis co-adviser), Ma'am Jhane Valetino (critic), Sir Rich Milton Dulay (Department Research Coordinator), and Ma'am Anna, for their assistance and for sharing their knowledge for the betterment of this study.

To the staff of Regional Soils Laboratory, Department of Agriculture, San Fernando, Pampanga, for accepting and processing my samples and sending the results earlier than their given date, despite of the many samples that they're processing at the time.

Lastly, to Ma'am Juico of the College of Agriculture, and to the food processing (FTBI) for letting us utilize their facilities.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDIX TABLES

LIST OF APPENDIX FIGURES

ABSTRACT

MORADA, NIÑA KRISTEL S., Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **JUNE 2018, NANOSTRUCTURED SOIL CONDITIONER ENRICHED WITH *Lactobacillus plantarum* UTILIZING GARLIC (*Allium sativum*) AS SOURCE OF PHOSPHORUS AND SWEET POTATO (*Ipomoea batatas*) AS SOURCE OF POTASSIUM**

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Fish amino acid (FAA) is a bio organic soil conditioner which is proven to be an excellent source of nutrients for the soil and plants. The FAA is produced by fermenting fresh fish and entrails with sugar or molasses. In order to establish the essential contents of the untreated FAA and the enhanced FAA, it was subjected to NPK analysis and bacterial cell counting in the initial and final stage of fermentation. The nanosilica was also characterized using FTIR and SEM. The result of the N, P, and K analysis revealed that FAA has significantly higher total NPK contents than all the other treatments. For the bacterial cell count, the FAA alone, and treatments with nanosilica increased in CFU. Based on the results, the silica proved to enhance the growth of bacteria. Furthermore, it can be concluded that the use of phosphorus from *Allium sativum*, potassium from *Ipomoea batatas*, *Lactobacillus plantarum,* and nanosilica as enhancers for FAA is not efficient since it did not increase the total NPK of the soil conditioner. The antibacterial property of the plant samples and the bactericidal activity of *L. plantarum* retarded the growth of the natural phosphate solubilizing, nitrogen fixing, and potassium solubilizing bacteria present in the soil conditioner.

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