NANOSTRUCTURED SOIL CONDITIONER ENRICHED WITH *Lactobacillus plantarum* UTILIZING TORDAN BANANA (*Musa acuminata*) AS SOURCE OF POTASSIUM AND SOYA BEAN (*Glycine max*) AS SOURCE OF PHOSPHORUS

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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 Munoz, Nueva Ecija, Philippines,
In Partial Fulfilment of the Requirements
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(Major in Microbiology)

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ACCEPTANCE SHEET

This undergraduate thesis entitled "**NANOSTRUCTURED SOIL CONDITIONER ENRICHED WITH *Lactobacillus plantarum* UTILISING TORDAN BANANA (*Musa acuminata*) AS SOURCE OF POTASSIUM AND SOYA BEAN (*Glycine max*) AS SOURCE OF PHOSPHORUS**" prepared and submitted by **JUDY ANN G. V ILLALUZ**, in partial fulfilment of the requirements for the degree of **BACHELOR OF SCIENCE IN BIOLOGY (MICROBIOLOGY)**, is hereby accepted.

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BIOGRAPHICAL SKETCH

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ABSTRACT

VILLALUZ, JUDY ANN G., Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, **JUNE 2018, NANOSTRUCTURED SOILS CONDITIONER ENRICHED WITH *Lactobacillus plantarum* UTILIZING TORDAN BANANA (*Musa acuminata*) AS SOURCE OF POTASSIUM AND SOYA BEAN (*Glycine max*) AS SOURCE OF PHOSPHORUS**

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This study was done to evaluate nanostructured bio fertilizer enriched with *Lactobacillus plantarum* utilizing *M. accuminata* as source of potassium and *G. max.* as source of phosphorus. Six treatments were taken and used for the NPK analysis and bacterial cell count using (CFU) Colony Forming Unit. Silica was characterized using FTIR and SEM. Based on the findings, the statistical analysis of NPK content revealed that Treatment 1 which is the control proved to be more efficient compare to other treatments since there is no need to add any of the enhancers. In addition, Treatment 1 (FAA) and Treatment 2 (FAA+ *L. plantarum*) revealed that there is no significant difference with each other. *L. plantarum* have a minimal effect for enhancing the NPK content while the plant extracts observed an decrease in the NPK content due to it's extraction process and antibacterial property. Bacterial cell count revealed that the addition of silica obtained the highest bacterial cell count observed in Treatment 4 (FAA+PK+ Silica) and Treatment 6 (FAA+PK+ *L. plantarum* + silica), it concluded that nanosilica favors the bacterial cell count to increase. For the characterization of nanosilica, FTIR confirms the presence of hydroxyl group while in SEM, the analysis revealed that the average mean particle size was 15.94±4.41 mm.

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