

**CHARACTERIZATION AND *In vitro* SCREENING OF PLANT GROWTH-
PROMOTING BACTERIA FOR PROBABLE DROUGHT
TOLERANCE IN RICE**

ABEGAIL PAEZ ADOR DIONISIO

An undergraduate thesis manuscript submitted to the faculty of the Department
of Soil Science, College of Agriculture, in partial fulfillment of
the requirements for the degree

**BACHELOR OF SCIENCE IN AGRICULTURE
(SOIL SCIENCE)**

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by


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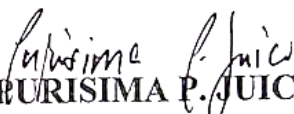
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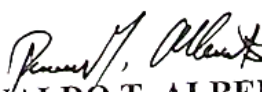
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BIOGRAPHICAL SKETCH

The researcher was born on February 2, 1996 at General Hospital of San Leonardo, Nueva Ecija. She is the third born child in the family. She is the only daughter of Mr. Noel J. Ador Dionisio and Mrs. Edna P. Ador Dionisio who permanently reside at the Municipality of Licab, Nueva Ecija.

She took her elementary education in Licab Central School located at their Barangay and graduated with honors. She also graduated with honors in her secondary education at Exequiel R. Lina High School.

To fulfill her dream of becoming a doctor of Veterinary Medicine, she enrolled at Central Luzon State University carrying the scholarship from OFWDSP. She took her first year as CFY, but unfortunately she failed in the final screening for Veterinary Medicine curriculum. She never lose hope, she decided to take Bachelor of Science in Agriculture in the same university. During her stay she realized that another opportunity comes to pursue her dreams. She had chosen Soil Science as her major field to enhance her in depth abilities through constant stimulating challenges.

She has been a part of various organizations, Christian Brotherhood International (CBI), CLSU ODSP scholars and CLSU Soil Science Society.

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CHARACTERIZATION AND *In vitro* SCREENING OF PLANT GROWTH-PROMOTING BACTERIA FOR PROBABLE DROUGHT TOLERANCE IN RICE [∪]

by

ABEGAIL PAEZ ADOR DIONISIO

ABSTRACT

This study was conducted to characterize the plant growth-promoting bacteria (PGPB) for ACC deaminase activity, starch hydrolysis, IAA production, phosphate solubilization and siderophore production. It also aimed to screen bacterial isolates for tolerance to probable drought stress induced by polyethylene glycol (PEG) and to identify the selected isolates using biochemical analysis.

Among 50 existing PGPB isolates, 14 were positive for ACC deaminase activity, 30 hydrolyzed starch, two solubilized phosphate, while 14 produced siderophores. In terms of intensity of IAA production, nine were high, 13 were medium and 28 were low. Eighteen out of 50 existing bacterial isolates were selected based on their growth-promoting capability and further tested for probable drought tolerance of rice condition using 15% and 25% polyethylene glycol (PEG).

Among these existing PGPB isolates, *Paenibacillus elgii* (AP 1-1) was found to have the capability to produce ACC deaminase and siderophore which have high impact on growth of the plant. The isolate was also found to have the ability to produce exoenzymes that hydrolyzed starch. Hence, this isolate can be considered to have growth promoting effect for probable drought tolerance in rice.

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