

**ANTHOCYANIN QUANTIFICATION AND MOLECULAR PROFILING OF
GENE CONTROLLING PIGMENT IN CENTRAL LUZON STATE
UNIVERSITY PIGMENTED RICE GERMPLASM**

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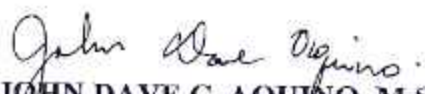
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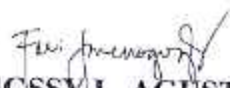
This undergraduate thesis entitled “ANTHOCYANIN QUANTIFICATION AND MOLECULAR PROFILING OF GENE CONTROLLING PIGMENT IN CENTRAL LUZON STATE UNIVERSITY PIGMENTED RICE GERMPLASM”, prepared and submitted by **REYNIEL R. AQUINO**, in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN AGRICULTURE (CROP SCIENCE – AGRONOMY)**, is hereby accepted:


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BIOGRAPHICAL SKETCH

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ABSTRACT

AQUINO, REYNIEL R., Department of Crop Science, College of Agriculture, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **JUNE 2019, ANTHOCYANIN QUANTIFICATION AND MOLECULAR PROFILING OF GENE CONTROLLING PIGMENT IN CENTRAL LUZON STATE UNIVERSITY PIGMENTED RICE GERMPLASM**

Adviser: MARCIAL A. GONZALES, M.Sc.

Pigmentation in rice pericarps is governed by *Rd*, *Rc*, and *Ra* genes, and the presence or absence of these genes determines the variation of anthocyanin deposition in rice pericarps. The twenty pigmented rice germplasm of Central Luzon State University were genetically profiled and total anthocyanin content was obtained as well as agromorphological characterization was observed. This study aimed to (1) determine the anthocyanin content of the different pigmented rice accessions, (2) profile selected gene (*Rc*, *Rd*, and *Ra*) controlling pigmentation in rice, (3) morphologically characterize the twenty CLSU pigmented rice germplasm and (4) determine the grain yield component.

The accessions that obtained the highest total anthocyanin content were from Ominio and Bongkitan PG. It was also observed that high amounts of anthocyanin were obtained from purple pericarps, significant amounts on red and brown pericarps and negligible amounts on white rice pericarps. Moreover, *Rd* gene was amplified on all accessions except for Escalante. Whereas, *Rc* gene was amplified at different expected products on all the accessions. While, *Ra* gene was amplified on all accessions except for Escalante and the non-pigmented accessions. Further, seven groups were observed in the dendrogram generated from morphological characterization. Consequently, the selection

of two accessions belonging to separate groups in the dendrogram can be used by breeders for crossing more diverse parents for better variability among their progenies.

The phenotypic and genotypic data gathered from this study provides a valuable information that can be used as basis for selection of accessions with high yielding ability and high anthocyanin that could be reproduced as a source of special rice with healthier benefits or more nutritious than ordinary rice.

Keywords: pigmented rice germplasm; anthocyanins; purple rice; red rice

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