CENTRAL LUZON STATE UNIVERSITY

ELEMENTAL ANALYSIS OF PHILIPINE TRADITIONAL RICE VARIETIES AND SOME ELITE LINES USING SCANNING ELECTRON MICROSCOPE/ENERGY DISPERSIVE X-RAY SPECTROSCOPY

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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 for the Degree

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MARK PHILIP BULOS CASTILLO

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ABSTRACT

CASTILLO, MARK PHILIP B., Bachelor of Science in Biology, Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science city of Munoz, Nueva Ecija, Philippines, June 2017, **ELEMENTAL ANALYSIS OF PHILIPPINE TRADITIONAL RICE VARIETIESAND SOME ELITE LINES USING SCANNING ELECTRON MICROSCOPE WITH ENERGY DISPERSIVE X-RAY**

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Knowledge on mineral concentration within rice grain plays a vital role on understanding biofortification and plant breeding techniques, In this study, the mineral composition of one hundred forty-six Philippine Traditional varieties of rice (TRVs) and five elite lines was analyzed using Scanning Electron Microscope with energy Dispersive X-ray Spectroscopy(SEM/EDX) together with agronomic morphological characterization with 31 specific characteristics of selected high mineral content and low mineral content of rice. The elemental analysis found that there are 21.23% of rice contained calcium (31 out of 146) with Fesl 2 contained 15.11 g.kg was the highest, 94% of magnesium (137 out of 146) with Fesl 2 contained 12.33 g/kg was the highest, 80.14% of potassium (117 out of 146) with San Juan,2003 contained 31.54g/kg was the highest, 69.86% of phosphorus (102 out of 146) with Sinampan,2019 contained 15.52 g/kg was the highest and 1.37% of zinc (2 out of 147) with Samon,2113 contained 4.65 g/kg was the highest among 146 TRVs, on the other hand, the MSR16WS-SI-106 with 9.52 g/kg and 5.54 g/kg

was the highest Calcium and Potassium content. The MSR16WS-SI-28 with 7.22 g/kg and MSR16WS-SI-97 with 1.79 g/kg was the highest Magnesium and Phosphorus content. Moreover, the five TRV's with high mineral content was compared to the average mineral content of elite lines and illustrate that TRV's showed higher mineral concentration compared to elite lines, On the agronomic characterization under the greenhouse condition found to have a large amount of differentiation between each other for 85.31% of differences. In conclusion, the study come up to satisfying result in elemental analysis, the TRVs contained significant amount of Ca, Mg, K, P, Zn which is higher compared to elite lines while on the agronomic morphological characteristics the Philippine Traditional varieties of rice and some elite lines of rice express different various characteristics that is important on germplasm database.

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