

**FABRICATION OF PARTICLEBOARD USING DIFFERENT
BIOMASS WITH MODIFIED CASSAVA
STARCH-BASED BINDER**

JOHN ROY U. BLANCAS

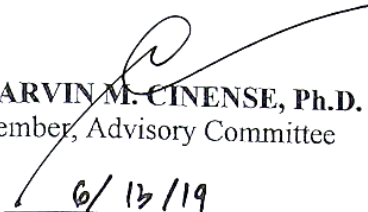
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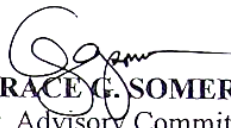
**BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS
ENGINEERING
(Bioproducts Process Engineering)**

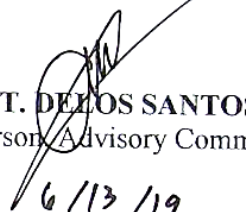
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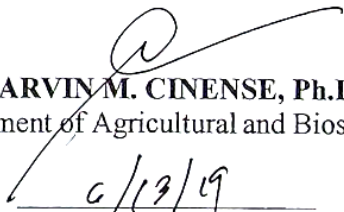
This undergraduate thesis entitled **“FABRICATION OF PARTICLEBOARD USING DIFFERENT BIOMASS WITH MODIFIED CASSAVA STARCH BASED BINDER,”** prepared and submitted by **JOHN ROY U. BLANCAS**, in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING (BIOPRODUCTS PROCESS ENGINEERING)**, is hereby accepted:


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BIOGRAPHICAL SKETCH

John Roy Blancas was born on the 23rd of January, 1998 at San Jose City, Nueva Ecija. They are the youngest among the two children of Fortunato and Fe Blancas. Their father died when they were in high school and being financially supported by their mother alone since then. Chereelyn Blancas, their sister, eventually decided to help out to support their family.

They attained their elementary education at Muñoz Central School. They were a drummer in the school band and an illustrator at the school paper. They continued participating in campus journalism at Muñoz National High School and annually partake in regional schools press conferences. They were a delegate at the 2011 National Schools Press Conference at Butuan City. They were a Special Science Class graduate on 2014.

They entered college at Central Luzon State University taken up the program Bachelor of Science in Agricultural and Biosystems Engineering specializing on Bioproducts Process Engineering. They joined the official students' publication of College of Engineering, The Mechanics as illustrator and later on acted as the opinion editor.

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ABSTRACT

BLANCAS, JOHN ROY U., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **June 2019. FABRICATION OF PARTICLEBOARDS USING DIFFERENT BIOMASS WITH MODIFIED CASSAVA STARCH-BASED BINDER**

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This study is conducted to exhaust the potential of rice husk (RH) and coconut husk (CH) as a raw material for particleboard production and to determine the effects of modified cassava starch-based binder (MCSB) on the particleboards manufactured from different biomass and to determine if the manufactured boards are comparable to the Japanese Industrial Standards. The particleboards from RH, CH, and rice-coconut husk mixture (RCM) were manufactured with different adhesive content; 40%, 45%, and 50%.

The manufactured board can be categorized as Low Density Fiberboards (LDF). The results of the tests on water absorption and thickness swelling shows that CH particleboards are highly sensitive to water.

The density of the boards is directly proportionate to the amount of adhesive used and the biomass use that results the highest density are CH and RCM.

The moisture content test on the boards show that the rice husk particleboard with 40% adhesive content has the lowest moisture content at 6.28%. The highest moisture content is by the rice husk particleboard at 50% adhesive with 11.82%. the results of the physical properties of the RH, CH and RCM boards implied to have an inverse relationship to the adhesive content. The boards with CH and RCM with 45% and

50% adhesive content are the optimum mixture for particleboards based on the results of physical tests in the study.

Keywords: particleboards, starch, modified starch based binder, coconut husk, rice husk

50% adhesive content are the optimum mixture for particleboards based on the results of physical tests in the study.

Keywords: particleboards, starch, modified starch based binder, coconut husk, rice husk

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