

**TECHNICAL EVALUATION OF THE DIFFERENT FERMENTATION  
VESSELS FOR SUGAR PALM WINE PRODUCTION**

**THESIS**

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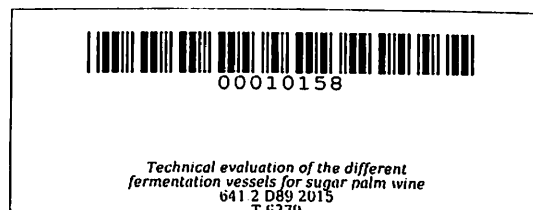
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**TECHNICAL EVALUATION OF THE DIFFERENT FERMENTATION  
VESSELS FOR SUGAR PALM WINE PRODUCTION**

Undergraduate Thesis  
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College of Engineering and Information Technology  
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**HELAISHA NISSI R. DUMAGUING**  
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## ABSTRACT

**DUMAGUING, HELAISHA NISSI R. Technical Evaluation of the Different Fermentation Vessels for Sugar Palm Wine Production.** Undergraduate Thesis. Bachelor of Science in Agricultural Engineering. Cavite State University, Indang, Cavite. April 2015. Adviser: Dr. Marilyn M. Escobar.

The study was conducted at Cavite State University-Main Campus from August 2014 to February 2015 to evaluate the different fermentation vessels used in sugar palm wine production. Specifically, the study aimed to: 1) compare the fermentation duration of different fermentation vessels as affected by closed room and open room temperature; 2) compare the pH, total soluble solids and color of sugar palm wine produced from the different fermentation vessels such as glass carboy, plastic carboy and wood barrel; 3) compare the relationships of pH, temperature and total soluble solids in making kaong wine, and; 4) evaluate the sensory characteristic of the wine produced from the different fermentation vessel.

The experiment was set in two different environments: closed room environment and open room environment. Freshly harvested *kaong* sap (with a pH of 6.9 and copper brown color) was fermented on three different vessels which include a wood barrel, a glass carboy and a plastic carboy. The fermentation process of the *kaong* sap was monitored. The pH level, sap temperature, and the ambient temperature were measured and recorded in an hourly basis. The final pH of *kaong* sweet wine was measured at 3.9 and with a cloudy white color.

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# **TECHNICAL EVALUATION OF THE DIFFERENT FERMENTATION VESSELS FOR SUGAR PALM WINE PRODUCTION**

**Helaisha Nissi R. Dumaguing**

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## **INTRODUCTION**

Wine is an alcoholic beverage made by fermenting fruits or certain vegetable products. Wine has been produced for thousands of years ago and have been drunk casually or occasionally.

Sugar palm (*Arenga pinnata*, or *kaong*) is a multipurpose palm species from which a variety of foods and beverages, timber commodities, biofibres, biopolymers and biocomposites can be produced. Recently, it is being used as a source of renewable energy in the form of bio-ethanol by a fermentation process of the sugar palm sap (Siregar, 2005). The sap is being harvested for commercial use in Southeast Asia, yielding a sugar known in India as gur, and is also fermented into vinegar and wine. The immature fruits are widely consumed in the Philippines and Indonesia and made into canned fruits after boiling them in sugar syrup. The dark fibrous bark is manufactured into rope. This crop is a potential biofuel feedstock.