

**DESIGN AND CONSTRUCTION OF A SYRUP
MAKING MACHINE FOR A SMALL SCALE
KAONG PRODUCTION**

THESIS

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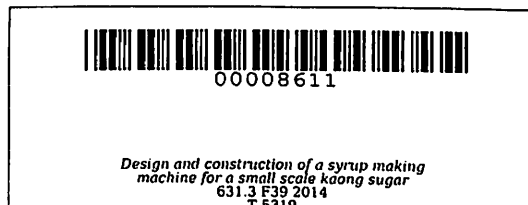
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**DESIGN AND CONSTRUCTION OF A SYRUP MAKING MACHINE FOR A
SMALL SCALE KAONG SUGAR PRODUCTION**

Undergraduate Thesis
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ABSTRACT

FERNANDEZ, AIRA MAE H. Design and Construction of a Syrup Making Machine for a Small Scale *Kaong* Sugar Production. Undergraduate Thesis. Bachelor of Science in Agricultural Engineering. Cavite State University. Cavite Philippines. April 2014. Adviser: Engr. Cesar C. Carriaga.

The study was conducted to design and construct a syrup making machine and assess the performance through a set of quantitative parameters, temperature of syrup, time of syrup making, viscosity, yield, noise emission level, fuel consumption, temperature of syrup, and total soluble solids. Three impellers were used and evaluated. Construction and evaluation was accomplished from January to March 2014 at Cavite State University Sugar Palm Research, Information, and Trade Center. Data collected were analyzed using ANOVA in a Completely Randomized Design and Tukey Honest Significant Different Test.

The study yielded the following results: in terms of temperature, impeller 1 increased a range of 58.56 °C than the other impellers in TSS 1 while impeller 2 increased a range of 47.80 °C among other impellers in TSS 2. Impeller 2 produced syrup fastest for both TSS 1 and TSS 2. In terms of viscosity, impeller 3 produced the most viscous syrup for both TSS 1 and 2. Impeller 2 produced the biggest yield for both TSS 1 and TSS 2. In terms of noise emission level, impeller 2 emitted the highest noise level for both TSS 1 and TSS 2 but still within the range of acceptable level. In terms of fuel consumption, impeller 2 consumed the least amount of fuel for TSS 1 and impeller 1 consumed the least amount of fuel for TSS 2.

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DESIGN AND CONSTRUCTION OF A SYRUP MAKING MACHINE FOR A SMALL SCALE *KAONG* SUGAR PRODUCTION

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INTRODUCTION

Sugar palm is popularly known as *Kaong* (*Arenga pinnata*). Although considered as a minor forest species, it provides two important food products: the sweet *kaong* gel and vinegar. These products have great potentials for export. *Kaong* gel is a popular ingredient for salad and can be eaten alone as dessert, while *kaong* vinegar is processed from the sweet sap. It is becoming popular especially in Indang, Cavite where the palms abundantly grow (DENR, 2007).

Since *kaong* is abundantly growing in the locality, it is one of the major sources of income among local people. This income primarily comes from products made out of sugar palm such as vinegar and sugar. Cavite State University (CvSU) also conducted researches and experiments to maximize the potentials of *kaong* and to contribute in the development of the *kaong* industry.