DESIGN AND DEVELOPMENT OF A WIRELESS SUGAR PALM VINEGAR PROPERTY MONITORING SYSTEM

Design Project

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Undergraduate Design Project
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College of Engineering and Information Technology
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ABSTRACT

BALURAN, CESAR IAN A. and MELINDO, VENZ JOSEPH P., Design and Development of a Wireless Sugar Palm Vinegar Property Monitoring System. Undergraduate Design Project. Bachelor of Science in Electronics and Communications Engineering. Cavite State University, Indang, Cavite. October 2019. Adviser: Engr. Nemilyn A. Fadchar.

The main objective of the study was to design and construct a wireless sugar palm vinegar property monitoring system. Specifically, it aimed to: 1. design and construct the circuit of the system; 2. develop a system software; 3. test and evaluate the system through the following parameters: sensitivity, response time, and accuracy; 4. conduct cost computation.

The system is composed of four (4) sensors turbidity sensor, pH sensor, waterproof temperature sensor, and ambient temperature sensor. These sensors were used to measure TSS, pH level, sap temperature and ambient temperature respectively. The data collected by the system was transmitted in a cloud server using a WI-FI module and displayed on a webpage through ThingSpeak™ platform. The data was also stored in a SD Card as backup in case internet connection was not available.

The results of the evaluation showed that the system is excellent in terms of its accuracy, response time and sensitivity. The readings from the system has a small percentage error and were comparable from the readings taken manually using handheld sensors.

The study was conducted from January 2019 to May 2019 at Gen. Trias, Cavite and Indang, Cavite. The total cost of the design project was ₱3, 370.00.

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An undergraduate design project submitted to the faculty of the Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite, in partial fulfilment of the requirements for the degree of Bachelor of Science in Electronics and Communication Engineering (BSEcE) with Contribution No. CEIT 2019-20-1-002. Prepared under the supervision of Engr. Nemilyn A. Fadchar.

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, according to DENR. These products have great potentials for export. *Kaong* gel is a very popular ingredient for salad and can be eaten alone as dessert, while *Kaong* vinegar is processed from the sweet sap. *Kaong* vinegar became a popular product of Indang. In fact, it became the town's entry in One Town, One Product program of previous Gov. Ayong Maliksi.

Additionally, the *Arenga Pinnata* is also known to produce the healthiest alternative sugar made from the sap of palm tree (B. Okpala, 2015). In 1409, the *Arenga* syrup and sugar were exported from Indonesia to China for the Chinese Emperor to be used as a diabetic food enhancer (Retrieved from www.hankerfoods.com).