DESIGN AND DEVELOPMENT OF AN ARTIFICIAL HONEYBEES FEEDER

THESIS

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DESIGN AND DEVELOPMENT OF AN ARTIFICIAL HONEYBEES FEEDER

An Undergraduate Thesis
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College of Engineering and Information Technology
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In partial fulfilment
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Bachelor of Science in Computer Engineering

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ABSTRACT

PLAZA, JAYSON MARK C. and POTENTE, ROBERT JESS M. Design and Development of an Artificial Honeybees Feeder. Undergraduate Design Project. Bachelor of Science in Computer Engineering. Cavite State University, Indang, Cavite. December, 2016. Adviser: Engr. Bienvenido C. Sarmiento, Jr.

A study was conducted to develop a microcontroller-based automatic honeybee feeder. Specifically, the study aimed to (1) design and develop a microcontroller circuit for pumping , lighting, and monitoring system; (2) design and fabricate the automatic feeder; (3) develop a PIC program that will control the system; (4) test and evaluate the performance of the system through pilot evaluation; and (5) conduct a cost computation of the machine.`

The design project was composed of PIC16F877A which served as the microcontroller unit, the light sensor module for the light sensing and automatic light switching, pH sensors for acidity and basicity monitoring, moisture sensor to monitor the moisture of sponge, DC Pump to transfer the solution from container to the sponge, LCD screen for displaying the pH value and pH volts. An LED lamp was used for feeding at night and morning. The microcontroller was responsible for the operation of the system of the honeybees feeder which depended on the data sent by the sensors.

The project was tested and evaluated at NCRDEC at Cavite State University Indang, Cavite to determine the effectiveness and efficiency of lamp, and the ability of feeder to monitor the pH level and to feed the honeybees.

Based on the results of the evaluation, the feeding time of bees could be lengthened by adding a light source for honeybees. A bright and war light could help the bees in navigating a new source of food. Using a bulb with a warm and bright light make bees active at night.

The total cost of the design project was P19,850.00.

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DEVELOPMENT OF AN ARTIFICIAL HONEYBEES FEEDER

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An undergraduate design project submitted to the faculty of Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Engineering (BSCpE) with Contribution No_____ Prepared under the supervision of Mr. Bienvenido C. Sarmiento Jr.

INTRODUCTION

Flower is the reproductive part of the plant. It is composed of peduncle, receptacle, sepal, petal, stamen, anther, pistil, stigma, and ovary. Flowers are also known as blossoms or a blooms. In order to produce a new seed, every plants with flowers should be pollinated. Pollination is the process of transferring the pollen to the anther of the flower. There are two (2) types of pollination, abiotic and biotic pollination. Abiotic pollination occur when the flower is pollinated without any involvement of animals, commonly the wind is the main cause of abiotic pollination. In abiotic pollination, 10 percent of flowering plants are being pollinated. In biotic pollination, the pollinating process occur with pollinators, the pollinators carry the pollen from the plants and transfer it to the anther of the flower. There are 200,000 varieties of pollinators in the wild including honeybees.

Honeybees are any member of genus Apis. Honeybees account for 80 percent of insect pollination. The honey stomach holds almost 70 mg of nectar and when full, it weighs