ACTIVATED CARBON FROM PEANUT *(Arachis hypogaea* L.*)* SHELL FOR BIOFILTRATION IN AQUACULTURE

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ACCEPTANCE SHEET

This undergraduate thesis entitled **"ACTIVATED CARBON FROM PEANUT *(Arachis hypogaea* L.*)* SHELL FOR BIOFILTRATION IN AQUACULTURE,"** prepared and submitted by **KAREN JOY DT. CORREA,** in partial fulfillment of the requirements for the degree of **BACHELOR OF SCIENCE IN AGRICULTURAL AND BIOSYSTEMS ENGINEERING (LAND AND WATER RESOURCES ENGINEERING)**, is hereby accepted:

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BIOGRAPHICAL SKETCH

Karen Joy D.T. Correa was born on 22th day of September 1997 in Sta. Ana, Manila. She grew up in Angat, Bulacan with her two siblings, Kristine and Kim, raised by their loving parents, Mr. Manolito Correa and Mrs. Rowena Correa.

She finished elementary on April 2010 in Banaban Elementary School at Banaban, Angat, Bulacan and secondary school on April 2014 in Colegio de Sta. Monica de Angat at Poblacion, Angat, Bulacan. She enrolled at the Central Luzon State University on June 2014 and pursued Bachelor of Science in Agricultural and Biosystems Engineering degree.

In college, she decided to join an organization, SAGES-PSAE CLSU chapter in 2016. SAGES-PSAE family help her to better understand her chosen degree and gave her a chance to attend the 20th PSAE-PPG Luzon Convention held at Nueva Vizcaya State University.

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ABSTRACT

CORREA, KAREN JOY D.T., Department of Agricultural and Biosystems Engineering, College of Engineering, Central Luzon State University, Science City of Muñoz, Nueva Ecija, Philippines, **June 2019, ACTIVATED CARBON FROM PEANUT *(Arachis hypogaea* L.*)* SHELL FOR BIOFILTRATION IN AQUACULTURE**

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Water quality is a critical factor in fish production. Biofilters are used to improve water quality. Peanut is one of the major field legumes grown by the farmers in the Philippines. Peanut generates an agricultural waste (shell). Peanut shell is very woody, converting it into activated carbon will maximize its adsorptive properties. The study was carried out to develop a biofilter system using peanut shell activated carbon as filtering media for aquaculture.

The filtration system was designed using peanut shell activated carbon and sand as filter medium and local available materials. The biofilter system was fabricated according to the proposed design using PVC pipes. The peanut shell activated carbon as filter medium were evaluated using multi parameter tester. Water quality parameters such as temperature, dissolved oxygen, pH level, and ammonia concentration were gathered for the analysis of the study. The filtration system was composed of three different treatments, peanut shell activated carbon with 2 mm, 4 mm, and 6 mm size. The data were laid out in Completely Randomized Design (CRD) with three replications.

Results showed the fabricated biofilter system using peanut shell activated carbon can decrease the water temperature to 28.03 °C, pH level to 8.29, and ammonia concentration to 0.19 mg/L and increase the dissolved oxygen to 4.47 ppm which is

favorable for fish production. Evaluation of the filtering capacity resulted to the lowest filtering capacity of 0.26 L/min for 2 mm size of peanut shell activated carbon. Small size gives slow filtration capacity and slow filtration capacity gives better qualities for treated water.

Keywords: biofilter system; peanut shell activated carbon; water quality parameters

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