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Coly Briq: Biomass Briquette Made from Water Hyacinth (*Eichhornia crassipes*) and Coconut (*Cocos nucifera)* Shell as an Alternative Fuel

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ABSTRACT

This study aimed to address the issue of the depletion of natural resources and the pollution caused by biomass waste by utilizing water hyacinth and coconut shells as an alternative fuel. The study sought to determine the best percentage of charcoal briquettes between water hyacinth and coconut shells and identify the difference between conventional briquettes in density, moisture content, ash content, volatile matter, and calorific value. Three set-ups were prepared consisting of three ratios of fine charcoal powder between water hyacinth and coconut shells were used which are Set-up A 75% water hyacinth and 25% coconut shells, Set-up B composed of 50% and 50% of both materials and Set-up C consisting of 25% water hyacinth and 75% coconut shells, with a cornstarch binder of 10% of the weight of each sample, approximately 30g, produced with a compaction pressure of 2 metric tons in a hydraulic press. The quantitative method, specifically the true experimental design, utilized simple random distribution with 25 samples per set-up. Descriptive statistics was used to analyze the results of the study. In comparing the best set-up briquette in each variable and the conventional briquette, the results show that set-up C, with an ash content of 20.5% and calorific value at 5,033 cal/g, and set-up B's moisture content at 1.90%, shows better properties compared to the conventional

briquette. The findings show that water hyacinth and coconut shells are viable alternative fuels for briquettes. The implication highlights the need for future researchers to improve temperature control during carbonization and the mixing techniques for briquetting, as exploring other methods could improve the production process.

Keywords: alternative fuel, biomass, briquette, coconut shell, water hyacinth