ABSTRACT

The study was conducted to gather reliable information necessary for motor-driven shell washer. Specifically, it aimed to answer the following objectives: (1) Design a motordriven shell washer; (2) Fabricate a motor-driven shell washer; (3) Determine the performance of a shell washer in terms of cleaning capacity in kg/hr, holding capacity in kg/batch, percent breakage (%), percent uncleaned shell (%), cleaning efficiency in percent (%), cleaning recovery in percent (%), electrical energy consumption in (kW-hr), water consumption in (l/hr) and (4) Analyze the cost in operating the motor-driven shell washer. The machine was fabricated at Barangay X, Lawaan, Roxas City from November 2018 to January 2019. The fabrication processes involved lay-outing, cutting, boring, welding, sanding, assembly, pre-testing and painting. The design criteria of the machine are as follows: ease of loading, ease of cleaning parts, ease of adjusting and repair of parts, ease of collecting output, and ease of transporting the machine, safety and vibration. The fabricated machine was tested at Capiz State University Pontevedra Campus, Agricultural Engineering Department. It was found out that the cleaning capacity of the machine was 544.88kg/hr, holding capacity of 50 kg/batch, cleaning recovery of 48.74%, cleaning efficiency of 90.95%, electrical energy consumption of 0.14 kW-hr, water consumption of 1, 731.25 l/hr. The cost of operating is computed to be O.542 Php/kg. The return of investment was computed to be 4.84 months. The break even use was computed to be 66.16 kg/hr.

Keywords: Shell washer, motor driven, shell cleaning, fabrication