

DESIGN MODIFICATION, FABRICATION AND PERFORMANCE EVALUATION
OF THE NEWTECH PULP INC.'S FIRST GENERATION MANUALLY-FED
ABACA (*Musa textilis* Nee) DECORTICATING MACHINE

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By

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ABSTRACT

The design modification of the first generation manually-fed abaca decortivating machine provided abaca farmers a more portable, lightweight and low-cost decortivating machine with simple operating principle. It is composed of the following main parts: a) decortivating blades, b) scraper block, c) decortivating drum, d) input chute, e) output chute, f) engine and belt drive assembly, and g) machine frame. This study was completed within 4 months including pretesting and modifications. It has an overall dimension of 950 mm L x 850 mm W x 950 mm H and weighs 56 kg including the engine. The fiber is extracted through the scraping action produced between the blades and the scraper block. The machine produced an average fiber length of 1,750 mm and elongation of 15.1 mm. It has a fiber recovery rate of 1.71% and an output capacity of 2.10 kg/hr of dry fiber and 3.68% and 5.52 kg/hr of dry fiber, using overmature and harvestable stalks, respectively. The machine consumed 0.73 li/hr of gasoline fuel to produce 2.10 kg/hr of dry fiber. As computed, its operating cost is PHP10.05/kg of fiber. For the quality of the fiber, it produced a fiber grade AD-1, the highest fiber grade for machine-cleaned fiber based on the sight evaluation conducted. With a buying price of AD-1 at PHP60.00/kg, the estimated daily income that can be generated is between PHP1,008.00/day to PHP2,649.6/day.