

DESIGN, FABRICATION, AND PERFORMANCE EVALUATION OF A CASSAVA
DIGGER ATTACHED TO A TRACTOR PRIME MOVER

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By

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ABSTRACT

The study was conducted to design and evaluate the field test performance of the designed cassava digger attached to a tractor prime mover in harvesting cassava tuberous roots. The fabrication was done at a machine shop located in Jaro, Iloilo City from April 2019 to May 2019. Performance evaluation was done at Sitio Salong, Calaya Nueva Valencia, Guimaras in October 17, 2019. The implement has the components of: (a) frame, (b) standard, (c) soil breaker, (d) soil guide, (e) digger base plate, (f) digging blade and (g) implement stand. The machine has an overall dimension of 115 cm length, 84 cm width and 90 cm height. The minimum power requirement to pull the implement is 70 Hp depending on the soil resistance. Results of the actual field test performance showed that the field efficiency and the digging efficiency of the machine were 69% and 96%, respectively. It can dig up to 30 cm depth. It has an investment cost of PHP50,000.00. The fixed cost and variable cost per day at 8 hours operation were PHP408.33 and PHP7,600.00, respectively, giving a total cost of PHP8,008.33. Finally, the operating cost per hectare of cassava tubers was PHP4,766.86, which was computed by dividing the total cost by its actual field capacity of 1.68 hectares per day at 8 hours operation. On the other hand, using the manual method showed that the total harvesting cost is PHP9,000.00 per hectare. Comparing the operating cost of the manual method to that of mechanized method of harvesting, not less than PHP4,000.00 per hectare will be saved by a farmer if he will adopt a mechanized operation.