

FACULTY OF ENGINEERING
DEPARTMENT OF AGRICULTURAL MECHANISATION AND IRRIGATION
ENGINEERING

**DESIGN AND CONSTRUCTION OF A WATER MELLON SEED SHELLING
MACHINE USING LOCALLY AVAILABLE MATERIALS**

BY

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ABSTRACT

Watermelon is one of the most common economic and productive fruits grown in the eastern part of Uganda. Water Melon processing in the industry generates large quantities of by-products that are usually discarded (Mansouri, Mirzabe and Ráufi, 2017). Within those by-products, melon seeds account for 10% of total melon weight.

Thus to increase the economic value of watermelon, the best use of this discarded has been studied in this literature. Since watermelon seed shelling is still carried out manually in most countries thus making the process slow, labour intensive, arduous in nature, and low productivity.

This work therefore focused on: design; construction; performance evaluation; economic analysis of a motor operated watermelon shelling machine which can shell a variety of watermelon seeds. A motor operated watermelon seed shelling machine was designed, fabricated and tested.

This watermelon seed shelling machine consists of an electric motor onto which a belt is attached which transfers motion to the pulley that is attached on the Shelling disk.

The shelling disk consists of a shaft which turns to drive the shelling disk; where

The seeds are hit against the stationary drum. During testing, 12 kg of watermelon seeds were shelled per hour with a shelling efficiency of 68.7%.

The machine had an investment cost of 1,200,000UGX, NPV of 8,763,840.48UGX and salvage value UGX 8,486.01UGX after five years. The results obtained showed that slight increase in the amount of seeds increases the shelling efficiency.

DECLARATION

I **MUSANA DEOGRACIOUS** hereby declare to the best of my knowledge that this is my true and original piece of work and has never been submitted to any university or institution of higher Learning by anybody for any academic award.

Signature.....

Date

APPROVAL

This final year project report has been submitted to the Faculty of Engineering for examination with approval of my supervisor.

SUPERVISOR: ENG. GODFREY SSAJJA SSALI

SIGNATURE:

DATE:/...../.....

ACKNOWLEDGEMENT

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DEDICATION

This report is dedicated to **ZIKUSOOKA** family, most especially my aunt madam **KASEA FLORANCE** in appreciation for their selfless care and parental support provided to me since childhood, and for the mentorship of hard work and determination delivered to me, which attributes I have cherished with firmness and which have transformed me to this level

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