FACULTY OF ENGINEERING

DEPARTMENT OF AGRICULTURAL MECHANISATION AND IRRIGATION ENGINEERING

FINAL YEAR PROJECT REPORT

DESIGN AND CONSTRUCTION OF A FINGER MILLET DEHUSKING AND CLEANING MACHINE.

BY: TUMWESIGYE ALEX

BU/UG/2016/96.

SUPERVISOR: MR. JAMES MENYA.

A final year project report submitted to the department of Agricultural Mechanisation and Irrigation Engineering in partial fulfilment of the requirements for the award of the BSc. Of Degree in Agricultural mechanization and irrigation engineering at Busitema University.

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ABSTRACT

Finger millet (**Eleusine coracana L.**) is a grass cereal crop grown in many countries of Africa and Asia. Finger millet can be ground and cooked into cakes, puddings or porridge. The grain is made into a fermented drink (or beer) in Nepal and in many parts of Africa. The straw from finger millet is used as animal fodder.

In Uganda finger millet is one of the oldest human foods and is important food for sustaining tribal population in western and northern regions of the Country.

Finger millet production and value addition chain involves a number of activities right from harvesting, drying, threshing, winnowing, dehusking, cleaning and then milling to produce high quality millet flour.

This project was designed and constructed to help the local farmers, small and medium scale industries to improve on the quality of their millet flour and grains which would yield high market prices hence improving their economic wellbeing and this was achieved by dehusking and cleaning the millet grains.

The design of the various machine parts was carried out by analyzing forces acting on them. Force analysis led to selection of proper materials to withstand the forces to avoid failure. Mild steels of various grades were the main materials recommended to be used because they are food grade, strong and durable. Engineering drawings of the various components were drawn before the various components were constructed and then machine parts fabricated. A fully functional prototype resulted after all the above operations. Testing of the prototype was carried out and the figures revealed that the machine was 79.74% efficient and 74.0 separation efficiency. The millet dehusking and cleaning machine has a total cost of 424.04$ which includes all the taxes, cost of material, machinery and hired labor to construct the machine, the cost evaluation analysis of the project was based on the payback period method, and on net present value method with NPV of 2,497.62$ over a period of three years

DECLARATION

I **TUMWESIGYE ALEX** declare to the best of my knowledge that this project report is as a result of my research and effort and it has never been presented or submitted to any institution or university for an academic award.

SIGNATURE ……....

DATE ……....

APPROVAL

This final year project report was compiled and submitted to the Department of Agricultural Mechanization and Irrigation Engineering under the supervision of;

Supervisor

Mr. JAMES MENYA

Signature ……

Date…… ….....

DEDICATION

This report is dedicated to my beloved parents Mr. Mwesigye Patrick and Miss. Turyahebwa Gloria in appreciation for their selfless care and unflinching support provided to me since my childhood and for the spirit of hard work, courage and determination instilled into me, which attributes I have cherished with firmness and which have indeed made me what I am today.

ACKNOWLEDGEMENT

First and foremost, I would like to thank the ALMIGHTY GOD for my life and good health I am living today. Thank you, Father, and may your name be glorified.

Great thanks to my supervisor, MR. JAMES MENYA for his time, and guidance he has rendered to me making it a success in compiling this report.

Lastly, I warmly thank all my friends and course mates for all their support and assistance that has been a positive contribution to the success for this report.

Table of Contents

LIST OF FIGURES

LIST OF TABLES

List of acronyms

FAO	Food and Agriculture Organization.
UBOS	Uganda bureau of standards
UCA	Uganda Census of Agriculture
Mt	Metric tones
Ha	Hectares
Kg	Kilograms
mm	millimeters