BUSITEMA UNIVERSITY
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF AGRICULTURAL MECHANIZATION AND IRRIGATION ENGINEERING

FINAL YEAR PROJECT

DESIGN AND CONSTRUCTION OF A DRY SWEET POTATO MILLER

BY

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A PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF A BACHELOR'S DEGREE IN AGRICULTURAL MECHANIZATION AND IRRIGATION ENGINEERING

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ABSTRACT .

Uganda is one of the largest producer of sweet potato (ipomoea batatas) in Africa with an annual average output of nearly 2 million. Scott F.,(1999). The high outputs enjoyed from the productive lands have not however translated into good living conditions for the eastern Ugandan residents as their products fetch little in terms of market price the farmers get. Farmers have the option of adding value to their sweet potatoes to fetch optimal prices; which have been advocated in the eastern Ugandan districts by many non- governmental organizations. This study therefore established one of the ways of adding value techniques to sweet potatoes and also adding on its shelf life. Processing of sweet potato into flour is perhaps the most satisfactory method of creating a product that is not only functionally adequate, but also remain for an extended period without spoilage and in long run value addition to sweet potatoes therefore the design and construction of a dry sweet potato miller .

For production of the final design of a dry sweet potato miller, the following steps were considered; laying out an intervention strategy for the problem, literature reviewing was carried out to find out on some sweet potato characteristics , making possible designs for the prototype, selection of the best design, components designing, material selection for each component: These materials were also selected basing on their applicability, availability, ease of fabrication and cost; economic analysis, fabrication of the components, machine assembling, testing, analysis of the results and discussions on the findings were done.

Finally conclusions and recommendations were done on what the machine was able to accomplish then some major recommendations for the effective performance of the machine were also made. Then the appendix was included having tables and pictures showing what transpired during the construction and fabrication of the miller.s

DEDICATION

I dedicate this project to my parents Mr. Musoke Solomon, Mrs. Nakyomu Lucy Harriet and sister Nadia Nakiwolo. for all the financial, moral and spiritual support they have always offered to me whole heartedly to see me through in my education carrier. May God almighty reward and bless them abundantly.

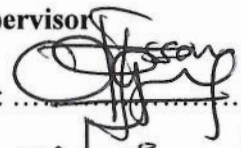
ACKNOWLEDGEMENT

I take this opportunity to thank Eng. Ssajja Ssali Godfrey and Ms. Mary Mwogeza for all the consultancy, help and advice that they have always extended to me before and during preparation of this final year report and the project as a whole. I thank my fellow students who have taken their time to help me in preparation of the report, the advisory point of view and the construction of the prototype. They include Mr. Ssaka Ronald, Mr. Mugume Lordin, Mr. Kyeswa Moses, Mr. Isingoma Joel , and Ms. Kisakye Joan . May God bless and reward them abundantly in whatsoever thing they do.

APPROVAL

This report has been submitted in for Examination with the approval of the following supervisors.

Main supervisor

Signature: 

Date: 01 June 2015

Eng. Ssajja Ssali Godfrey

Co supervisor

Miss Mary Mwogeza

Signature: ……..

Date: ……..

DECLARATION

I, Wampona Ivan, do declare that this project is my original work and has never been present to any university or any other institution of higher learning for an award of a bachelor's degree.

Signature: .....

Date: .....01/June/2015.....

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CHAPTER I

1.0 INTRODUCTION.

This chapter introduces the study by providing a background to the study, a problem to be addressed, and objectives of the study, justification of the study and finally purpose plus scope of the study.

1.1 BACKGROUND.

Sweet potato (Ipomoea batatas L. Lam) is a nutritive vegetable, being an excellent source of vitamin A precursor, certain other vitamins and minerals, energy, dietary fiber and some protein. Ndolo, 2002). It yields more protein and calories per unit area than either maize or Irish potato (Nungo et al., 2007) Sweet potato has a moisture content of about 67%, and this makes a perishable which reduces its shelf life. **Vital A.,(2003)**

Processing of potato into flour is perhaps the most satisfactory method of creating a product that is not only functionally adequate, but also remain for an extended period without spoilage. Different products can be prepared by incorporating potato flour with other flours using different methods of cooking such as, chapattis ,baking, roasting, steaming, boiling and deep fat frying.. This report reports the different steps and procedures involved in the sweet potato product value addition of getting flour out of it, which will be achieved through design and fabrication of a dry sweet potato mill to enhance on the production of the flours.

Also, the existing mills and local milling methods such as the attrition mill, the hammer mill grinding stones mortar and pestle used by show some inefficiencies. Such inefficiencies include inability to produce uniform grind of the sweet potato flour, producing contaminated flour for local methods and those un specialized flour producing hammer mills plus the long hours taken to produce the flour . This research is aimed at developing a modified dry sweet potato milling machine that can address nearly all the concerns of the existing milling machines and tradition methods.

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