BUSITEMA UNIVERSITY
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF AGROPROCESSING ENGINEERING

DESIGN AND CONSTRUCTION OF A COCOA POD HUSK SLICIING MACHINE FOR ANIMAL FEEDS

BY

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EXECUTIVE SUMMARY

Cocoa-pod husk is a by-product of the cocoa processing industry and despite the involvement of many farmers in the cocoa growing areas in Uganda; many have not utilized fully its by-product into useful products such as ingredient for animal feeds and others. Slicing using knives is time consuming, labor intensive and gives less output.

There is a problem of feed scarcity due to competition of the available animal feeds between animals and because of seasonal changes especially during the dry season, there is always less feeds. The size of the cocoa pod husk is big thus cannot be taken in by animals with ease. This calls for a way of minimizing all these constraining issues to the full utilization of cocoa pod husks.

The purpose of this study is to design and construct a cocoa pod- husk slicing machine local farmers, which increased the output of animal feeds compared to the quantity obtained while using knives. This will be by designing and constructing the various components and testing the performance of the slicing machine. The proposed machine was constructed mainly by carpentry and welding.

The methods used include designing different components of the machine, which include the handle, slicing platform, cutting blades, spout, blade attachments and a flame.

The results include comparison between slicing using a knife and a constructed machine. The output using a machine gradually increased with reduced waste.

In conclusion, the project was found to be viable by carrying out an economic analysis and it was efficient. A continuous mechanism for slicing should be provided to to increase output a mechanism that conveys the husks to the slicing unit.

DECLARATION

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

DATE ..... 22/05/2015 .....

SIGNATURE .....

APPROVAL

This proposal has been submitted for examination with approval from the following supervisors:

Mr. KILAMA GEORGE

SIGNATURE .....

DATE 3/6/2015

Mr. MUYINGO EMMANUEL

SIGNATURE .....

DATE .....

ACKNOWLEDGEMENT

First, I thank God who has enabled me to do this proposal without any single limitation encountered.

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LIST OF ACRONYMS

ESCO- Energy Services Company

CPH- Cocoa Pod Husk

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CHAPTER ONE: INTRODUCTION

1.0 INTRODUCTION

This chapter briefly gives the general information relevant to the research topic while clearly showing the problem of interest for the intended research. It also shows how the study will help reduce the challenges encountered in the study through the fulfillment of a number of objectives and activities listed there in.

1.1 BACKGROUND OF THE STUDY

Cocoa-pod husk is a by-product of the cocoa processing industry, it forms about 80% by weight of the cocoa pod, and it is essentially a waste product except for the small amount being used in the manufacture of local soap and feeding of livestock. It is estimated that 0.8 to 1.0 million tons of cocoa pod husk is generated annually in cocoa farms in Nigeria.

Cocoa pod husk which contains protein, energy and fiber has gained considerable interest as a livestock ingredient in Nigeria owing to availability and lack of large-scale commercial application. Meat is expensive because of high cereal prices and cereal scarcity and therefore becomes imperative to find local agricultural residues and byproducts that are commonly available, unsuitable for human consumption, cheap and can provide commercial diet for livestock without negatively affecting their health and productivity (Eghosa, 2010). The amounts of protein and fiber in the pod bear a close resemblance to those for grass hay, and this suggests that this by-product can be used in feeding ruminant animals. Experiments were carried out in Costa Rica in which artificially dried cocoa pod husks, converted into a meal, were used as a concentrate for dairy cows. The meal comprised 50% of the ration. Comparisons were made between pod meal on the one hand and cassava meal and corn on the other; milk production, when dairy cows were fed on pod husk meal was-found to be just as high as when the cows were fed on corn. The cocoa pod husks have a very much lower content of theo- bromine than cocoa shell, and are therefore less dangerous as a feedstuff. (OWUSU, 1972).

The practice of feeding animals on crop or food wastes was found to be a very important strategy for coping with feed scarcity, particularly among pig and dairy cattle farmers.

Cocoa pod husks are used in the production of animal feeds, source of energy as biomass and are used to remove colour from waste water (Adejobi, 2014).

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