BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF TEXTILE AND GINING ENGINEERING

DESIGN AND CONSTRUCTION OF A MANUALLY OPERATED MULBERRY LEAF CHOPPING MACHINE

BY

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DECLARATION

I, TUMUSIIME Godias, Registration Number BU/UG/2012/1814, declare that this project report is my original work and that it has never been submitted to any university or any other institution of learning for academic or any other reasons. I am therefore glad to present it to the board of Busitema university examiners for examination purposes.

Signature: .....

Date: 17/05/16

APPROVAL

This project report has been fully and consistently worked on and submitted to the Department of Textile Engineering under the supervision of the undersigned supervisors.

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DEDICATION

I dedicate this project report to my beloved mother Kemiziga Beatrice and to my cherished friends Eng. Muhabuzi Pastori, Mr.Twazagye Naboth and Ms. Natukunda Beth MAY the almighty GOD BLESS them

ACKNOWLEDGMENT

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ABSTRACT

This report deals with the development and testing of a manually operated mulberry leaf chopping machine. The existing methods of cutting mulberry leaves like using a knife, a motorized power leaf chopper and motorized leaf cutter are tedious, prone to accidents, labour, time consuming, consumes power and requires two people to operate. A mulberry leaf chopper is a machine used in sericulture centres (places where they rear silkworms). This is used by silk farmers and sericulture centres.it is manually driven by rotating a handle in clockwise direction in relation to the feeder.

The mulberry leaf chopping machine consists of a feeder hopper with 400x240x400mm, shaft diameter 25mm, moving knife 300x60x4mm,

A mulberry leaf chopping machine capacity $0.5kg/min$ was designed. The chopper was tested with a view to increasing the cutting efficiency and reducing on the cost of power in comparison with traditional method of cutting leaves and a motorized one. It was observed that the maximum cutting efficiency of 93.7% can be achieved by cutting mulberry leaves.

The successful development of this machine is meant to reduce on accidents, increase on efficiency and no power consumption compared with the traditional method of threshing finger millet and therefore increase productivity of farmers.

The total initial cost of the mulberry leaf chopping machine is 511,680 UGX with a profit margin (23% of the grand total of costs) inclusive, includes the cost of material and labour. The investment in the leaf chopper has a payback period of 3 weeks. Since the payback period of the machine is less than the estimated machine life of 4 years, therefore the machine is economically viable.

LIST OF ACRONYMS.

NSS National Sericulture Station

HP Horse Power

B.S.F.A Bushenyi Silk Farmers Association

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CHAPTER ONE.

INTRODUCTION

This chapter describes the background information of the project, the problem statement, justification of the study, purpose, objectives and the scope of the study. The problem statement describes the problem of the study and identifies potential causes and a solution. The justification describes the importance of the project and the specific objectives will achieve the main objectives.

1.1 BACKGROUND

Mulberry (*Morus* spp.) leaves have been the traditional feed for the silk worm (*Bombyxmori*). Through silk production projects, mulberry has been taken to countries all over the world, and it has now spread from the temperate areas of northwest and central Asia, Europe and North America, through the tropics of Asia, Africa and Latin America, to the southern hemisphere (southern Africa and South America). Mulberry has been selected and improved for leaf quality and yield for a long time. There are mulberry varieties for many environments, from sea level to altitudes of 4,000m (FAO, 1990), and from the humid tropics to semi-arid lands, like in the Near East with 250mm of annual rainfall and southwest of the U.S.A mulberry grows well. (Tipton, 1994).

The main use of mulberry globally is as feed for the silk worm. However depending on location, the plant is also appreciated for its fruit, as a delicious vegetable, for its medicinal properties (in infusions)such as mulberry leaf tea, for mulching and as animal feed. In Peru, various uses of mulberry were discovered (Zepeda, 1991).In Italy,several studies on the use of mulberry for dairy cows and other domestic animals were carried out (Vezzani, 1938; Maymone *et al*, 1959; Bonciarelli and Santilocchi, 1980; Talamucci, and Pardini, 1993) and in France a research project to introduce mulberry in livestock production was made (Armand, 1995). Nevertheless it was only in the eighties that great interest in the intensive cultivation and use of mulberry as animal feed developed in Latin America.

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