

BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF AGRO PROCROSSING ENGINEERING

DESIGN AND CONSTRUCTION OF PINEAPPLE PEELER-CUM-RING SLICER

By

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DECLARATION

I **BAMULESEYO DEBORAH** declare that the work presented in this report is my own and has never been presented to any university or higher institution of learning for any academic award.

Signature... *Deborah W*

Date



APPROVAL

The project report has been submitted to the department of Agro Processing Engineering for examination with approval from the following supervisors.

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DEDICATION

I dedicate this project report to my beloved dad, MR. BAMULESEYO IBRAHIM and all my brothers and sisters.

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LIST OF ACRONYMS

CCPs	Critical Control Points
HACCP	Hazard Analysis and Critical Control Points
USFDA	United States Food and Drug Administration
GHP	Good Hygienic Practice
AISI	American Iron and Steel Institute
GHP	Good Hygienic Practices

ABSTRACT

The objective of this study was to determine design and construct a manually operated pineapple peeler-cum-ring slicer.

Manually peeling and slicing of pineapple is a time consuming and labor intensive process. Pineapple peeler and slicer are required for reducing the size, obtaining uniform thick slices, proper shape finishing and further processing of pineapple quickly. Therefore a peeler-cum-slicer was designed with slicing plate of diameter 7 cm and core diameter of 2.5 cm. It removes the core and produces pineapple rings of uniform thickness & diameter in a single motion. This is a hand operated peeler cum slicer which works satisfactorily with easy operation. Twenty numbers of pineapple fruits can easily be peeled and sliced by skilled worker in one hour with this designed device. The designed peeler-cum-slicer has also proved to have high peeling efficiency of 56%.

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter presents the background of the study, and its significance to the development of the agro processing industry in Uganda.

1.1 Background

Pineapple (*Ananas comosus*) belongs to the family Bromeliaceae and is one of the most important commercial fruits of the world. Pineapples are thought to have originated in Brazil and Paraguay in South America (Anon, 2013). Today, it is found to grow throughout the tropical and sub-tropical regions of the world. Pineapples may have originated in Paraguay but they were perfected in Uganda – the Pearl of Africa (Jon, 2012). Pineapples are by far the most developed and widely grown commodity in the fruit crop range and value chain in Uganda. Current production is estimated at 5000 acres (2000ha) on 2500 smallholdings in Luwero and Kayunga where pineapples are grown as a sole crop or intercropped with bananas.(Anon, 2013). Other districts growing pineapples in Uganda include; Masaka, Iganga, Kamuli and Tororo.

This delicious fruit is full of nutrients that promote good health. Raw pineapples are loaded with vitamins, enzymes and minerals including vitamin A, vitamin C, calcium, phosphorus, manganese and potassium, which are all important to human health. It is also rich in fiber and calories, and low in fat and cholesterol. Both the root and fruit may be eaten or applied topically as an anti-inflammatory. The anti-inflammatory properties can greatly alleviate the pain of arthritis (Tribin, 2012).

In addition, changing lifestyles dictate the need for food that offers convenience to the consumer in a myriad of ways such as minimizing preparation time while also offering high quality through an extended shelf-life. As a result, consumers are increasingly demanding convenient, ready-to-use and ready-to-eat fruits with a fresh-like quality, containing only natural ingredients (Rocha & Morais, 2007). Manual peeling and slicing of pineapple is a time consuming and labor intensive process; moreover, it poses health concerns of hygiene.

In response to these needs, one of the most important recent developments in the food industry has been the development of minimal food processing technologies designed to limit

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