BUSITEMA UNIVERSITY
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF CHEMICAL AND PROCESSING ENGINEERING

DESIGN AND CONSTRUCTION OF A POULTRY MEAT DEBONING AND MINCING MACHINE

BY

NAMUGERE FAITH

REG NO: BU/UG/2014/14

EMAIL: faithblessing@gmail.com

PHONE NO: 0703989006/0778444005

SUPERVISORS

1. MR.KIYEMBA ANDREW.

2. MADAM KABASA MARY

A final year project report presented in partial fulfilment of the requirements for the award of the Bachelor of Science in Agro-Processing Engineering of Busitema University.

MAY, 2018

ABSRACT.

Poultry meat is one of the essential food required in a human deity, it has got proteins, minerals, vitamins and low content of fats. The low fat content is a great deal to a person's life as it can be used by the pregnant mothers .mincing poultry meat is one of the way of preserving and increasing products of the poultry meat in Uganda, it can be in form of sausages, hot cakes etc. which can be used by any person regardless of age that is to say even babies.

However the deboning technologies especially for poultry meat that exist have not been efficient enough to cope up with such increasing demands of the minced meat. One of the most common method in Uganda is using hands which is too tiresome, labor costly, sharp knives are used which causes injuries to workers hence contamination of the meat. Its time consuming. The aim of this study was to design a poultry meat deboning and mincing machine which is easy to operate with an improved efficiency. Designing and constructing of the various components of the deboning and mincing machine involved, calculating speed of cutting knives, Force analysis led to selection of proper materials to withstand the forces to avoid failure. Engineering drawings of the various components of the deboning were designed before the machine was constructed and assembled. The performance of the poultry meat deboning and mincing machine after construction was evaluated taking into consideration its capacity, efficiency and power requirement. Therefore, it is recommended that, this deboning machine should be manufactured and popularized for adoption in Uganda to meet the increasing demand for minced meat.

DECLARATION

I NAMUGERE FAITH, declare to the best of my knowledge that the piece of 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 an academic award.

DATE .....

SIGNATURE .....

APPROVAL

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

MADAM KABASA MARY.

SIGNATURE .....

DATE .....

MR.KIYEMBA ANDREW.

SIGNATURE .....

DATE .....

DEDICATION.

I dedicate this report to my parents; Mr. and Mrs. Isabirye George who have raised me up, given me financial assistance, parental guidance and counseling plus encouragement in all my academic endeavors and in making sure my project gets done.

ACKNOWLEDGEMENT

My sincere thanks go to the Almighty God for the wisdom, knowledge, grace, mercy, and protection He has given to me.

I am indebted to my parents, brothers, sisters, relatives, classmates and friends who have assisted me through guidance and support.

I extend my thanks to all my lecturers of Busitema University at the Faculty of Engineering, Agro-processing Engineering Department who have equipped me with academic knowledge that has enabled me to succeed in my studies. I sincerely thank madam KABASA MARY AND MR KIYEMBA ANDREW for the support rendered to me in preparation of my project proposal.

Table of Contents

LIST OF FIGURES

LIST OF TABLE

1.0. CHAPTER ONE.

1.1 BACKGROUND

Poultry is predicted to become the overall meat of choice (Bilgili, 2002), because of the continued growth and competitive nature of the industry in the world have been attributed to a variety of factors, some of which relate to economies of scale in intensive production and processing, extensive use of mechanization and the more convenient development of convenient and ready-to-eat products that meets both consumer demand and rapid expansion of the market.

Poultry products are nutritious, healthy, convenient and inexpensive foods(Yeung and Yee,2002) and the recent food scares such as foot and mouth disease in 2001 have had a negative effect on consumption of red meat and this has boosted poultry meat consumption in the world (Kennedy *et al.*, 2004) as people considered poultry meat to be safer than all other meat products (Yeung and Yee,2002;Kennedy et al.2004).the quality attributes in poultry meat are essential to the producer and the consumer and these include ;color, Ph, water holding capacity, drip loss and texture (Warner-Bratzler shear force value).

Poultry meat is very essential in a person's deity because it is composed of ,70% of water,20%proteins and 5% lipids on average (Zhuang et al,2007) this shows relatively low-fat content and with a more desirable unsaturated fatty-acid content than other meats which is healthy and nutritious. Most importantly, high-quality poultry products are available to many people at affordable prices, although production costs vary widely around the world (van Home, 2002). Poultry products are popular because they are not subject to cultural or religious constraints.
Throughout the world, consumption and production of poultry meat continued to rise in both developed and developing countries and financial recession is one of the causes of rise in consumption as consumers stayed away from expensive cuts. Much of the hand and mechanically deboned chicken meat is directed into value added products. Deboned meat can be marketed when fresh, as whole breast fillets, strips and chunks, it can also be tumbled, marinated, chopped, ground emulsified or prepared in a number of ways for sale. The fast-food restaurants have had a tremendous influence on new poultry product popularity for items such as nuggets, tenders, marinated breast fillets, and frozen fried parts.in the retail supermarket, low-fat chicken products

REFERENCES

Barbut, (2002), an experimental poultry deboning machine', Journal of agricultural Engineering and technology VOL 13.

Biligili, (2002), processing and preservation of meat.micmillan Education Ltd, London.

Castelline, et al, (2008), poultry meat processing Technology, Tata McGraw-Hill publishing Company limited ISBN 0-07-61141-6, ISBN 978-0-07-061141-2.

Grandfield, (1994), Deboning machine: Development, design and construction. Journal of Agricultural Engineering Research.

Fletcher, (2002), Agricultural Research Technology: Design and Fabrication of a poultry meat deboner and mincing machine. American Food Journal.Vol.23, pp. 1-9.

Jaturasitha at el, (2008), Food Science Technology in poultry deboning, Transactions of of the USRN: Lund university/School of industrial Design.

Kennedy et al. (2004).food cycle technology; chap.5-processing of meat.publ.intermediate technology. London.

Meckchay et al, (2010), Science in poultry meat Technology. International journal of Food Engineering, Volume 3.

Petracei and Baeza, (2012), Food and Science Technology, Journal of Agricultural Research, VOL 14.

Sheng et al, (2013), Agricultural food science and Technology, Studies and preliminary design for a poultry meat deboning machine. Transactions of the ASAE, 31(2), 380-385.