BUSITEMA UNIVERSITY
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FACULTY OF ENGINEERING

DEPARTMENT OF AGRICULTURAL MECHANISATION AND IRRIGATION ENGINEERING

DESIGN AND CONSTRUCTION OF AN AUTOMATED CHICKEN-FEEDER

By

NABAWANUKA PROSCOVIA.

BU/UG/2012/12

+256-754701662

+256-700385164

nabsprosy@gmail.com

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SUPERVISORS: 1. JACQUELINE ABBO

2. GRISM LWARENCE OBETI

A Project Report Submitted in Partial Fulfillment for the Award of a Bachelor's Degree in Agricultural Mechanization.

ABSTRACT

Due to the problem of feed-wastage by chicken farmers, an automated chicken-feeder which operates mechanically, refills the feeding trough whenever feed is consumed by the birds without human supervision has been designed and its prototype constructed. With this chicken-feeder only small quantity of feed is metered to limit feed-wastage by spillage on the floor with in the poultry farm housing hence, reducing expenditure on the feed. The automatic chicken-feeder components were designed and fabricated and the assembled-prototype tested for performance. The chicken-feeder can contain up to 25kg per batch of chicken feed which is able to feed twenty-five layer birds for one week.

DECLARATION

I, **NABAWANUKA PROSCOVIA** sincerely declare that all the written material contained in this report is an account of my own efforts except where cited and has never been submitted to any university or institution for an academic award.

Signature.....

Date.....30th/May/2016

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APPROVAL

This project report is submitted in to the department of Agricultural Mechanization and Irrigation Engineering, the faculty of Engineering at Busitema University as a partial fulfillment of the requirements for the award of a Bachelor's Degree in Agricultural Mechanization and Irrigation Engineering

Report approved by:

Miss Abbo Jacqueline.

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Mr. Obeti Grism Lawrence.

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25/9/2016

DEDICATION

This report is dedicated to my mum Ms. Zawedde Annet Mary and other people that gave me material and emotional support during my project execution.

ACKNOWLEDGEMENT

First of all, I thank God for his blessing and unending mercies throughout my education and my life in general.

Then I thank my loving family for standing by me, supporting me and always believing in me more than anything.

I now appreciate Busitema University staff for the skills and knowledge they have added to me during my four years in the university. Greatly appreciate my supervisors Ms. Jacqueline Abbo and Mr. Grism Lawrence Obeti for working hand in hand with me to accomplish my project.

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LIST OF ACRONYMS

NAADS	National Agricultural Advisory Services
DOF	Degree of freedom
B.C	Benefit_ cost ratio
CAD	Computer Aided Design
GDP	Gross Domestic Product
UBOS	Uganda Bureau of Standards
IAEA	International Atomic Energy Agency
PW	Present Worth
AW	Annual Worth
WHO	World Health organization

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1 INTRODUCTION

1.1 Background

In Uganda chicken is kept countrywide, but mainly in rural areas. The people in rural areas usually rear chicken for different activities for example prestige, but they rear them on a small scale. They usually keep local breeds because they are the resistant to diseases thus avoiding the cost of hiring veterinary doctors. The poultry work is mostly done by women and children as men consider it minor. By 2009 the districts that reared chicken most in Uganda are; Arua, Lira, Kanungu, Tororo, Jinja (Andrew, 2003).

In the last 30 years, there has been improvement in feeding systems and mechanism which has reduced on the time required to grow chicken to market weight (Mack, 2005). Some of these improved feeding mechanisms are; wooden chicken feeders, galvanized metal feeders, little giant hanging feeders, chicken feeder plants, polyvinyl pipes, automatic feeders, bucket feeders and plastic buckets and covers. There was also an attempt of design and construction an automatic chicken feeder by different engineers including Mutumba Raymonds for the award of Bachelor's degree in Agriculture Mechanization and Irrigation Engineering in Busitema University in 2013. Most of methods have been improved to suit the required efficiency and specifications but still there remains the problem feed wastage by the birds. When chicken are going through different growth stages they tend exhibit different behavior changes which also affect their feeding habits, for example feeder chicken tend to scratch in trough for their chicks, young hens also tend to like removing feed and feeding separately, laying hens sometimes prefer to take feeds to their laying houses. Naturally when chicken are feeding tend to pull the feed towards themselves in the process most of the feed falls on the ground and its contaminated, so it is not fed to them again thus the wastage. There is need to design an automatic chicken feeder that can reduce the feed losses up to the lowest percentage. The common commercial feeds that are used are in mash form, others are not economical. The invention of the programmed automatic feeding systems reduced the feeding stress but due to the increased power costs and installation of those power automated chicken feeders many farmers could not afford them and the problem of wastage was not also solved. So there was a rise of need to design an automated chicken feeder that will be affordable to small scale farmers in Uganda with no wastage of feeds.

1.2 Problem Statement

Most poultry farmers in Uganda today use manual feeders that require one to constantly refill the feeding troughs, associated with many sources of feed wastage. However, there are high labor costs associated with these methods, high management and monitoring costs. Furthermore, the inefficiency of available feeding methods makes famers to spend a lot of money on feeds as the

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