



FACULTY OF ENGINEERING

DEPARTMENT OF AGRICULTURAL MECHANIZATION AND IRRIGATION ENGINEERING

**DESIGN AND FABRICATION OF A MOTORISED FRESH CASSAVA  
GRATING MACHINE**

**BY**

**ONEN PATRICK**

**BU/UG/2013/11**

[onen.pk@gmail.com](mailto:onen.pk@gmail.com)

+256782889045 / 0700420273

**SUPERVISORS:**

**ENG. ODOGOLA R. WILFRED and MR. OBETI GRISM LAWRENCE**

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FULFILLMENT FOR THE AWARD OF BACHELOR DEGREE OF AGRICULTURAL  
MECHANIZATION AND IRRIGATION ENGINEERING.

DECLARATION

I ONEN PATRICK declare that this project report is as a result of my research unless otherwise referenced. It has never been submitted to any institution for an award of Bachelor's degree in Agricultural Mechanization and Irrigation Engineering.

Signature..... Date.....

APPROVAL

This final year project report has been submitted to the department of Agricultural Mechanization and Irrigation Engineering for examination with approval of the following supervisors:

**ENG. ODOGOLA R. WILFRED**

Date: .....

**MR. OBETI GRISM LAWRENCE**

Date: .....

## DEDICATION

I dedicate this report to my beloved mother AKOKO SANTA for the love, care and selfless sacrifices she made for me and my siblings.

I therefore say that may the almighty God reward her abundantly.

## ACKNOWLEDGEMENT

All glory goes to God almighty who has provided me with the life to still live and reach this moment of life.

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## ABSTRACT

The health problems originating from cyanogen exposure from cassava in several African communities could be avoided if effective processing techniques were applied. However, the role of technological intervention in preventing toxic effects has to be considered against the background of the combination of socio-economic and environmental factors that affect the food situation of the population at the community and household level. Long-term exposure with low and occasionally medium levels of cyanogens under stable conditions must be distinguished from exposure under conditions like war, natural disaster, extreme poverty and collapse of the commercial or agricultural system.

The highly increasing source of cyanide poisoning exposure in Uganda is the rapid increase in rudimentary and inadequate methods for cassava processing. Both bitter and sweet cassava tubers contain cyanogenic glucosides which breakdown into cyanohydrins and free hydrogen cyanide (HCN), hence the design and fabrication of a motorized fresh cassava grating machine.

The objectives of the study were achieved as the grater was fully designed, constructed and tested with performance efficiency of 62.31%

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# CHAPTER ONE

## 1 INTRODUCTION

This chapter presents the background of the study and its significance in the development of agricultural mechanization in Uganda.

### 1.1 Background

#### 1.1.1 Cassava production

According to FAO estimates, 172 million tons of cassava was produced worldwide in 2000. During that period, Africa accounted for 54%, Asia for 28%, and Latin America and the Caribbean for 19% of the world production. Over the past 5 years (2008–2012 inclusive), cassava production on the African continent as a whole, has been growing at approximately 4% p.a. compared with other major regions worldwide with average growth rate, of 1.2%. African cassava production surpassed 145 million tons in 2011, approximately 57% of the global crop that year (Ben, 2014). Nigeria alone contributed 36% of all Africa cassava production, which is approximately 52 million tons (Ben, 2014). In contrast to Latin America with 14% of global production, mainly from Brazil, and Southeast Asia 32% of global production mainly from Thailand and Indonesia, where the majority of cassava is exported for industrial purposes or animal feed, In Africa 70 - 80% of cassava produced is for human consumption, with many food products being based on cassava tubers and roots starch for ethanol production, only a reported 5% of cassava production is currently used as livestock feed (Ben, 2014). Increased cassava productivity offers further opportunities to intensify the utilization of cassava, particularly unused or underused fractions and residues, within applied animal feeding programs.

Cassava was introduced into sub-Saharan Africa from South America in the 16<sup>th</sup> century by the Portuguese settlers. It has since then spread throughout sub-Saharan Africa and become one of the starchy staples in the diet of the people. Although the crop is grown in every country of the sub-continent, cultivation is concentrated in the humid tropics. Africa produces 48 million tons of cassava annually; this translates into an average of more than 200 calories per day for 200 million

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