



**BUSITEMA  
UNIVERSITY**  
*Pursuing Excellence*

**FACULTY OF ENGINEERING**

**DEPARTMENT OF AGRICULTURAL MECHANIZATION AND IRRIGATION  
ENGINEERING.**

**FINAL YEAR PROJECT**

**DESIGN AND FABRICATION OF A MOTORIZED POTATO SLICING MACHINE  
FOR TESO FARMERS.**

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BU/UP/2014/162

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**A final year project report submitted as partial fulfilment of the requirements for the  
award of a Bachelor of Agricultural Mechanization and Irrigation Engineering**

## **ABSTRACT**

Sweet potato which is ranked 7<sup>th</sup> among food crops consumed in the world, is one of the major food crops grown in Teso region. During periods of much production, there is need for the excess to be preserved. This calls for slicing which is mainly done using rudimentary tools which is tedious, non-uniform, prone to injuries and low output.

There are different types of manual and electric slicers on market but most of them produce chips which are not desired by the farmers because upon drying they break into small pieces.

Therefore, this study aimed at designing and constructing a motorized sweet potato slicing machine that will produce uniform slices, increase output and maintain quality. It avoids direct contact of the operator with the cutting mechanism. The slicer was designed with 70% efficiency and capacity of 1kg/min.

**Key words: sweet potato, slicing machine, output capacity, slicing efficiency.**

## **DECLARATION**

I, Itwomo Catherine registration number BU/UP/2014/162 declare that the entirety of work contained in this project is my original work except where explicit citations have been made.

Therefore, it has never been submitted to any institution of higher learning for any academic award.

Sign: .....

Date: .....

## APPROVAL

I affirm that Itwomo Catherine, registration number: BU/UP/2014/162 compiled this project under my supervision, and it can be submitted to the University management for an academic award.

Eng. Wilfred Richard Odoogola

Supervisor

Sign.....

Date.....

Mr. Obeti Lawrence

Supervisor

Sign.....

Date.....

## **ACKNOWLEDGEMENT**

My sincere thanks go to the Almighty God for the strength, health, wisdom, grace, and protection He has given to me all through. I am very grateful to my sponsor Barbra for her endless support throughout my education, may GOD reward you greatly.

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**May the ALMIGHTY GOD bless you abundantly!**

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## **ACRONYMS**

FAO- Food and Agricultural Organisation.

IJFP-International Journal of Food Processing.

ICP- International Crop Centre.

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# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background

Sweet potato (*Ipomoea batatas*), is a food crop belonging to the morning glory family. The crop has large, starchy sweet-tasting, tuberous roots. Worldwide there are about 6500 potato varieties including wild accessions, farmer varieties and beading lines (IPC 2009). Sweet potato skin colours come in various shades of creamy white, yellow-orange, tan, reddish purple and red. Sweet potato flesh colours come in shades of orange, yellow, orange, white, purple and red. Sweet potato is rich in carbohydrates and vitamin A, as well as other essential vitamins. The crop is ranked the seventh among the food crops produced in the world. History portrays that the sweet potato originated in South America between 8,000 and 6,000 B.C in the present countries of Guatemala, Colombia, Ecuador and Peru (Austin, 1983, 1988; Purselove, 1982; Odongo, 1999). During the early 1500s, the crop was later introduced it to Eastern and Western parts of Africa by European traders (O'Brien, 1972; Brand, 1971). China currently accounts for more than half of the total global sweet potato output at 70,963,630 metric tons annually. This is due to the rich production yield of up to 30 tons per hectare. It is also treated as a catch crop. Second is Nigeria at 3,478,270 metric tons. Nigerians prefer their sweet potato in porridge, fermented drinks, and plain boiled. Third is Tanzania at 3,345,170 metric tons. Tanzanians prefer it as crisps, porridge, steamed, and mashed potatoes. Fourth is Ethiopia at 2,701,599 metric tons. Ethiopians prefer theirs consumed as cookies, stews, porridge, and even flatbread. Fifth is Indonesia at 2,382,658 metric tons. Indonesians love it in sweets, cakes, desserts, and as potato puffs. Sixth is Uganda at 1,863,000 metric tons. Ugandans like them made into porridge, chapatti, and as donuts. Seventh is Vietnam at 1,401,055 metric tons. Vietnamese prefer theirs in meat dishes, stews, and curry. Eighth is United States at 341,910 metric tons. Americans like it mashed, baked, candied, and in pies. Ninth is India at 1,087,880 metric tons. Asian Indians like them in patties, spiced, chutney, and curry. Tenth is Rwanda at 1,080,780 metric tons. Rwandans like it as fries, sweets, chips, and in chunks (world atlas.com) Per capita production of sweet potatoes in Uganda is about 125kg against the per capita consumption of 85kg (Epeju, 2005; Mwangi & Ssemakula 2011; Woolfe, 1992). In terms of regions, the Eastern Region reported the highest production of Sweet Potatoes with the total output 847,000 Mt (46.6%) followed by the

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