



**BUSITEMA
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Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF CHEMICAL AND PROCESSING ENGINEERING

FINAL YEAR PROJECT

**INVESTIGATING THE EFFICACY OF WAXING ON THE SHELF
STABILITY OF FRESH CASSAVA AND SWEET POTATOES**

BY

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ABSTRACT

Cassava and sweet potatoes are one of the most important root crops grown throughout the world and they are well known for their adaptability to adverse environmental conditions, such as drought and poor soils. Despite the nutritional quality of these root crops, they are very perishable and cannot stay in the fresh state in a long period of time. An investigation of PKO waxing on the shelf stability of fresh cassava and sweet potatoes was carried out. The root crops were stored under room temperature and the parameters that were investigated were moisture content, reducing sugars and Vitamin A in OFSP. The study revealed that there was a significant difference (p value >0.05) between the waxed root crops and unwaxed/control samples.

The wax was able to reduce moisture loss throughout the storage period, Reducing sugars were significantly affected by the wax and Vitamin A was affected though the effect was not significant.

The waxed cassava roots were able to stay fresh for a period of 19 days and the waxed sweet potatoes stayed for 28 days.

DECLARATION

I PATIENCE DOREEN declare to the best of my knowledge that this project report was as a result of my research and effort and it has never been presented or submitted to any institution or university for any academic award.

DATE 30th May 2017

SIGNATURE 



DEDICATION

I dedicate this report to my Mother Ms. Kyokunzire Annet, my sisters and my brother for their love and continued support in my education.

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First and foremost, I thank the Almighty God who has enabled me to do this research and granted me a healthy life. In a special way I thank my parents, brothers and sisters for their continued support and encouragement

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CHAPTER ONE

1.0 Introduction

This chapter presents the background to the study, problem addressed by the study, justification of the study, the objectives and the scope of the study

1.1 Background

Cassava (*Manihot esculenta* Crantz) is one of the most important crops grown in the tropics and a major carbohydrate staple. In Uganda, Cassava is the second most important staple and food security crop after banana (Kleih *et al.*, 2012), and is one of the ten commodities that have been prioritized by the Ugandan Government in its Agriculture Sector Development Strategy and Investment Plan (DSIP). Uganda is the sixth largest producer of Cassava in Africa, with an estimated 5.2 million tons in 2013 (FAOSTAT; 2014).

Sweet potato (*Ipomoea batatas* L) is an important food crop, yielding remarkably well with low input requirements such as fertilizer and water (Carey *et al.*, 1999). The largest producers of sweet potato in Africa are: Uganda (1.9 million tons), Rwanda (0.7 million tons), Burundi (0.68 million tons) and Kenya (0.63 million tons).

According to IITA (1990), once harvested, roots and tubers begin to deteriorate due to some physiological changes and decay by rot organisms if they do not under go any processing. Roots and tubers are primarily affected by two types of postharvest deterioration: primary physiological deterioration (PPD) that is the initial cause of loss of market acceptability and secondary deterioration due to microbial spoilage (Booth and Coursey, 1974). PPD can render cassava unpalatable and un-marketable within 24-72 h (Rielly *et al.*, 2004). This substantially reduces the eating quality, transportation range, and financial value of cassava (Booth, 1976; Buschmann *et al.*, 2000; Westby, 2002; Lyer *et al.*, 2010). Cassava roots are much more perishable than other root and tuber crops, this has been attributed to the fact that the root of cassava as a storage organ has no dormancy, has no function in propagation and possesses no bud primordia from which regrowth can occur (Onwueme 1978, Cooke *et al.*, 1988a, Wickam 1988).. As well as direct physical loss of the crop, postharvest deterioration causes a reduction in quality that results in price discounts and so contributes to economic losses (Naziri *et al.*, 2014; Wenham, 1995; Westby *et al.*, 2002). If harvested cassava roots cannot be marketed within two or three days of

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