



**BUSITEMA  
UNIVERSITY**  
*Pursuing Excellence*

**FACULTY OF ENGINEERING**

**DEPARTMENT OF CHEMICAL AND PROCESSING ENGINEERING**

**CHARACTERIZATION OF BANANAS FOR WINE MAKING**

by

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## **ABSTRACT**

The Banana is an important economic resource for rural farmers in Uganda. With a total annual production estimated at about 10 million metric tons, the crop ranks high among enterprises that support livelihoods of smallholder poor rural farming communities. However, cooking varieties have not been well utilized in the brewing industry. A study was able to quantify parameters (sugar content, ph, tannin vitamin b1, and pectin) that affect wine making.

During fermentation the yeast cells feed on the sugars in the must and multiply, producing carbon dioxide gas and alcohol. Tannins play a big role in wine processing for example stabilization of colour, increasing aging potential, modifying aromas. Pectin cells cause haze in wine making clarification difficult and expensive. Titratable acidity is applied to sensory perception of a wine's acidity, i.e. its tartness, sourness, crispness.

The results obtained by carrying out experiments and analysed using analysis of variance in Microsoft excel

## DECLARATION

I AYEBARE RABECCA, declare that the work in this report is my own except where indicated with reference within the text and that it has never been submitted before to any university or institution of higher learning. I therefore take full responsibility over it.

Signature: Rebecca

Date: 23<sup>rd</sup> May 2018



**APPROVAL**

This final year research project has been submitted to the Department of Chemical and Process Engineering for examination with approval from my supervisors:

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## **DEDICATION**

I dedicate this report to my dear family members in appreciation of the care, support, encouragement and financial help they have always given me.

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## **LIST OF ACRONYMS**

NAADS – national agricultural advisory services

HPLC - high performance liquid chromatography

TA - Titratable acidity

DF - Degree of freedom

SS - Sum of Squares

MS – Mean Squares

ANOVA - Analysis of Variance



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## **CHAPTER ONE: INTRODUCTION**

### **1.0 Introduction**

This chapter explains the background of the study, addresses the problem to be handle in the research, purpose of the study, objectives, justification and scope of the study.

### **1.2 Background**

The Banana is an important economic resource for rural farmers in Uganda. With a total annual production estimated at about 10 million metric tons, the crop ranks high among enterprises that support livelihoods of smallholder poor rural farming communities. About 75% of Ugandan farmers grow the crop on 1.5 million hectares of land, an estimated 38% of arable land under use. However, Uganda face risks of high postharvest losses due to short green life of bananas and damage arising from poor post-harvest handling.(NAADS, 2013) On farm post harvest losses are about 40% of production for farms far from markets. For instance, at retailer/trader level losses accrue from ripening (60%), bruises (21.4%), thefts (20.2%), weight loss as a result of delayed selling (15%) and diseases. (4%).(CGIAR, 2010)

Bananas are herbaceous with high starch content in there fruits. Starch is the principal component of unripe bananas, which undergoes important changes during ripening. The chemical composition of bananas during the different stages of maturation as starch is degraded, the sucrose content increases and glucose and fructose accumulate due to enzymatic activities (Joshi and Sarangi, 2014). This makes it suitable for wine making from the bananas.

Bananas have diverse varieties, cooking which include mbwazirume, nakitembe, mpologoma. Desert varieties include; sukari ndizi and mbogoya. Roasting include gonja, and beer varieties include mbidde and kisubi. (JAICAF, 2010) Of the cooking varieties East African highland banana subgroup is the dominant mbidde is the one utilized in brewing banana beer. All banana varieties can be processes to wine. (Shweta et al, 2016) therefore, this research bases on availability of the varieties for samples

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