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FINAL YEAR PROJECT REPORT

**APPLICATION OF GEO SPATIAL TECHNIQUES IN
LAND SUITABILITY ANALYSIS FOR COFFEE GROWING WITH IN AMOLATOR
DISTRICT**

BY

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**This Report is submitted in partial fulfillment of the requirements for the award of a
Bachelor of Science in Agricultural Mechanization and Irrigation Engineering Busitema
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DECLARATION

I **JEMBA TONNY** of registration number **BU/UP/2017/1669**, declare to the best of my knowledge that this project report is as result of my research and efforts.

Student's signature:

Date:

ACKNOWLEDGMENT:

I would love to thank God for the far he has brought me till the final point of all studies considering all aspects include financial provision, es protection upon my life, good health and knowledge.

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APPROVAL

This project report has been submitted for examination with approval of the following University Supervisor.

MR. WANJI MARIO

Signature.....

Date.....

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LIST OF ACRONYMS

AHP	Analytic Hierarchy Process
DEM	Digital Elevation Model
EC	Electrical Conductivity
ERDAS	Earth Resource Development Assessment System
ESRI	Environmental Systems Research Institute
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information System
GDP	Gross domestic Product
GPS	Global Positioning System
LDA	Land Degradation Assessment
LULC	Land Use and Land Cover
MCDA	Multi Criteria Decision Analysis
MCDM	Multi Criteria Decision Making
MCE	Multi Criteria Evaluation
MS	Microsoft
NARO	National Agricultural Research Organization
RS	Remote Sensing
SDGs	sustainable development goals

ABSTRACT

Uganda's economic development is highly dependent on agricultural production since it employs approximately 70% of the population and contributes about 37% to the GDP (ITA, 2020) .

Uganda is one of the leading exporters of coffee globally, with exports of coffee amounting to 10.7% of foreign exchange earnings (2019). Amolator district is endowed with large tracts of fertile and irrigable land resources suitable to become an agricultural hub of the kyoga basin region and to the country at large. however, survey shows that mostly ordinary crops are grown as per history of which they are of low value.

This study's aim was to map out suitable areas for coffee with amolator district in the kyoga basin to improve and develop a scientific foundation onto which coffee growing is to be based. with understanding of different variable factors that affect coffee growing, such factors include soil types, climatic conditions, slope, water proximity and so forth. basing on multicriteria analysis and use of the overlay tool embedded in the GIS environment, different suitability maps were generated and developed. validation of the generated suitability model was based on both actual findings on the ground, and experimental analysis of the samples picked. the results of the study have potential to improve the coffee production in amolator and country wide country wide

CHAPTER ONE

1.0 Introduction

This chapter outlines the relevant information about the project: background, problem statement, and justification, objectives of the study, purpose of the study and the scope of the study.

1.1 Background of the study

Uganda's economic development is highly dependent on agricultural production since it employs approximately 70% of the population and contributes about 37% to the GDP (ITA, 2020). Uganda is a leading exporter of coffee globally, with exports of coffee amounting to 10.7% of foreign exchange earnings (2019). In May 2020, for example, coffee exports amounted to 437,597 bags worth US\$ 42.48 million, made up of 340,830 bags (US\$ 29.54 million) of Robusta and 96,767 bags (US\$12.94 million) of Arabica. Compared to May 2019, this was an increase of 27% and 29% in quantity and value respectively (UCDA monthly Highlights, 2020). However, the 3% annual increase in population also demands increase in GDP to meet people's needs for example poverty eradication and also achieve improved standard of living and so forth through both private and government initiatives.

Amolator district is endowed with large tracts of fertile and irrigable land resources suitable to become an agricultural hub of the region and to the country at large. However, survey shows that mostly ordinary crops are grown as per history of which they are of low value thus may not entirely meet the economic needs for farmers and value adders for those crops i.e., cassava and maize (MAAIF, 2020).

Consequently, Amolator district receives heavy rainfall but unfortunately it occurs for a shorter period of time. This limits the success of growing crops that take long to mature, however this problem can be solved scientifically by the water proximity potential of the nearby water resources that can support cheaper (drip) irrigation to support high value crops other factors such as the gentle sloping terrain.

Additionally a few farmers have picked interest in cultivating cash crops, among those cash crops is coffee, it has been realized that coffee is one of the potential futuristic crops that can grow well at minimal investment cost resulting from factors like topography and can sustainably meet the

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