



**BUSITEMA  
UNIVERSITY**  
*Pursuing Excellence*

**FACULTY OF AGRICULTURE AND ANIMAL SCIENCES**

**DEPARTMENT OF CROP PRODUCTION AND MANAGEMENT**

**DETERMINATION OF POTENTIAL AREAS FOR COCOA PRODUCTION  
EXPANSION IN UGANDA**

**BY**

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**RESEARCH DISSERTATION SUBMITTED TO THE DEPARTMENT OF CROP  
PRODUCTION AND MANAGEMENT IN PARTIAL FULFILMENT OF THE  
REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF  
SCIENCE IN AGRICULTURE OF BUSITEMA UNIVERSITY**

**MAY 2023**

## ABSTRACT

In Uganda, cocoa is one of the major exported crop leading to wealth creation and poverty alleviation. The study used Geographical Information System (GIS) approach to assess land suitability for cocoa cultivation. Data of selected climatic parameters (rainfall and temperature) of 65 districts was obtained from Uganda National Meteorological Authority (UNMA) and for selected soil physico-chemical properties was obtained from African Innovation Institute (AFRII) and analyzed in Aeronautical Reconnaissance Coverage GIS (ArcGIS.10.4.1) software. Each of the land parameters were matched with the soil and climate requirement for cocoa production and suitability classes; highly suitable (S1), moderately suitable (S2), marginally suitable (S3) and unsuitable (N) were assigned. The results of analysis as per selected climatic parameters showed that 3.9% of the study area was highly suitable, 45.5% moderately suitable, 50.2% marginally suitable and of 0.4% unsuitable for cocoa cultivation. Based on selected soil physico-chemical properties, 10.783% was found to be highly suitable, 88.422% moderately suitable and 0.8% marginally suitable. Based on selected combined climate and soil physico-chemical properties, 10.6% are highly suitable, 88.2% moderately suitable and 1.2% marginally suitable for cocoa growing. It was concluded that based on the selected climatic parameters evaluated, Bundibugyo, Kabarole, Kyenjojo, Ntoroko, Kibaale, Bulambuli, Bunyangadu, Kamwenge and others are the best areas for cocoa production, based on selected soil physico-chemical properties, Bundibugyo, Kabarole, Kyenjojo, Arua, Nwoya, Nakasongola, Masindi, Nebbi, Apac and others are best suitable for cocoa growing and based on selected combined climate and soil physico-chemical properties, Bundibugyo, Kabarole, Kyenjojo and Kasese, and districts of Masindi, Buliisa, Nakasongola and Nwoya, in northern Uganda and Pakwach, Arua in west Nile region are the best areas for cocoa production. Moderately suitable areas can be made highly suitable by in cooperating irrigation, fertilizer application, use of improved planting material and others. It was recommended that more research done looking at many parameters like cation exchange capacity, slope, flooding, drainage, soil salinity and humidity together with the eight considered in this research. There is also need to carryout research to model the climatic and soil conditions for a period after 5-10 years and in places where cocoa has never been grown before but were found to be potential for cocoa production expansion, the government, needs to allocate money for field trials and hence the promotion of cocoa growing by providing inputs at reduced costs and better extension services.

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## DECLARATION

I ALEO CAROLINE, hereby declare that the entire work in this report is my own original document and that it has never been submitted to any Institution or University for any academic award and all the attachments are correct to the best of my knowledge.

Signature.....

Date.....

**APPROVAL**

This is to certify that this work has been submitted to the university under my approval as the university supervisor

Signature of Supervisor..... Date: .....

Name of the supervisor.....

## **DEDICATION**

I dedicate this report to my sponsor Christopher and Sons; Francis and Fabian, my lovely parents, sisters and Brother Samuel for the material and financial support, course mates and the entire staff of Busitema University Arapai Campus.



## **ACKNOWLEDGEMENT**

I acknowledge God for his divine mercy and blessings, sponsor Chris, brothers, sisters and parents for the support and encouragement they gave to me in my academic move. I also acknowledge the technical support of my supervisors Mr. Akodi David, Dr. Wasige John during this research process

My sincere gratitude goes to the administration of the Busitema University Arapai campus and staff members for guidance, knowledge and skills offered to me during data collection, analysis and compilation of this report.

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## LIST OF ABBREVIATIONS

AWC	Available Water Capacity
BS	Base Saturation
CEC	Cation Exchange Capacity
CSV	Comma Separated Values
EU-EAC-MARKUP	European Union-East African Community-Market Access Upgrade Programme
GDP	Gross Domestic Product
GIS	Geographical Information System
ICCO	International Cocoa Organization
IDW	Inverse Distance Weighting
MAAIF	Ministry of Agriculture Animal Industries and Fisheries
NARO	National Agricultural Research Organization
NaCORI	National Coffee Research Institute
UEPB	Uganda Export Promotion Board
UN	United Nations
USD	United States Dollars
ArcGIS	Aeronautical Reconnaissance Coverage Geographical Information System

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

Cocoa production in Uganda dates from the 1950s (Randa, 2016). Cocoa (Theobroma Cacao L) is a commodity originating from tropical regions of South America, and one of the agricultural crops that has an important and reliable role in realizing agricultural development programs, especially as a source of income, employment, and foreign exchange (Aminatullaila *et al.*, 2021). At the global level, Africa remains the largest cocoa producing region, with its main competitors being Latin America, Asia and Oceania. In 2019/2020, Africa's cocoa bean production amounted to around 3.5 million tonnes. Nearly two-thirds of the world's cocoa production comes from West Africa, with Ivory Coast leading production at over 2.2 million tonnes, and nearby Ghana, Nigeria, Cameroon and Togo producing additional 1.55 million tonnes (Shakeel Anwar, 2017).

According to the Food and Agriculture Organization of the United Nations, Ivory Coast is the largest producing country in Africa and the world supplying over 30% of the world's cocoa beans at 2,200,000 tonnes, Ghana is the second with an annual production of approximately 1,100,000 tonnes, Nigeria third with 340,000 tonnes, Cameroon fourth with approximately 290,000 tonnes and Uganda fifth approximately 35,000 metric tonnes by 2021/2022 (Shakeel Anwar, 2017). Cocoa beans production of Uganda increased from 145 tonnes in 1971 to 35000 tonnes in 2020 growing at an average annual rate of 18.92%, but by comparison, Uganda's cocoa production is still very low (Uganda Sector Analysis : Cocoa Production , Supply and Demand.). In 2021, cocoa beans products was the third most exported commodity accounting for 3.0 percent of total exports (UBOS, 2022).

Cocoa grows in countries lying between 10 degrees north and 10 degrees south of the equator (UEPB: *Product*, 2015.). It does well in soil containing coarse particles with a reasonable quantity of soil nutrients to a depth of 1.5m to allow the development of a good root system. Cocoa can be grown on a wide range of soils providing they are fairly deep and well-drained. Loamy soils rich in iron and potassium are ideal but light clays are also suitable (NARO, 2008).

It also thrives best under shade and in areas with annual rainfall between 1,500mm to 2,000mm, about 27°C of average annual temperature. (Barry Callebaut, 2008)

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### REFERENCES AND APPENDICES

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