FACULTY OF NATURAL RESOURCES AND ENVIRONMNETAL SCIENCES

DEPARTMENT OF NATURAL RESOURCSE ECONOMICS

THE EFFECT OF TEMPERATURE VARIABILITY ON MAIZE PRODUCTION IN NAMALEMBA SUB COUNTY, BUGWERI DISTRICT.

Wanyama Emmanuel

BU/UP/2021/0459

Supervisor

Mr. Kakungulu Moses

A research report submitted to the Faculty of Natural Resources and Environmental Sciences in partial fulfillment of the requirements for the award of a degree in Bachelor of Science in Natural Resources Economics of Busitema University.

August, 2024

Declaration

I **Wanyama Emmanuel**, declare that this research report submitted to the Faculty of Natural Resources and Environmental Sciences is my original work achieved from my personal efforts and to the best of my knowledge, it has not been submitted by any other person to any institution for any academic qualification**.**

Signature ……

Date ……

Approval

This is to certify that the research report herein titled “The effects of temperature variability on maize production in Namalemba sub county, Bugweri district” has been done under my supervision.

Name Mr. Kakungulu Moses

Signature ……

Date ……

DEDICATION

I dedicate this piece of work to my beloved Mother Ms. Namajja Grace Maria, sister Suzan K and the entire family of Rtd SSP Wakadubi Fred. Thank you for the support.

\

ACKNOWLEDGEMENT

I express my gratitude to the almighty God for the wisdom and knowledge he has granted me throughout my academic journey.

I do extend my appreciation to my academic supervisor Mr. Moses Kakungulu for his guidance towards the success of this research.

A special thanks to my family, Ms. Namajja, Suzan, Rose, Stella, Musimami, Mr. Fred Wakadubi B, and friends Kathina, Deborah, I would like to say a thank you is an understatement. I'm grateful for your unwavering support till this day.

I do acknowledge the participation of the community of Namalemba Sub County for their willingness to avail me with data that made this publication a success.

Contents

LIST OF FIGUR

LIST OF TABLES

LIST OF ACRONYMS/ ABBREVIATIONS

NRE Natural Resource Economics

DAO District Agricultural Officer

FAO Food and Agriculture Organization

GDP Gross Domestic Product

UNMA Uganda National Meteorological Authority

IPCC Intergovernmental Panel On Climate Change

ABSTRACT

The study analyzed the effects of temperature variability on maize production in Namalemba subcounty Bugweri district.

This study focused towards the effects of temperature variability on maize production, as the main objective of the research, the perception of farmers to temperature variability, the adaptive measures towards the mitigation of the negative effects of temperature variability and the barriers to adaptation for mitigation of the effects of temperature variability on maize production.

The research employed across sectional, descriptive research design to get data from the local farmers on the effects of temperature variability, perception towards the effects of temperature variability, adaptive measures to mitigate the effects of temperature variability and the barriers to adaptation towards the negative effects of temperature variability on maize production. Data was collected using pretested questionaries. Data were analyzed using Microsoft Excel and SPSS version 20 software, presented using charts, graphs and tables. Findings from the study revealed that temperature variability as a serious problem with men sore (4.50), temperature variability contributes to reduced yields reflected with mean score (4.39) and also lack of extension services with mean score (3.11) show that this is a significant barrier to adaptation This study therefore identifies key adaptive strategies adopted by farmers, practicing crop rotation. planting improved varieties, mulching the soil, artificial watering or irrigation, mixed cropping, planting drought resistant maize varieties and changing planting time.

In relation to the findings, recommendations include improving access to information, implementing financial support mechanisms, strengthening extension services, promoting adoption of climate-smart agriculture practices, and reviewing government policies. These findings contribute to the understanding of temperature variability in maize farming and provide actionable insights for policymakers, researchers, and local community.

CHAPTER ONE

GENERAL INTRODUCITON

1.1 Introduction

This chapter presents the background of the study, problem statement, objectives, research questions, significance of the study, geographical scope, content scope, time scope, the conceptual framework, justification of the study about the effects of temperature variability on maize production and the operational definition of key terms relating to the effect of temperature variability on maize production.

1.2 Background of the study

The effect of temperature variability on maize production is really critical in a sense of high vulnerability to temperature, food security, and economic stability. Several studies have shown that variability in temperatures can have adverse effects on maize yields and thus leading to reduction maize production in areas like Mbeya, Tanzania, Uganda, Kenya, Ethiopia and South Sudan. The increased temperatures do pose a challenge to crop growth and yield reliability, therefore in the various regions where maize is a staple food understanding the impacts is really crucial. These maize producing countries have already faced a number of challenges such as low irrigation, limited access to fertilizers, pesticides, insecticides and lack of technologies which further makes those engaged in maize production prone to the impacts of climate variability.

In Uganda, over 40% of the calories consumed in rural and urban areas comes from maize and therefore plays a significant role to food security, though there have been reductions in yield mainly attributed to heavy dependence on rain amongst the farmers. Temperature variability has direct and indirect effects on maize production, in most cases, adverse influence on quality and quantity of agricultural crop outputs. The climate of an area is highly correlated to the crops cultivated and thus predictability of climate is imperative for planning of farm operations (Sowunmi, 2010).

REFERENCES

Amankwa, E. O. (2021). Analysis of the effect of climate variability on maize yeilds in Tana North District, Ahafo region, Ghana. *Journal of geography and regional planning, 14*(2). doi:10.5897/JGRP2020.0794

Ambrose Agona, J. N. (2001). An overview of maize in Uganda.

Angella Lowra Ajam, J. K. (2024). Population Dynamics of Fall Armyworm (Lepidoptera:. 1-13.

Barnabe, A. (2020, November 23). Access to Credit and Agricultural Productivity. Retrieved 1 17, 2024, from https://aercafrica.org/wp-content/uploads/2020/11/C8Achille-Assouto

Butler, E. E. (2013, January). Adaptation of Us maize to temperature variations. *Nature climate change, 3*. Retrieved 6 29, 2024

Jorge Durand, D. S. (2022). *Mexican migartion to the united states; A critical review.* Canbridge university press.

Kobe, F. (2023). Understanding climate change in Ethiopia. *International jounal of Big Data Data mining for global warming , 5*.

MAAIF. (2020). *A sustainable coffee industry with high stakeholder value for socio-economic transformation.* Kampala: Ministry of Agriculture, Animal Industry and Fisheries.

song, L. (2020). Effect of sunshine hours and daily maximum temperature and cultiver replacements on maize growth and yeilds. *Agronomy, 10*(1862). doi: :10.3390/agronomy10121862

Stephen, T. (2022, october 31). Impact of Improved Maize Varieties on Production Efficiency in Nigeria. Retrieved 01 19, 2024, from https://www.mdpi.com/2077-0472/13/3/611

Stiftung, H. R. (2021). *International Coffee Partners Annual Report 2020.* Africa: International Coffee Partners.

UBOS. (2019).

UNMA. (2023).

Verburg, R., Rahn, E., Verweij, P., Kuijk, M. v., (Ghazoul), J., & et al. (2019). An innovation perspective to climate change adaptation in coffee systems. *Environmental Science and Policy*, 16 - 24.