

BUSITEMA UNIVERSITY
FACULTY OF NATURAL RESOURCES AND ENVIRONMENTAL
SCIENCES

TOPIC OF STUDY:
ASSESSING THE IMPACT OF CLIMATE VARIABILITY ON RICE
PRODUCTIVITY IN UGANDA A CASE STUDY OF NAMASAGALI SUB-
COUNTY KAMULI DISTRICT”

NAMAKULA GLORIA
REG NO. BU/UG/2019/0070

A RESEARCH PROPOSAL SUBMITTED TO THE FACULTY OF NATURAL
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FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF A
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DECLARATION

I NAMAKULA GLORIA hereby declare that this research report submitted to the faculty of Natural resource and environmental science is my original work and to the best of my knowledge, it has never been submitted by any other person to any institution for the award of a degree or any other purposes, any other information sourced from other literature is referenced.

NAME: NAMAKULA GLORIA

REG.NO:BU/UG/2019/0070

DATE:

SIGNATURE:

APPROVAL

This is to certify that this research report by **NAMAKULA GLORIA, REG NO.BU/UG/2019/0070** titled **“ASSESSING THE IMPACT OF CLIMATE VARIABILITY ON RICE PRODUCTIVITY IN UGANDA, A CASE STUDY OF NAMASAGALI SUB-COUNTY KAMULI DISTRICT”** has been completed under supervision and therefore I recommend it for submission to the Faculty of Natural Resources and Environmental Sciences, Department of Natural Resource Economics, Busitema university.

Signature

.....

MDM. NYANGOMA IMMELDAH

ACADEMIC SUPERVISOR

Date.....

DEDICATION.

I would like to dedicate this report to my late father **Mr. SSEMWOGERERE KIZITO (BODYLINE)**, my mother **Mrs. GRACE NABANKEMA**, my siblings, and all the other family members, my friends (course mates), all the lecturers who gave me support and motivation to work hard towards achieving the task amidst all the challenges .May my academic journey always be an inspiration to you all as you thrive to achieve greatness.

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LIST OF ACRONYMS.

AE	East Africa.
AEZs	Agro-Ecological Zones.
CA	Conservation Agriculture.
CBOs	Community Based Organizations.
CO ₂	Carbondioxide
DAP	Di-ammonium Phosphate.
DRS	Doho Rice Irrigation Scheme.
FAO	Food and Agricultural Organization.
GHGs	Green House Gases.
HR	Herbicide Resistant.
IPCC	Intergovernmental Panel on Climate Change.
IRRI	International Rice Research Institute.
JICA	Japan International Co-operation Agency.
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries.
NAAC	National Agro Forestry Agency Center
NEMA	National Environmental Management Authority.
NGOs	Non- Government Organizations.
PDM	Parish Development Model.
SPSS	Statistical Package for the Social Sciences.
SSA	Sub-Saharan Africa.
STRASA	Stress-Tolerant Rice for Africa and South Asia.
UNFCCC	United Nations Framework Convention on Climate Change.
UNRDS	Uganda National Rice Development Strategy.
USGCRP	United States Global Change Research Program.

ABSTRACT.

Climate variability as a stress towards efficient rice productivity has also significantly affected global agriculture in the 21st century. Before the intensification in the occurrence of extreme weather events, outbreak of pests and diseases, rice farmers in Namasagali sub-county used to grow rain fed rice in two seasons and the output in terms of quality and quantity was satisfactory to farmers despite the fact that less efforts were employed.

This study was conducted in Namasagali sub-county in Bwiiza, Kasozi, Kisaikye and Namasagali parishes, Kamuli district so as to gather information on the impact of climate variability on rice productivity .This was aimed to identify the different varieties of rice grown in the area, the effects of climate variability on rice productivity and the different measures that may be put in place to adapt to the effects of climate variability on rice productivity.

The study employed simple random sampling and purposive sampling techniques to get the data from the sample of 67 respondents. Data was collected from rice farmers of age 18-60 years and above using self-administer questionnaires, interviews, and observation. Microsoft office Excel was used for data entry while SPSS 20 was used for analysis. This made it easy to-come up with pie charts; bar graphs and frequency tables for eased presentation and interpretation.

The study revealed that men were more engaged in rice growing than women, most of the farmers had low education levels (primary level) and most of them were self-employed on hired land of about 1-4 acres implying that rice growing was majorly small scale based. The major rice varieties grown by farmers in Namasagali sub county included; NERICA 6 (Benenego), Suparica (Supa china), NERICA 4 (Supa) and NERICA 10 (Kaiso) because they are drought resistant and highly productive. Prolonged drought, outbreak of pests and diseases and seasonal flooding were the major impacts of climate variability faced my rice farmers and these highly caused a change or reduction in rice productivity.

The study also revealed that most rice farmers use artificial fertilizers, spray using pesticides and also dig channels through the rice fields and despite their inventions, the farmers suggested that the government and other stakeholders like NGOs should mainly support them with irrigation pumps.

CHAPTER ONE: INTRODUCTION.

1.1. Background of the study.

Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales beyond that of individual weather events (IPCC 2018). Variability of climate may be due to natural internal processes within the climate system or to variations in natural or anthropogenic external forcing. Climate variability has adversely affected agricultural sector and the situation is expected to worsen in the future. We find that climate variability and change affects agricultural production but effects differ across crops. It raises upcoming temperatures, hypothetically resulting in reduced crop production and productivity (E. A. Ainsworth and S. P. Long, 2021).

Climate variability as a stress towards efficient rice productivity has also significantly affected global agriculture in the 21st century and the Intergovernmental Panel on Climate Change (IPCC) assessment report indicates that most countries will experience an increase in average temperature, more frequent heat waves, more stressed water resources, desertification, and periods of heavy precipitation (IPCC 2014).

The impacts of climate variability on crop yields are different in various areas with an increase in some areas and a decrease in others. In the United States of America (U.S.A), the newly revised and updated productivity statistics in 2014 indicated that agricultural output grew at an average annual rate of nearly 2% from 1948-2014. Despite technological improvements that increase cereal yields in U.S.A, extreme weather events have caused a significant yield reduction in some years, due to changes in temperature, amount of carbon dioxide, frequency and intensity of weather conditions.

In Europe, agriculture has been a down-ward trend (Pennsy Ivania, 2009) especially in 2005-2010, where the average annual rate of decline in crop production stood at -3.7% with a great loss in Countries such as Czech Republic, Estonia. Hungary. Latvia among others that joined the European Union in 2004 and 2007. In Africa, a large fraction of its crop production depends directly on rainfall for example, 89% of cereals in Sub-Saharan Africa are rain fed (Cooper et al., 2004; 2019) making the climate to be a key driver of food security (Gregory and Jonathan, 2005). Rice has been cultivated for more than 3000 years in parts of Africa.

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