



**BUSITEMA  
UNIVERSITY**  
*Pursuing Excellence*

**FACULTY OF ENGINEERING**

**DEPARTMENT OF AGRICULTURAL MECHANISATION AND  
IRRIGATION ENGINEERING**

**FINAL YEAR PROJECT REPORT**

**INVESTIGATING THE EFFECT OF PHYSICAL STORAGE - CONDITIOINS ON  
RICE VIABILITY**

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Final year project proposal report presented to Dept. of Agricultural Mechanization and Irrigation Engineering as a partial fulfillment for the award of bachelor's degree in Agricultural Mechanization and Irrigation Engineering of Busitema University

## ABSTRACT

The present research was carried out to investigate the effect of physical-storage conditions (temperature, relative humidity and grain moisture content) on viability of rice seed for two months of storage in the laboratory of national crop resource research institute during February -April 2015. Temperature, relative humidity moisture content and germination capacity was recorded throughout the storage period. Polyester bags was used as the packing material. the moisture content and germination capacity was studied as seed temperature and relative humidity changes with the increase of storage duration at initial moisture content of 10% ,13%and 16% . Desk study, consultations and discussions and laboratory tests were used in data collection and data analysis was done by using ANOVA and Microsoft Excel

The rice viability was found high with 10% initial moisture content package, followed by 13% initial moisture content and lowest from 16% initial moisture content package with in the progress of storage period

**DECLARATION**

I RUBIHAYO GADDIE hereby declare to the best of my knowledge that this is my true and original piece of work and has never been submitted to any university or institution of higher learning by anybody for any academic award.

*Rubyo*  
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## **APPROVAL**

This report has been submitted to the department of Agricultural Mechanization and Irrigation Engineering for examination with the approval of the supervisors,

**Ms. ABBO JACQUELINE**

(Main Supervisor)

Date.....

**MR. SSAJJA SSALLI**

(Co-Supervisor)

Date.....

## **DEDICATION**

I dedicate this report to almighty God and my parents who tirelessly supported and guided me up to this stage in my life.

## **ACKNOWLEDGEMENTS**

First and foremost, I would like to thank Almighty God for His protection and guidance up to this stage in my life.

I feel highly indebted to the entire staffs in the department of agricultural mechanization and irrigation engineering for giving me knowledge in the fields of mechanization and irrigation. Specifically, I am very grateful to Ms. Abbo Jacqueline and Mr. Ssajja Ssalli my final year project supervisors who gave me all the necessary guidance, advice and encouragement during preparation of this report. May the Almighty God bless you abundantly.

Last but not least, I appreciate my parents, brothers and sisters for the support they have continued to offer me in order to attain quality education. May the Almighty God bless the work of your hands and may He make you live long enough to enjoy the fruits of your labors.

Finally I thank all my friends and colleagues for the assistance they have given me in endeavors to see me through with my research.

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## LIST OF ACRONYMS

NERICA	New rice for Africa
WARDA	Africa rice center
EMCs	Equilibrium moisture contents
CAP	cover and plinth
ANOVA	Analysis of variance
d.f	degree of freedom
CRD	completely randomized design

# CHAPTER ONE

## 1.0 INTRODUCTION

### Preamble

In relation to the intended study, this chapter presents background to worldwide rice production and consumption with specific emphasis on Uganda's progress in rice production and value addition activities in the rice value chain. The problem considered in this study is presented in the problem statement and the justification, objectives and scope of the study are also presented.

## 1.1 BACKGROUND

Today rice is grown mainly by small scale farmers almost throughout the country, but also with large scale farmers in few places. Total production is estimated at 165,000 metric tones. Total rice consumption is estimated at 225,000 metric tones. Uganda adopted NERICA 1, 4 and 10 varieties in addition to the old lowland varieties. Since the introduction of upland rice in 2002, rice farming has grown from 4,000 farmers to over 35,000. From the earlier releases of three upland rice varieties in Uganda in 2002 courtesy of the Rockefeller support farmers were able to reap \$9 million (14.9 billion) in 2005. In the process, the country has seen rice imports drop between 2005 and 2008. This trend of events according to the NARO saved the country about \$30 million in foreign exchange earnings

The storage of food grain is practiced from the era of the beginning of civilization. It is an important problem because the production of grain crops is seasonal and location specific (Sawant, 1994); however, consumption of food grain is throughout the year and is not location specific. Storage of food grain is necessary in order to ensure constant supply for the year and also to provide to distant areas.

Grain quality is an important parameter for marketing and processing, and can affect the commodity value. These factors can be physical, such as temperature and humidity; chemical, such as oxygen supply; and biological, such as bacteria, insects and rodents Brooker *et al.* (1992). Safe storage preserves the qualitative and quantitative aspects of the grains by providing

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*field crops res. inst., arc, Giza, Egypt*

