BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

AN INVESTIGATION OF THE FACTORS FOR RICE YELLOWING ALONG RIVER NAMADOPE

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A FINAL YEAR PROJECT SUBMITTED TO THE FACULTY OF ENGINEERING, BUSITEMA UNIVERSITY IN PARTIAL FULLFILMENT OF THE REQUIREMENTS FOR AWARD OF A BACHELOR OF SCIENCE DEGREE IN WATER RESOURCES ENGINEERING

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ABSTRACT

Rice (*Oryza glaberrima*) is a grain and the most widely consumed staple food for a large part of the world's human population, especially in Asia. It is the agricultural commodity with the third-highest worldwide production, after sugarcane and maize (FAO, 2012).Since a large portion of maize crops are grown for purposes other than human consumption, rice is the most important grain with regard to human nutrition and caloric intake, providing more than one fifth of the calories consumed worldwide by humans (Smith and Bruce, 1998). Genetic evidence has shown that rice originates from a single domestication 8,200–13,500 years ago (Molina *et al.*, 2011) in the Pearl River valley region of China (Huang *et al.*, 2012).

Rice (*Oryza)* was introduced in Uganda by Indian traders as early as 1904 (Bigirwa *et al.*, 2005). Rice production in Uganda started in 1942 mainly to feed the world war two soldiers, schools, prisoners and hospitals. However due to a number of constraints, production remained minimal until 1974 when farmers appealed to the then government for assistance (Bigirwa *et al.*, 2005).

Total production is estimated at 165,000 metric tons with total rice consumption estimated at 225,000 metric tons this makes national rice demand higher than current national production yet according to the Uganda National Bureau of Statistics (UBOS) (2009), the population growth rate is 3.2 % per year thus the demand for rice is expected to rise much higher.

Despite the demand for rice, it has been observed in Luuka District that rice is being affected in Luuka District through yellowing of the leaves ad finally drying up.

This report involves a statement of problem(s), justification and objectives of study. It also reviews various literatures on the agronomic aspects of origins of rice, nutrition requirement and growth conditions of rice.

The report also outlines the various data collection methods (approaches) which were used to gather information, survey activity, several soil and water samples' tests was done in recognized laboratories, outcomes, data analysis and benefits of the investigation if implemented.

DEDICATION

I dedicate this report to my mother Mrs. Nattabi Juliet Ssanyu, my uncle Mr. Kyeyune Elmegious and my aunt Nakyeyune Resty who have raised me up, given me financial assistance, parental guidance and counseling plus encouragement in all my academic endeavors.

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I do give great gratitude to my supervisors who have worked tirelessly to see that my project becomes successful.

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I would also like to appreciate the residents of the project area for the knowledge got from them and for the amicable hospitality offered to me for the period I spent at the station.

DECLARATION

I do hereby declare that this project report has been compiled by me and has not been presented to any university or other institution of higher learning for any academic award.

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APPROVAL

This project work has been supervised by;

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LIST OF ACRONYMS AND SYMBOLS

Mt	Million tonnes
TDS	Total dissolved salts
SAR	Sodium absorption ratio
FAO	Food agricultural organization
RSC	Residual sodium carbonate
UNRDS	Uganda National Rice Development Strategy
DRS	Doho Rice Scheme
UBOS	Uganda National Bureau of Statistics
USDA	United States Department of Agriculture
ECw	Electrical conductivity
dS/m	DeciSiemens per meter
S/m	Siemens per meter
µS/cm	micro Siemens per centimeter
mmhos/cm	milliohms per centimeter
µmhos/cm	micromhos per centimeter
mg/lm	milligram/liter
ppm	part per million
CEC	Cation exchange capacity

LP	Leaching Percentage
mm	millimeters
IRRI	International Rice Research Institute
LR	Leaching Requirement

CHAPTER ONE

1.0 INTRODUCTION

This chapter explains the background of the study that leads to the problem statement. It also contains the main and specific objectives of the project in line with the significance of the research.

1.1. Background of the study

Rice *(Oryza glaberrima)* is a grain and the most widely consumed staple food for a large part of the world's human population, especially in Asia. It is the agricultural commodity with the third-highest worldwide production, after sugarcane and maize (FAO, 2012).

According to Bigirwa *et al.*, 2005, Rice (*Oryza)* was introduced in Uganda by Indian traders as early as 1904. Rice production in Uganda started in 1942 by the Uganda Government, mainly to feed the world war two soldiers, prisoners, schools and hospitals however due to a number of constraints, production remained minimal until 1974 when farmers appealed to government for assistance (Bigirwa*et al.*, 2005). In response, government introduced Doho Rice Scheme (DRS) with assistance from the Chinese experts as stated by the Uganda National Rice Development Strategy (UNRDS) (2009). In Uganda the total area under formal irrigation is 14,418 ha out of an estimated 560,000 ha with irrigation potential (FAO. 2004).

Today UNRDS (2009) says rice is grown mainly by small scale farmers almost throughout the country plus also some large scale farmers in few places. Total production is estimated at 165,000metric tones with total rice consumption estimated at 225,000 metric tons this makes national rice demand higher than current national production yet according to the Uganda National Bureau of Statistics (UBOS) (2009), the population growth rate is 3.2 % per year thus the demand for rice is expected to rise much higher.

According to UBOS (2009) about 80% of rice farmers in Uganda are small scale farmers with an area of less than 2 hectares using simple technologies including use of rudimentary tools, little or no fertilizer use, poor qualified seeds, with little or no irrigation and poor water management practices among others. Recent developments have seen rice cultivation expand in the traditional crop growing districts of Bugiri, Iganga, Tororo and Pallisa (UNRDS, 2009).

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