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FACULTY OF ENGINEERING

DEPARTMENT OF AGRICULTURAL MECHANISATION AND IRRIGATION ENGINEERING

FINAL YEAR PROJECT

DESIGN AND CONSTRUCTION OF A MINI PADDY HARVESTER FOR SMALL SCALE FARMERS

BY:

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Final year project 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

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ABSTRUCT

This final project report comprise of four chapters; Chapter one 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.

Chapter two discusses the details of the various aspects involved in rice production with emphasis on the aspect of harvesting; different harvesting techniques and the operation of the existing rice harvesters are presented.

In relation to the objectives of this study, the methods and procedures that were followed in order to come up with the design of a mini paddy harvester the procedures used to fabricate, test the performance and evaluation of the prototype were also handled in chapter three.

Chapter four provides the results and discussions obtained from the design and development of a mini paddy harvester.

Chapter five give details about the conclusions, recommendations and challenges derived from the design and construction of a mini paddy harvester. Appendices are attached at the end of this document.

DECLARATION

I hereby, declared this final project report entitled "A mini paddy harvester" is the results of my own research except as cited in references.

Signature: .....

Author's Name: ....SUNDAY EMMANUEL.....

Date: ....24th - 05 - 2016.....

APPROVAL

This final project report is submitted to the Faculty of Agricultural Mechanization and Irrigation Engineering (AMI) of Busitema University as a partial fulfillment of the requirements for the Degree in Bachelor of Agricultural Mechanization and Irrigation Engineering with the approval of the following supervisors:

Main supervisor

Name: Mr Kavuma Chrish

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Co-supervisor

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CHAPTER ONE

1.0 INTRODUCTION

In relation to the 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

Rice (oryzae staiva) has been gathered, consumed, and cultivated by women and men worldwide for more than 10,000 years (Kenmore, 2003), longer than any other crop. Except of course for Antarctica. The total area under rice cultivation is globally estimated to be 150,000,000 ha with annual production averaging 500,000,000 metric tons (Tsuboi 2004). Rice represents 29 % of the total output of grain crops worldwide, (Xu et al., 2003).). Rice is also becoming increasingly popular in Africa. Consumption of rice in Africa is within the range of 16 metric tons while production is approximately at 14 metric tons, creating a deficit of 2 million metric tons (Bouman et al 2007). Currently, rice is grown in over 75% of the African countries, with a total population close to 800 million people. Rice is the main staple food of the populations in various countries in Africa. In addition, rice has become an important food security factor in Uganda among other countries (Alizadehet al, 2006).

Though rice production was introduced into Uganda way back in 1904, (Bigirwa et al, 2005) , its role in the country's economy only became noticed in the late 1940s as part of the then government efforts to incorporate rice-based rations in the feeding of soldiers during and after the second world war. With the establishment of the Kibimba Rice Scheme in 1966 and Doho Rice Scheme in 1976, smallholder rice production mainly in the Eastern and Northern parts of the country, was also spontaneously twigged but with emphasis on low-land rice varieties. It is only in the late 1980s' that production rapidly increased to the current figure of nearly 95,000ha. The country's total annual rice production now stands at 140,000 metric tons of milled rice, representing about 70% of the current national rice demand estimated at 190,000 – 200,000 metric tons. Oryokot et.al (2004), reported that by 2004, Uganda's rice imports stood at about 45,000 metric tons. The very rapid increase in rice production in the country was mainly attributed to the release of improved rice varieties (especially the NERICA rice), conducive government policy, increase in demand and

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