



FACULTY OF ENGINEERING
DEPARTMENT OF AGRICULTURAL MECHANIZATION AND
IRRIGATION ENGINEERING

DESIGN AND FABRICATION OF AN ENGINE PADDY RICE SUCTION
TRANSPORTER.

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**Final year project report submitted in partial fulfilment for the award of a
bachelor's degree in agricultural mechanization & irrigation engineering**

ABSTRACT

A motorized paddy suction transporter machine made of locally available materials using local technology was designed, fabricated and tested for bagging and transporting paddy dried on the concrete pavements to solve intensive manual paddy rice drying activities done. The paddy suction transporter comprises of the following major components flat blades type centrifugal fan, power transmission system, flexible pipe conveyor system, and frame. results show significant difference on the collecting capacity, noise level and fuel consumption when rotation speed of the air mover shaft was varied.

Other parameters such as collecting efficiency, air velocity, cracked grain percentage were significantly affected by varying rotational speed of the air mover shaft. The paddy suction transporter had a collecting efficiency of 86% with a collecting capacity of 560kg/hr. at a maximum rotational speed of centrifugal fan shaft of about 2700rpm with an engine of 8hp. The machine has an initial investment of 3,930,135/=. utilizing the machine for 2920 hours a year generating an income of 312,000,000/=. These needs a time recovery of about one year.

Keywords—Mobile engine-driven pneumatic paddy collector, collecting capacity and efficiency, simple cost analysis

DECLARATION

I **BARASA EDRINE** hereby declare that this final year project report was prepared and written by me and it's my own work. It has never been presented to any other institution of learning for award or published anywhere

Signature..... Date.....

APPROVAL

Supervisor

Mr. **ERIAU EMMANUEL**

Signature Date

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ACRONOMYS AND ABBREVIATIONS

FAO	Food Agricultural Organization
USA	United States of America
W	watts
HP	Ampere hour
RPM	Revolutions per Minute
AMI	Agricultural Mechanization and Irrigation Engineering
CGIAR	Consultative Group on International Agricultural Research

CHAPTER ONE: INTRODUCTION

1.1 BACK GROUND.

Rice is a cereal grown mostly in wetlands within the eastern regions of Uganda. In the past few years, it has become a popular food in the country and preferred by most since it is easy to prepare. Locally known as Omuchelle it is production in Uganda begun in 1942 to feed the World War two soldiers(*Uganda National Rice Development Strategy (Unrds) 2, 2009*). Due to Population growth rate of 3.2%, thus the demand for rice is expected to rise. Hence a need to increase rice production to cater for the ever-increasing demand due to population increase.

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), reports that by 2004, Uganda's rice imports stood at about 45,000 metric tons.

However, Uganda has tremendous potentials (given its good soils, favorable climate, two growing seasons, political support and farmers' enthusiasm) for increasing its rice production to self-sufficiency; the crop is still relatively new in the country's farming systems. This poses a number of important challenges in terms of knowledge and information-gaps in the entire rice production continuum. These gaps require urgent definition and redress. The purpose of this study was therefore to generate basic information on the status of rice production, processing and marketing in Uganda with a view to guiding decision making in future development initiatives for the rice industry(Wilfred & Consultant, 2006)

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