BUSITEMA UNIVERSITY
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF AGRICULTURAL MECHANISATION AND IRRIGATION ENGINEERING

DESIGN OF A COMPUTERISED FUEL MANAGEMENT SYSTEM FOR A FARM

CASE STUDY: SCOUL (TEBALOWOOZA PLANTATION SECTION)

BY

KATO DAVID

BU/UG/2011/79

Email: katodavidkacwa@gmail.com

CONTACTS: +256 -784302717 / 750070114

MAIN SUPERVISOR: MR. KIMERA DAVID

CO – SUPERVISOR: MR. ODONG SAMUEL ATOCHON

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ABSTRACT

Fuel management is a very important aspect as far as agricultural mechanization is concerned. It refers to the organized and systematic monitoring and accounting of fuel through proper record keeping and issuing out the required amount of fuel sufficient for a tractor to perform a given farm operation. Many farms in the developing countries have failed to achieve their profit target and others have not benefited from their farms due to poor fuel management methods.

SCOUL plantations use ordinary ways of data recording and keeping. Where-by they write in the books entering the amount given out. This has been challenging in a way that sometimes they forget to record and these books are subjected to getting lost hence making the method un reliable. The tractor drivers are selling off a lot of fuel after doing the work because they are given more than required and fuel personnel at the stores during issuing out. Fuel management needs a continuous tracking and monitoring to give a better accountability after even a long time. This has caused plantations to lack fuel some days leading to delay in carrying out the farm operations. Therefore proper fuel management cannot be achieved without a well-designed fuel management system.

Therefore this study was intended to design a computerized fuel management system that will be able to determine the required amount of fuel required by the tractor to perform a given farm operation using different farm implements, and also store the fuel records for the fuel used on each day in the database. This project focused on the fuel used in the plantation section since this is where most fuel losses occur.

The system was designed, tested and debagged and it was found out that, the data could be saved in the three databases that is; personnel, in-charge and auditor. Approximately 30 minutes is saved every day of work and fuel available in the tank at the section can be known just by the click of a button. Hence making fuel accountability and auditing much easier in the plantations due to reliable data.

DECLARATION

I **KATO DAVID** do hereby declare that this is my original work. I am the right author of this final year project report. It has never been submitted before to Busitema University or any other institution of learning for the award of bachelor's degree in Agricultural Mechanization and Irrigation Engineering.

SIGNATURE: .....

NAME: **KATO DAVID**

REGN NUMBER: **BU/UG/2011/79**

DATE: 25/05/2015

APPROVAL

This is to approve that **KATO DAVID** under registration number **BU/UG/2011/79** has done, presented and submitted his final year project report to Busitema University faculty of Engineering, department of agricultural mechanization and irrigation engineering under my supervision.

1. ..... DATE.....

   MR. KIMERA DAVID

   MAIN SUPERVISOR

2. .....DATE.....

   MR. ODONG SAMUEL ATOCHON

   CO-SUPERVISOR

DEDICATION

I dedicate this report to my lovely mum. Mrs. Jennifer Kacwa for her tireless work, love and care for me. May the Lord keep you in perfect peace.

I also dedicate this report to my beloved Miss Cyimpaye Winfred for her love, support, and dedication towards me. May the God of heaven and earth richly bless you.

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First of all I give thanks to God for giving me knowledge and wisdom finish the whole of my final year project process.

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Gratefully and joyfully I extend my sincere gratitude to all my friends for their encouragement, company and support towards me. May God bless you.

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ICAR	Indian council of agricultural research
CIAE	Central Institute of Agricultural Engineering
SCOUL	Sugar Corporation of Uganda Limited
SSA	Sub-Sahara African
DAP	Draught Animal Power
GDP	Gross Domestic Product
GUI	Graphical user interface
GUIDE	Graphical user interface development environment
hp	Horse power

CHAPTER ONE

1.0 INTRODUCTION

This section comprises of the background of the study, the statement of the problem, justification of the study, the purpose, objectives and the scope of the study, the significance of the study and the limitations of the study.

1.1 BACKGROUND OF STUDY

According to Kulakarni, (2004), Farm mechanization has been coupled with use of prime movers, tractor and power tillers rather than adoption and availability of farm machinery, which perform the specific task. The rate of growth, in animal operated machinery, has remained low as compared to tractor or power operated machinery. The whole of farm machinery almost uses fuel for them to function. There has been a lot of fuel lost in the field during time of work. Therefore much attention should be put on fuel management in any farm.

Commercial farms in Uganda like SCOUL, Kakira, Kinyara, Tilda, and other large mechanized agricultural farms use large machinery like tractors since they cultivate on larger pieces of land and therefore they are majorly faced with high fuel costs to run the machinery. Therefore fuel should be properly managed in order for the farm to gain much from the plantations.

Wikipedia, (2010)

According to SCOUL, (2012) SCOUL occupies land of about 15,000 hectares of which 13,500 hectares is under cane cultivation. This land is divided into various plantation sections for example, Tebalowooza, Lugazi, Kivuvu, Ntenga, Bundo and many others. Each section has at least ten tractors to carry out the farm operations. All these tractors consume fuel every day. This makes SCOUL to have more than one hundred tractors in the every day. If each day of work, every tractor gets one extra litre of diesel due to over approximation, the company experiences a loss of more than one hundred litres of diesel each day of work.

According to the researcher's experience at SCOUL (Tebalowooza plantation section) during industrial training, there has been no proper way of managing fuel in the plantation sections in

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