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FACULTY OF ENGINEERING

DEPARTMENT OF AGRICULTURAL MECHANISATION & IRRIGATION ENGINEERING

DESIGN AND FABRICATION OF A DC OPERATED INTER-ROW WEEDER MACHINE

NDUGA ROGERS

BU/UG/2017/129

SUPERVISOR

Associate Prof. Dr. Titus Bitek Watmon

Final year Project Report Submitted to the Department of Agricultural Mechanization and Irrigation Engineering in partial fulfillment for The Award of Bachelor's Degree In Agricultural Mechanization & Irrigation Engineering At Busitema University.

ABSTRACT

A weed is a plant that is considered undesirable in a particular situation, it is basically “a plant in the wrong place”. Weeds need to be controlled because they reduce crop quality by contaminating the commodity, reduce farm products, invade crops, smother pastures and in some cases can be harmful to the livestock, and at the same time aggressively compete for water, nutrients, and sunlight, resulting in reduced crop yield and poor crop quality. Weed control is one of the most difficult tasks on an agricultural farm.

Farmers in Uganda, farmers a total loss of 33% of their income from Weeds. The Losses are due to some of the following reasons, total loss of 26% from Crop Diseases, total loss of 20% from Insects and Worms, total loss of 6% from Rats, as it has been surveyed. Shrinking farmlands, acute labor shortage, decreasing income per acre of cultivation, and economic frustration are some of the key factors hurting a farmer's confidence in continuing farming. Weeding control is done by: mechanical weeding, thermal weeding: flaming, biological control, chemical control, and farming pattern. It has always been a problem to successfully and completely remove weeds and other innocuous plants in a time scope. Invariably, weeds always grow where they are not wanted. This work involved the design and construction of a mechanical weeder, having discovered that tools such as cutlass and hoes require high drudgery, time-consuming, and high labor force, and also the power weeder (gasoline operated) having the problem of pollution and excess vibration.

As a solution to these problems, a mechanical weeder powered by a DC source and UV intensity is to be designed and constructed which will address the above challenges hence better quality and quantity production. The mechanical weeder will be made of two implements attachment i.e. the primary cutting edge which is in front of loose soil above and the secondary cutting edge which is behind to do cutting and lifting of weeds. The machine will be focused on: weight is expected to be less, suitable for both ladies and senior persons, economical for small farmers, machine noise being low, environmentally friendly and should run using a battery-backed up with solar energy.

APPROVAL

This project report has been submitted to the Department of Agricultural Mechanization and Irrigation Engineering of Busitema University with approval from;

Supervisor

Associate Prof. Dr. Titus Bitek Watmon

Signature…….....

Date…….....

DECLARATION

I, **NDUGA ROGERS** do hereby declare that all the written material contained in this report is an account of my efforts and has never been submitted to any university or institution for an academic award.

NDUGA ROGERS

BU/UG/2017/129

Date…….

DEDICATION

To my beloved mother Ms. Nalumansi Jane, brother Ntumbu Charles and Sister Nabukenya Oliver.

ACKNOWLEDGEMENT

I am greatly indebted to the administration of Busitema University, especially the Department of Agricultural Mechanization and Irrigation Engineering for their mentorship and on the same note great thanks go to my supervisor Prof. Titus Bitek Watmon his remarkable support entirely through the course of the preparation of this project documentation, sincerely your instruction has ensured my success.

On the same note, I do extend my great thanks to all my lecturers in the Department of Agricultural Mechanization and Irrigation Engineering for the knowledge both theoretical and practical related imparted in me.

To all my fellow students and classmates to mention; Audi Naboth, Kusemererwa Joseph, Okurut Joseph, Nasilu Metrine, Turyamuhaki Benjamin, etc. for all favors, assistance, guidance, advice, and encouragements of any kind, am pleased.

In all a great delight and pleasure to the almighty God for all his continued provisions, to Him be all the glory and honor

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List of Abbreviation

AMI Agricultural Mechanization and Irrigation Engineering

UBOS Uganda Bureau of Statistics

GDP Gross Domestic Product

DC Direct current

NPV Net present value

MAAIF Ministry of Agriculture, Animal Industry and Fisheries

RMP Revolution per minute