



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

FACULTY OF ENGINEERING

DEPARTMENT OF MINING AND WATER RESOURCES ENGINEERING

FINAL YEAR PROJECT REPORT

**DESIGN AND CONSTRUCTION OF A RAINWATER HARVESTING AND AN
AUTOMATED GRAVITY FED DRIP IRRIGATION SYSTEM FOR COLLARD
GREENS GROWING AT BUKADE HILL, BUSITEMA UNIVERSITY.**

BY

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ABSTRACT

Currently, global technology plays very tremendous role in the field of agriculture and therefore automation is adopted in most parts of the world. Automation is the technology with which a procedure or process is executed without human assistance. Most irrigation systems are still physically regulated where farmers visit their agricultural fields periodically to manually control the irrigation process basing on the irrigation schedules. This requires a lot of time and labour and may lead to over or under irrigation of the plants resulting in low yields. This study therefore was to determine how a person can use the automatic irrigation system of his own moderately economical facilities in a few hours to connect some electronic components and other materials. An automatic irrigation system based on sensor-based systems was designed and implemented as one of the most widely used and advantageous automatic systems. This will help people in their daily activities, thus saving them time and hard work. This system uses sensor technology (soil moisture sensor, temperature, humidity sensors, etc) with the microcontroller, camera, relay, and battery. Behaves as an intelligent switching system that detects the soil moisture level and irrigates the plant if necessary and these can be remotely monitored even through an application. The opening and closing of the valve were automatically based on the dryness level of the soil and other environmental factors that affect irrigation. Sensor readings were transmitted to raspberry pi controller which was the heart of the system and these readings checked against a predetermined threshold. In general, this system applies automatically for small and large gardens, nurseries, greenhouses and green roofs. This will also save time and energy, as well as minimize water loss.

DECLARATION

We, KATUSABE ROBINA and MOORE STEVEN WANYAMA hereby certify and confirm that the information we have written in this project is a result of our own effort, research and has not been submitted before to any university or institution of higher learning for any academic award.

KATUSABE ROBINA

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

MOORE STEVEN WANYAMA

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

APPROVAL

This is to certify that this project report has been written under my close supervision and it is ready to be presented to the Faculty of Engineering for examination

SUPERVISOR:

Ms. NABUNYA VICTO

Signature..... Date...../...../.....

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LIST OF ACRONYMS

SMS – Soil moisture sensor

RPI –Raspberry pi

HDPE -High density polyethene

RWH – Rainwater harvesting

LIST OF TABLES

Table 1: summary of the tests and the equipment used	38
Table 2: Soil tests.....	53
Table 3: Reference evapotranspiration	54
Table 4: Effective rainfall	55
Table 5: loads.....	64
Table 6: Initial costs.....	65

LIST OF FIGURES

Figure 1: A furrow irrigation system	14
Figure 2: A boarder irrigation system.....	14
Figure 3: Sprinkler irrigation system	15
Figure 4: Drip irrigation system.....	16
Figure 5: Raspberry pi components	28
Figure 6: The design approach.....	36
Figure 7: Architectural drawing of the system	37
Figure 8: The flow diagram of the system	49
Figure 9: Crop data	55
Figure 10: Soil data.....	56
Figure 11: The web application interface	63
Figure 12: the dashboard.....	63

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION	11
1.1 BACKGROUND	11
1.2 PROBLEM STATEMENT	12
1.3 JUSTIFICATION	12
1.4 OBJECTIVE	12
1.4.1 MAIN OBJECTIVE	12
1.4.2 SPECIFIC OBJECTIVES	12
1.5 SCOPE AND LIMITATION OF THE STUDY	13
1.5.1 Conceptual scope	13
1.5.2 Time scope	13
1.5.3 Geographic scope	13
2.0 CHAPTER TWO: LITERATURE REVIEW	14
2.1 The irrigation system	14
2.1.1 TYPES OF IRRIGATION SYSTEM	14
2.2 Irrigation pipes	19
2.2.1 Types of irrigation pipes	19
2.3 Crop water requirement	21
2.4 Sukuma wiki production in Uganda	21
2.5 Energy sources for pumps	21
Hydro-electric power	21
Wind energy	21
Fuels	21
2.6 Rainwater harvesting	22
2.6.1 Components of RWH systems	23
2.6.2 CURRENT RAINWATER HARVESTING STORAGE TECHNOLOGIES	23
2.6.3 BENEFITS OF RAINWATER HARVESTING SYSTEM	25
2.7 AUTOMATION OF IRRIGATION SYSTEMS	26
3.0 CHAPTER THREE: MATERIALS AND METHODS	36
3.1 INTRODUCTION	36
3.2 Study Area	36
3.3 System layout of the project	37
3.4 SPECIFIC OBJECTIVE ONE: DATA COLLECTION TO DETERMINE SOIL TYPE, CROP TYPE AND THE WATER QUALITY	37

3.5	SPECIFIC OBJECTIVE TWO: TO DESIGN AND CONSTRUCT THE RAINWATER HARVESTING AND DRIP IRRIGATION SYSTEM COMPONENTS.	39
3.5.1	<i>DESIGN OF THE DRIP IRRIGATION SYSTEM</i>	39
3.5.2	<i>DESIGN OF THE RAINWATER HARVESTING SYSTEM</i>	42
3.5.3	<i>CONSTRUCTION OF THE RAINWATER HARVESTING AND THE DRIP SYSTEM</i>	43
3.6	SPECIFIC OBJECTIVE THREE: TO AUTOMATE AND TEST THE PERFORMANCE OF THE SYSTEM.	44
3.6.1	<i>THE AUTOMATION SYSTEM</i>	44
3.6.2	<i>TESTING SYSTEM PERFORMANCE</i>	51
3.7	SPECIFIC OBJECTIVE FOUR: TO PERFORM THE FINANCIAL ANALYSIS	51
4.0	CHAPTER FOUR: RESULTS AND DISCUSSION	53
4.1	Specific objective one	53
4.1.1	<i>The soil tests</i>	53
4.2	Specific objective Two	54
4.2.1	<i>Design of the drip irrigation system</i>	54
4.3	Specific objective three	62
4.3.1	<i>Automation of the system</i>	62
4.3.2	<i>Testing</i>	63
4.3.3	<i>Sizing of the solar PV power supply</i>	64
4.4	Specific objective four	65
5.0	CHAPTER FIVE: CONCLUSION AND RECOMMENDATION	69
5.1	CONCLUSION	69
5.2	RECOMMENDATION	69