



**FACULTY OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF WATER RESOURCES**

**ENGINEERING**

**FINAL YEAR PROJECT PRESENTATION**

**OPERATING AQUAPONICS SYSTEM USING RAIN WATER**

**IN BUSITEMA UNIVERSITY**

**By;**

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*A final year project proposal submitted to the Department of Water Resources Engineering as a partial fulfillment for the award of Bachelor of Science in Water Resources Engineering.*

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## **ABSTRACT.**

Rain water harvesting (RWH) is an excellent technique of water conservation for future needs and also to recharge groundwater.

Surface water and municipal water has often been used in Aquaponics systems but due to the presence of Total Dissolved Solids, TDS, Total suspended solids and Chlorine/Chloramines respectively which whiz has been a distress to the fish growth in Aquaponics. Rain water turns out to be the effective option for the Aquaponics system due to it purity and absence of suspended and dissolved solids in it.

Aquaponics is an eco-friendly system for food production utilizing aquaculture and hydroponics to cultivate fish and crop without soil. It is an inexpensive symbiotic cycle between the fish and plant. In an aquaponic system, fish waste (ammonia) is fed into the plant bed which acts as a bio-filter and takes the nitrate which is essential to grow vegetation. The fresh new water is then returned to the fish enclosure to restart the cycle. A unique advantage of an aquaponic system is conserving water more effectively compared to traditional irrigation systems. Conservation of water is accomplished by recirculating water between the plant bed and the fish habitat continuously. Organic fertilization of plants using dissolved fish waste is the other benefit of aquaponics. Utilizing plants as a natural alternative to other filters, requires less monitoring of water quality.

Here in our project, we are going to adopt the roof-top rainwater harvesting method and implement it in the Aquaponics system. This project focuses on to design a structure for rainwater harvesting and use it to establish a balanced ecosystem between the fish and the plants.

## DECLARATION

We the undersigned, declare that this project report is our original work, except where due acknowledgement has been made. We declare that this work has never been submitted to this University or any other institution for funding/for partial fulfillment for any award.

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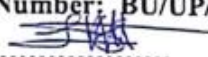
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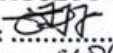
#### **SUPERVISOR APPROVAL**

This research proposal submitted as a partial fulfillment for the award of Bachelor Degree in Water Resources Engineering of Busitema University, with our approval as the academic supervisor(s).

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## ACRONYMS

RWH-Rain Water Harvesting

TDS-Total Dissolved Solids

DO—Dissolved Oxygen

pH—potential of hydrogen

FAO—Food and Agriculture Organization

HRT—Hydraulic Retention Time

NH<sub>3</sub>—Ammonia

K--Potassium

NO<sub>2</sub>- --Nitrite

NO<sub>3</sub>- --Nitrate

P—Phosphorus

Q—flow rate

t—time

T--Temperature

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