

BUSITEMA UNIVERSITY, NAMASAGALI CAMPUS

FACILITY OF NATURAL RESOURCES AND ENVIRONMENTAL SCIENCES

**An Assessment of Physico-chemical Water Quality Parameters in Earthen Fish Ponds:
A Case Study of Kisozi Sub-county, Kamuli district.**

BY

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BU/UG/2021/0629

**A RESEARCH REPORT SUBMITTED TO THE
FUCULTY OF NATURAL RESOURCES AND ENVIRONMENTAL SCIENCES IN
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR AWARD OF THE DEGREE
OF BACHELORS OF SCIENCE IN FISHERIES AND WATER RESOURCE
MANAGEMENT OF BUSITEMA UNIVERSITY**

JULY, 2024

DECLARATION

I hereby declare that unless otherwise references quoted, the work embodied in this research dissertation is entirely a result of my own effort and has never been submitted to any other institution of higher learning for the award of Bachelor's degree

SIGNATURE..... DATE.....

APPROVAL

This is to certify that this research has been submitted with my approval as supervisor.

Signature.....

Date.....

Tebitendwa Sylvie Muwanga (PhD)

(Supervisor)

DEDICATION

I dedicate this thesis to God Almighty for His unlimited grace, consistent love, immeasurable faithfulness, and sparing my life throughout the period of my research. In addition, I dedicate this work to my parents Mr. Olego Max and Mrs Atim Joyce Mary, my brothers Omongot Cuthbert, Ogwang James and my beloved friend Asilo Poulin Shilla

ACKNOWLEDGEMENTS

I am thankful for the laboratory assistance and equipment provided by The Faculty of Natural Resources and Environmental Sciences, Namasagali Campus, Busitema University. I am mainly appreciative for the efforts from Mr. Sentongo Oscar who helped me during laboratory analysis and sample collection on time. Special thanks go to Dr. Tebitendwa Sylvie Muwanga, whose mentorship has been invaluable from the time of the proposal development to this time when the thesis is accomplished. I am really thankful for her guidance, encouragement and more especially, editing my work and providing me with the relevant literature. Lastly but not least, I am honoured to appreciate my family, more especially my parents, Mr. Olego Robert , Omongot Cuthbert and Ogwang James for the financial assistance throughout the project.

TABLE OF CONTENTS

DECLARATION.....	II
APPROVAL	III
DEDICATION.....	IV
ACKNOWLEDGEMENTS	V
LIST OF FIGURES	VIII
LIST OF TABLES	IX
LIST OF ACRONYMS	X
ABSTRACT	XI
CHAPTER ONE	1
1.1 Background of the study.....	1
1.2. Statement of the problem.	2
1.3. Aim and Objectives of the study.	2
1.31. aim of the study.	2
1.3.2. Specific objectives.	3
1.4. Research questions.....	3
1.5. Justification of the study.	3
CHAPTER TWO	4
LITERATURE REVIEW	4
2.1. Earthen ponds	4
2.2. physio-chemical water quality parameters.....	4
2.3. Physio-chemical parameters that influence fish culture.....	6
2.3. Management practices to control and maintain water quality.....	7
CHAPTER THREE	9
METHODOLOGY	9
3.1. Study area.....	9
3.2. Sampling design	9
3.3. Data collection	10
3.3.1. On-site measurements.....	10
3.3.2. Laboratory analysis	10
CHAPTER FOUR.....	12
RESULTS	12
4.1 Water quality composition in earthen ponds in Kamuli district.	12
4.1.1 Temperature.....	12
4.1.2 Dissolved oxygen	12
4.1.3 PH.....	13

4.1.4 Electrical Conductivity	13
4.1.4 Total Dissolved Solids	14
4.1.5. Total suspended solids (TSS)	15
4.2. Determination if physio-chemical parameters are in recommended range for fish culture .	17
CHAPTER FIVE	18
DISCUSSION, CONCLUSSION AND RECOMMENDATIONS	18
5.1. DISCUSSION	18
5.1.1 Introduction.....	18
5.1.2. Physico-chemical water quality parameters.....	18
5.1.3 Temperature.....	18
5.1.4 Dissolved oxygen (DO).....	18
5.1.5. pH	19
5.1.6 Electrical conductivity (EC).....	19
5.1.7 Total dissolved solids (TDS).....	20
5.1.8 Total suspended solids (TSS)	20
5.1.9 Proposed management options for water quality management.....	21
5.2. CONCLUSIONS	22
5.3. RECOMMENDATION	22
REFERENCES.....	23

LIST OF FIGURES

Figure 1: Map of Kamuli district with monitored ponds	9
Figure 2: Shows variation in temperature of fish ponds over the six weeks monitoring period.....	12
Figure 3: Shows variation in DO of the fish ponds over the six weeks monitoring period	13
Figure 4: Shows variation in pH in the fish ponds over the six weeks monitoring period	13
Figure 5: Shows variation in EC in fish ponds over the six weeks monitoring period	14
Figure 6: Shows variation in TDS in the fish ponds in the six weeks monitoring period.....	15
Figure 7: Shows variation in TSS in the fish ponds over the four weeks monitoring period	15

LIST OF TABLES

Table 1: water quality standard ranges	6
Table 2: water quality tolerance by species (source: David Cline 2019).....	7
Table 3: summary of physico-chemical parameters in the monitored ponds presented as range (Mean ± SD).....	16
Table 4: Comparison of water quality with recommended standards	17

LIST OF ACRONYNS

APHA: American public health association

BOD: Biological oxygen demand

COD: Chemical oxygen demand

L: Litre

N: Nitrogen

P: Phosphorus

SD: Standard deviation

TSS: Total suspended solids

Cm/s: Centimetre per second

Gm-3: Grams per cubic meter

Mg/L: Milligram per litre

µS/cm: Microsiemes per centimetre

ABSTRACT

Aquaculture is one of the fastest food growing industries in the world with potential to supplement the ever declining capture fisheries stock. Nevertheless, one of the major challenges limiting fish productivity in earthen ponds is the unreliable water quality, which is either attributed to point or non-point pollution from human activities or in-pond activities including over feeding and poor pond maintenance. Therefore, this study aimed to assess the physico-chemical water quality parameters in earthen ponds. The specific objectives were to: i) find out the physio-chemical water quality composition of earthen fish ponds in relation to temperature, pH, dissolved oxygen (DO) concentration, electrical conductivity (EC), total dissolved solids (TDS) and total suspended solids (TSS); ii) determine if named parameters in objective 1 are within the recommended standards to support fish culture, and iii) suggest the management practices for improved and sustained water quality of earthen ponds.

This study was conducted in Kamuli district, Kisozi sub-county, and this involved random selection of 5 fish ponds based on accessibility. The fish ponds were monitored over a period of six (6) weeks from May-June, 2024. The physico-chemical water quality parameters monitored included: Temperature, DO, pH, EC and TDS were measured in-situ using Multimeter parameter probe (HANNA H198194) while TSS was analysed in the laboratory following standard methods of water and wastewater treatment by APHA (1998).

Results for the physio-chemical water quality composition in five earthen fish ponds that is to say A, B, C, D, and E was: Temperature 26.06 ± 1.44 , 25.58 ± 1.40 , 25.30 ± 1.41 , 25.47 ± 1.22 and 26.83 ± 2.59 respectively; DO: 5.30 ± 0.66 , 5.41 ± 0.66 , 5.35 ± 0.62 , 5.72 ± 0.41 and 4.91 ± 0.71 , PH was 7.51 ± 0.16 , 6.74 ± 1.28 , 7.09 ± 0.11 , 6.33 ± 0.30 and 7.31 ± 0.29 respectively. EC was found to be 349.72 ± 10.73 , 346.88 ± 22.23 , 662.44 ± 13.15 , 98.83 ± 19.67 and 280.66 ± 23.11 for ponds A, B, C, D and E respectively. TDS: 174.11 ± 4.54 , 172.55 ± 1.48 , 331.66 ± 6.58 , 48.83 ± 9.07 and 143 ± 11.08 and TSS water was 166.67 ± 98.47 , 141.67 ± 66.85 , 200 ± 95.34 , 200 ± 95.34 and 141 ± 66.85 respectively, and were found to be within the recommended ranges required to support fish culture except TSS. It is recommended that pond management should be encouraged through regular water exchange, influent treatment and controlled feeding to maintain TSS levels within recommended standards.

