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FACULTY OF NATURAL RESOURCES AND ENVIRONMENTAL SCIENCES

DEPARTMENT OF BIO-PHYSICAL AND GEO-INFORMATION

THE PERFORMANCE OF NILE TILAPIA (OREOCHROMISNILOTICUS) FED ON INDUSTRIALLY MANUFACTURED AND LOCALLY ON FARM FORMULATED FEEDS RAISED IN CAGES AT NAMASAGALI, UPPER VICTORIA NILE, UGANDA

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A RESEARCH REPORT SUBMITTED IN PARTIAL FULLFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE FISHERIES AND WATER RESOURCE MANAGEMENT OF BUSITEMA UNIVERSTY.

DECEMBER 2020

DECLARATION

I **MUGABE JOSEPH** do declare that this research report is my original work and has not been submitted for any other degree award to any other university or institution of higher learning.

Sign..... Date 11/01/2021

APPROVAL

This is to certify that this report by Mugabe Joseph has been, successfully completed under my supervision and recommend it for submission to the Faculty of Natural Resources and Environmental Science of Busitema University with my approval.

SUPERVISOR'S NAME: BASSA SAMUEL (PhD Cand. Maseno University, Kenya)

DATE: ..... 11th January 2024 .....

SIGNATURE: .....

DEDICATION

I dedicate this report to wonderful parents, the late Mr. Mukama Francis & Mrs. Babirye Aidah and my wife Tebesigwa Irene for their love, encouragement and support morally and financially you are greatly honored. May God Bless you abundantly.

ACKNOWLEDGEMENT

I dedicate this piece of work, to the most, highest GOD who graced this work to be a success. I acknowledge Busitema University and in particular school of Natural Resources and Environmental Science for making me what I am today. I am also grateful to my research supervisor Bassa Samuel for his valuable time in fine-tuning this research report. God be with you. Special thanks go to people of Namasagali campus for their wise and articulate counsel ever since I started working with them up to this date. Not to forget, I acknowledge my parents, whom I have missed during this hectic period, I salute you for your love. Finally, I recognize my children, all my brothers and sisters, colleagues, work mates, class mates; their support which has been, immensely appreciated towards helping me complete this study.

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LIST OF ABBREVIATIONS

ADC:	Apparent Digestibility Coefficients
CHO:L:	Carbohydrate and Lipid Ratio
EAA:	Essential Amino Acid
FAO:	Food and Agricultural Organizations
FCR:	Feed Conversion Ratio
FT:	Feeding Treatment
LFCR:	Low Food Conversion Ratio
LSD:	Least Significant Difference
NFE:	Nitrogen Free Extract
NRC:	National Research Council
PER:	Protein Efficiency Ratio
SGR:	Specific Growth Rate
SPSS:	Statistical Package for Social Sciences

ABSTRACT

Feed costs contribute the most to operational costs in aquaculture production. The nutrient input and utilization need to be balanced, especially proteins, because it contributes the highest cost in aqua feeds. Key constraints to aquaculture development in Uganda are the poor quality and limited availability of supplementary feeds. Where commercial feeds are available, they are often prohibitively expensive. The alternative for farmers is to make their own feeds. However, the limited availability of ingredients, lack of information on fish nutrition and on how to make and deliver feeds often results in poor quality feed and reduced production and profitability. This study was conducted to assess the performance of Nile Tilapia (Oreochromisniloticus) fed on industrially manufactured and locally on farm formulated feeds raised in cages at Namasagali, upper Victoria Nile. Growth and survival of Tilapia fingerlings fed with a local feed and commercial feed were, observed for 13 weeks. The proximate compositions and economics of the feeds and water quality of the culturing cages were, assessed. Fish fed with industrial commercial feeds showed significant ($P<0.05$) higher weight increase, specific growth rate, protein efficiency ratio and low food conversion ratio than fish fed with local feed. Significant ($P<0.05$) higher mortality were recorded in fish fed with the local feed. The growth performance was a reflection of the proximate composition of the feeds with local feed having low crude protein (10.95%), lipid (3.95%) and ash (4.92%) when compared to industrially manufactured imported fish feed which had 42% crude protein, 12% lipid and 9.5% ash with protein being most significant. Carbohydrate (69.90%) and crude fiber (2.88%) were higher in the local feed than in industrial commercial feeds with an imbalance in carbohydrate and lipid ratio. Mortality was attributed to stress resulting from the poor quality of the feed. Cost of feeding with local feed to a weight gain of 31.67g was 80/=, while the cost of feeding with to a weight gain of 148.58g was 16/ .

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter contains the backgroand of the study, statement of the problem, purpose of the study, objectives of the study, research questions, scope of the study and significance of the study,

1.1. Background of the study

The nile tilapia (Oreochromisniloticus), is the primary aquaculture species produced in Uganda. They are mainly cultured in earthen ponds and concrete or plastic tanks. Fish farming in Uganda is semi-intensive and practiced in mono-sex culture (all male species) for tilapia (Isyagi, 2001). The main water sources are rivers, natural springs and rainwater harvesting. With support from the government of Uganda, the Fisheries Department is actively seeking to facilitate improved communication and interaction among aquaculture producers and the aquaculture community. To support that effort, an Aquaculture unit was, established under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), (MAAIF, 2004).

One mission of the Department of Fisheries is to foster in-land aquaculture that creates employment and business opportunities in communities across the island. Another objective is to provide a safe and sustainable way of acquiring food and improving family diets. Fisheries officers have been, trained to provide technical assistance to aquaculture farmers throughout the duration of the production cycle, from stocking to harvesting. Technical assistance also includes consultation on feed formulation and regular sampling of ponds and tanks using nets to monitor stocking density and growth (MAAIF, 2004).

In Uganda there is need to improve the sustainability and profitability of the aquaculture sector. One way to help improve the sector is to work towards overcoming the challenges associated with poor quality fish feed. There is currently no collaboration between feed producers and the contribution from the government of Uganda, which is needed in order to work together to formulate more viable feeds that farmers can use to potentially increase their production (SARNISSA, 2009).

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