

**THE IMPACTS OF FARMING ACTIVITIES ON WETLANDS. A CASE STUDY OF
NALWEKOMBA WETLAND IN NAMASAGALI SUBCOUNTY, KAMULI DISTRICT.**

KUGONZA ROBERT

BU/UG/2019/0014

**A RESEARCH REPORT SUBMITTED TO THE FACULTY OF NATURAL
RESOURCES AND ENVIRONMENTAL SCIENCES IN PARTIAL FULFILLMENT OF
THE AWARD OF THE BACHELOR OF SCIENCE DEGREE IN NATURAL
RESOURCES ECONOMICS.**

MARCH 2023

DECLARATION

I **Kugonza Robert** declare that this research report is my original work and declare that this work has never been submitted to this university or to any other institution for funding or partial fulfillment of any award.

Name

Registration number.....

Signature

Date

APPROVAL

This research dissertation titled “**Impacts of Farming Practices on Wetlands, a case study of Nalwekomba Wetland**” submitted as a partial fulfillment for the award of a bachelor degree in natural resource economics of Busitema University, with my approval as the academic supervisor.

MS ARIANGO ESTHER

Signature

Date

DEDICATION

I dedicate this work to my dearest mother, Mrs. Banura Rose Ateenyi and my beloved sister Fortunate Patricia.

I also dedicate the piece of work to my grandmother (May her soul rest in peace).

Lastly I dedicate it to all people who will read it.

ACKNOWLEDGEMENT.

I give great thanks to the Almighty GOD who gave me the gift of life and made me strong during hard times at the University, during my research.

I owe special thanks to all people of good will that assisted, guided and supported me in all ways towards the successful completion of my research dissertation. Special thanks to my mother for the support, encouragement and sacrifice made to ensure that this work becomes a reality. I am equally indebted to my class that has always given me positive encouragement, positive comments.

Great thanks to the entire Busitema University Namasagali Campus administration for their support in execution of their duties during my research period. Lastly, I would like to appreciate the unreserved efforts and guidance of my academic supervisor, MS ARIANGO ESTHER.

Table of Contents

DECLARATION	i
APPROVAL	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
ABBREVIATIONS	viii
LIST OF FIGURES.....	ix
LIST OF TABLES.....	x
ABSTRACT.....	xi
1.0 CHAPTER ONE.	1
1.1 Back ground information.	1
1.3 Research objectives.	2
1.3.1General objective	2
1.3.2 Specific objectives	3
1.4 Research questions.....	3
1.5 Significance of the study.	3
1.6 Scope of the study.....	3
1.7 Theoretical conceptual frame work.....	3
2.0 CHAPTER TWO LITERATURE REVIEW.....	5
2.1 Introduction	5
2.2 Farming practices carried out in wetlands.	6
2.3 Importance of wetlands in Uganda.....	7
2.4 Impacts of farming practices on wetlands.	9
2.4.1 Impacts of agriculture on water quality.....	9
2.5 Measures to wetland degradation.....	11

2.5.1 Constitution.....	11
2.5.2 Aquatic Buffers on Wetlands.....	11
2.5.3 Restrictions on Dumping in Wetlands and their Buffers.....	12
CHAPTER THREE: MATERIALS AND METHODS.....	13
3.1 Introduction.....	13
3.2 Research design.....	13
3.3 Sampling strategy and sample size determination.....	13
3.4.1 Self-administered Questionnaires.....	14
3.4.2 Interviews.....	14
3.4.3 Observation.....	15
3.5 Data analysis and presentations.....	15
3.6 Ethical consideration.....	15
3.7 Limitations of then study.....	15
CHAPTER FOUR: PRESENTATION OF FINDINGS, ANALYSIS AND DISCUSIONS.....	17
4:0 Introduction.....	17
4.1. Demographic characteristics of respondents.....	17
4.1.1 Age of respondents.....	17
4.1.2 Sex of the respondents.....	18
4.1.3 Marital status of the respondents.....	19
4.1.4 Educational level of respondents.....	21
4.1.5 Occupation of respondents.....	21
4.1.6 Village of respondents.....	22
4.2 Impacts of farming practices on wetlands.....	24
4.2.1 Farming practices affect wetlands.....	25
4.2.2 Impacts of farming practices on wetlands.....	26

4.2.4 Impacts of farming practices on water quality.	28
4.3 Measures to reduce degradation of Nalwekomba wetland.	29
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS.	30
5.1 Conclusions of the study.	30
5.2 Recommendations of the study.	30
5.2.1 Areas for further studies.	31
REFERERENCES.	32
APPENDICES.	35
Appendix one: field photos.	35
Appendix two: questionnaire	37

ABBREVIATIONS

FAO	Food and Agriculture Organization.
MAAIF	Ministry of Agriculture, Animal industry and Fisheries.
MWE	Ministry of Water and Environment.
NARO	National Agricultural Research Organization.
UBOS	Uganda Bureau of statistics.
UN	United Nations.
GHG'S	Green House Gases
WMD	Wetland Management Department

LIST OF FIGURES.

figure 1. 1 conceptual framework	4
figure 4. 1 showing different age groups of the respondents.....	17
figure 4. 2 showing the sex of the respondents.....	18
figure 4. 3 marital status of the respondents.....	20
figure 4. 4 showing occupation of the respondents.....	22
figure 4. 5 showing villages of the respondents.....	24
figure 4. 6 showing percentage of responses on farming practices on a wetland.....	24
figure 4. 7 showing impact of farming practices	26
figure 4. 8 showing effects of farming practices on fish stock.....	27

LIST OF TABLES.

table 2. 1. Ecosystem services provided by wetlands. 8

table 4. 1 showing the marital status the respondents. 20

table 4. 2 showing the levels of education of the respondents. 21

table 4. 3 showing occupation of the respondents 22

table 4. 4 shows the sampled respondent’s villages. 22

table 4. 5 showing responses on the impacts of farming practices. 24

table 4. 6 showing responses on farming practices affect wetlands. 25

table 4. 7 showing impact of farming practices on water quality. 28

table 4. 8 showing responses on the measures to protect the wetland. 29

ABSTRACT.

This study assessed the impacts of farming practices on wetlands. The case study was Nalwekomba wetland in Kamuli-Uganda. The main objective of the study was to examine the impacts of the farming practices on wetland. The study assessed the different farming practices which affect wetland values and their functions as well as the different measures to be taken to avoid or reduce the destruction of wetlands in Kamuli. The study was based on population sample size of 65 people from areas near Nalwekomba wetland in Namasagali-Kamuli. Data/information was gathered using questionnaires, and interview methods. Data was analyzed using Microsoft excel and was presented inform of descriptions, charts, columns and tables.

The results show that 93.8% out of the 65 respondents confirmed that there were impacts of farming practices had a great impact on the wetland and most of them identified the farming practices that affect wetland which included sugarcane growing, bush burning, trench digging, and fertilizer application. Use of fertilizers and chemicals had the highest percentages (41.3%), followed by trench construction (25.6%).

26.5% out of 128 responses said that sensitization should be done if wetlands are to be protected. Sensitization can be done through radio/ TV shows, seminars, workshops and meetings with the people farming in Nalwekomba. 25.0% of the respondents said that monitoring of Nalwekomba should be strengthened. This would help catch the people who are practicing improper farming methods in the wetland. 18.0% of the respondents said there should be employment of enforcers to implement the set laws and policies that protect Nalwekomba wetland. Another 18.0% of the respondents said that the all stakeholders should be involved in decision making.

The government with other stakeholders like NGO'S can develop and implement a monitoring system. This ensures that the monitoring of the wetland and activities easy. The system can be able to track the changes in the water quality.

1.0 CHAPTER ONE.

1.1 Back ground information.

Wetlands are valuable ecosystems that occupy 6% of the world's land surface (Schuyt and Brander, 2009). These are enjoyed by both human beings and plants. Wetlands provide many important services to human health and natural environment (Birol, 2008). Wetlands provide many important services to human society, but are at the same time ecologically sensitive and adaptive systems (Turner, 2010). Wetlands are especially beneficial under extreme drought or flood conditions for their ability to retain water, reduce runoff, filter sediments and provide water purification (Haetig, 2008). They comprise both land ecosystems that are strongly influenced by water and aquatic ecosystems with special characteristics due to shallowness and proximity to land. Wetlands play a key role in pollution elimination and flood control, serve as breeding and nursery grounds for many species of fish and wildlife and help maintain ground water supplies and quality (Koos,2005).

According to Wetlands International (2007), Africa's wetland ecosystems are estimated to cover more than 131 million hectares. They deliver a wide range of ecosystem services that contribute to human well-being such as nutrition, water supply and purification, climate and flood regulation, coastal protection, feeding and nesting sites, recreational opportunities and increasingly, tourism. Africa has 131 million ha of wetlands, varying in type from saline coastal lagoons in West Africa to fresh and brackish water lakes in East Africa.

In Uganda, wetlands occupy 29,000 km² (13 percent) of the total area. The complexity of Uganda's wetlands can be described as follows: In the south and west, of the country, they form an extensive low gradient which is steep with V- shaped valley bottoms with permanent wetland edges. In the East, wetlands exist as a network of small, vegetated valley bottoms in slightly undulating land shape (NEMA, 2008).

Wetlands are defined as "areas of marsh. Fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, brackish or salty, including areas of marine water the depth of which, at low tide, does not exceed six meters" (NEMA, 2017).

Wetlands are among the world's most biologically productive ecosystems and rich in a diversity of species. Of the 20000 species of fish in the world, 40% live in fresh water.

REFERENCES.

- Acreman, M.C.; Hollis, G.E. 1996. *Water Management and Wetlands in sub-Saharan Africa. Development of a sahelian floodplain wetland.* G.E. Hollis. ; W.M. Adams; M.Aminu-Europe: *vulnerability, adaptation and policy. Climate Change* 36: 107—121.
- Bruland, G. L., Hanchey, M. F., & Richardson, C. J. (2003). Effects of agriculture and wetland restoration on hydrology, soils, and water quality of a Carolina bay complex. *Wetlands Ecology and Management*, 11, 141-156.
- Czech, Helen A., and Katharine C. Parsons. "Agricultural Wetlands and Water birds: A Review." *Waterbirds: The International Journal of Waterbird Biology*, vol. 25, 2002, pp. 56–65. *JSTOR*, <http://www.jstor.org/stable/1522452>. Accessed 26 Feb. 2023.
- Dale, V. H., & Polasky, S. (2007). Measures of the effects of agricultural practices on ecosystem services. *Ecological economics*, 64(2), 286-296.
- Detenbeck, N. E., Elonen, C. M., Taylor, D. L., Cotter, A. M., Puglisi, F. A., & Sanville, W. D. (2002). Effects of agricultural activities and best management practices on water quality of seasonal prairie pothole wetlands. *Wetlands Ecology and Management*, 10(4), 335-354.
- Galbraith, H., Amerasinghe, P., & Huber-Lee, A. (2005). The effects of agricultural irrigation on wetland ecosystems in developing countries: A literature review.
- Kairu, J. K. (2001). Wetland use and impact on Lake Victoria, Kenya region. *Lakes & Reservoirs: Research & Management*, 6(2), 117-125.
- Matavire, M. M. (2015). *Impacts of sugarcane farming on coastal wetlands of the North Coast of Zululand, Kwadukuza, South Africa* (Doctoral dissertation, Stellenbosch: Stellenbosch University).
- McCartney, M., Rebelo, L. M., Senaratna Sellamuttu, S., & De Silva, S. (2010). *Wetlands, agriculture and poverty reduction* (Vol. 137). Iwmi.

- Mironga, J. M. (2005). Effect of farming practices on wetlands of Kisii District, Kenya. *Applied Ecology and Environmental Research*, 3(2), 81-91.
- Mwanja, W. W., Akol, A., Abubaker, L., Mwanja, M., Msuku, S. B., & Bugenyi, F. (2007). Status and impact of rural aquaculture practice on Lake Victoria basin wetlands. *African Journal of Ecology*, 45(2), 165-174.
- Nagy, B., & Watters, B. R. (2022). A review of the conservation status of seasonal Nothobranchius fishes (Teleostei: Cyprinodontiformes), a genus with a high level of threat, inhabiting ephemeral wetland habitats in Africa. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 32(1), 199-216.
- Olhan, E., Gün, S., Ataseven, Y., & Arisoy, H. (2010). Effects of agricultural activities in Seyfe Wetland. *Scientific Research and Essay*, 5(1), 9-14.
- River banks and lakeshore Management) Regulations. Uganda.
Setting. *Ecological Economics*, 35(1)25-33.
- Sirima, A., Japhet Kashaigili, J. J., & Kamau, F. (2021). THE EFFECT OF AGRICULTURAL INTENSIFICATION ON ECOSYSTEM SERVICES AROUND IHEMI CLUSTER. *Tanzania Journal of Forestry and Nature Conservation*, 90(1), 30-40.
- Tong, S. T., & Naramngam, S. (2007). Modeling the impacts of farming practices on water quality in the little Miami River Basin. *Environmental Management*, 39, 853-866.
- Valizadeh, N., Esfandiyari Bayat, S., Bijani, M., Hayati, D., Viira, A. H., Tanaskovik, V., ...& Azadi, H. (2021). Understanding farmers' intention towards the management and conservation of wetlands. *Land*, 10(8), 860.
- Verhoeven, J. T., & Setter, T. L. (2010). Agricultural use of wetlands: opportunities and limitations. *Annals of botany*, 105(1), 155-163.

www.iwmi.cgiar.org/Assessment/files_new/.../CADiscussionPaper1.pdf

Zalidis, G., Stamatiadis, S., Takavakoglou, V., Eskridge, K., & Misopolinos, N. (2002). Impacts of agricultural practices on soil and water quality in the Mediterranean region and proposed assessment methodology. *Agriculture, Ecosystems & Environment*, 88(2), 137-146.

Zhang, J., Ma, K., & Fu, B. (2010). Wetland loss under the impact of agricultural development in the Sanjiang Plain, NE China. *Environmental monitoring and assessment*, 166, 139-148.

Zou, Y., Wang, L., Xue, Z., E, M., Jiang, M., Lu, X., ...& Yu, X. (2018). Impacts of agricultural and reclamation practices on wetlands in the Amur River Basin, Northeastern China. *Wetlands*, 38, 383-389.