



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

**PREVALENCE OF BOVINE FASCIOLIASIS ALONG THE WETLANDS
OF SOROTI AND KATAKWI DISTRICT,
EASTERN UGANDA**

By

**TEMA SIMBA SIMON
(BU/UP/2020/1427)**

**A DISSERTATION SUBMITTED TO THE FACULTY OF
AGRICULTURE AND ANIMAL SCIENCES IN PARTIAL
FULFILLMENT OF REQUIREMENTS FOR THE AWARD OF
BACHELOR OF ANIMAL PRODUCTION AND MANAGEMENT
OF BUSITEMA UNIVERSITY**

FEB, 2024

DEDICATION

I dedicate this research to my mother **Cunyua Palimira**, my Late Dad **Drami Pius**, my beloved uncle **Vukoni Lupa-Lasaga**, Friend **Aliga Peter**, Brother **Erwaga Francis** and the Ancestors of **Tanio** family at large for their tirelessly willing support physically, spiritually and financially. Special thanks should go to my supervisor **Dr. Justine Ekou** for his fatherly support.

DECLARATION

I, **TEMA SIMBA SIMON** do declare that this is my work, through the guidance of my supervisor and has never been submitted, shared or copied to this university or any other higher institution of learning for the award of a bachelor's degree

STUDENT

TEMA SIMBA SIMON

Signature:  Date: 7/3/2024

temasimbason@gmail.com

APPROVAL

This dissertation is submitted with the approval of my academic supervisor

Academic supervisor

Name: Dr. Ekou Justine

Date: 07/3/2024

Signature: (Signature)

TABLE OF CONTENTS

DEDICATION.....	i
DECLARATION.....	ii
APPROVAL	iii
ACKNOWLEDGEMENT.....	vi
LIST OF ABBREVIATIONS	vii
LIST OF TABLES AND FIGURE	viii
ABSTRACT.....	ix
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the study	1
1.2 Problem statement	2
1.3 Main objective of the study	2
1.3.1 Specific Objectives:	2
1.4 Research questions.....	3
1.5 Justification:	3
1.6 Significance of the study	3
1.7 scope of the study	3
1.7.1. The geographical scope.....	3
1.7.2. Time scope	3
1.7.3. Content scope	4
CHAPTER TWO: LITERATURE REVIEW	5
2.1. Description.....	5
2.2. Etiology of fascioliasis.....	5
2.3. Life cycle of liver fluke	6
2.4. Epidemiology of fascioliasis.....	7
2.5. Diagnosis of fascioliasis.....	7
2.5.1. Sedimentation Technique to Identify Fluke Eggs	7
2.5.2. Enzyme-Linked Immunosorbent Assay (ELISA)	8
2.6. Signs of fascioliasis	8
CHAPTER THREE: METHODOLOGY.....	9
3.1. Study area	9
3.2. Study population	9
3.3. Study design.....	9
3.4. Study animals and sampling technique.....	9
3.5. Sample size determination	9
3.6. Method of data collection	10
3.7. Coprological examination	10

3.8. Data management and analysis	10
3.9. Ethical consideration	10
3.10. Environmental consideration.....	10
CHAPTER FOUR: RESULTS	11
4.1 Prevalence of bovine fascioliasis by age	11
4.2 Prevalence of bovine fascioliasis by sex.....	11
4.3 Prevalence by location of bovine fascioliasis	12
CHAPTER FIVE: DISCUSSION OF THE RESULTS.....	13
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS	15
6.1 Conclusions.....	15
6.2 recommendation.....	15
REFERENCES.....	16
APPENDICES.....	19
<i>Picture 1. Sample analysis in lab.....</i>	19
Picture 4. Co-ordinates of locations of data collection.....	20

ACKNOWLEDGEMENT

On the first note, I would like to thank the Almighty God who enabled me to complete this research successfully. My sincere appreciation goes to my Supervisor, Dr. Ekou Justine for the guidance and advice offered to me during my report writing. This is specifically through the constructive criticisms and corrective hard work to complete this research report

LIST OF ABBREVIATIONS

MAAIF – Ministry of Agriculture Animal Industries and Fisheries

UBOS – Uganda Bureau of Statistics

ELISA – Enzyme Linked immunosorbent Assay

USD – United States Dollar

FEC – Fecal egg count

PCR – Polymerase chain reaction

DNA – Deoxycarboxylic nucleic Acid

LIST OF TABLES AND FIGURE

Table 1 Shows prevalence of bovine fascioliasis by age.....	11
Table 2 shows prevalence of bovine fascioliasis by sex.....	11
Table 3 shows prevalence by location of bovine fascioliasis	12
Table 4 shows prevalence of bovine fascioliasis by breeds.....	12

ABSTRACT

Bovine fascioliasis, caused by the trematode parasite *Fasciola* spp., poses a significant threat to livestock health and productivity in many regions worldwide. This study aimed to assess the prevalence of bovine fascioliasis along the wetlands of Soroti and Katakwi, Uganda. The study population consisted of bovines of different breeds, sexes, and age classifications, tracked down along the wetlands of Soroti and Katakwi district.

Gweri and Aukot sub counties were purposively chosen for this study in Soroti, while Toroma and Kapujan were selected from the Katakwi locale. Fresh fecal samples were collected directly from the rectum and placed in sample bottles containing 10% formalin. The sedimentation method was utilized to identify the presence or absence of *Fasciola* spp. eggs in the fecal samples.

The prevalence of bovine fascioliasis was found to be 65% across the study sites, indicating a high burden of infection among the sampled bovine population. This high prevalence underscores the importance of implementing effective control measures to mitigate the impact of fascioliasis on livestock health and welfare in the study area. Further research is warranted to explore the factors contributing to the high prevalence and to develop targeted control strategies to reduce the burden of bovine fascioliasis in Soroti and Katakwi district in Eastern Uganda

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Uganda currently has 14.2 million dairy cattle, 16 million goats, 4.5 million sheep, 47.6 million poultry and 4.1 million pigs, as indicated by information from the agrarian service and the Uganda Agency of Statistics (MAAIF and UBOS, 2009). The nation is as of now a net exporter of animal's items and live creatures, principally dairy items and eggs. Meat and meat items play a minor role. (UBOS, 2021)

Animals' food products (meat, milk, dairy items and eggs) comprise around 43% of family uses on food and refreshments; 72% of these consumptions are in cash. (UBOS, 2021) For different classes of use that may be supposed to be upheld in some action by animals' creation (transport or attire, for example) accessible proof doesn't permit the disaggregation of the animal's contribution (Behnke and Nakirya, 2013).

large animal products of Uganda were being compelled by various elements including hunger, infection either bacterial, viral or parasitic, ill-advised medical services and other administrative problem. (Arbabi et al., 2018). Fascioliasis is one of the significant parasitic sicknesses in tropical and subtropical nations, which limit efficiency of ruminants. The infection is brought about by digenean trematodes of the sort *Fasciola* generally alluded to as liver accidents. *Fasciola hepatica* and *Fasciola gigantica* are the two liver accidents usually answered to cause fascioliasis in ruminants, which forces immediate and roundabout monetary effect on domesticated animals' creation, especially of dairy cattle and (Abattoir and Zone, 2012)

Bovine fascioliasis in Uganda is extremely continuous and causes a critical financial misfortune underway, decline efficiency and loss of body condition and the yearly misfortunes were assessed at 8.4 million, of which were because of mortality, efficiency and liver judgment at slaughter (Ssimbwa et al., 2014). Misfortune because of fascioliasis is related with mortality, decreased development rate, decrease in weight gain and frugality, decrease in working influence, judgment in enormous number of tainted livers, expanded helplessness to optional disease and cost because of control measure (Ducatelle et al., 2020)

REFERENCES

- Khan, N. U. (2020). Epidemiological study of bovine fascioliasis using coprological technique in district Mardan, Khyber Pakhtunkhwa, Pakistan. *Pure and Applied Biology*, 9(1), 455–463. <https://doi.org/10.19045/bspab.2020.90050>
- Nkurunziza, S., Nishemezwe, G., Ntirandekura, J. B., Niyokwizera, P., Nyabongo, L., Omore, A., & Odhiambo, R. (2024). Prevalence and associated risk factors assessment of bovine fascioliasis in the Imbo Region, Burundi. *Parasitology Research*, 123(1). <https://doi.org/10.1007/s00436-023-08040-w>
- Opio, L. G., Abdelfattah, E. M., Terry, J., Odongo, S., & Okello, E. (2021). Prevalence of fascioliasis and associated economic losses in cattle slaughtered at lira municipality abattoir in northern Uganda. *Animals*, 11(3), 1–10. <https://doi.org/10.3390/ani11030681>
- Petros, A., Kebede, A., & Wolde, A. (2013). Prevalence and economic significance of bovine fascioliasis in Nekemte Municipal abattoir. *Journal of Veterinary Medicine and Animal Health*, 5(8), 202–205. <https://doi.org/10.5897/JVMAH2013.0212>
- Tsegaye, B., Abebaw, H., & Girma, S. (2012). Study on coprological prevalence of bovine fascioliasis in and around Woreta , Northwestern Ethiopia. *Journal of Veterinary Medicine and Animal Health*, 4(October), 89–92. <https://doi.org/10.5897/JVMAH12.018>
- Zone, J. (2023). *Thesis on Prevalence of Bovine Fascioliasis and Around Dimtu. 14.* <https://doi.org/10.37421/2157-7579.2023.14.168>
- Abattoir, D. M., & Zone, S. W. (2012). *Prevalence and Economic Losses of Bovine Fascioliasis in. 4(2), 53–59.* <https://doi.org/10.5829/idosi.ejbs.2012.4.2.63172>
- Ahmad-najib, M., Wan-nor-amilah, W. A. W., & Kin, W. W. (2021). *Prevalence and Risk Factors of Bovine Fascioliasis in Kelantan , Malaysia : A Cross-Sectional Study Authors : Muhammad Faez Arizam and Noor Jamil Noor-Izani * * Correspondence : noorizani@usm.my DOI : https://doi.org/10.21315/tlsr2021.32.2.1 Highlights Bo. 32(2).*
- Animal, F., & Diseases, I. (2020). *InFocus Fascioliasis in cattle. 1–10.*
- Arbabi, M., Nezami, E., Hooshyar, H., & Delavari, M. (2018). *Epidemiology and economic loss*

of fascioliasis and dicrocoeliosis in. 11, 1648–1655.
<https://doi.org/10.14202/vetworld.2018.1648-1655>

Baluka, S. A. (2016). *Economic effects of foot and mouth disease outbreaks along the cattle marketing chain in Uganda*. 9, 544–553. <https://doi.org/10.14202/vetworld.2016.544-553>

Behnke, R., & Nakiryia, M. (n.d.). *The Contribution of Livestock to the Ugandan Economy United Kingdom*. 02, 1–37.

Ducatelle, R., Immerseel, F. Van, & Goossens, E. (2020). Research Note : The administration schedule of coccidia is a major determinant in broiler necrotic enteritis models Model Descriptions Based on Previously. *Poultry Science*, 100(3), 100806. <https://doi.org/10.1016/j.psj.2020.10.060>

Kim, T., Kim, G., Son, J., Lai, V. D., Mo, I., Jang, H., & Al, K. I. M. E. T. (2018). Prevalence , biosecurity factor , and antimicrobial susceptibility analysis of Salmonella species isolated from commercial duck farms in Korea. *Poultry Science*, 100(3), 100893. <https://doi.org/10.1016/j.psj.2020.12.006>

Liver Fluke – the parasite and disease . (n.d.). 1–4.

MAAIF & UBOS. (2009). The Republic of Uganda National Livestock Census Report. *Statistics*, 256.

Musotsi, P. Y., Otieno, C. A., Njoroge, S. M., & Box, P. O. (2017). *Prevalence of Fascioliasis in Cattle , Sheep , and Goats Slaughtered in Slaughter Slabs in Trans-Nzoia West , Kenya . and Knowledge of Livestock Handlers*. 7(6), 34–43.

Opio, L. G., Abdelfattah, E. M., Terry, J., Odongo, S., & Okello, E. (2021). *Prevalence of Fascioliasis and Associated Economic Losses in Cattle Slaughtered at Lira Municipality Abattoir in*.

Paulson, M. (2009). Liver fluke: Fasciola hepatica. *Medical Parasitology*, 92–97. <https://doi.org/10.1201/9781498713672-24>

Reigate, C., Williams, H. W., Denwood, M. J., Morphew, R. M., Thomas, R., & Brophy, P. M. (2021). Veterinary Parasitology Evaluation of two Fasciola hepatica faecal egg counting protocols in sheep and cattle. *Veterinary Parasitology*, 294(October 2020), 109435. <https://doi.org/10.1016/j.vetpar.2021.109435>

- Roesel, K., Dohoo, I., Baumann, M., Dione, M., Grace, D., & Clausen, P. (2017). Prevalence and risk factors for gastrointestinal parasites in small-scale pig enterprises in Central and Eastern Uganda. *Parasitology Research*, 335–345. <https://doi.org/10.1007/s00436-016-5296-7>
- Ssimbwa, G., Baluka, S. A., & Ocaido, M. (2014). Prevalence and financial losses associated with bovine fascioliasis at Lyantonde Town abattoir. *Livestock Research for Rural Development*, 26(9), Article-165.
- UBOS. (2021). *Producer Price Index Agriculture Up-To September 2021*. 2019, 1–10.