

COMPARATIVE PREVALENCE OF FASCIOLA HEPATICA AND FASCIOLA  
GIGANTICA IN CATTLE SLAUGHTERED AT SOROTI CITY ABATTOIR

BY

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SUBMITTED TO THE ANIMAL PRODUCTION AND MANAGEMENT DEPARTMENT,  
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DECLARATION

I, Shida Miracle, hereby declare that this dissertation titled "**Comparative Prevalence of Fasciola hepatica and Fasciola gigantica in Cattle Slaughtered at Soroti City Abattoir**" is my original work. This research was conducted as part of my degree requirements and has not been submitted to any other institution for any purpose.

I affirm that all sources of information and literature used in this study have been properly acknowledged, and I have adhered to the ethical standards and guidelines in conducting this research.

I take full responsibility for the content of this dissertation and affirm that the findings and conclusions presented herein are my own.

Approval

Shida Miracle

Sign.....  .....

Supervisor

Dr. Ekou Justine

Sign.....  .....

7<sup>th</sup> NOV, 2024

## DEDICATION

This dissertation is dedicated to my beloved family for their unwavering support, encouragement, and love throughout my academic journey. To my parents, whose sacrifices have made my education possible, and to my siblings, who have always believed in me—thank you for inspiring me to reach for my dreams. I also dedicate this work to the dedicated farmers and livestock keepers in my community, whose commitment to animal health drives the pursuit of knowledge and improvement in our agricultural practices. Your resilience and hard work inspire me every day

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## LISTS OF ABBREVIATIONS

Dr.	Doctor
Fasciola spp	Fasciola species
PCR	Polymerase Chain Reaction
P-value	Probability of observing the data
$X^2$ - value	Chi-Square value
Fig	Figure

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## ABSTRACT

Liver fluke infection, or fascioliasis, is one of the most significant parasite disorders that affect humans, cattle, and other ruminant animals. For cattle ranchers and traders, fascioliasis results in significant financial losses that are frequently disregarded. Fascioliasis prevalence in cattle killed at the Soroti City Abattoir in Uganda was compared between the two common species (*F. gigantica* and *F. hepatica*). During the study period, 250 cattle in total were sampled. By looking at the animals' phenotypic traits, the sex and origin of the animals were ascertained. By evaluating the eruption and wear of permanent teeth, age was ascertained. Following slaughter, the liver was inspected visually, palpated, and cut to check for the presence of liver flukes, or *Fasciola* spp. The existence of mature *Fasciola* spp. was also investigated in the gall bladder and bile ducts. Of the 250 livers examined, results revealed an overall prevalence of 44.8%, with 112 cattle testing positive for *Fasciola* species. The study identified a higher prevalence of *Fasciola gigantica* (n=76) compared to *Fasciola hepatica* (n=10), with 26 cases exhibiting mixed infections. No significant differences in prevalence were observed between sexes ( $P>0.772$ ), although males (67.86%) exhibited a higher prevalence than females (32.14%). In conclusion, the study highlighted a 44.8% prevalence of fascioliasis, predominantly due to *Fasciola gigantica*. To mitigate its impact on cattle health, ongoing surveillance and targeted interventions are recommended, alongside enhanced awareness and improved management practices among farmers and veterinarians to effectively control liver fluke infections in the region.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background

Fascioliasis, a disease caused by the parasitic trematodes *Fasciola hepatica* and *Fasciola gigantica*, is a significant global health problem affecting millions of livestock and humans worldwide (Ibrahim, 2017). The global distribution of fascioliasis is widespread with *F. hepatica* found in temperate and subtropical regions, while *F. gigantica* is predominantly found in tropical and subtropical regions. *Fasciola* species are known to infect a wide range of mammalian hosts, with cattle being particularly susceptible. In Uganda, where agriculture is a major sector, fascioliasis represents a significant challenge, with considerable impacts on livestock productivity and human health (Joan et al., 2015a).

In Uganda, fascioliasis is a common disease in cattle, with a national prevalence of 65.7% with eastern region having 63% (Lawrence *et al.*, 2021). The high prevalence in this region is attributed to the presence of intermediate snail host in swamps and rivers, and extensive livestock farming practices.

Because of the high population density of cattle, Soroti City, in Uganda's Eastern Region, is especially vulnerable to fascioliasis. An excellent place to investigate the presence of *Fasciola* species in the local cow population is the Soroti City Abattoir, which acts as a central hub for the slaughter and processing of cattle. Although earlier research has indicated that *Fasciola* infections are present in Uganda, little is known about the relative frequencies of *Fasciola hepatica* and *Fasciola gigantica* in the Soroti City region (Bennema *et al.*, 2011).

To effectively implement control measures and mitigate the effects of fascioliasis on livestock output and public health, it is imperative to have a thorough understanding of the distribution and prevalence of *Fasciola* species. It's important to distinguish between *Fasciola gigantica* and *Fasciola hepatica* because they have different epidemiologist and management approaches. Molecular methods like Polymerase Chain Reaction (PCR) have shown to be useful in identifying species and characterizing the genetic makeup of isolates of *Fasciola*, providing information about the dynamics of transmission and host specificity (Amor et al., 2011)

Although fascioliasis is a significant disease in Uganda, nothing is known about the relative abundance of different *Fasciola* species in cattle at the Soroti City Abattoir. Developing

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