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PREVALENCE OF BOVINE ANAPLASMOSIS IN BULIDHA SUB COUNTY, BUGIRI
DISTRICT.

BY

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A RESEARCH DISSERTATION TO BE SUBMITTED TO THE DEPARTMENT OF ANIMAL
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ABSTRACT

Bovine anaplasmosis, caused by the intracellular bacterium *Anaplasma marginale*, is a vector-borne disease that presents significant health risks to cattle and leads to economic losses in the livestock sector. This study aimed to assess the prevalence of *Anaplasma marginale* in cattle within Bulidha Sub County, Bugiri District, and to investigate potential associations between infection rates and demographic factors, including breed, sex, and age. Understanding these patterns is critical for formulating effective disease management strategies.

A cross-sectional study design was employed, involving 400 cattle from multiple farms in Bulidha Sub County. Blood samples were collected and analyzed using serological tests (indirect ELISA) to detect antibodies against *Anaplasma marginale*. Data were recorded for breed (local vs. crossbred), sex (male vs. female), and age groups (young, adult, senior), with statistical analyses performed using Chi-square tests to examine associations, setting significance at $p < 0.05$.

The study revealed an overall prevalence of *Anaplasma marginale* infection at 20.2% (81 positive samples out of 400). Infection rates were similar across breeds, sexes, and age groups, with no statistically significant associations found between prevalence and breed ($p = 0.421$), sex ($p = 0.778$), or age ($p = 0.961$). These findings suggest that susceptibility to anaplasmosis is relatively consistent across different demographic categories. However, the notable infection rate emphasizes the need for proactive disease control measures.


To mitigate the impact of anaplasmosis, it is recommended that farmers adopt routine testing for *Anaplasma marginale*, ensuring timely treatment of infected animals to prevent further transmission. Enhanced tick control through regular acaricide use and improved pasture management to reduce tick habitats are also advised. Educating cattle farmers and local veterinary personnel on anaplasmosis prevention, tick control, and biosecurity practices is essential. Collaborative efforts involving veterinary authorities, researchers, and livestock owners will be crucial in establishing sustainable management strategies to control anaplasmosis and support healthy livestock production in the region.

DECLARATION

I MUKWAYA JOSEPH declare that this piece of work was solely developed by myself and it hasnot been duplicated or being used by any other institution for similar award.

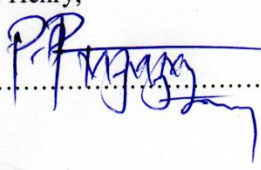
APPROVAL

Mukwaya Joseph

Sign.....  07/11/2024.

Dr. Matovu Henry,

Supervisor

Sign.....  07/11/2024.

DEDICATION

To my beloved father, mother and my siblings for their support, effort and contribution towards my success. Thank you, may God award, you abundantly.

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I am grateful to Bulidha sub-county, Bugiri district and Busitema University Arapai campus who are to make this study a learning process. My thanks first go to my supervisor Dr. Matovu Henry for intellectual guidance to come up with a clear and detailed research dissertation on this research project.

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LISTS OF ABBREVIATIONS

1. P.C.R - Polymerase Chain Reaction.
2. T.B.D - Tick Borne Diseases.
3. ELISA - Enzyme Linked Immunosorbent Assay.
4. DNA - Deoxyribonucleic Acid.

CHAPTER ONE: INTRODUCTION

1.1 Background

Bovine Anaplasmosis, caused by the rickettsial organism *Anaplasma marginale*, is a prevalent tick-borne disease that significantly impacts cattle production globally. The disease is characterized by fever, anemia, jaundice, and in severe cases, death, leading to substantial economic losses in affected regions (Kocan et al., 2010). The disease is primarily transmitted by ticks, particularly those of the *Rhipicephalus* species, but can also be spread through mechanical means such as contaminated needles or equipment during veterinary procedures (Aubry & Geale, 2011).

In Uganda, livestock farming is a crucial part of the agricultural sector, contributing to food security and household incomes. Cattle are particularly important, providing milk, meat, and draft power. However, the livestock sector faces challenges from various diseases, including tick-borne infections such as bovine Anaplasmosis (Okello-Onen et al., 2012). The disease's prevalence varies across different regions of Uganda, influenced by factors such as climate, tick distribution, and farming practices (Ocaido et al., 2009).

Bugiri District, located in the Eastern region of Uganda, has a predominantly agricultural economy, with a significant portion of the population engaged in livestock farming. The district's warm climate and abundant vegetation create an environment conducive to tick proliferation, increasing the risk of tick-borne diseases like bovine Anaplasmosis. Despite the importance of cattle to the livelihoods of farmers in Bulidha Sub County, there is limited data on the prevalence of bovine Anaplasmosis in this area, making it difficult to develop effective control strategies.

Studies conducted in other regions of Uganda have reported varying prevalence rates of bovine Anaplasmosis. For instance, a study by Muhanguzi et al. (2010) in the districts of Kiboga and Kyankwanzi found a seroprevalence of 28.9%, highlighting the significant presence of the disease. However, factors such as differences in tick species, cattle breeds, and management practices can result in variations in disease prevalence across different areas.

Understanding the prevalence and distribution of bovine Anaplasmosis in Bugiri District is essential for implementing effective control measures. This study aimed to fill the knowledge gap by determining the prevalence of bovine Anaplasmosis in Bulidha Sub County and identifying associated risk factors. The findings provided a foundation for developing targeted interventions to reduce the impact of the disease on cattle health and farmer livelihoods.

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