# UGANDA VETERINARY ASSOCIATION

Farmers engagement,

# Scientific Symposium&

## Annual General Meeting

29th November - 1st December 2023



**Theme**

People centered veterinary services for economic transformation

**MBALE COURTS VIEW HOTEL**

Mbale City, Eastern Uganda

FANGTONG
Chongqing Fangtong Animal Pharmaceutical Co., Ltd
www.fangtongpharm.com

BACLEAN
Compound Sulfamonomethoxine Sodium Injection
EFFECTIVE BY ONE SHOT

Respiratory diseases
Gastrointestinal tract diseases
Urogenital tract infections
Mastitis
Sepsis
Eperythrozoonsis and Toxoplasmosis
Various high fevers and inflammations caused by bacteria




NS
Nile Services Limited
Mobile: +256 41 4349243

# UGANDA VETERINARY ASSOCIATION

## Farmers engagement, Scientific Symposium and Annual General Meeting (AGM)

## 2023

*Theme: "People centered veterinary services for economic transformation"*







## OUR PARTNERS AND SPONSORS

MAAIF
Safe Drugs Save Lives
FANGTONG
BACLEAN
NS
zoetis
Norbrook
VETCARE AFRICA
Here to enrich
EAGLE VET
VETCENTRE
Bimeda
WORLD ANIMAL PROTECTION
ERAM (U) LIMITED
ULTRAVETIS
BIYINZIKA POULTRY INTERNATIONAL LIMITED
Alfasan Uganda Ltd. (Farm Support Ltd.)
BUKOOLA CHEMICAL INDUSTRIES LIMITED
Uzima Chicken
ODA
VETERINARY WEALTH SACCO LIMITED
koudijs
Powered by De Heus
SANGA VET. CHEM. LTD
EVERVICTORY
URUS
SR AFRO CHICKS & BREEDERS LTD
"Quality is our Commitment"



# Yoweri Kaguta Museveni
## President of The Republic Of Uganda



**Hon. Frank Kagyigyi Tumwebaze**
Minister of Agriculture, Animal Industry and Fisheries



**Hon. Fred Bwino Kyakulaga**
Minister of State for Agriculture,
Animal Industry and Fisheries
(Agriculture)



**Hon. Hellen Adoa**
Minister of State for Agriculture,
Animal Industry and Fisheries
(Fisheries)



**Lt. Col. (Rtd) Bright Kanyontore Rwamirama**
Minister of State for Agriculture,
Animal Industry and Fisheries
(Animal Industry)



Welcome Remark from

# Dr. Daniel Kasibule

**PRESIDENT**

UGANDA VETERINARY ASSOCIATION

The Uganda Veterinary Association warmly welcomes all of you to its 42nd Scientific Symposium and Annual General Meeting that is taking place in Mbale City. It is the second time such a conference is being held outside Kampala. Mbale City lies in one of our newly revamped UVA regional Chapters- the Eastern Chapter. The city's beautiful panorama and cool climate offers a perfect environment for such a purposeful function where different stakeholders in the livestock industry will meet to reflect on and discuss all aspects of veterinary services in an open supportive and intellectually stimulating environment to contribute to national development. The conference will be held under the theme: A people centered veterinary services for socio-economic transformation.

The Uganda vision 2040 seeks to transform the economic landscape to ensure the country reaches middle income status with in the next two decades. The Government of Uganda is implementing different policies and strategies geared towards revamping the livestock sector to meet the increasing demand of animal source foods. These are guided by the agriculture sector strategic plan (ASSP) 2015/16-2019/20, which prioritizes investments in beef, dairy cattle, poultry and goats as well as in other agricultural commodities. The services of veterinarians and paraprofessionals play a central role in realizing socio-economic transformation through the livestock industry.

The Uganda Veterinary Association is a professional association which was established to promote the integration, lobbying, resource mobilization, advocacy and provide a platform for networking to transform veterinarians for relevance towards national development.The Association Network is mandated to strengthen the quality and relevance of veterinarians especially through veterinary services, science, technology, and innovation—through activities designed to improve capacity and generate knowledge relevant to veterinarians and veterinary related challenges.

The theme of this year's Scientific conference **"A people centered veterinary services for socio-economic transformation"** engages multiple stakeholders to articulate short, medium- and long-term scenarios and explore the different livestock-related opportunities and challenges that will inform the policy debates. This will embrace consolidating achievements, reflecting and learning from implementing various activities for the past years, listening to views and ideas from the different stakeholders and partners and forge a way forward in line with the Vision 2030. The symposium will be one of the key pillars of the strategy, which is also meant to be a vehicle for facilitating veterinarians, stakeholders and key partners to synthesize emerging lessons and best practices, and to document and disseminate information, knowledge and innovations. This will highlight and deliberate on key developments within the veterinary profession exploring what it takes to deliver in the transformation of Uganda agro industrialization and strengthening the veterinary sector.

This year's scientific conference has been preceded by the farmers' day engagement and exhibition where farmers and other stakeholders are taking the lead in highlighting key areas where strengthening of the veterinary sector is crucial. Listening to the final consumers of our services is very important as it realistically guides on which areas to be improved.

Penetration of the ever-emerging market barriers that leave the country in extreme trade imbalances can effectively be circumvented by strengthening the veterinary sector a key player in agriculture the backbone of our country. Recent experiences during the pandemic that left many farmers stranded with the highly valuable sources of essential nutrients including eggs and milk spoke volumes of why the veterinarian should take interest in repositioning his efforts to address the ever-changing global market trends. Meanwhile as we endeavor to address this concern we continue appealing to key stake holders to address the following amongst others:

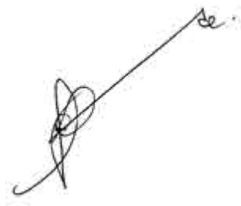
- Increase the sector's budget to reflect the 10% Malabo declaration and consequently better facilitation for the animal health workers.
- Expand and support private sector provision.
- Develop, amend or update key policies and fast track their implementation
- Improve staffing at national and local levels
- Allocate more funds into research of thermal stable vaccines (Comparison with the New castle Disease Kuku star vaccine by Brentec).
- Commit meaningful resources to manufacture of priority vaccines (FMD, NCD, Rabies)
- Improve on vaccine storage facilities as the vaccine once released from the central stores needs to always be kept under stipulated temperature ranges up to the time of its use.

We are extremely humbled by the several local and international veterinarians, stakeholders; academia, producers, processors, dealers of veterinary commodities, consumers, policy makers, extension workers, researchers, development partners, financial institutions, society leaders who submitted abstracts for presentation at this scientific conference.

It is also my honor, pleasure and privilege to welcome all partners and stakeholders from all walks of life: Research, Central and Local Governments, State and Non-State Actors, Civil Society Organizations, academia, pharmaceuticals, not forgetting the farmers from local, regional and international origin to this important symposium. It will be our privilege to continue building upon this foundation for a permanent structure of friendship, cooperation and collaboration.

I wish all of you a comfortable stay in Mbale City.

FOR GOD AND MY COUNTRY.



**Dr Kasibule Daniel**

PRESIDENT, UVA.

# UVA - EXECUTIVE COMMITTEE



Dr. Daniel Kasibule
President



Dr. Nabadda Sitenda Madrine
Vice-President



Dr. Bonifance Obbo
General Secretary



Dr. Geoffrey Mukama
Deputy Gen. Secretary



Dr. Ben Ssenkeera
Treasurer



Dr. Justine Wobusobozi
Deputy Treasurer



Dr. Maureen Mayanja
Committee Member



Dr. Merab Acam
Committee Member



Dr. Amanya Joseph
Committee Member



Dr. William Blatter Ssendaula
CVA Councilor

# UVA CHAPTER PRESIDENTS



Dr. Ismail Asiimwe
President, Central Chapter



Dr Okello David Nelson
President, Northern Chapter



Dr. Andrew Akashaba
President, Western Chapter



Dr Patrick Barasa
President, Eastern Chapter



Dr. Candia Stephen
President, Westnile Chapter



Welcome Remark from

## Dr. Bonifance Obbo

**GENERAL SECRETARY**

UGANDA VETERINARY ASSOCIATION

Dear colleagues, sponsors/partners, participants, ladies and Gentlemen

On my behalf and on behalf of the secretariat of Uganda veterinary Association, we greet you all in the name of the Almighty God and welcome you to this Uganda veterinary association Farmers engagement, Scientific symposium and Annual general meeting 2023 hosted by Uganda veterinary Association Eastern chapter in Mbale courts view Hotel in Eastern Uganda under theme: **"people centered Veterinary services for socio-economic transformation"**

The theme has been further broken down under the following subthemes: **Veterinary services in a changing policy environment, Diagnostics and Genomics and Animal disease surveillance for preparedness, prediction and planning.**

The secretariat and members of executive would not have been able to achieve and organize one of the most exciting scientific symposium alone without immense support from all partners/ sponsors, members of the organizing committee and all the participants who turned up for this memorable occasion for the first time being hosted by UVA Eastern chapter in Mbale city at the slopes of the beautiful Mountain Elgon in Eastern Uganda

Therefore the secretariat would like to thank you whole heartedly for this great support and immense contribution to the success of this Farmers engagement, scientific symposium and Annual general meeting 2023.

We urge all veterinarians, veterinary paraprofessionals and animal sector stakeholders to promote veterinary profession, Animal welfare and put the people at the center of veterinary service delivery in the country

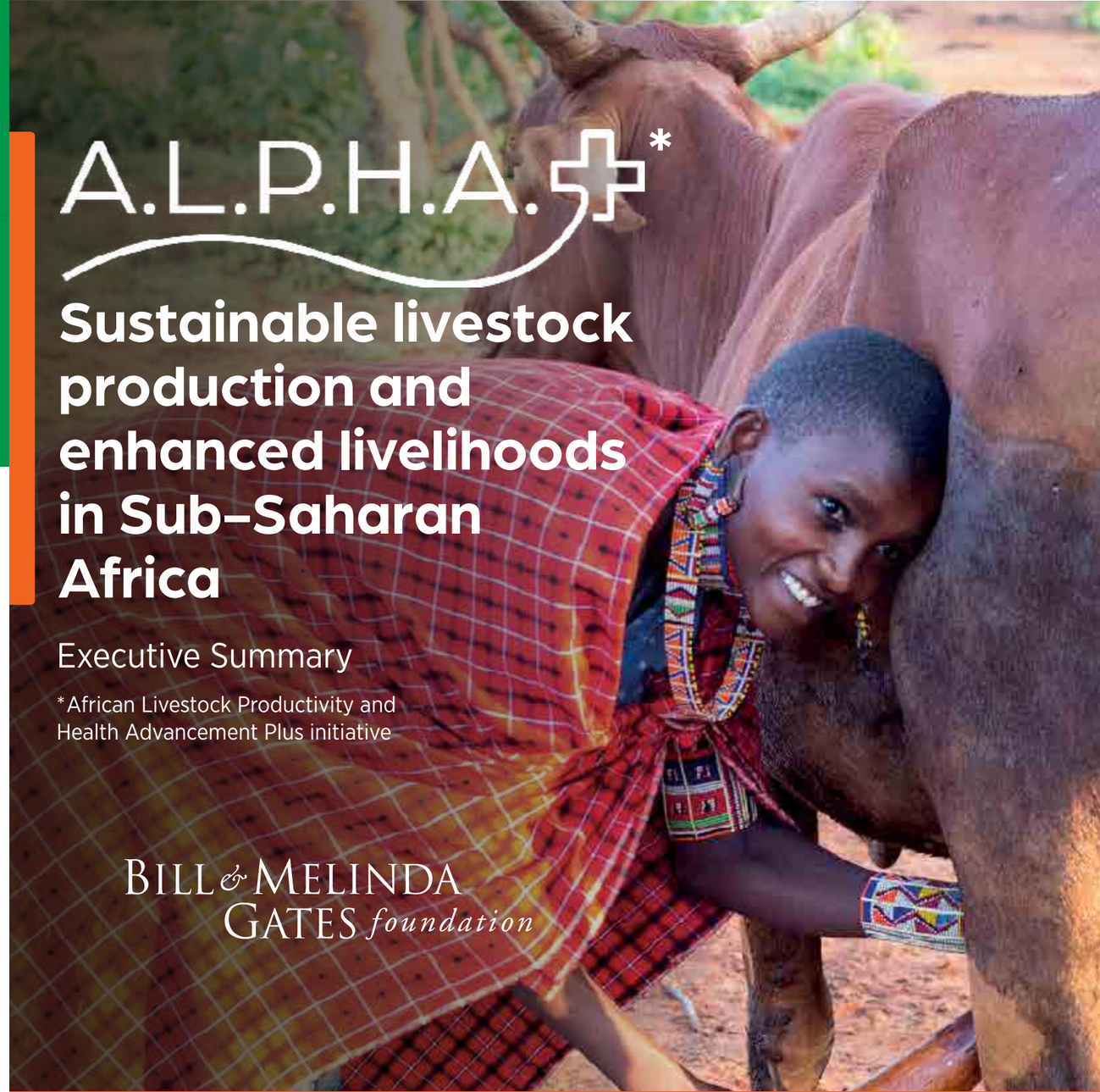
The secretariat of Uganda veterinary Association has done everything within their sphere of influence to ensure that your stay and participation in this year's farmers engagement, scientific symposium is memorable one and would like to wish you the best stay in Mbale city.

Please come again and again.

For God and My country.

**DR OBBO BONIFANCE**
GENERAL SECRETARY
UVA/PRINCIPAL VETERINARY OFFICER, MANAFWA.
CHAIRPERSON SCIENTIFIC COMMITTEE






zoetis

# Scientific Symposium Program

| Thursday 30th November 2023 – Opening ceremony and Scientific symposium | | |
|---|---|---|
| 8:00-5:00pm | Exhibition and farmers' engagements | |
| | | |
| **Time** | **Activity** | **Responsible person** |
| 8:00-9:00 | Arrival and registration | UVA Administrator |
| **Opening Ceremony** | | |
| 9:00-9:10 | Anthems: Uganda, East Africa | Dr. Barasa Patrick |
| 9:10-9:20 | Welcome remarks by President UVA<br>Dr. Kasibule Daniel | Dr. Barasa Patrick |
| 9:20-9:40 | Special Presentation and Keynote Address<br>Professor John David Kabasa | Dr. Kasibule Daniel |
| 9:40-10:00 | Official opening | Dr. Kasibule Daniel |
| 10:00-10:30 | Break time | |
| 10:30: | Plenary Session | |
| 10:30 -10:40 | Veterinary Education for the 21st Century;<br>Prof Frank Mwine | Dr. Akashaba Andrew |
| 10:40 -10:50 | Regulation of veterinary professionals and practice – Dr. Kasirye Florence, | |
| **Session I: Veterinary Services in a changing policy environment.**<br>Chairperson: Dr. Kasirye Florence, Secretary/Registrar, Uganda Veterinary Board | | |
| 10:50 -11:00 | Understanding the Role of the ProgRESSVet Program in Leveraging PVS Gap Analysis to Support Veterinary Service Capacity in Uganda. | Dr. George Muhanguzi |
| 11:00 -11:10 | Field assessment and mitigations to improve working donkey welfare for the poor owning communities in Kween district – Uganda | Dr. Wilson J |
| 11:10 -11:20 | Animal welfare and the law | Dr. Thomas Faye |
| 11:20 -11:30 | Changing the pig husbandry landscape using Innoculated Deep Litter System: A community-based approach | Dr. Samuel Majalija |
| 11:30 -11:40 | Development of a Welfare assessment tool for Small-scale pig farms under extensive system in Butemba Town Council Kyankwanzi District, Uganda | Dr. Nelson Achong |
| 11:40 -11:50 | Public-private multi-stakeholder platform in last mile animal health service delivery: The role of veterinary paraprofessionals and veterinarians | Mr. Balondemu David |
| 11:50 – 12:20 | Leveraging on Flock Dynamics and Farmers' Production Constraints in Designing Flock Health Program for Accelerated Goat Production | Dr. Williams Guma |
| 12:20-12:30 | Question and answer | |
| 12:30-12:45 | Sponsor presentations | Dr. Justine Wobusobozi |



| **Session II: One Health approach adoption in addressing public health emergencies:** Chairperson: Dr. Monje Fred | | |
|---|---|---|
| 12:45 -12:50 | Status of Water Quality and Phytoplankton Community of Awoja Stream and Wetland System, Soroti District | Mr. Okello W |
| 12:50 -1:05 | Vaccination as a cornerstone for farm biosecurity | Dr. Fu Jin |
| 1:05-1:15 | Community level one health implementation overview in Uganda | Dr. Asiimwe Ismail |
| 1:15 -1:25 | Integrating One Health in the management of animal bites and rabies: Lessons learnt from Tororo district, Eastern Uganda | Dr. Dickson Stuart Tayebwa |
| 1:25-1:35 | Burden of Multidrug-Resistant Escherichia coli in Pigs Slaughtered in Uganda and its Implication on Veterinary Public Health. | Dr. Byaruhanga Joseph |
| 1:35-1:45 | Sharing key lessons for udder health management | Dr. Arinaitwe Brian |
| 1:45-2:00 | Question and answer session | |
| 2:00:2:40 | Lunch break | Hotel Management |
| **Session III: Veterinary Diagnostics and Genomics** Chairperson: Dr. Halid Kirunda | | |
| 2:40 – 2:50 | Ticks; a reservoir for new and emerging orthonairoviruses in Uganda | Dr. Atim Stella Acaye |
| 2:50 -3:00 | Alternative method for determining efficacy of acaricides under field trial conditions. | Dr. Byaruhanga Joseph |
| 3:30 -3:10 | Molecular and serological survey of paratuberculosis in cattle in selected Districts of western Uganda | Dr. Ssekitoleko Jude |
| 3:10-3:20 | Perspectives for proteogenomic assay development using the circulating acellular proteome in veterinary species | Dr. Chemonges Saul |
| 3:20-3:30 | Emerging pregnancy diagnosis technologies for improved reproductive performance monitoring in cattle | Dr. Mugimba Kahoza Kizito |
| 3:30-3:40 | Question and answer session | |
| **Session III: Animal disease surveillance for preparedness, prediction and planning**<br>Chairperson: Dr. Chrisostom Ayebazibwe | | |
| 3:40-3:50 | Actions and perceived impact of African swine fever control measures along the smallholder pig value chain in Uganda | Dr. Tony Aliro |
| 3:50-4:00 | Epidemiological survey of assessing baboons, dogs and pigs as reservoirs for strongyloides species isolated from parasitic cases of mountain gorillas at the park boundaries of Bwindi Impenetrable National Park | Dr. Bukama Nelson |
| 4:00-4:10 | Prevalence and infection intensity of major helminths groups in cattle and goats from pastoral and agro pastoral systems in selected districts in Uganda | Dr. Biryomumaisho Savino |
| 4:10 -4:20 | Evaluation of the monthly veterinary surveillance system for Mbale Region for January 2023-June 2023 | Dr. Yatuwa Jude |
| 4:20 -4:30 | Modelling the transmission of Porcine Reproductive and Respiratory Syndrome Virus among Smallholder Pig farms in Western Uganda | Dr. Emily Niwandinda |
| 4:30 -4:40 | Proactive Disease Surveillance for Mountain Gorilla Conservation: The Vital Role of Veterinary Care | Dr. Okwir Ricky Okello |
| 4:40 -5:20 | Plenary Discussion | Dr. Kakungulu James |
| 5:20-5:30 | Closing remarks | Commissioner Animal Health. |
| 6:45 -12:00 am | Social Evening | |

# Anthrax Outbreak Investigation: A case study of Bududa District, Uganda, 2022

**[*1]Monje F., [2]Muwanguzi D., [2]Opolot J, [2]Kabami Z, [2]Simbwa B., [2]Agaba B., [2]Naiga N., [2]Akunzirwe R., [2]Namubiru S., [2]Zavuga R., [3]Mbolanyi B., [3]Obbo B., and [4]Kibone S.**

[*1]Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Tel: 0775640304, Email: fredmonje230@gamil.com

[2]Ministry of Health

[3]Ministry of Water and Environment

[4]District Local Government

## Introduction

On 16 May 2022, the District Health Officer informed Ministry of Health of suspected cases of anthrax amongst humans in Bududa District, linked to cows that died suddenly. We investigated to; determine scope of the outbreak, identify possible risk factors assess knowledge, and practices regarding anthrax so as to inform evidence-based control measures.

## Methods

We defined and identified case-animals as well as case-patients. We interviewed homesteads with sudden deaths of animals and suspected case-patients respectively to identify possible risk factors associated with anthrax infection. We described case-animals as well case-patients by animal/person, place and time. We used proportions to describe distribution of case-patients by knowledge, and practices regarding anthrax. We collected samples from dead animals and humans for laboratory analysis.

## Key findings

We identified 18 animal deaths in two sub counties/Town council. The first animal death occurred on 13 February 2022. We identified 13 suspected human cases, but one death (CFR: 7.7%). The Mean age of the case-patients was 32.3 years. The first two human cases occurred on 10 March and 13 March 2022 respectively. We superimposed case- animals identified over time onto case-patients epidemiological curve. All the 2 samples from dead animals turned positive by gram stain, whereas the 7 samples from humans turned positive by PCR. Fifty-eight percent of the case-patients reported that every ate meat of animals that died suddenly. All case-patients and livestock owners interviewed reported that they had never heard about anthrax. Animal owners practiced zero grazing. Animals had never been vaccinated against anthrax.

## Recommendations

The outbreak in animals was likely due to grass infected with anthrax spores. The outbreak in humans was likely due to consumption of infected meat. The affected community had no knowledge about anthrax. We recommended annual vaccination of animals at risk and regular sensitization of the communities about anthrax.



# Field assessment and mitigations to improve working donkey welfare for the poor owning communities in kween district – uganda

**Wilson J.A[1], Wesonga W.S.N[2], Masia N.M[3]**

*[1]Surrey University School of Veterinary Medicine, United Kingdom*

*[2]Animal Welfare and Protection Organisation (AWPO), Entebbe, Uganda*

*[3] College of Veterinary Medicine, Animal Resources and Biosecurity, Kampala*

Jw02105@surrey.ac.uk, +447903892343; drwesonga2@yahoo.com , +256789610490; Masianancy2@gmail.com, +256786555333

## ABSTRACT

Working donkeys provide animal labour to move loads including ploughing of gardens in Karamoja semi arid and Eastern Mountainous Regions of Uganda. Kwosir Sub-county in Kween District where the study was done is on Mountain slopes. The problem studied was that donkeys were facing inadequate care. The objectives of the study were to assess the donkey welfare; identify most common causes of sickness and current veterinary capacity for treating sick donkeys. A cross section study was used where all presented animals were sampled and treated and or vaccinated. Owners were interviewed on how they were providing welfare to these animals; clinical inspection and assessment and laboratory screening of samples to confirm health conditions were made. Results indicated 34.2% had a body condition score of only 3/5 or less. Assesment found 22.7% donkeys had problematic hooves; 40.9% with injuries and 40.9% had skin conditions including parasites. Laboratory screening indicated: Babebiosis, marked eosinophilia indicative of parasitism and allergic reactions; moderate neutrophilia and lymphocytosis indicative of infectious inflammation processes. This confirms that donkeys become sick requiring intervention for welfare and health.






## Emerging pregnancy diagnosis technologies for improved reproductive performance monitoring in cows.

Mugimba Kahoza Kizito[1,2], Kabanda William[1] and Rutaro Hamid[1] Kidega Tony

1. URUS Uganda office, Kigo, Kampala
2. Makerere University, College of Veterinary Medicine, Animal resources and Biosecurity

### ABSTRACT

If the Farmer is to be profitable, the ideal goal is for every cow to have calf per year Assuming an average gestation length of 283 days, this calls for a cow to be bred and pregnant within 80 days after calving. This means a cow should be bred successful, conception is one of the key measures for monitoring reproductive performance of a herd. The Key Questions to getting cows bred and pregnant are, how and when are cows first submitted for AI and secondly, how and when non pregnant cows are identified and re-inseminated. Therefore, it is important that the farmer/veterinarian finds out the open as soon as possible to guide timely and profitable herd management decisions.

Several approaches have been applied to test for pregnancy diagnosis in cows, both invasive and noninvasive methods, including but not limited to rectal palpation, observation of return to estrus, ultrasound technologies. However, their use is limited by the associated challenges. For example, reliable rectal palpation results can only be obtained after 45 days of pregnancy. The observation of return to estrus can be challenging given the poor record keeping culture and inadequate understanding of heat signs in the farming communities. Ultrasound technologies are expensive, require skilled human resources and are largely inaccessible by the farming communities. It is therefore imperative that emerging technologies are applied for early pregnancy diagnosis and guide decision making at the farm.

To this end, two rapid pregnancy diagnosis kits are available for use to solve the inadequacy. We present to you these technologies as viable alternatives for early pregnancy diagnosis in cows. The tests use whole blood or serum and can confirm pregnancy in 30 days, are easy to perform with a very short turnaround time. Application of these kits will help farmers evaluate reproductive performance of their herds, guide in decision making and enhance overall profitability of their enterprises.

## Ticks; a reservoir for new and emerging orthonairoviruses in uganda

Authors: Atim et al, 2023; https://www.biorxiv.org/content/10.1101/2023.03.10.532017v1

### Abstract

### Background:

Uganda is one of the most biodiverse regions on the planet and a hotspot for virus emergence. Ticks are vectors of a wide range of pathogens that are responsible for causing mild to severe illnesses in both humans and animals, most notably the orthonairoviruses Crimean-Congo Haemorrhagic Fever virus (CCHFV), Nairobi Sheep Disease Virus (NSDV) and Dugbe virus (DV). We have recently described a CCHFV seroprevalence of 27.6% in Ugandan farming communities, suggesting that this disease with a high associated mortality is under-estimated as a cause of non-malarial fever. In order to assess the distribution and genetic diversity of such viruses in ticks, we aimed to assess the prevalence of nairoviruses in ticks at three geographically diverse sites in Uganda using target-enrichment (TE) next generation sequencing (NGS).

### Methods:

We collected 2,754 ticks from all three sites. These included Rhipicephalus appendiculatus, Rhipicephalus evertsi evertsi, Amblyomma variegatum and Hyalomma rufipes ticks, sorted into 219 pools by species and location. Viral genomes were detected following de novo assembly, BLASTn and mapping to viral reference sequences.

### Results:

We detected partial or near-complete viral genomes in 103/219 tick pools; 75 of which were from Arua, 21 from Nakaseke and 7 from Lyantonde districts. These included 22 species of virus, representing 16 genera and 9 families, including the Nairoviridae, Retroviridae, Orthomyxoviridae, Chuviridae, Rhabdoviridae, Phenuiviridae, Parvoviridae, Poxviridae and Flaviviridae. There were 5 highly divergent genomes detected, representing novel virus species. A high abundance of orthonairoviruses was notable, including CCHFV, Dugbe virus and a novel Orthonairovirus species that we have named Macira virus that require public health decisions.

Uzima Chicken

Uzima Chicken | Making Smallholder Farmers Healthier and Wealthier

**UGANDA IMPACT SNAPSHOT FOR 2023 YTD**

Uzima Chicken, a social enterprise focused on making smallholder farmers healthier and wealthier, distributes an improved breed of chicken that is 4x more productive than local breeds in terms of egg and meat production while requiring the same level of management and care as the local chicken. Our journey to achieving this vision is not possible without the support of the Government and our partners. This YTD report sheds a light on our performance and social impact in Uganda.

**1 Employment**



Uzima Chicken Ltd currently employs **500+** Ugandans (**95% youth, 36% Women**) at our production facilities, sales team in 70+ districts and back office staff.

**2 Nutrition/Food Security**



Uzima has sold **3 million** Day Old Chicks in 2023, a 93% increase from 2022 adding an estimated **236 million** eggs and **6250 tonnes** of animal protein to the food web.

**3 Exports**



Our influence in the region continues to grow, YTD we have exported **1,200,000** Day Old Chicks to neighbouring countries (Kenya, Burundi and Ivory Coast) contributing directly to Uganda's GDP.

**4 Women Empowerment**



Uzima Chicken in partnership with FINCA, a rural-focused microfinance institution has extended **256** loans (**47% to women**) to farmers to start, grow and expand their poultry businesses contributing directly to women empowerment and financial inclusion.

**5 Job Creation**

**2,850**

Brooding agents engaged (43% women, 38% youth) YTD; ordering on average of **900** Day Old Chicks translating into ~3 million UgX in earnings which improves economic welfare in households.

**6 Technical Training/Support**

**100,000+**

Ugandans trained and equipped with poultry management skills to increase productivity through our extension services in villages and district level classroom trainings.

# Changing the pig husbandry landscape using Innoculated Deep Litter System: A community based approach

[1*]Majalija Samuel, [1]Gabriel Tumwine, [2]Juliet Kiguli, [3]Robert Isabirye

*[1]College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, P.O. Box 7062 Kampala*
*[2]School of Public Health College of Health Sciences, Makerere University*
*[3]Mukono Zonal Agricultural Research and Development Institute, National Agricultural Research Organization (NARO)*

**Corresponding author: saraali67@gmail.com*

## Abstract

**Problem:**

A major challenge facing pig farmers in Uganda is the high cost of building pig houses forcing most farmers to rear their pigs tied with ropes or left to roam. We present a community based microbial technology for curbing pig fecal waste accumulation, odor management and basic housing for sustainable pig husbandry referred to as Innoculated Deep Litter System (IDLS). We promote affordable simple deep litter housing system, as well as providing appropriate and feasible low cost, easy treatment, and non-toxicity recycling of pig feacal waste and minimizes smell. We clarify the myths, difficulties, and ambiguities surrounding the use of indigenous microbes. Using a participatory action research strategy, our research team is evaluating and promoting IDLS as an alternative piggery husbandry model with farmers in Masindi district. Farmers are guided and assisted in establishing low-cost IDLS using locally available materials. As support system we are establishing Innovation Platforms (IP) made up of 20-30 farmers within neigbouring villages, coordinated by a household known as the village service center (VSC). The VSCs are provided with stocks of probiotic lactobacillus for each IP and in total we have established 30 IPs in six parishes.

**Conclusion:**

Our community project supports the creation of clusters of pig farmers as a model for transfer of technology and information.Promoting Innoculated Deep Litter System jointly with pig farmers' participation will increase productivity and sustainable piggery production among the women and youth in Uganda.



# Leveraging on Flock Dynamics and Farmers' Production Constraints in Designing Flock Health Program for Accelerated Goat Production

Williams Guma*, Sylvester Dickson Baguma, Lydia Patricia Asekenye and Ivan Tumwesige

Bulindi Zonal Agricultural Research and Development Institute, Hoima, Uganda

https://doi.org/10.4236/ojvm.2023.1311017

## Abstract

Compliance with appropriate flock health program is vital for preventing introduction and minimizing impact of diseases in goat farms. Unfortunately, most goat farms in Uganda, especially in the Albertine Graben Zone lack flock health program. The associated frequent outbreaks slow down effort aimed at commercializing goat production. In this study, we documented flock dynamics, identified and prioritized pressing challenges experienced by goat farms during the year 2022 and generated appropriate flock health program and packaged it for dissemination to farmers.

**Materials and Methods:**

Using a cross-sectional design, semi-structured questionnaire, data were collected and analyzed with MS Excel 2013. The data included: location and socio-demographics of household, farming system, flock dynamics, housing, feeding system, health management, challenges encountered by goat farm and suggested solutions.

**Results:**

Beginning January 2022 to December 2022, the number of goats reared in all the 45 sample farms increased from 2128 to 2220 goats. Results showed that 884 kids were produced and 88 breeding goats were introduced into the farms. Three hundred ninety-nine goats died due to mainly diseases and 435 goats got withdrawn through nondeath. The average farm level and overall mortality rate were 21 goats per 1000 goatmonths and 15 goats per 1000 goatmonths respectively. The most pressing challenges encountered by sample farms were death of goats especially due to diseases, poor access to veterinary extension services, high cost of inputs and feed scarcity. Solutions suggested by sample farms were improved access to veterinary services, improved housing, enhanced vaccination of goats against diseases, and enhanced grazing land management and feed conservation, all of which were incorporated into the flock health program.

**Conclusion and Recommendations**

An appropriate flock health program was generated based on flock dynamics and production constraints which reveal high mortality and limited access to veterinary services respectively. Actors are recommended to promote adoption and adherence to the flock health program so as to increase goat production and access to wider market.

## Evaluation of the monthly veterinary surveillance system for Mbale Region for January 2023-June 2023

*Author; Dr.Yatuwa J*

*Correspondence: 0775197072 judeyatuwa@gmail.com*

In Uganda disease surveillance is a direct responsibility of the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) through National Animal Disease Diagnostics and Epidemiology Center (NADDEC).All District Veterinary Officers (DVOs) are required to submit a monthly surveillance report by the 15th of every month to the epidemiology unit at NADDEC. The DVOs receive data from the sub county staff who submit monthly surveillance reports. This is paper based and is submitted to the office of the DVO manually or sent electronically. The objectives of this evaluation were to assess the completeness, timeliness, simplicity and usefulness of the monthly veterinary surveillance system in the 16 districts of Mbale region from January 2023 to June 2023. Completeness and timeliness were evaluated through reviewing of the reports submitted to NADDEC from Mbale region. Simplicity and usefulness were evaluated through questionnaires administered through phone interviews. Only 9 districts submitted at least one report during the period of January-June 2023. The completeness for the 16 districts was 30% while timeliness was 17%.The system is useful since it generates data used for decision making at the ministry. However only 62% of the DVOs use the data generated by the system at their respective districts. The various tools used by the surveillance system are not simple to use by the DVOs. Regular feedback from MAAIF on the summaries of the reports submitted.Conduct regular DQA at national and district level. This will improve on the usefulness of the data generated by the system. Extensively train the DVOs, DSFPs and other animal health workers on the reporting tool. Create a standardized simplified tool that can be used at Sub-County level.

## Understanding the Role of the ProgRESSVet Program in Leveraging PVS Gap Analysis to Support Veterinary Service Capacity in Uganda

Author: George Muhanguzi(ProgRESSVet Alumni) with Support from UMN CAHFS team and the ProgRESSVet Alumni Network.

Address: Kazo District, drgeorgemuhanguzi@gmail.com

### Abstract

Launched in January 2020, ProgRESSVet-Uganda is a 12-month educational program addressing the inadequate continuing education for Ugandan veterinarians, aiming to empower professionals for sustainable economic development. With over 27 participants successfully trained across three cohorts, the program bridges gaps in veterinary service capacity. In Uganda, the lack of ongoing education negatively impacts the Veterinary Service's performance, influencing animal health, food safety, and international trade. The program's objectives encompass enhancing local, national, and regional practices related to animal health and food safety, facilitating access to global trade markets, and promoting sustainable development. The comprehensive curriculum integrates theoretical and practical learning through a Technical Curriculum and a Proposal Development eBook, requiring 120 hours of participant effort. Notably, since 2020, 54 veterinarians applied, 34 were selected, and 27 successfully completed the program, reporting significant changes in their veterinary practices. ProgRESSVet-Uganda plans to continue until 2030, ensuring ongoing impact on Ugandan veterinarians. Future collaborations with local and international stakeholders will expand, and iterative feedback mechanisms will prioritize local expertise, enhancing the curriculum's impact on Uganda's Veterinary Service Capacity.

Key words: ProgRESSVet, Continuing, Education, Animal health, Food safety.



## Prevalence and infection intensity of major helminths groups in cattle and goats from pastoral and agro pastoral systems in selected districts in Uganda

***Biryomumaisho S, Nalule S, Kesiime C, Byamukama B, Tweyongyere R**

*School of Veterinary Medicine and Animal Resources, Makerere University, P.O. Box 7062, Kampala, Uganda*

***Corresponding author:** Prof. Savino Biryomumaisho, email: sbiryomumaisho15@gmail.com;

Tel 0772401567

### Abstract

One of the major health constraints faced by the livestock sector are gastrointestinal helminthes commonly known as worms. A study was conducted in the agro-pastoral district of Mbarara and the pastoral districts of Kiruhura and Nakasongola. Infection intensity of nematodes, cestodes and trematodes was scored for fecal samples of cattle and goats of all ages, sex and breed. The sampling was carried out on a total of 116 farms of which 37 were from Nakasongola, 45 in Mbarara while 34 were from Kiruhura districts.

Of the 1,078 cattle sampled in the three districts, 338 (31.4%) tested positive to at least one of the three groups of worms. Trematodes comprising of Fasciola and Paramphistoma eggs were detected in 601 (55.8%) of the 1078 cattle fecal samples. Nematode + trematode combination was the highest at 16.6%, n=123; cestodes + trematodes 4.7%, n=35 while nematodes + cestode combination was 1.2%, n=3. Cattle that were infected with all the three worm groups were 1.8%, n= 9 but were obtained from Mbarara and Kiruhura and none from Nakasongola district. Among all goats sampled, 97%, 650/670 were infected by at least one of the three major types of worms. Infection was not detected in only 10 goats. Among the sampled districts, nematode eggs were detected in 62% (144/232) while trematodes were more detected in goats from Mbarara district (86%, n=79).

The findings from this study show that gastrointestinal helminthes are still a big challenge as they are known to cause economic losses to farmers. Control efforts should be intensified to optimse returns from livestock enterprises.

## Development of a Welfare assessment tool for Small-scale pig farms under extensive system in Butemba Town Council Kyankwanzi District, Uganda

**Authors:** Dr Nelson Achong[1]*, Dr Dickson Tayebwa[1], Dr Samuel George Okech[1]

**Correspondence:** Mobile Number: +256782442477 nelsonachong10@gmail.com

Department of Veterinary Pharmacy, Clinical and Comparative Medicine, School of Veterinary Medicine and Animal Resources, College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University Kampala, Uganda.

**Abstract**

**Background:**

The number of pigs in Uganda has increased from 3.18 million (2008) to 4.5 million (2018) produced by 1.34 million households. Whereas extensive production system accounts for 90%, the welfare of animals in this production system has received little attention - in research - than the intensive system due to the assumption that animals in extensive system live a more natural life; hence, welfare issues are perceived as minor. This study aimed at developing a welfare assessment tool for small-scale pig farms under extensive production system.

**Methods:**

A checklist containing indicators of the welfare aspects: nutrition, environment, health, behaviour and mental state was drafted. Some indicators were assessed on a 3-point scale: 0 (good welfare), 1 (moderate welfare), and 2 (poor welfare) while a 2-point scale was used for presence/absence or positive/negative. A survey was used to collect data on key health and management practices. The indicators were given weights from which welfare variables were generated as weighted averages. The data was collected from 100 farms with a total of 350 pigs.

**Results:**

Model one (individual level): Lameness, body condition score, wounds on the body, Nose ringing, and behaviour negatively regressed welfare, R-squared-0.9073, P< 0.05. Model two (farm level): veterinarian-client relationship, mortality, environmental conditions, castration, medical records, water supply negatively regressed welfare, P<0.05 while panting, huddling and shivering positively regressed welfare, P>0.05. The R-squared-0.7503, P<0.05. Conclusion and recommendations: A welfare assessment tool was developed and tested for predictability of welfare. The models indicated high R-squared. Farmer sensitization is required.



## Vaccination the cornerstone of farm biosecurity

**Authors:** Fu Jin, Pharmacist

[1]Department of Veterinary Medicine, Southwest University,

[2]Pharmaceuticals at Sichuan Institute of Industry and Information Technology,

[2]Chongqing Fangtong Animal Pharmaceuticals Co. Ltd, China (www.fangtongpharm.com)

### Abstract

Avian influenza is zoonotic, and may infect humans through direct or indirect contact with birds which are natural hosts for avian influenza viruses. After an outbreak of Avian influenza virus in 1997 in poultry, Avian influenza A (H7N9) virus was identified and reported in China in 2013. The virus evolved into a Highly Pathogenic Avian Influenza (HPAI) in the year of 2017, it was reported that 766 people infected during that year, and 288 died. Due to the panic resulted from the disease outbreak, and the need to control the disease, consumers abandoned the consumption of poultry and poultry products completely, and hundreds of million poultry were culled and destroyed. Subsequently, the poultry industry in China lost billions of dollars in the same year. Fortunately, Chinese scientists developed a vaccine to control A(H5N1), and in the year of 2017, the same group of scientists developed a bivalent vaccine which can control A(H5N1) and A(H7N9) viruses simultaneously with nearly no increased cost. Great success had been observed since mass vaccination program was introduced on poultry in Sept 2017. Since then, isolation of A(H7N9) virus in the collected sample has been reduced by 93% in the next 12 months. Only 3 people died of A(H7N9) virus by in the year of 2018, and none died of it in the year of 2019. As of now avian influenza A(H7N9) is no longer a problem in poultry industry, the more important, a vividly portrayed human pandemic had been prevented in its cradle.

***Key words***: A(H7N9) virus, Mass Vaccination Program

## Animal welfare and the law

Author: Thomas, Faye, *Mbale City, Eastern Uganda,* ugandaawc@gmail.com

### Abstract

Animal welfare is a global issue with ethical, cultural, religious, and economic consequences. Although Uganda continues to make reformations, a multitude of gaps have been identified over recent years by international organizations which reviewed this issue at the request of the Ugandan government. Chief among them are a lack of awareness, acceptance and enforcement of established animal welfare laws. These gaps in lack of knowledge and/or non-compliance of these precepts are systemically found throughout all levels of Ugandan society, including the animal sector. Minimum standards of welfare were established in 1965, later popularized by World Organization for Animal Health and globally accepted. The principles of minimum standards are known as the Five Freedoms of Animal Welfare. Uganda has pledged conformity to this global model through many international treatises. This presentation will discuss these standards and the importance of implementation to enhance animal and community health safety; the efforts of the Ugandan government to advance the concepts; review the enforcement effectiveness of current legislation; the psychological effects on a society scoring low on animal welfare sensitivity; and communicate the global standards of vaccination and successful mitigation protocols of community (stray) dog populations as a benchmark analyses of welfare practices within the country.

***Keywords:*** *animal welfare law, Uganda prevention of animal cruelty, 5 Freedoms, psychological damage of exposure to animal cruelty*

## Perspectives for proteogenomic assay development using the circulating acellular proteome in veterinary species

Author: Chemonges S.

*90 Degrees, Kokwomurya, Central Division, Kapchorwa Municipality, Uganda*

*Correspondences: s_chemonges@yahoo.com, Tel: +61479149234*

### Abstract

Proteogenomic studies using the circulating acellular proteome in veterinary species is still comparatively scarce. This emerging science utilises tandem mass spectrometry (MS/MS)-derived proteomics to improve existing genome annotations and to identify novel proteins. There is unrivalled need to apply emerging biotechnologies to explore the fine aspects of alterations in serum and plasma with the goal of discovering novel assays. Although there are many parallels in the pathophysiology of many ailments between humans and veterinary species, research output in the proteogenomics field remains disproportionately largely that of humans and small laboratory rodents. It is therefore necessary to continue instigating robust molecular-level insights into developing methods used to detect salient potential biomarkers of common illnesses such as those associated with inflammation en masse, with capabilities for wide applicability across several species. It is reasonable to advance the notion that by exploring the liquid fraction of blood of veterinary species, it is possible to detect alterations of specific biomarkers responsible in contributing, defining and predicting response to infection, for example. This paper concerns a proteogenomic method that was developed to detect acute phase protein (APP) inflammation markers and their alterations in the liquid fraction of veterinary species with specific reference to sheep using next-generation MS/MS. There is consensus that the discovery of, and the ability to simultaneously assay many disease-related proteins, is a very welcome boost for the advancement of diagnosis and monitoring of animal diseases in clinical settings, an application that could benefit animal welfare.




## Modelling the transmission of Porcine Reproductive and Respiratory Syndrome Virus among Smallholder Pig farms in Western Uganda

**Emilly Niwandinda[1], Emmanuel Hasahya[2], Andrew Wange Bugenyi[3], Halid Kirunda[3], Pablo Alarcón[1] and Charles Masembe[4]**

*[1]Royal Veterinary College, University of London, London, UK, [2]International Livestock Research Institute, Kampala, Uganda, [3]National Agricultural Research Organization, Mbarara, Uganda, [4]College of Natural Resources, Makerere University, Kampala, Uganda*

### Abstract

Porcine Reproductive and Respiratory Syndrome is an economically important disease that causes reproductive failure in sows and mortalities in piglets. The aim of this study was to simulate the transmission of PRRSV in smallholder pig farms in western Uganda using a stochastic model. A total of 398 pig keeping households were interviewed. Questions were asked on their husbandry practices which included biosecurity, sharing of boars, selling and buying of replacement gilts, sharing of farm equipment. This information was used to calculate the contact rates and determining the distance between households, both contact rates and distance were fed into the model. In the baseline scenario we assumed no control measures. We also modelled scenarios in which, factors such as equipment sharing, free range, boar sharing, visitors and restocking were eliminated. The model was run for two years with 500 iterations for each scenario. Findings show that the median number of infectious farms was 2,273 for the baseline scenario which represents a 5.19% prevalence by end of 2 years. Also in this period, up to 17.7% of the households ((7747(0,15223.2)) had been infected. Incidence stability was reached after day 700 where the median number of new infected units was about 37 per day. Scenarios in which either boar sharing, restocking or visitors, were eliminated, revealed reductions of up to 99% in disease spread., Eliminating free range operations resulted in a 40% reduction in PRRSV spread while absence of equipment sharing had no impact on the spread of the disease. The outcome of this study gives new insights in the epidemiology of PRRSV, which informs policy makers and planners on the key risk factors to prioritize in control efforts within Uganda.

**Key words**:

Porcine reproductive and respiratory syndrome; epidemiology; simulation; smallholder pig farms; Uganda

# Next generation tick &tick-borne disease control strategies in uganda: preparing for the post-acaricide era!

**Author: Byaruhanga* J.**

***Research Center for Tropical Diseases and Vector Control (RTC), College of Veterinary Medicine, Animal Resources and Biosecurity (COVAB), Makerere University.***

**Corresponding Author: Joseph Byaruhanga**

***Email: jbyaruhanga01@gmail.com Tel: +256774881544***

## Abstract

Millions of metric tons of acaricides have been used especially in the tropics to kill and possibly eliminate ticks. However, ticks are still here with us and have gone ahead to develop survival strategies such as resisting major acaricides which used to kill them. In addition, the tick acaricide resistance challenge has become widely distributed in all regions of Uganda complicating options for acaricide zoning. Furthermore, the rate of new acaricide product innovations has not in any way matched the rate of tick resistance development leaving farmers with limited options. In addition, we continue to witness an upsurge in tick-borne diseases (TBDs) incidence at farm level leading to unprecedented cattle morbidity, mortality and increased production costs. In an attempt to fight against acaricide resistance, farmers have reported using dangerous chemicals and concoctions including use of crop pesticides and herbicides for tick control. Therefore, we postulate that the era of relying on acaricides for tick and TBDs control could soon come to an end and therefore in this paper we propose the next generation strategies for sustainable control of ticks and TBDs in Uganda as we prepare for the post acaricide era. Broadly, the strategies include developing and adopting vector infection control technologies (VICT), strategic chemotherapy (Triple Combo), modifying the host and environment plus shifting efforts from tick control to TBDs control at reservoir/host level. The above strategies could ensure that animals and ticks co-exist in one ecosystem yet causing limited to no harm to each other leading to sustainable TTBDs control.

**Key words:**

Ticks, Tick-borne diseases, Acaricide resistance, Vector infection control technologies, Triple combo, and Post-acaricide era



# Alternative method for determining efficacy of acaricides under field trial conditions.

Byaruhanga[1*] J., Vudriko[1] P., Mugisha[2] A.

[1]*Research Center for Tropical Diseases and Vector Control (RTC), Department of Veterinary Pharmacy, Clinics and Comparative Medicine; School of Veterinary Medicine and Animal Resources; College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, Kampala, Uganda.*

[2]*School of Veterinary Medicine and Animal Resources; College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, Kampala, Uganda.*

Corresponding Author: Joseph Byaruhanga

***Email: jbyaruhanga01@gmail.com Tel: +256774881544***

## Abstract

In Uganda, there is a regulatory requirement for newly formulated or introduced acaricides to undergo field trials before registration and licensing. We reviewed the various methods for determining the field efficacy of new acaricides recommended by reputable organizations such as NDA, FAO, European Medicines Agency, Medicines Control Authority of Zimbabwe, WAAVP and methods proposed by Teka Feyera, *et al* 2015. The recommended methods were found to have some shortcomings affecting the quality of the trial results. Some key shortcomings identified included; failure of the methods to consider the use of a comparable control product, assuming use of a placebo in the control group, failure to meet some requirements of randomized clinical trials (RCT) and failure to account for realities in field settings. With all the shortcomings of the recommended methods and gross insufficiency of published literature about acaricide field trials, it was fascinating to advance an improved method for acaricide efficacy determination under field trial conditions. Using the alternative method, the efficacy of trial products can be determined for any day of the cycle post acaricide application by determining the relative risk of tick infestation (RRTI) among the animals on farms exposed to the trial product and among animals on farms exposed to control product using the formula below:

**RRTI =**

The method has also determined the desired outcome for acaricide application, variable for measurement of outcome, developed data capture form (DCF) for trial data collection, developed formulae for determining efficacy, stated assumptions of the method, provided guidance on results interpretation and decision making. Lastly, the method meets most requirements for RCT and GCP trials thus generating accurate, reliable and credible results. We recommend to researchers and regulatory bodies at local and international levels to embrace and adopt the use of the method to promote accurate, fair and plausible evaluation of new acaricides in field conditions.

**Key Words:** Acaricide field trials**,** relative risk of tick infestation, ticks randomized controlled trials, methods.

# Public-private multi-stakeholder platform in last mile animal health service delivery: Roles of Veterinary paraprofessionals and veterinarians

**Author: Mr. Balondemu David, Chairperson, MSP & Dr Sylvia Angubua Baluka, VPP Project Coordinator, Uganda**

*Correspondence e-mail address:* sbaluka3@gmail.com

**Abstract**

The "Sustainable business for animal health service provision through training for veterinary paraprofessionals" project aims to increase smallholder farmers' access to quality animal health service provision through improved capacity of Veterinary Paraprofessionals (VPPs) to deliver animal health services, and by addressing the key challenges to VPP business instability in Uganda. VPPs comprise an important professional cadre in veterinary services that are critical for delivering last-mile veterinary services to livestock farmers in rural areas. Veterinary Paraprofessionals are for example key in disease surveillance and in providing preventative animal health care services that are critical for animal health, environmental health, and human health, and so collectively using a one health approach. Key to this approach is the delivery of competency-based training and recognition of acquired competencies through certification. Certification should serve as a gateway to recognition, increased access to quality veterinary medical products, and new business opportunities in the last-mile delivery of animal health services. The project aims to support the establishment of a public-private multi-stakeholder platform (MSP) to bring together public and private sector organizations and associations to support the development of a supportive environment for the delivery of last-mile animal health care services in Uganda. A multi-stakeholder platform is a formal or informal gathering of people representing various constituencies, interests, and stakes. The mission of the multi-stakeholder platform is to serve as a platform for driving a system change that would support, facilitate, and improve the sustainable delivery of last-mile animal health services in Uganda. The MSP will highlight and augment the different but complementary roles played by veterinarians and veterinary paraprofessionals towards delivery of animal health services in Uganda.

**Key words;** Sustainable business, Public-private multi-stakeholders, VPPS, smallholder farmers, competence based, last mile animal health care services, Uganda




# Evaluation of the potential virulence of selected strains of m. Avium subsp. Paratuberculosis isolated from cattle in uganda

**Ssekitoleko J.[1,6‡], Tanneberger F.[2], Eltom K. H.[3], Eltayeb E.[4], Truyen U.[2], Ojok L.[1,7], Wampande E.[1], Abd El Wahed A.[2], Okuni J. B.[1]**

[1.] College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, Kampala P. O. Box 7062, Uganda

[2.] Institute of Animal Hygiene and Veterinary Public Health, Leipzig University, D-04103 Leipzig, Germany

[3.] Unit of Animal Health and Safety of Animal Products, Institute for Studies and Promotion of Animal Exports, University of Khartoum, Shambat, Khartoum North 13314, Sudan

[4.] Faculty of Medicine, Al Neelain University/Ibn Sina Specialised Hospital Khartoum 11112, Sudan

[6.] Department of Livestock Health Research, Rwebitaba Zonal Agricultural Research and Development Institute, National Agricultural Research Organisation, Entebbe P. O. Box 295, Uganda

[7.] Department of Pathology, Faculty of Medicine, Gulu University, Gulu P.O. Box 166, Uganda

‡ Correspondence: jsekitoleko2810@gmail.com; Tel: 0772312886

## ABSTRACT

Mycobacterium avium subsp. paratuberculosis (MAP) is the cause of Paratuberculosis (PTB); a devastating diarrheal disease especially in ruminants. Understanding the pathogenesis of PTB is essential in the management of this economically important disease. There are several MAP strains and are known to differ genotypically which could contribute to differences in strain virulence and disease outcome. The behaviour of MAP inside the host and the mechanisms it utilises to overcome the host defence system are not adequately understood. This study aimed at evaluating the potential virulence of different MAP strains isolated from cattle in Uganda. This was achieved by analysing the cytokine expression profiles of RAW 264.7 macrophages when infected with four different MAP isolates. Specific real-time PCR was used to determine the expression of different cytokines, probable MAP virulence genes as well MAP quantities and viability inside the macrophages at different time points (3h, 24h and 48h). Significant differences in the relative cytokine and virulence gene expression profiles as well as quantity and viability were observed during the infection among the different isolates. MAP4 isolate exhibited least ability for survival inside macrophages whereas MAP1 isolate, on the contrary exhibited higher virulent behaviour in regard to relative cytokine expression and replication intracellularly compared to the other isolates. This shows that MAP strains differ in behaviour inside macrophages which is an indication of differential virulence. This knowledge is important in designing strategies for PTB management.

## Animal disease surveillance for preparedness, prediction and planning.

AUTHOR: ECENGU ISAAC.

*Email: ecenguisaac@gmail.com. 0773388885/ 0759407352*

### ABSTRACT

Animal disease surveillance is a tool used to monitor disease trends to facilitate the control of infections and infestations, to provide data for use in risk analysis for animal or public health, to substantiate the rationale for sanitary measures for providing assurance of trading patterns.it involves collection of long term data on disease events, risk factors and other relevant parameters, followed by analyzing them with reference to temporal and spatial characteristics to arrive at a conclusion. In Uganda the recurrent outbreak of endemic, emerging and re-emerging animal diseases are the problem like foot and mouth disease, lumpy skin disease, African swine fever among others. The current disease priority under surveillance are; -theileriosis, brucellosis, helminthiasis, anaplasmosis, calibasiosis, coccidiosis, babesiosis, crimean-congo haemorrhagic fever, echinococcosis, avian influenza, hyme borrelosis west Nile fever. The objectives of this surveillance are; collect, compile, analyse, interpret data on prevalence of various diseases of livestock, study the patterns of various epidemics under different geographical regions in Uganda, forecast occurrence of diseases on the basis of data of disease outbreak, work out the mobidity and mortality covering various factors like age, breed, species ,sex, to prepare the chart on outbreak of diseases in the country for the past years, prepare the map showing vulnerable areas. The methodologies included; - passive surveillance, active surveillance, participatory surveillance, syndromic surveillance. Results include; rapid outbreak of diseases, drug resistance, disease resurgence. I recommend that, veterinary officers give regular reports on disease out break whenever it happens at the field, hold regular meetings between staff at the ground and top management, collaboration between government veterinary officers and private vpps on ground.







## Proactive Disease Surveillance for Mountain Gorilla Conservation: The Vital Role of Veterinary Care

**Okwir Ricky Okello[1,3], Ssebide J Benard[1], Fred Nizeyimana[1], Nelson Bukamba[1], Kirsten Gilardi[1,2], Tierra Smilley[1,2]**

*1 Mountain Gorilla Veterinary Project*

*Wildlife and Aquatic Resources Management (WARM) Department, College of Veterinary Medicine, Makerere University*

*P O Box 72901, Kampala, Uganda*

*2. University of California Davis*

*Karen C. Drayer Wildlife Health Center, 1089 Veterinary Medicine Drive VetMed 3B, Ground Floor West Davis, CA 95616*

*3. Corresponding author: Contact +256772496663 email:* rickyokwirokello@yahoo.com *or* rokello@gorilladoctors.org

### ABSTRACT

Mountain gorillas (Gorilla beringei beringei), an endangered species inhabiting the high-altitude forests of Bwindi Impenetrable National Park and the Virunga Mastiff, face a multitude of health threats in their natural habitat. The success of conservation efforts for this remarkable species hinges on the proactive surveillance and management of diseases, highlighting the crucial role played by veterinary care.

This abstract delves into the primary threats facing mountain gorillas, including habitat loss, poaching, and the emergence of infectious diseases. Focusing on the “One Health” approach emphasizes the critical need for veterinary interventions as a cornerstone of proactive disease surveillance and mitigation.

The presentation showcases the invaluable work of organizations like Gorilla Doctors, a dedicated team of veterinarians committed to the health and conservation of mountain gorillas. These professionals conduct regular health assessments, monitor for potential disease outbreaks, and provide essential medical care when needed. Their work in disease surveillance has proven instrumental in preventing and managing health threats within gorilla populations.

Furthermore, this abstract explores the application of advanced technologies and molecular diagnostics in disease surveillance for mountain gorillas. These tools enable early detection of potential health risks, contributing to timely response and planning for disease outbreaks.

Drawing from real-world case studies and successful interventions by Gorilla Doctors, it highlights the tangible impact of proactive disease surveillance and veterinary care on the survival of mountain gorilla populations. By preventing and managing disease outbreaks, these efforts not only save individual gorillas but also contribute to the overall conservation of the species.

# A longitudinal study on African Swine fever at Kampala area abattoirs

**Authors:** EM. Wampande[1], JE. Ekakoro2, E Kayaga[1], R Okwasiimire[1], M Nawatti[1], D Singler[2], K Ochoa2, R Kizza1, D Ndoboli1, K Schumann[2], B Faburay[3], A Nassali[1], C Hauser[2], D Ndumu[4], and KA Havas[2]

**Abstract:**

African swine fever virus (ASFV) causes a febrile hemorrhagic disease of suidae, is endemic in Uganda, and has ravaged the swine industry. Earlier studies performed in Uganda have divergent information regarding the disease prevalence and pig survival. Therefore, the purpose of this study was to provide a robust ASFV diagnostic summary of pigs slaughtered in the greater Kampala metropolitan (GKM) area over the course of one-year, define spatial and temporal distribution of ASFV, confirm the genotypes of ASFV circulating in Uganda, describe the live pig supply chain as well as outlining the level of biosecurity practices of farmers in selected ASFV infected districts.

**Method:**

A total of 1208-1323 blood, serum and tissue or swabs samples were collected from pigs at six abattoirs in the GKM as well as administration of a questionnaire in selected districts. Validated diagnostic assays were used. Serologic, molecular and survey data analysis approaches were used to analyze the blood, serum, tissues and questionaries data.

**Results:**

Our data showed that 0.15% of pigs had detectable antibodies against ASFV and that 59.5% of pigs were positive for ASFV. Blood had the lowest ASFV detection rate (15.3%) while tonsil and lymph nodes had the highest (38% and 37.5%, respectively), spleen samples (31.5%) were in between. ASFV infections occurred predominately in the dry seasons and spatial assessments revealed a vast area in Uganda affected with ASFV, but the pig dense areas were affected. The biosecurity scores for the respondents were considered poor with 99% (98/99) scoring <70%. Of all farmers interviewed, 89% -94 % sourced and 91-93 % sold their pigs from within their district. All the viral isolates that were sequenced belonged to genotype IX with evidence of microevolution.

**Conclusions:**

Serological surveillance does not seem to be useful, as very few pigs seroconverted in this study prior to slaughter. Other sample like blood, tonsils, lymph node, or swabs of spleen/diagram of pigs can be used to detect disease using qPCR methods. This may reflect panic sales, as pigs are sold at the first indication of an outbreak and arrive at the slaughterhouse with pre-clinical or acute disease, but before the pig's antibody response develops. Plans for control of ASF disease should target smaller regions since pig movement was mainly intra district. There is need for increased farmer education on good ASF disease biosecurity practices.

**Affiliations**

Central Diagnostic Laboratory, College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, P.O Box 7062, Kampala, Uganda

Department of Public and Ecosystem Health, College of Veterinary Medicine, Cornell University, Ithaca, NY 14853-6401, USA

Foreign Animal Disease Diagnostic Laboratory, Veterinary Services, Animal and Plant Health Inspection Services, United States Department of Agriculture, National Veterinary Services Laboratories, Greenport, NY, USA

Ministry of Agriculture Animal Industries and Fisheries.



# Molecular and serological survey of paratuberculosis in cattle in selected districts of western uganda

*Ssekitoleko J.[1,2*], Ojok L.[1,9], Omala S. K.[3], Mohamed E. M[4], Eltom K. H[5‡], Eltayeb E[6], Kankya C.[1], Kisekka M[1], Truyen U[7], Czerny C. P[8,†], Abd El Wahed A[7‡], Okuni J. B[1‡]*

*[1] College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, Kampala P. O. Box 7062, Uganda*

*[2] Department of Livestock Health Research, Rwebitaba Zonal Agricultural Research and Development Institute, National Agricultural Research Organisation, Entebbe P. O. Box 295, Uganda*

*[3] Department of Statistical Methods and Actuarial Science, School of Statistics and Planning, Makerere University, Kampala P.O. Box 7062, Uganda.*

*[4] Department of Agricultural Extension and Rural Development, Faculty of Agriculture, University of Khartoum, Sudan*

*[5] Unit of Animal Health and Safety of Animal Products, Institute for Studies and Promotion of Animal Exports, University of Khartoum, Shambat, Khartoum North 13314, Sudan*

*[6] Faculty of Medicine, Al Neelain University/Ibn Sina Specialised Hospital Khartoum 11112, Sudan*

*[7] Institute of Animal Hygiene and Veterinary Public Health, Leipzig University, D-04103 Leipzig, Germany*

*[8] Division of Microbiology and Animal Hygiene, University of Goettingen, D-37077 Goettingen, Germany*

*[9] Department of Pathology, Faculty of Medicine, Gulu University, Gulu P.O. Box 166, Uganda*

*† (R.I.P)*

*‡ Contributed equally*

**** Correspondence:*** jsekitoleko2810@gmail.com*; Tel: 0772312886*

**Abstract**

Paratuberculosis, caused by *Mycobacterium avium* subsp. *paratuberculosis* (MAP) causes a serious wasting disease in animals especially dairy cattle. Knowledge of herd infection status is important to plan appropriate control and prevention strategies for Paratuberculosis (PTB); however, in Uganda MAP infection status of most herds is unknown. This study aimed at determining the MAP infection status of cattle herds and the associated risk factors for MAP infection in six western districts of Uganda: Ntoroko, Mbarara, Ntungamo, Kiruhura, Kabale and Bushenyi. The survey covered a total of 93 herds where faecal and blood samples were collected from 1814 heads of cattle. A Recombinase Polymerase Amplification (RPA) and an antibody-based (ELISA) assays were used to test for the presence of MAP DNA in faeces and MAP antibodies in serum, respectively. The true cow-level prevalence using ELISA and RPA was 4.9% and 3% respectively. A herd-level prevalence of 43% (ELISA) and 40.8% (RPA) and a within-herd prevalence of 3.8 ± 2.1% based on ELISA were obtained. Among the risk factors investigated, prolonged dry seasons were significantly associated with high MAP infection ($p < 0.05$). These results indicate that MAP is actively present in the surveyed areas. This poses a serious threat to the livestock industry and potentially to public health as MAP is a suspected zoonosis. Other areas of the country need to be surveyed as well in order to establish full data on MAP infection status to enable interventions for the control and prevention of the disease.

## Integrating One Health is key in animal bites and rabies control: Lessons learnt from Tororo district, Eastern Uganda

Dickson Stuart Tayebwa*[1], Lydia Nabawanuka Namakula[2], Monica Mpumwiire[3], Herbert Isabirye[5], Richard Ssekitoleko[6], Albert Patrick Ipola[4], Angella Musewa[4], Robert Tweyongere[1]

[1]Department of Veterinary Pharmacy Clinical and Comparative Medicine, Makerere University: [2]Department of Disease Control and Environmental Health, School of Public Health Makerere University: [3]Center for Biosecurity and Global Health, Makerere University: [4]Africa One Health Universities Network: [5]Mbale Regional Emergency Operations Centre: [6]World Health Organization, Uganda

*Corresponding author: tayebwa.dickson@gmail.com +256776005428

**Abstract:**

Data from District Health Information System (DHIS2) 2021-2022 has an average 507 animal bites from Bukedi sub-region. Of those, 261 (51.5%) occurred in Tororo district. We investigated the factors associated with animal bites and assessed the capacity of the veterinary and health departments to prevent, detect and respond to animal bites in Tororo district. We administered questionnaires to 393 community members and 88 dog bite victims. We obtained interviews from 5 purposely selected health facilities and 8 veterinary animal health workers. We analyzed the data in SPSS (quantitative) and NVivo software (qualitative data). A stakeholder meeting mirroring one health was convened to generate action points. Overall knowledge was low among 99% of the respondents and 42.8% of them owned 2-3 dogs that were allowed to roam. When confronted by the roaming dogs, most of the community members threw stones or ran. The Chi-square test showed a significant association (p=0.016) between knowledge level and what a respondent would do in case of a dog attack. The veterinary department lacked equipment for immobilizing dogs and 1/5 health centers had stock of 16 doses of rabies post exposure prophylaxis for a quarter (2-3 months). Animal bites in Tororo were rampant because the community members provoked roaming dogs. Hence, the veterinary and health sectors were overwhelmed. The stakeholders meeting concluded that dog owners should restrict their dogs by using locally available materials to construct kennels. The findings of this study could be used as a benchmark for other districts in the region.




## Burden of Multidrug-Resistant Escherichia coli in Pigs Slaughtered in Uganda and its Implication on Veterinary Public Health.

**Authors: Katushabe (KP), Byamukama (BB) and Byaruhanga* (JB)**

*Research Center for Tropical Diseases and Vector Control (RTC), School of Veterinary Medicine and Animal Resources, College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, Kampala, Uganda*
*Email: *jbyaruhanga01@gmail.com 0774881544*

Antimicrobial resistance has become a global public and animal health threat, whose development is demonstrated by microorganisms such as bacteria. This cross-sectional study investigated antimicrobial susceptibility patterns of *Escherichia coli* isolated from pigs brought for slaughter at Wambizzi, the main pig abattoir in Uganda. We also assessed the abattoir workers' practices concerning pork handling and waste management. Rectal and floor swabs collected were cultured to detect and isolate *E. coli.* Observation checklists were used to monitor the slaughter process. Overall, multi-drug resistant *E coli* was detected in pigs from all Uganda regions. Swine *E. coli* exhibited high resistance against erythromycin (87.4%) and least resistance against ciprofloxacin at 2.3%. At regional level, *E. coli* isolates from the central region of Uganda showed high prevalence of drug resistance to amoxicillin (30.4%, p-value =0.007), erythromycin (34.8%, p value= 0.002), streptomycin (40.7%), ciprofloxacin (100%), oxytetracycline (31%) and sulphamethoxazole-trimethoprim (42.9%). Furthermore, multidrug-resistant *E. coli* (100%) was confirmed in the immediate environment where pigs were gathered and slaughtered. Among environmental isolates, highest resistance was confirmed against erythromycin (100%), whereas no isolates showed resistance against ciprofloxacin. Generally, most of the recommended abattoir hygiene practices were not performed by the abattoir workers. Failure to follow recommended abattoir hygiene practices by the workers and the presence of multidrug-resistant *E. coli* in the slaughterhouses present a possible risk of pork contamination with multidrug-resistant *E. coli* with a potential risk of causing foodborne illnesses among pork consumers in Uganda.

## Community level one health implementation overview in uganda

**Author:** Asiimwe Ismail

### Abstract

One health is a multisectoral and multidisciplinary: collaboration, coordination, communication, planning, budgeting and advocating for: preparing, predicting, preventing, responding to, controlling and achieving deliberate recovery from crosscutting public health threats to achieve optimal health for the animals, humans, plants and other life forms in the environment. All the above one health endeavors should be applied largely at community or village level given that an infectious disease or any other public health threat(s) begin and end at a given village(s). Then from a community level, one health should be applied at subnational, national, regional, continental and global levels. Therefore, community level one health involves multidisciplinary multisectoral engagements with an ultimate goal of achieving optimal health and wellbeing of the animals, humans, plants and other life forms in the environments, given that all life forms are interconnected in nature. This study therefore, aimed at assessing the level of commitment in the implementation of one health at community level in Uganda. The published resource documents about community one health in Uganda were searched and reviewed, and organizations that are implanting projects that are leveraging on one health were engaged and consulted. There is no one health streamlined system of delivering services at community level in Uganda, with exception of isolated communities where one health has been implemented through projects, that have been carried out by not-for-profit organizations. Decentralization of one health to subnational level is at about 30% and there is national one health platform for overall one health coordination in the country, all of which are critical one health efforts. Largely, there is no community level implementation of one health in Uganda. There is need to introduce, create awareness and popularize one health, and advocate for its implementation through existing service delivery systems at community level in Uganda.

***Key words:*** One health, community, public health threats, service delivery, multisectoral, multidisciplinary and Uganda.

# Actions and perceived impact of African swine fever control measures along the smallholder pig value chain in Uganda

**Tonny Aliro[1*], Walter Odongo[1], Karl Ståhl[2], Michel Mainack Dione[3], Daniel Micheal Okello[1], Charles Masembe[4] and Erika Chenais[2]**

*[1]Faculty of Agriculture and Environment, Gulu University P. O. Box 166, Gulu, Uganda*
*[2]Department of Disease Control and Epidemiology, National Veterinary Institute, Sweden*
*[3]International Livestock Research Institute (ILRI), P. O. Box 30709, Nairobi, Kenya*
*[4]College of Natural Sciences, Makerere University, P.O. Box 7062, Kampala, Uganda*

**Corresponding author: alirotony@gmail.com*

## Abstract

Pig production in Uganda is constrained by African swine fever (ASF) which is endemic in the country. Current measures taken by the Government of Uganda in controlling ASF outbreaks include trade and livestock movement restrictions, called "quarantine". Little is known about the actions of, and impact of value chain actors in response to ASF quarantines. This study describes actions that different stakeholders in the smallholder pig value chain took, and the perceived economic impact, during ASF quarantines. Data was collected in ten focus group discussions (FGD) using participatory epidemiology tools and two key informants' (KIs) interviews with District Veterinary Officers (DVOs) of Kisoro and Moyo districts in Uganda. The results show that during ASF quarantine, pig value chain actors shifted their activities from formal places such as livestock markets, slaughter slabs, pork butcheries and pork joints to informal places such as farmers' homesteads. Farmers were perceived the most economically affected stakeholder group with forgone income due to unsold pigs, costs for implementing biosecurity measures and extra costs for feeding unsold pigs being the major perceived causes of the losses. The continued trade in pigs and pig products in informal marketplaces suggests that quarantine might not be effective for hindering activities that might spread ASF in these settings. The perceived economic losses provide an insight into the negative economic impact of the quarantine for the different stakeholders.

***Keywords:*** *ASF quarantine, Control, Economic impact, Smallholder pig value chain, Stakeholders, Uganda.*

EAGLE

EAGLEVET

The vet drugs you should trust.



# Knowledge and attitude towards rabies disease: A survey of two communities of eThekwini District, KwaZulu-Natal Province, South Africa

**Letsoalo M. T.[1], Qekwana D. N.[2], Mbajiorgu C. A.[1], Oguttu W. J.[1]***

[1] Department of Agriculture and Animal Health, College of Agriculture and Environmental Sciences, University of South Africa, Johannesburg, South Africa

[2] Section Veterinary Public Health, Department of Paraclinical Sciences, Faculty of Veterinary Science, University of Pretoria, Pretoria, South Africa

*Correspondence: James W. Oguttu, Email: joguttu@unisa.ac.za Tel No: +27847456768

## ABSTRACT

Kwa Zulu Natal (KZN) Province has the highest rabies incidence in South Africa. This study investigated the knowledge and attitude towards rabies among members of two communities in KZN. A cross-sectional study design was adopted for this study. Participants aged ≥18 years (n=548) were recruited using systematic random sampling. Structured interviews were used to collect data. Descriptive statistics and a binary logistic regression model were used to analyze the data. Significance was assessed at ≤0.05. Most respondents (86.50%) considered receiving anti-rabies injection following a dog bite as important. However, most respondents (89.78%) would not immediately seek medical attention following a dog bite. Only 58.21% would quarantine a dog that had bitten someone. Some respondents (16.79%) would not take any action against a dog that had bitten someone and did not think it was appropriate to put down a suspected rabid dog (31.93%). Only 61.13% of the respondents had a rabies vaccination certificate. Pet ownership was a significant predictor of knowledge of rabies (p< 0.05). The odds of people who owned pets obtaining a high knowledge score was twice (OR: 2.30, 95% CI:1.33-3.40) that of the people who did not own pets. The vaccination coverage in the study area was below the recommended 70% vaccination coverage for dogs needed to prevent rabies. This in addition to the observed poor attitude towards rabies, are a source of public health concern worth noting by the relevant authorities. Rabies awareness in the study area should include people who do not own pets.

**Key words**: Rabies vaccination certificate, rabies awareness, dog ownership, anti-rabies, vaccination coverage



EAGLE EAGLEVET

Eaglevet Uganda limited a unique fast growing Veterinary pharmaceutical company. we have unique quality drugs ,

Biologicals and feed additives.

We are located at Mukono Industrial Area Box 359 Mukono on +256 786 403024./ + 256 772 601025
In container village place Central Kampala
Mbarara branch at Akiiki Abony road at +393225813
Mbale branch at Bishop Wesikye Road Tel +256 393248680
Email info@eaglevetug.com or dkibiike@eaglevetug.com

# Status of Water Quality and Phytoplankton Community of Awoja Stream and Wetland System, Soroti District

**Ejobi F[1,2]., Olokotum M[3]., Sasanya J[4]., Areu D[1]., Ayau S[1]., and Okello W[3*]**

[1]*School of Graduate Studies, Research and Innovations, Soroti University, P.O. Box 211, Soroti, Uganda.*

[2] *College of Veterinary Medicine, Animal Resources and Biosecurity, Makerere University, P.O. Box 7062, Kampala, Uganda.*

[3]*National Fisheries Resources Research Institute, P.O. Box 343, Jinja, Uganda.*

[4] *International Atomic Energy Agency, P.O. Box 100, 1400 Vienna, Austria*

**Corresponding Author: E-mail: wiokello@yahoo.com, Telephone: +256-782-835956*

## Abstract

Due to global warming and increasing anthropogenic activities, harmful algal blooms are becoming more frequent worldwide, posing a public health threat. We conducted a study in August 2023 at Awoja stream, the source of drinking water supply for Soroti City. The objective was to profile water quality characteristics and harmful algae community of Awoja stream. Eight (8) sampling sites were selected and georeferenced. The sites were selected based on land use practises, confluence, downstream and potential health risks from drinking water for the people of Soroti City. At all sampling sites, dissolved oxygen, water temperature, pH, electrical conductivity and turbidity were measured *in situ*. Water samples were collected from all the sites for laboratory analysis of chlorophyl-a and resident phytoplankton community using standard methods. The water quality of Awoja stream and wetland system indicated good status with low phytoplankton biomass (0.02 - 0.06 $mm^3L^{-1}$). The chlorophyll-a concentration (0.15 - 0.68 µg/L) too was very low and correlated with low oxygen concentration (0.73 - 0.63 µg/L) implying very low primary production. There was no evidence of nutrient loading into Awoja stream. The phytoplankton community identified comprised of blue-green algae (cyanobacteria), cryptophytes, diatoms, and green algae. Cyanobacteria found comprised of *Aphanocapsa*, *Chroococcus limnetica, Dolichospermum circinale, Planktolyngbya limnetica, Pseudanabaena limnetica,* and *Raphidiopsis.* Of these species, only Dolichospermum *circinale, Dolichospermum flosaque* and *Raphidiopsis* are potentially toxigenic. *Microcystis aeruginosa* was not present in all the samples. We recommend periodic monitoring of Ugandan water bodies in order to develop harmful algae advisories.

*Key words: Cyanobacteria, water quality, Awoja stream, Uganda*



UGANDA
NATIONAL DRUG AUTHORITY
Safe Drugs Save Lives



# Be rigorous, reach everywhere.

方 正做人

通 达九州





FANGTONG

FANGTONG

NS Nile Services Limited - Mob: +256 414 349243