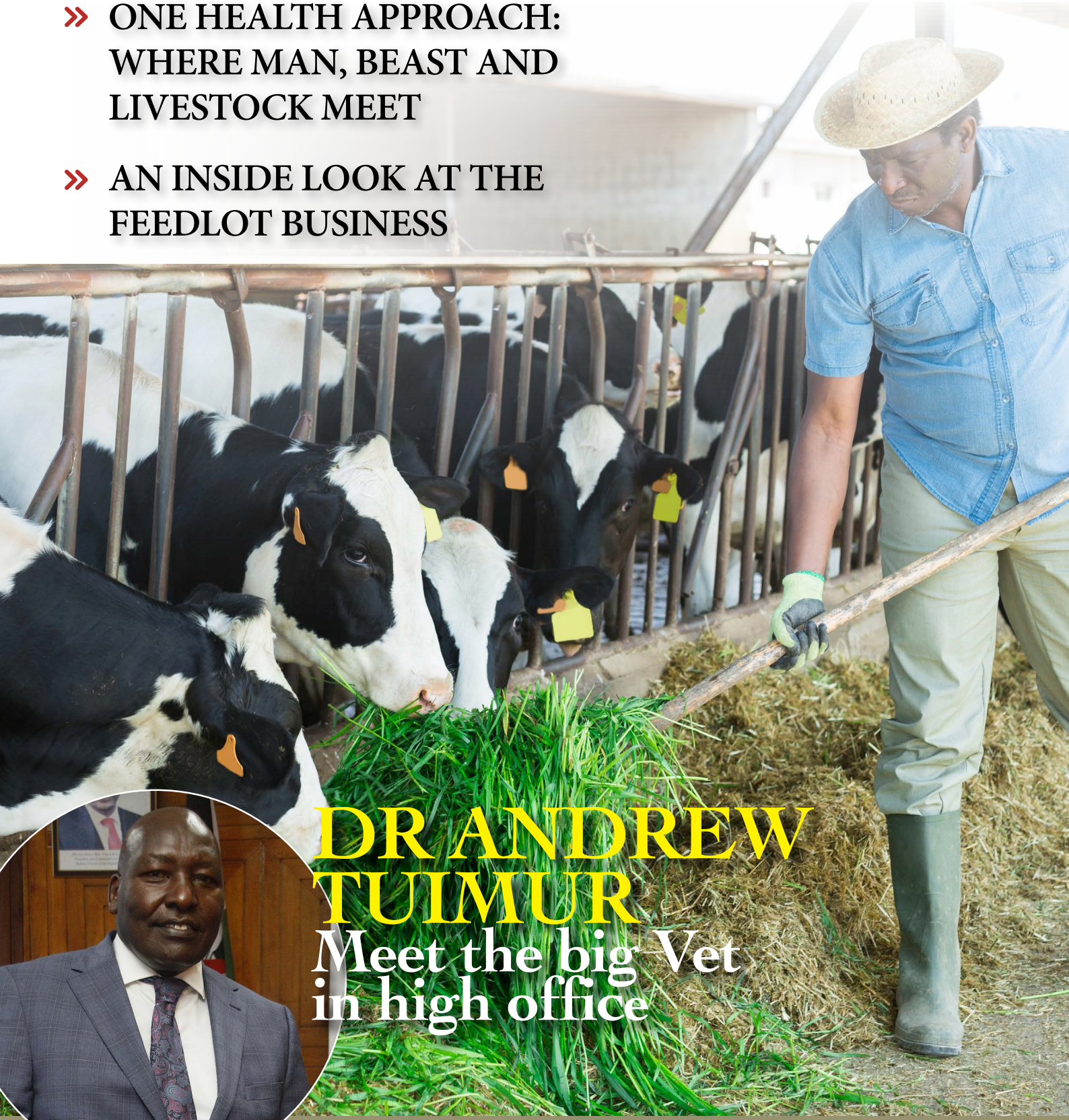
Animal focus

IMPROVING THE LIVELIHOODS OF KENYANS

Issue No. 12

» ONE HEALTH APPROACH: WHERE MAN, BEAST AND LIVESTOCK MEET

» AN INSIDE LOOK AT THE FEEDLOT BUSINESS



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contents

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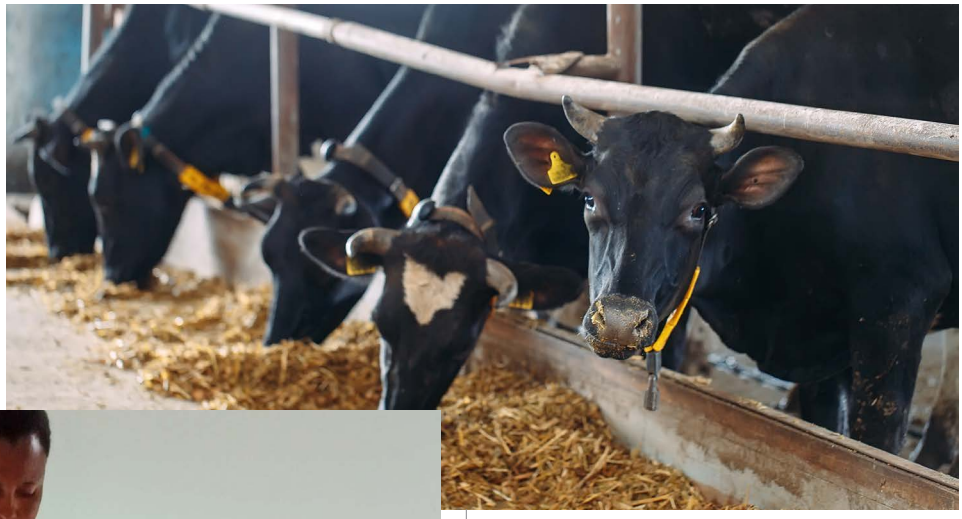

Publisher's Perch

Over centuries, the word season has heavily been associated to weather patterns, be it the rain or the shine. We have, however, an underlying spirit of hope and resilience, to brave through and transit from one season to another.

In the recent past, we have as humans entered an unchartered survival season, globally as victims of the Covid-19 virus. Nationally, in Kenya, we have absorbed our fair share of not only the pandemic, but have had to grapple too with inflation, scarcity and lack – from milk to fuel and cash in hand.

But we stay resilient.

Animals, both wild and domestic, as entertainment, economic assets or pets, deliver a substantial and indispensable contribution to that resilience – irrespective of the season – in the form of emotional, psychological, social and economic benefits. Animals are both a heritage and survival companions to humans.

Having an Animal Focus is therefore not a choice, but a way of life. Animal Focus is not a magazine – it is a part of our psyche.

The publishing team at Integral Media Limited is therefore proud to deliver this brilliant piece of work by Kenya's professional vets, members of the Kenya Veterinary Association and skilful writers. We wish you an informative, entertaining and fulfilling Animal Focus. Enjoy!

Ashington Ngigi

Publishing Director

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...improving the livelihoods of Kenyans

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The Journey of Rebuilding Kenya Veterinary Association

Mary Anne Radmacher in her book titled Lean Forward into Your Life, said "At first glance, it may appear too hard. Look again. Always look again." Being at the helm of the Kenya Veterinary Association (KVA) as the chairman has been a journey with a story to tell. The beginning was tough but with focus and determination, I can look back and say it appeared hard but we made it. Looking at the Association one and half years ago, the progress is apparent that we survived all odds and came out a winner with minimal bruises.

Leading a not-for-profit organization like KVA amidst COVID-19 encumbrances is not a mean feat. It requires innovativeness and resilience to survive. As an organization, we rely on membership subscriptions and income from partners' support. With majority of our activities grounded, we risked becoming a hostage of the circumstances. At first glance, it appeared too hard, beyond salvage. But a leadership that is determined to make an impact is versatile, learns to lead up, across and down as John Maxwell puts it, "leading in every direction".

The immediate concerns for the organization have been to repair its image, win the confidence of the partners and get them to support, increase membership, initiate relevant members' welfare activities, survive financially, and sustain the main activities of the organization. Leadership had to come from the middle of the organization and not from the top. This was achieved by utilizing our members to drive agendas, to support the executive in conceiving innovative and stimulating activities, engaging partners and establishing strong linkages within and outside the veterinary profession.

In the period when it would've been impossible to have a significant impact, the reverse happened. Today KVA boasts of 920 members, 33 per cent increase from the 2020 membership. This was made possible by fulfilling a promise I made to the members of waiving the outstanding fees/arrears.

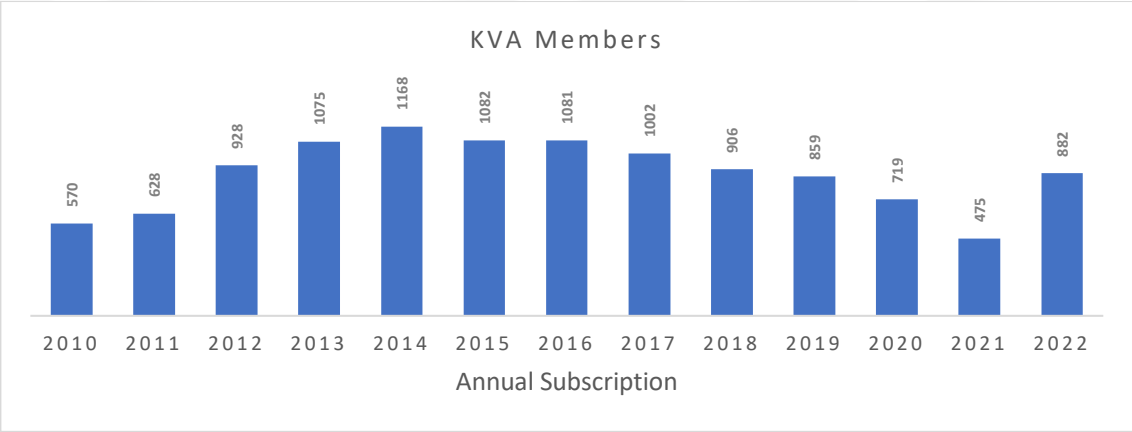

Figure 1

From less than 10 active partners, the number of partners has increased threefold, going by the Malindi conference and Field Day participation. Of critical importance is that all the key partners like Brooke East Africa are back, supporting us in many ways. As an icing to the cake, we have managed to get new partners who sponsored KVA for the first time. Our partners keep growing and we are getting support from non-traditional quarters like the insurance and banking sector. This is a clear indication that our members have a wider niche that has untapped opportunities. We have partners from NGOs, government parastatals, State corporations, pharmaceutical industry, training institutions, banks and insurance companies.

KVA has led the way by constituting a Stakeholders Engagement Forum, which is an endeavor to unite the veterinary profession, steering the profession to move in one direction, address matters of interest to the veterinary profession and allowing stakeholders to exploit opportunities within the animal resource industry. This has been made possible through the support of Brooke East Africa and Farming Systems Kenya. The Forum continues to structure itself in readiness for countrywide rollout.

We have enjoyed a wonderful media attention. For once in the veterinary profession our members have had opportunities to be employed by media houses. Being pioneers, they have opened wide doors for veterinarians to be featured in the newspapers as expert columnists, in television as subject experts, and in radio as experts and opinion leaders. The veterinary profession is gaining recognition and relevance to the community that we serve.

KVA has continued to work with KCB Foundation in the implementation of the Livestock Identification and Traceability System (LITS). As the LITS space continue to be crowded due to other players offering the same service, KVA will need to reposition herself with a unique value that will give us an edge over the competitors. The biggest asset for KVA is having the expertise resources that our competitors lack. What is needed is to have a business model that captures the current and future needs of LITS and related opportunities. With the centralized database owned by the government, data generation and utilization will be the next service big thing in the animal resource industry.

As a National Executive Committee we are glad to have managed accomplish the Malindi Conference and Field Day. It was a taunting task but we had the will and stamina to pull through. These are just but a few of our achievements as we come to the end of the first term of my leadership.

Having survived the storm, KVA is at the verge of exploring opportunities within the region and globally. There are unexplored spaces that are within the mandates of the Association which must be utilized optimally. This will require restructuring and acquiring legal personality status to be able to transact without restraint constitutional amendment, agile leadership and support members and partners. Boundaries are only good for those who don't want to grow.

KVA is better with active membership, satisfied partnerships, and an efficient and effective board of management. This can only be improved through feedback. I implore our members and partners to use the available channels to give feedback and grow KVA.

Thank you!

Dr. Nicholas Muyale | *Chairman, Kenya Veterinary Association*

Village dairy shines with yoghurt venture

By Sylvia Wakhisi

Using modest equipment and factory, Odupa Women Enterprises Society is making high value yoghurt deep in the village.

The effects of drought and high cost of living continue to be felt by many people, including farmers.

Despite the challenges, one cooperative is striving to ensure they remain afloat to impact others on matters value addition and are optimistic that they will scale up.

"We have really scaled down since milk production and supply has gone down due to the effects of drought, which we have experienced for the last four months. People were not prepared for the ravaging effects of this drought that hit us abruptly. We had not stored anything in terms of pasture to feed our cows on," says Julia Koikai, team leader at Odupa Women Enterprises Society.

As a result of her work, she earned a nickname, 'mama yoghurt, Odupa dairies'.

Ms Koikai, who also spearheads all the cooperatives in Narok County for value addition, says the drought has affected the health of the animals, yet the cost of feeds has escalated.

High cost of feeds

"We can hardly meet the cost of feeds. Up to now we still don't have milk. Before, we could produce 300 litres of milk per day but for now we can only manage 100 litres of raw milk because the cows dry up," she explains.

She says the armyworm also invaded their pasture and other food crops such as maize, hence they did not have enough to feed their animals.

"As a group, we are still pressing on with the little milk that we get and we believe that we will soon scale up. Politics has also greatly affected us since people have now turned their focus into it, being an election year. They no longer want to struggle with their animals," adds Ms Koikai.

Based in Ololunga village in Narok County, the group comprises 30 Maasai women who came together in 2017 to form the cooperative – Odupa Women Enterprises Society – having realised they weren't making any profits through the sale of raw milk.

[Continued to page 6]

Many were the days they had to pour out the surplus milk from members.

Ms Koikai says the group took advantage of a training course sponsored by the county government at the Jomo Kenyatta University of Agriculture and Technology (JKUAT) on how to add value to raw milk by making yogurt.

Odupa Dairies provides a certified probiotic yoghurt of all the varieties for individuals suffering from lifestyle diseases who struggle with a low body immunity and lactose intolerance, thus promoting good health and global business entrepreneurs.

Armed with the technical know-how, Ms Koikai and the rest of the cooperative members formed a small cottage milk processing unit and hit the road running. Albeit slow due to lack of the necessary equipment, they processed their first consignment of probiotic yoghurt, which they sold to neighbours and traders at the local markets.

To test the waters, the group began with the 100ml and 250ml cup packaging, processing about 200 litres of milk per day. To their amazement, the yoghurt, which they named 'Odupa', meaning superior, was received well, especially by the men who were pleased to see what their women were doing.

Ms Koikai says, "We could hardly meet the demand."

The new flavours – strawberry, vanilla and natural (with only honey added as a sweetener) – were also received well. They had to go back to the drawing board and re-strategise.

The group leaders took a loan to equip their cottage industry with state-of-the-art equipment for cooling, heating, pasteurising, processing and packaging the milk. On top of these, they had to invest in better dairy cow breeds and train their suppliers on best practices for a healthy herd.

To ensure their animals stay healthy, they engage services of veterinarians anytime they notice something is amiss.

"We always ensure our animals are checked by a vet so that if there is a problem they arrest it on time. When we notice a sign of an ailment, we call in a vet immediately," says Ms Koikai.

Having met all large-scale production standards like hygiene and volumes, they approached the Kenya Bureau of Standards (Kebs) and were issued with a standardisation mark of quality.

"We always ensure that our animals are checked by a vet so that if there is a problem they arrest it on time. When we notice sign of an ailment, we call in a vet immediately

Yoghurt processing

So, how do they process the milk? Ms Koikai explains: "Milk is a delicate product and should be handled with care. We had to train our farmers on how to clean their animals before milking and handling the milk hygienically as well as using the right containers for storing and transporting the milk. Milk should only be transported or stored in aluminium containers approved by the Kenya Dairy Board.

"When we receive the milk from the farm, we measure and record the weight of each farmer's delivery, test for freshness by stirring."

Thereafter, they do a lactometer test to measure purity and the richness of the milk. The next step is sieving any impurities. They then heat the milk to 90 degrees celsius, a process known as pasteurisation to eliminate pathogens and extend the milk's shelf life.

Ms Koikai adds: "When we started, we used to heat the milk in huge 'sufurias' on a gas stove and stir it continuously to the required temperature but this was exhausting and inaccurate."

The next process is incubation or cooling to 40 degrees celsius using the pasteuriser. This temperature is just right to aid in the growth of the starter culture. From here they add the probiotic fermentation culture and let it to incubate for a while.

Ms Koikai says, "Afterwards we add the flavours and package for delivery."

In a bid to sharpen their skills, the group visits processors in Githunguri, Kiambu County, to learn about the best dairy breeds, management practices and technologies.

As a co-operative, they have formed another sub-county co-operative called Naweso (Narok South West Co-operative Society) with 12,000 members under the umbrella of Narok County Co-operative.

"We are so passionate about this work. As Maasai women, we are passionate about milk and other milk products and we will strive to ensure that others also learn about value addition," she says.

"We want to do things collectively to avert the challenges that come with drought and ensure we increase our production capacity. Naweso has also enabled us to interact with other communities, hence spearhead peaceful relations. Even with the coming elections, it is my wake-up call that people will not just focus on politics but also concentrate on their businesses. Our co-operatives need to stand even after the elections. Let us exercise peace during this time and choose our leaders wisely."

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BROOKE
ACTION FOR WORKING HORSES AND DONKEYS

Brooke East Africa Overview

Brooke East Africa is an affiliate of Brooke UK which is an international animal welfare charity dedicated to improving the lives of working horses, donkeys, mules and people who work for them. At Brooke East Africa, we reach over 387,000 donkeys that support the livelihoods of their owners as well as their households.

Our Vision

Our vision is of a world in which working horses, donkeys and mules are free from suffering and have a life worth living.

Our Mission

Our mission is to achieve immediate and lasting change to the lives of working horses, donkeys and mules and the communities that depend on them.
Global reach: To help more working animals in need in more places around the world.

What we do

- Improve animal welfare, with a particular focus on the working horses, donkeys and mules.
- Strengthen the livelihoods and resilience of animal owners and users, especially women and young people.
- Improve the quality of animal health services and systems, both public and private.
- Respond to emergencies, such as drought, to help communities cope and thrive.
- Raise awareness about animal welfare and support the development of animal welfare-friendly policy and regulation locally, nationally and internationally.

How we do it:

- Partner with local organizations to engage communities in the creation of sustainable animal-welfare improvement programmes that are linked to improved livelihoods and build resilience.
- Train and mentor animal health and welfare service providers to increase the quality of veterinary services and link them to communities.
- Collaborate with schools, educational institutions and the media to strengthen animal welfare education and knowledge.
- Work with policy makers to shape animal welfare policy and regulation
- Innovate to ensure we employ the most appropriate and effective technologies, ways of working and make the best use of opportunities to learn from, and share our expertise with other agencies.

Our Partners

Kenya, Tanzania, Uganda, South Sudan & Somalia

Kenya Partners

- Kenya Network for the Dissemination of Agricultural Technologies
- Farming Systems Kenya
- CARITAS
- INADES Formation - Kenya
- Send a Cow Kenya
- APAD – Agency for Pastoral Development
- KSPCA
- STIPA

Tanzania Partners

- Arusha Society for the Protection of Animals
- INADES Formation – Tanzania

South Sudan Partner

- VSF Germany

Somaliland Partner

- VSF Suisse

Our Collaborators

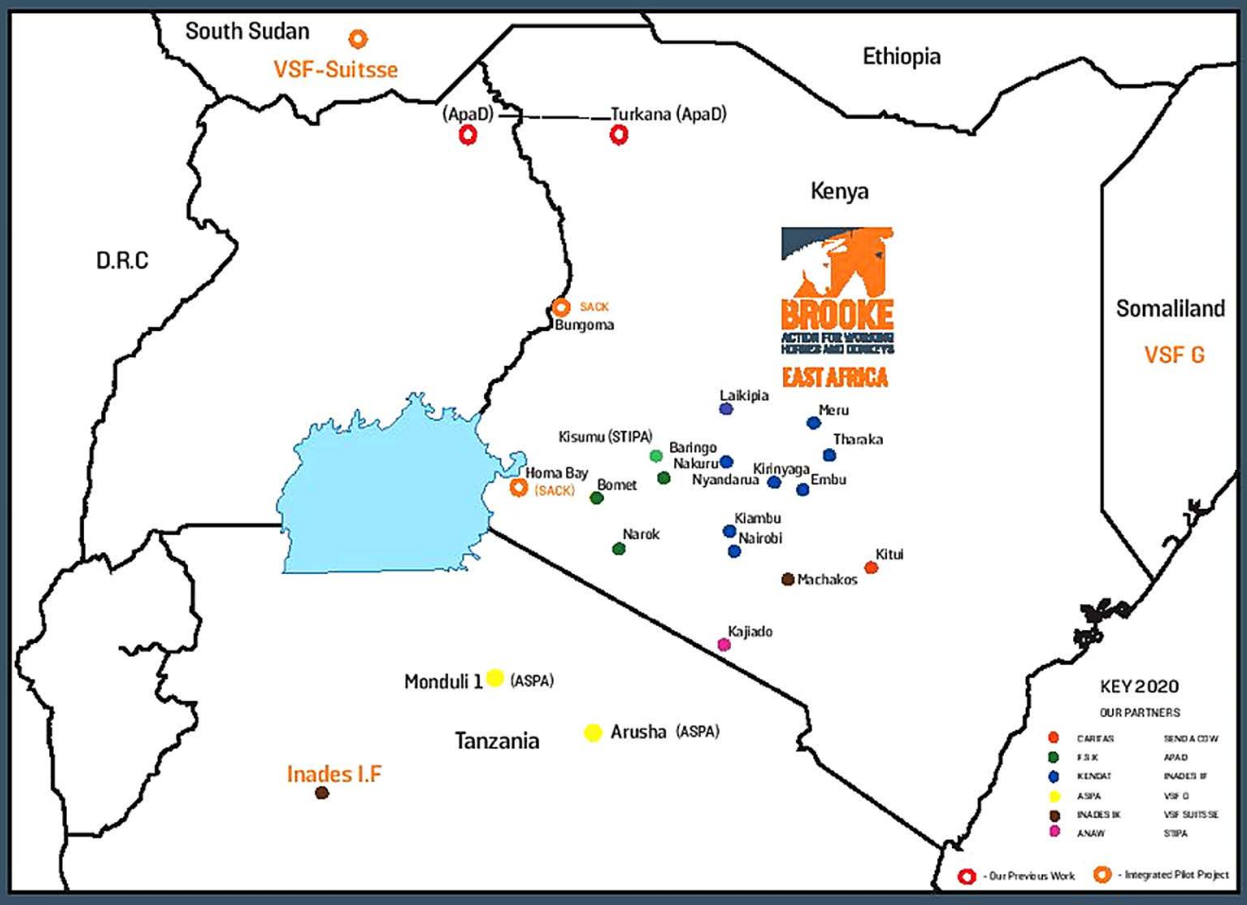
- Kenya Veterinary Board
- Kenya Veterinary Association
- OIE – World Organizations for Animals
- African Union Inter-African Bureau for Animal Resources
- UNEP
- NGO-Coordination Board
- Collaboration with Relevant Governments i.e., Kenya & Tanzania

Why partner with us

- We have a large area of coverage within East Africa
- We work with many partners who have a variety of strategies that suit targeted communities
- We are effective and impactful in the way we work
- Our work ensures sustainable change within the communities in which we work
- We provide a platform to share innovations, services and increase the visibility of both our brands throughout Brooke East Africa.

Our Strengths

- A rich and diverse expertise base encompassing veterinary doctors, animal welfare experts, development practitioners and communications professionals.
- Efficient, transparent and accountable ways of working, with robust financial and organizational systems, including an established monitoring, evaluation, accountability and learning framework.
- An expensive and varied network of partners across East Africa with capacity to operate at scale.
- Strong working relationships with local and national government stakeholders in operational areas.
- An excellent track record delivering improvements in animal welfare and human livelihoods.



BROOKE
ACTION FOR WORKING HORSES AND DONKEYS

Embracing Telemedicine During Covid-19 Pandemic

Brooke East Africa (BEA) is an affiliate of Brooke UK, which is an animal welfare charity organisation working to alleviate the suffering of working equines globally. In East Africa, Brooke currently works in 22 counties within Kenya, Somaliland, South Sudan, Tanzania, and part of Northern Uganda, through a strategic partnership model engagement.

In the wake of the COVID-19 pandemic, which reduced face-to-face encounters, Brooke East Africa's quest to achieve immediate and lasting change in the lives of working donkeys was put in check following the restriction put in place to tackle the pandemic.

In a decision that put animal welfare on the edge, the World Health Organisation and Ministry of Health put in place control measures to tackle the pandemic, including lockdowns, keeping social distances, and night curfews, which affected how Brooke East Africa worked to ensure working equines have a life worth living, including getting treatment when sick.

The situation was even made worse, since Kenyan Animal Health Practitioners (AHPs) were not initially classified as essential service providers, and as a result, were unable to attend to routine and emergency cases during curfew hours and due to geographical movement restrictions.

During this unprecedented period, Brooke East Africa and its partner vet teams deliberated to find new ways of reaching out to donkeys in need of veterinary care, which led to the birth of telemedicine, which incorporated the use of phone calls and social media platforms to ensure donkeys in need still had access to essential veterinary services at the last mile.

Among other innovative methods, AHP mentoring, case sharing, and diagnosis were shared on the phone. Interestingly, WhatsApp offered an opportunity for images and videos of cases at hand to be distributed within a platform where tentative working diagnoses were arrived at promptly.

Interestingly, months after the ministry of health relaxed the COVID-19 restrictions, case information sharing via WhatsApp is still widely used. AHPs in the field share photos and videos via a WhatsApp group for advice.

Besides helping in reaching donkeys in need, the ever-reliable WhatsApp group is still used for information sharing purposes, since it incorporates all AHPs, making it an avenue to share cases, get advice and learn from other experienced AHPs.

Telemedicine has proved to offer opportunities to get technical support for AHPs while in the field without having to wait for their mentor on-site, hence saving time and resources.

Since the inception of the programme, a phone call followed by images and videos shared on WhatsApp or a video call means equines get required and timely veterinary care. Additionally, AHP WhatsApp groups have provided a platform for peer learning and sharing.

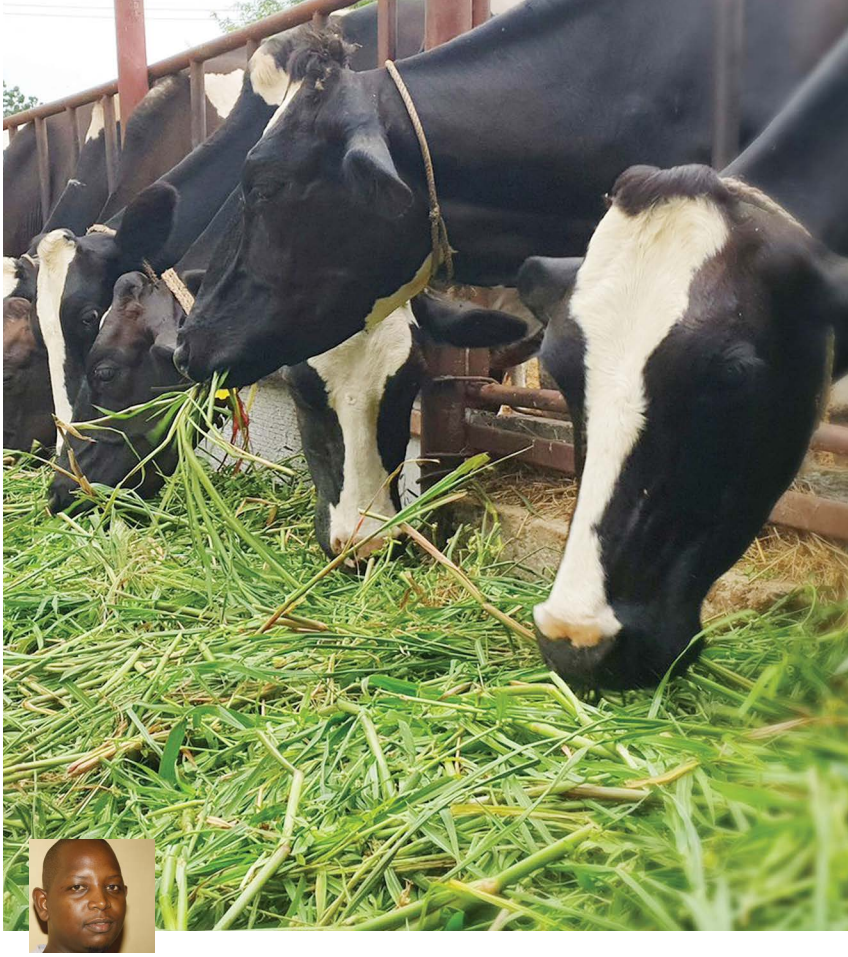
Besides helping in alleviating donkey suffering amid pandemic restrictions, the telemedicine programme helped in mentoring AHP graduates, who anecdotally have limited knowledge on how to appropriately handle donkey cases, and as a result, many avoid responding to donkey health cases.

As a countermeasure, Brooke East Africa often implements a mentorship programme through its partners, targeting practising AHPs in the field and aimed at building their confidence in handling donkeys appropriately. This was given a boost by the telemedicine programme since they would easily send cases to the WhatsApp group and easily get advice from experienced vets.

BEA is working towards further incorporating the use of technology into the animal health service provision space. Online Continuous Professional Development (CPD) workshops have also been conducted with great success. Embracing technology will ensure no gaps in terms of access to veterinary services are experienced during future pandemics.

Local voices

Why do farmers and pet owners opt to consult Agrovets and buy medicine directly than look for a veterinarian to treat their animals? What do you think should be done?



Jackie Jumba, Businesswoman, Vihiga County

Most people don't even know that they need a veterinarian to help them because they have never seen one before. They don't even know they exist. Those who know cannot afford the fee they charge. To change this trend, veterinarians should be going round villages to meet farmers and give them advice on how to take care of their animals. By doing that, farmers will get to know them and even call or invite them when there is a problem with their animals.

Margaret Usikolo, Businesswoman

Veterinarians are not available, they are not near people and they are expensive. They need to create a platform where they can be reached easily. For example, I want to keep poultry and I do not know where I can get advice on how to go about it. I wish there was an App for us to reach the veterinarians when we need them.

Ernest Komu, Interior Designer

In many instances, veterinarians are rarely available compared to agrovets, which are everywhere. There are simple common diseases that can be handled by agrovet attendants. If you ask a vet a simple question you must pay money for consultation. Our government should address this issue and ensure vets are stationed where farmers can reach them without using fare. The government should also provide them with means of transport like motorbikes and vehicles to facilitate their mobility.

> *"To help farmers, veterinarians should be going round villages to meet farmers and give them advice on how to take care of their animals.*

Peter Aywa, Fashion Designer, Nairobi

It is much cheaper to use an agrovet compared to a vet. Also, many of the animal diseases are common and agrovet attendants understand and know the kind of medicine that is used to treat the ailments. Even if I go to the Vet, I will still go back to the agrovet to buy the same medicine for my animal. So I would rather go directly to the Agrovet. By the way, most of us do not know the difference between a Veterinarian and an agrovet attendant. We need to be taught the difference.

Stephen Otieno, Tailor, Siaya County

Most farmers get their income from the farm and it is very low. What they get cannot be enough to pay for vet services. Calling in a vet is very costly. That is why they prefer to go directly to an agrovet and buy medicine when a cow is sick or has a difficult birth. Farmers need extension services that were common a while back when agricultural officers and veterinarians would visit farmers in villages and listen to their problems. Today things are different. When, let's say, your cow needed artificial insemination, you could go to a designated place to get a vet to come and do it for you. Today, to find that vet is a problem and when the artificial insemination is done chances of success are low. Veterinarians should get out and go to the field and help farmers instead of sitting in their big offices. They should get out and visit farmers.

HOW LIVESTOCK PRODUCTION CONTRIBUTES TO CLIMATE CHANGE

By Dr Serah Kahuri

Human consumption of meat and dairy products is a major driver of climate change

Livestock systems have appreciable impacts in the economy and culture of societies. They contribute to rural development, human diets, trade balances, biodiversity, risk management and other sustainable development outcomes.

More than one-quarter of the world's greenhouse gas (GHG) emissions come from the agriculture, forestry and land use sector. Human consumption of meat and dairy products is a major driver of climate change. GHG emissions associated with their production are estimated to account for over 14.5 per cent of the global total. Moreover, animal products have been estimated to contribute more to GHGs, deforestation, ocean acidification, biodiversity loss, and unhealthy humans, than plant-based foods. Beef and dairy are the most emissions-intensive livestock products and account for 65 per cent of the total GHGs emitted by livestock. As the world's population increases, the need for food continues to grow. Unless actively addressed, these emissions are likely to increase.

80 %

Percentage of agricultural methane emissions from livestock production, including enteric fermentation and manure management.

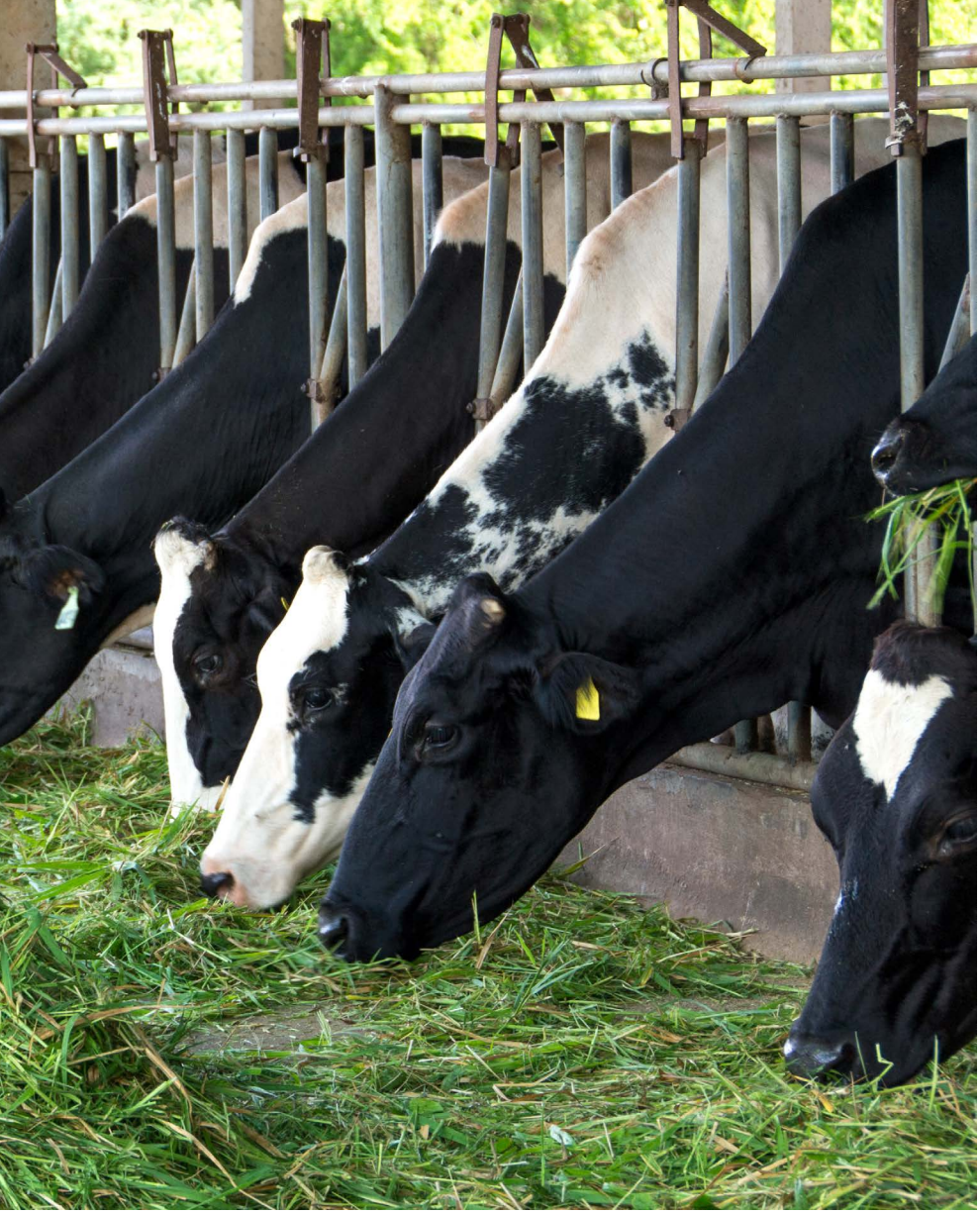
Agriculture is responsible for highly impactful emissions and accounts for an estimated 45 per cent of total methane emissions. About 80 per cent of agricultural methane emissions are from livestock production, including enteric fermentation and manure management.

Agriculture also accounts for 80 per cent of total nitrous oxide emissions, mainly from the application of fertilisers, both synthetic nitrogen and manure added to soils or left on pastures.

These two gases are significantly more powerful than carbon dioxide in driving warming over a span of 20 years. Methane has more than 84 times global warming potential (GWP) of carbon dioxide, while nitrous oxide has a GWP of 264 over the first 20 years after reaching the atmosphere.

Main sources of nitrous oxide

The principal sources of nitrous oxide are manure and fertilisers used in the production of animal feed. Methane gets emitted from manure because of bacterial activity. Bacteria are involved in the decomposition process and releases methane in the process. When manure is stored long enough, a large bacterial community consisting of many different species can establish. The larger the bacterial community called inoculum in technical terminology, the higher the emission of methane. The biggest



Challenges in Reducing emissions from livestock

Despite the scale and trajectory of emissions from the livestock sector, it attracts remarkably little policy attention at either the international or national level.

Reducing emissions from agriculture poses challenges due to the diffuse nature of farming and the critical role of agriculture in the lives (and livelihoods) of billions of people. Reducing agriculture emissions requires action from the more than two billion people employed in agriculture, or one-quarter of the global population. Moreover, compared with other sectors, recognition of the livestock sector as a significant contributor to climate change is markedly low; public awareness of the link between animal food consumption and climate change is not fully comprehended.

What has been done

A recent assessment from the United Nations Environment Programme (UNEP) and the Climate and Clean Air Coalition found that cutting farming-related methane emissions would be key in the battle against climate change.

[Continued to page 14]

source of methane is from enteric fermentation, a digestive process of ruminant livestock such as cattle, goats and sheep.

Plant-based diet

Governments in developed countries such as Australia, Canada, European Union and the United States and have focused on lower impact actions to reduce the livestock carbon such as the use of reusable bags, as these are less politically contested. Higher impact actions, such as a plant-based diet, may be politically less popular, and are therefore avoided.

Demand for animal products is rising fast. By 2050, consumption of meat and dairy is expected to rise to 76 per cent and 65 per cent, respectively, against a 2005–07 baseline, compared with 40 per cent for cereals. The biggest meat-consuming countries are China, the European Union, the United States and Brazil; major dairy consumers are China, India, the EU and the United States. Rising demand for livestock products translates to rising emissions of CH4 and nitrous oxide. Studies show that if current dietary trends (increasing global consumption of animal products) were to continue, emissions of methane and nitrous oxide would more than double by 2055 from 1995 levels.

Livestock production is also an important driver of land use changes like deforestation, which contributes carbon dioxide emissions directly and indirectly through the conversion of forests into cropland. In nomadic areas where livestock numbers exceed the land carrying capacity, land degradation takes place and contributes to slow emissions.

> *GHGs emissions associated with their production are estimated to account for over 14.5 per cent of the global total. Beef and dairy are the most emissions-intensive livestock products and are responsible for the most emissions, accounting for 65 per cent of the total GHGs emitted by livestock.*

The UN held the UN Food Systems Summit in September 2021, to make farming and food production more environmentally friendly. It was stressed that all governments must build on good practices such as indigenous food systems, invest in science and innovation, and engage all people, particularly women and youth, indigenous peoples, businesses and producers in achieving the Sustainable Development Goals (SDGs); (SDG 13 – Climate Action)

At policy level, countries have made commitments to reduce emissions in Nationally Determined Contributions (NDCs) in fulfillment of the Paris Agreement. In Kenya's NDC, there is a specific mention of focus on efficient livestock management systems to address adaptation and mitigation targets.

On the ground, the first step in reducing emissions from animal agriculture is to produce animal products as efficiently as possible that is, to change how we farm. The adoption of proven GHG-efficient farming technologies and practices could achieve about 20 per cent of the sector's required emissions reduction by 2050. At all levels of livestock farming, both large and small scale, manure management approaches should be efficient, by covering it, composting it, or using it to produce biogas.

It has been realised that individual and societal consumption behavioural changes offer important means to reduce livestock emissions. It is noted that government intervention to address overconsumption of unsustainable foods will play a big role in climate mitigation.

In conclusion, the solution to emit less GHGs from livestock farming is to limit the demand for GHG intensive foods through encouraging shifts to more sustainable diets, development of governance tools such as policy design and enforcement and public awareness through national sensitisation.

[The author Dr Serah Kahuri holds BSc in Geography & Topographic Science- University of Wales, Swansea 2004, MSc. in Geo-Information and Earth Observation: Land Administration University of Twente, ITC Faculty, Netherlands, 2010]

Andrew Tuimur
Big Vet in high office speaks

By Wainaina Wambu

In a wide-ranging interview, the Water, Sanitation and Irrigation Chief Administrative Secretary (CAS) traces his humble beginnings as a vet to burning fingers in politics and finding a calling in public service.

For most village boys, a lifelong attachmwnt to livestock is born while trudging long distances over harsh terrain in search of water and pasture.

Andrew Tuimur's tale is no different.

"I tell my children now that I used to look after cattle barefooted and they don't believe me. I got pricked by thorns, which hurt, but I had to remove them and keep moving," the Water and Irrigation Chief Administrative Secretary (CAS) says, recalling his early life growing up in Kapsabet, Nandi County.

In hindsight, those years when he trekked long distances to watering points and cattle dips forged his future as a veterinarian and top agriculture and water ministries' official.

That once wiry boy is now a towering, well-tailored figure who calls the shots from a corner office on the sixth floor of Maji House – the fortress where decisions concerning Kenya's water and irrigation are made.

No classroom beats a grazing field

But lessons – which began at the grazing fields – such as patience and humility have stuck with him as the Animal Focus team found out when they sat him down for this interview.

"When I was appointed Livestock Principal Secretary, I was introduced to my driver who was shocked when I reached out to shake his hand. 'You are the first PS who's ever greeted me with a handshake,' the driver, who had worked for many years in Public Service said to my great shock."

Man of the people

The CAS has over the years cultivated a team spirit among staff who work under him mostly because he has no airs. Tuimur enjoys rubbing shoulders and sharing meals with junior staff, which is uncommon among top public servants.

This way, he keeps a pulse on things and creates a trust culture within the team. Not surprisingly, he keeps an open door policy, and his office is always teeming with citizens seeking his audience.

Tuimur who was born in 1960 in Kapsabet keeps fit and eats healthy, making it hard to tell he's a day over 60 years of age.

[Continued to page 16]

> *Corruption was once very low, but it's now literally chocking our country. If we could reduce corruption by 50 per cent our country would be transformed totally.*

Interestingly, as a young boy, his dream was to be a lawyer. His father, however, would have none of it insisting that he becomes a scientist.

"After high school, I took up veterinary medicine at the University of Nairobi (UoN), which I found quite interesting. It's a field where one deals with all types of animals, be it livestock or wildlife," he tells Animal Focus.

Tuimur's curious mind was intrigued by the range of features in the various animal species.

"All these animals have different attributes. For example, the muscles of a horse are different from the muscles of a cow. So are the nerves that run through their arteries and so on. This is opposed to human medicine where you only deal with a human."

He found vet science so fascinating that he pursued his post-graduate in the same field.

At UoN), where he did his undergraduate, he was among the top students, earning him a spot as an assistant lecturer in the faculty of veterinary medicine. He later pursued a Master of Science degree at the University of Edinburgh, UK.

Tuimur, a member of the Kenya Veterinary Association and the Kenya Veterinary Board, lights up when discussing vet affairs.

He's excited that in the last few years, the vet profession is earning the recognition it rightfully deserves.

One health approach

He, for example, points out at the One Health approach where human and animal health professionals look at the linkages between the two fields, combined with environmental health, to tackle diseases that are spread from animals to humans.

"The world can't do without veterinarians," he notes.

Tuimur explains that 60 to 70 per cent of diseases that affect humans come from either domesticated livestock or wildlife.

Also, zoonotic diseases such as the deadly Ebola virus (believed to originate from bats and non-human primates) and the coronavirus (believed to originate from bats and other exotic wildlife) have upended the world as we know it for the last few years.

Tuimur's postgraduate thesis was on the epidemiology of a rare disease known as Q Fever. This is a disease

that presents itself like malaria and is spread to humans by animals such as goats and sheep.

He taught at the university for a year and quit to pursue a Master's degree but was unable to complete it.

"Our superiors then were very rigid. You would write a proposal and it would be rejected many times. So I got frustrated."

This led him away from academia. He'd seen a job advert at the Agricultural Development Corporation (ADC) for a veterinary officer – applications were closing the same day – he applied and secured the position.

Back then, the ADC had many farms doted across the country and Tuimur was placed in Nakuru and placed in charge of about ten farms.

ADC was established after independence to facilitate the land transfer programme from European settlers to locals. It also aimed to stabilise and assist in maintaining good quality livestock and continuity of the breeding programmes in the affected farms, it says in its website.

Agricultural glory days

He recalls with nostalgia and regret what he calls "agriculture's glory days". ADC had huge farms, with livestock and crops such as barley and wheat.

"If you flew over Molo those days, you'd think you were somewhere in Australia because of the thousands of sheep you'd see."

Tuimur practised as a vet for a few years before moving into management at the Nairobi headquarters.

He says those days strong agricultural structures existed even though the road network was poor. Farmers' co-operatives were, the cash crop sector was thriving, with good prices, prompt payments and low production costs giving farmers attractive profit margins.

"Corruption was once very low, but it's now literally chocking our country. If we could reduce corruption by 50 per cent, our country would be transformed totally," he says on what's has changed besides dynamics such as technology.

He also served as manager at the then 1.8 million acre Galana before rising to regional manager of ADC farms at the Coast.

Betrayal in politics

It was in 1997 that he unwittingly first tasted betrayal in politics. He believes someone wanted him out of ADC.

"The region (Coast) was doing very well. But for some reason, there are always enemies trying to bring you down. For example, HQ would say 'there are a lot of issues happening, such as lost livestock', but this was all false.

"They sent auditor after auditor to my office but they couldn't fix me because the allegations were either driven out of jealousy or they wanted somebody else in my position," he says.

Not long after, the then ADC Managing Director surprised him with a three-day inspection visit.

When Tuimur saw him off at the Malindi Airstrip, the boss handed some letters before hopping into a plane. To his shock, one of the letters was a transfer letter to Kitale, a demotion, he says.

"I asked myself, 'What wrong have I done'?"

Because the MD had handed him the letters when boarding to avoid questions, Tuimur followed him to Nairobi in search of answers.

But the answers only made him unhappy so he decided to run for MP for Emgwen, Nandi County, in 1997.

"People see my humility and think I can't do politics," he chuckles.

Tuimur believed that he'd struck an agreement with the ADC MD that if he didn't succeed in winning the MP seat, he'd return to the organisation.

"After the nominations, I received a letter to the effect that I went to politics without the authority of the managing director," he says, recalling his rude shock.

Then a young man in his late 20s and running against former head of Public Service Joseph Letting, a giant, the cards were stacked against him and he trailed in second.

But he couldn't return to ADC, and not even the intervention of President Daniel arap Moi helped him.

Moi however later appointed him as the chair of the Insurance Advisory Board which was instrumental in starting the Insurance Regulatory Authority (IRA) to stem collapse of insurers in the then unregulated sector.

But Tuimur wasn't done with politics yet.

In the 2002 elections, he won the KANU nominations only for the nomination papers to be stolen. To his chagrin, they also refused to repeat the nominations.

After this ordeal, he licked his wounds at home for a long period until he saw an advert for head of operations at ADC and applied. For the second time, he returned to ADC, vowing never to venture into politics again.

Wakeup call from wife

"My wife asked me: You've sold many things for politics, is it me you are going to sell next?

He would in a few years rise to ADC Managing Director.

His achievements at ADC include spearheading the setting up of a bull station in the Kitale region aimed at producing 1.5 million doses of semen a year. Tuimur was also among the pioneers of research on Embryo Transfer Programme in Kenya, an initiative aimed at increasing heifer production which was rolled out in 2002. Up to 100 successful implants are done annually.

When the Jubilee Administration took over, he took advantage of the job adverts placed for Principal Secretaries. After a competitive process, Tuimur was appointed PS for Livestock.

"Many people think we were just handpicked ... I applied, did interviews and was selected," he says.

[Continued to page 18]

This is my legacy

Here he is credited with the successful implementation of the Kenya Index-Based Livestock Insurance Programme which was established to minimise risks emanating from drought-related disasters and to build the resilience of pastoralists in Kenya.

During his tenure, the State Department for Livestock rehabilitated its training institutions and also implemented, for the first time, vet internship programmes, with 582 graduate students successfully placed in 2017/2018 financial year.

But does he have any big regrets so far?

Reflectively, he says there are things he could have completed if he'd stayed longer as Livestock PS. He served in this capacity from December 2015 to March 2018 after which he was named CAS Agriculture.

For instance, he'd started negotiating with the Salaries and Remunerations Commission (SRC) for risk allowances for veterinarians but was transferred to another docket before culmination.

"Veterinarians in the field really suffer but don't get those risk allowances ... for example they can get bitten while treating an animal with rabies," he explains.

Will he ever venture into politics again? Not unless nominated, he chuckles.

Curiously, has been nominated before. At some point, during the Moi era, he was appointed one of five MPs to the East African Community (EAC). However, someone went behind his back and told the President that there was a problem with the appointments.

All the appointees, said his detractor to the President, were men.

Being the youngest, he was removed and instead of a competitive process to find a suitable woman, the man who went behind his back selected his wife, who was promptly appointed!

Another low moment in his life came after the 2002 elections when Tuimur, was tapped as the MD of a big agricultural parastatal only to be blocked by influence peddlers. This notwithstanding an appointment letter signed by the President with instructions to report to Nairobi immediately.

Passion for youth

Because of these tribulations, he has a deep passion for the youth and has always championed to have more of them in involved in agriculture.

His other achievements include installation of Liquid Nitrogen Plants to boost semen production and availability to farmers, facilitating the purchase, distribution and installation of 48 milk coolers in nine counties, and improvement of the capacity for vaccine production.

In January 2020, he was moved to the Ministry of Water and Irrigation as CAS.

Now, his job entails assisting the Cabinet Secretary, liaising with county governments, the senate and national assemblies, and supervising projects among other roles.

The Ministry is currently executing 685 projects nationwide, ranging from small water pans to huge dams such as the Thwake Dam and the just-completed Thiba Dam in Kirinyaga.

The Ministry's target is to improve Kenya's water coverage by 100 per cent by 2030.

"My proudest achievement," Tuimur says in sum, "is getting opportunities to serve my country in several capacities for all these years and giving my all."

VETERINARY MEDICINES DIRECTORATE

ABOUT US

Veterinary Medicines Directorate (VMD) is created by Section 39 of the Veterinary Surgeons and Veterinary Paraprofessionals (VSVP) Act and is operationalised by Veterinary Medicines Directorate Regulations – Legal Notice No. 209 of 2015 as a State Corporation.

The Directorate is mandated to regulate the manufacture, importation, exportation, registration, distribution, prescription and dispensing of veterinary medicines and the practice of veterinary pharmacy in Kenya. This applies to all conventional and alternative veterinary medicines.

Veterinary medicines are classified as; veterinary pharmaceuticals, biologicals, nutrients, equipment/veterinary devices, alternative medicines and poisons.

It is illegal to handle, market, import or export any veterinary medicine in Kenya unless it is registered for use in the country. Such registered products are deemed to have been issued with a Market Authorization (MA). Any Market Authorization Holder (MAH) operating from outside the country is required to appoint a Local Technical Representative (LTR) through whom communications with the regulator can be channelled. It is proven that 60 per cent of pathogens affecting animals are transmissible to humans either directly through contact or indirectly through food of animal origin or vectors. Transmission cycles of these pathogens often involve stages of interaction with the environment. It is therefore of paramount importance to ensure the highest standards of safety, quality and efficacy for all veterinary medicines to safeguard not only the health of animals but also the health of humans and the environment.

Vision

To be a world class regulatory authority ensuring safe, effective and responsible use of veterinary medicines.

Mission

To protect the health of animals, humans and environment through regulation to ensure safe and responsible use of veterinary medicines.

Our Departments

1. Registration Department

The department is in charge of:

- Conducting technical assessment and evaluation of application dossiers for veterinary medicines. Products that comply with regulatory requirements for registration are recommended to the Council by the Technical and Registration Committee.
- Publishing and updating registers of newly registered products, suspensions, and deregistered products.
- Development and review of regulations, guidelines, manuals, and standard operating procedures (SOPs) related to the assessment and registration of veterinary medicines.
- Carrying out inspections of facilities involved in manufacturing of veterinary medicines to ensure adherence to Good Manufacturing Practices (GMP).

2. Inspectorate and Enforcement Department

The department is in charge of:

- Ensuring compliance with the laws and regulations that apply to the manufacture, wholesale/distribution and retail of veterinary medicines in the Kenyan market through;

i) Assessment of applications for authorisation of premises for manufacture, warehousing, distribution and retail of veterinary medicines.

ii) Inspection of the premises for compliance to standard requirements.

iii) Issuance of licences to compliant manufacturers, wholesalers and retailers and suspension of the licences if any of the conditions of issuance are violated.

iv) Post-market surveillance to assure the quality, safety and efficacy of medicines in the market. This entails receiving and analysing feedback, sampling and analysis, ensuring removal of non-compliant products from the market.

v) Training of operators along the distribution chain on Good Distribution Practices (GDP)

vi) Regulation of trade through issuance of import and export permits after carrying out risk assessment and inspections at various Ports of Entry (PoEs).

vii) Development of tools for carrying out pharmacovigilance of registered products to establish Adverse Drug Reactions of medicines during usage and taking necessary action. In addition, receive and analyse Periodic Safety Update Reports/Periodic Benefit Risk Evaluation Report (PSUR/PBRER) and Risk Management Plans (RMP) from Marketing Authorisation Holders.

viii) Regulation of advertisement of veterinary medicines to ensure misleading information is not given to audiences.

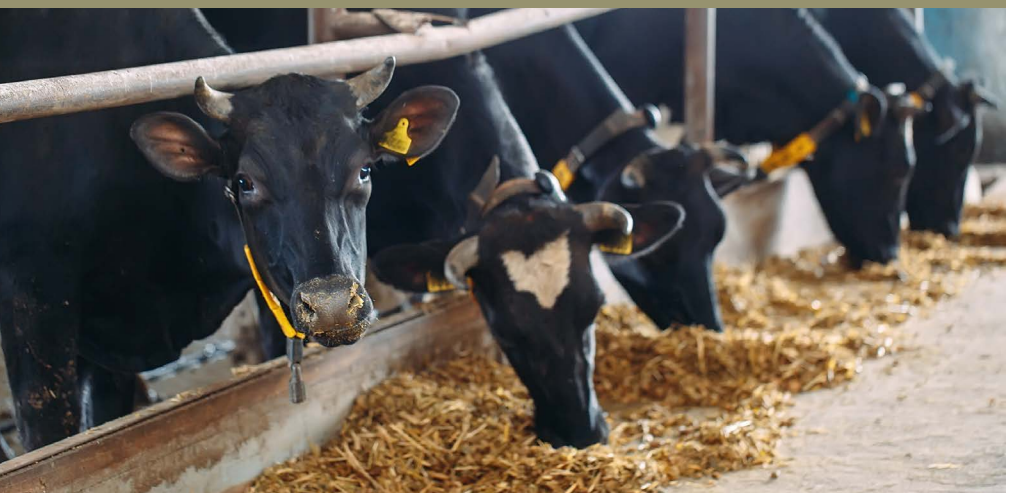
VETERINARY MEDICINES DIRECTORATE

P.O. Box 66171-00800 | Westlands, Nairobi | Telephone: 0743795395 | Email: VMD@kilimo.go.ke

The problem with Challenge Feeding

Feeding costs are rising fast and one way to offset the costs of running a dairy farm is to have the cows produce higher volumes of milk for every kilo of feed provided to them.

By David Maina



Dairy farmers are getting more sensitised about the potential of their animals. They are getting eager to challenge their animals to produce higher volumes of milk per day, especially during early lactation. Feeding costs are rising fast and one way to offset the costs of running a dairy farm is to have the cows produce higher volumes of milk for every kilo of feed provided to them.

For most smallholder dairy farmers, the land size challenge makes it hard for their farms to be self-sufficient throughout the year, so they have to outsource fodder. Buying fodder makes the farm less profitable because feeding forms the highest segment of the total production cost. This becomes a leading cause of insufficient feeding, where farmers either feed their cows with insufficient dry matter or nutritionally unbalanced rations.

Persistent fodder shortages

With the persistent fodder shortages and the need to get higher milk production levels, there is the tendency to exceed the percentage of concentrates in the ration because of their quick effect in raising milk production.

Therefore, as long as the cow registers an increase in milk production with every addition of a kilo of dairy meal, the trend continues and, in the end, the concentrate percentage exceeds 50 per cent of the total daily dry matter intake. In farms where the cost calculation and basic record-keeping are not observed, the focus is more on milk production and less on the amount of money spent to produce that litre of milk.

Farmers should remember that only sufficient and balanced feeding will optimise growth, production, and meet the cow's nutritional requirements. Energy and protein are the main drivers of milk production. If the two are not sufficient, the cow cannot produce optimally. A total mixed ration (TMR) is the recommended feeding model where the farmer ensures that with every bite a cow takes off the feed placed on her trough, she gets all the nutritional elements that she needs. The feeding of TMR also minimises feed selection at the trough, especially where the chop sizes of the fodder are minimised to mix well with the rest of the feed components in the TMR.

High concentrate diets

The tendency to overfeed concentrates has been observed, especially on the early lactation cows (from day one to 100 days after calving), which are transitioning from high fiber diets. With increased feeding of concentrates, the cows have a high intake of rapidly fermentable carbohydrates and in the long run, this leads to a drop in the rumen pH to less than 5.5 (normal pH ranges between 6.5 and 7) for several hours a day. This results in Sub-Acute Rumen Acidosis (SARA). This is characterised mainly by reddening at the coronary band, which is slightly above the cow's hooves, and reduced fiber digestion. Some of the immediate observations is the early lactation herd tending to stand with their front legs at a higher position than the hind legs, which already indicates discomfort with high concentrate diets.

The dung also tends to be watery and foamy with small bubbles, and if the high concentrate feeding does not change, the cows begin to show signs of lameness in the long run.

Sub-acute rumen acidosis can be corrected by reducing the amounts of concentrates while increasing fiber levels in the diet, for example introducing Lucerne hay gradually into the ration to stimulate rumination. An increase in concentrates affects rumination as well as the production of saliva. Saliva helps to counteract the effects of acid-producing feeds. This can be corrected by buying commercial buffers like sodium bicarbonate which can be added to the concentrates in recommended levels as indicated on the package.

[The author David Maina is the Managing Consultant at Perfometer, www.perfometer.co.ke]

Why precision is everything in delivery of vet services

Like any other aspect of veterinary practice, pest control must be done with military precision

By Dr Pascal Juma

During graduation, the chancellor pronounces the magic words; "by my own powers and that of the university, I give you the powers to read and do all that appertains to this degree". For a degree in veterinary medicine, that means a lot and with that phrase, the chancellor grants you powers to do so many things. In fact, after that the fresh graduates proceed to take the veterinarian's oath that goes something like "... we do swear to use our scientific knowledge and skills for the benefit of society by providing professional animal health care, relief of animal suffering, conservation of livestock resources, promotion of public health and advancement of veterinary medical knowledge."

Life and death

That is a lot of responsibilities for a mere mortal. As if that is not enough, these services have to be offered with clinical precision. It is always about life or death. That a vet is bestowed with so many responsibilities cannot be gainsaid. It therefore follows that a practitioner, is likely to specialise in one sector out of the wider scope of veterinary practice. My area of specialisation is Public Health, Pest Control and Sanitation. Public Health refers to a wide range of activities carried out by medical practitioners that help mitigate against diseases that may affect the masses and sometimes cause sporadic outbreaks or pandemics. This ranges from vaccination against zoonotic diseases such as rabies and anthrax, to meat inspection and even surface disinfection and sterilisation.

> *"Pest control is at the centre of this agenda since pests play a significant role in disease transmission, acting as vectors of dangerous and deadly diseases...*

In all these, Pest Control is at the centre of this agenda since pests play a significant role in disease transmission, acting as vectors of dangerous and deadly diseases such as malaria, typhoid, dengue fever, cholera. Pests also transmit diseases to animals. As long as there are pests roaming around, animals and humans shall never be at peace.

That is why at Naypest Limited, we always say the only good pest is a dead one and it is our everyday job to create a world free of pests and pathogens. Like any other aspect of veterinary practice, pest control must be done with military precision. It is never enough to know which pesticides is meant for eradication of a particular pest, the methodology and approach count for more than half of the success in extermination of the target pest.

From correct mixing ratio of pesticide and water to correct spray pump pressure that allows proper atomisation of pesticide molecules to the method of spray employed against the specific target pest, everything must be done with precision to achieve desired results. That level of precision only comes with proper training, experience and passion.

[The author is a vet who specialises in Public Health, Pest Control & Sanitation and is the founder and CEO of Naypest Limited]

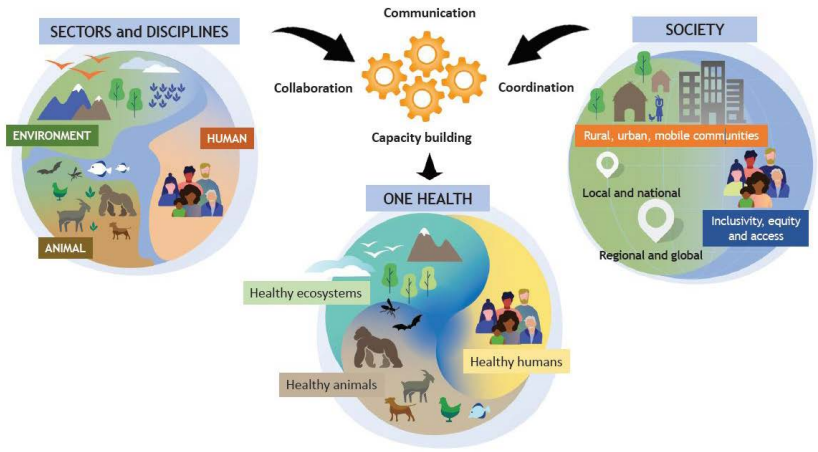
Understanding the One Health Concept

Dr Kelvin Momanyi

It is widely accepted that One Health offers a more effective and sustainable approach to managing the major threats to health in the 21st century.

SUMMARY

Despite all efforts of cooperation between human and animal health, isolated silo thinking persists, particularly in the public health sector. A holistic One Health approach to the management of ecosystems and the humans, plants, and animals they contain represents a paradigm shift away from the highly specialised single discipline approaches that evolved during the 20th century. It is widely accepted that One Health offers a more effective and sustainable approach to managing the major threats to health in the 21st century, including population growth, globalisation, livestock intensification, habitat degradation (Figure 1), biodiversity loss and climate change. However, due to the inherent multi-disciplinary character of the approach, defining the nature and scope of the field is not easy and misconceptions are common. The main challenge for the 21st century will be the practical implementation of a One Health approach and the breakdown of traditional barriers to cross-sectorial working.



Joint quadripartite (FAO, OIE, UNEP & WHO) One Health infographic. (Source: WHO)

Defining One Health

The operational definition of One Health by the One Health High Level Expert Panel (OHHLEP) is, "One Health is an integrated, unifying approach that aims to sustainably balance and optimise the health of people, animals, and ecosystems."

It recognises the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilises multiple sectors, disciplines, and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development.

One Health is best demonstrable through its added values in terms of improved health, welfare and well-being for humans and animals, environmental services, and financial savings beyond what can be achieved by working alone or using conventional approaches. Fundamentally, One Health is attractive, 'fashionable' and with a track record of success of being cost effective. Nevertheless, there are still

major challenges in operationalising it not only in Africa, but globally, which has been attributed to the long standing sectoral or organisational deep-seated collaborative barriers.

Historical perspective

Early human approaches to health and disease were invariably based around religious and spiritual beliefs. Disease was often considered a curse or divine retribution for lapsed moral behaviour. Ancient healers were often priests who gathered their earliest knowledge of pathology from inspecting animals for their fitness for sacrifice. An example of this provided from the Thora or the Old Testament (Leviticus 1,3): 'If his offering [be] a burnt sacrifice of the herd, let him offer a male without blemish.'

Hippocrates (460-377 BC) was arguably the first person to separate health from religion and regarded disease as a product of environmental factors, diet and living habits. He is credited as being the father of western medicine and established medicine as a discipline distinct from other fields that it had previously been associated with, such as theurgy (the practice of rituals) and philosophy. He is famously quoted as saying: 'As to diseases, make a habit of two things – to help or at least to do no harm'.

Current historical knowledge suggests that in the early days of the practice of healing, there was little differentiation made between the healers of people and the healers of animals. Indeed, treatment of humans and animals continued to be closely aligned for much of early history. Several notable scientists recognized the advantages of a more integrated approach between the human and animal health sciences.

> *"There is no difference of paradigm between human and veterinary medicine. Both sciences share a common body of knowledge in anatomy, physiology, pathology, on the origins of diseases in all species,"* Calvin Schwabe

One of the most notable of these was Rudolf Virchow (1821-1902), a German physician and pathologist. He coined the term 'zoonosis' and was very supportive of the veterinary profession. He was a strong advocate for public health meat inspections and set the foundations for modern meat inspection practices by veterinarians. With reference to the control of bovine tuberculosis, Rudolf Virchow stated in the Prussian Senate: '**Between animal and human medicine there is no dividing line – nor should there be. The object is different, but the experience obtained constitutes the basis of all medicine.'** This can be considered as one of the first One Health statements of the modern world and through his statement Virchow was drawing attention to the similarities in the knowledge and tools used by both vets and physicians. The first records of an integrated public health system date back to the Zhou Dynasty in China (11-13th century) and include both medical doctors and veterinarians working together.

Sir William Osler (1849-1919) was also an important figure and is credited with introducing integrative thinking to North America. He was a physician who studied with Virchow. Osler is credited with creating the term 'one medicine.'

Calvin Schwabe (1927–2006) is widely credited with **t**He was a renowned veterinary epidemiologist and parasitologist and was one of a small number of veterinarians who continued to promote a unified approach to zoonotic disease through the 20th century. His most notable contribution was the publication of 'Veterinary Medicine and Human Health' which was the first textbook considering veterinary medicine and human health as one entity. Although Osler is credited with creating the term 'one medicine', Schwabe brought it back to life through the publication of his book. His use of the term was inspired by his work with Dinka pastoralists in Sudan in the 1960s. He interpreted one medicine as a general medicine being part of the body of knowledge of zoology, including the science of humans, in the broader sense.

'There is no difference of paradigm between human and veterinary medicine. Both sciences share a common body of knowledge in anatomy, physiology, pathology, on the origins of diseases in all species', Calvin Schwabe,

Dr Abigail Woods (a historian from King's College London) acknowledges the historical synopsis above but at

[Continued to page 24]

Aerial drone view of the Xingu Indigenous Park territory border and large soybean farms in the Amazon rainforest, Brazil. Almost 80% of the world's soy bean crop is used to feed farmed animals not people. Credit: PARALAXIS / Shutterstock

the same time asserts that it is a highly selective account, that is deliberately designed to advance the case of One Health today. She and her colleagues have developed a more critical, in-depth and evidence-based account of its history, published the book, "One Health: The theory and practice of integrated health approaches."

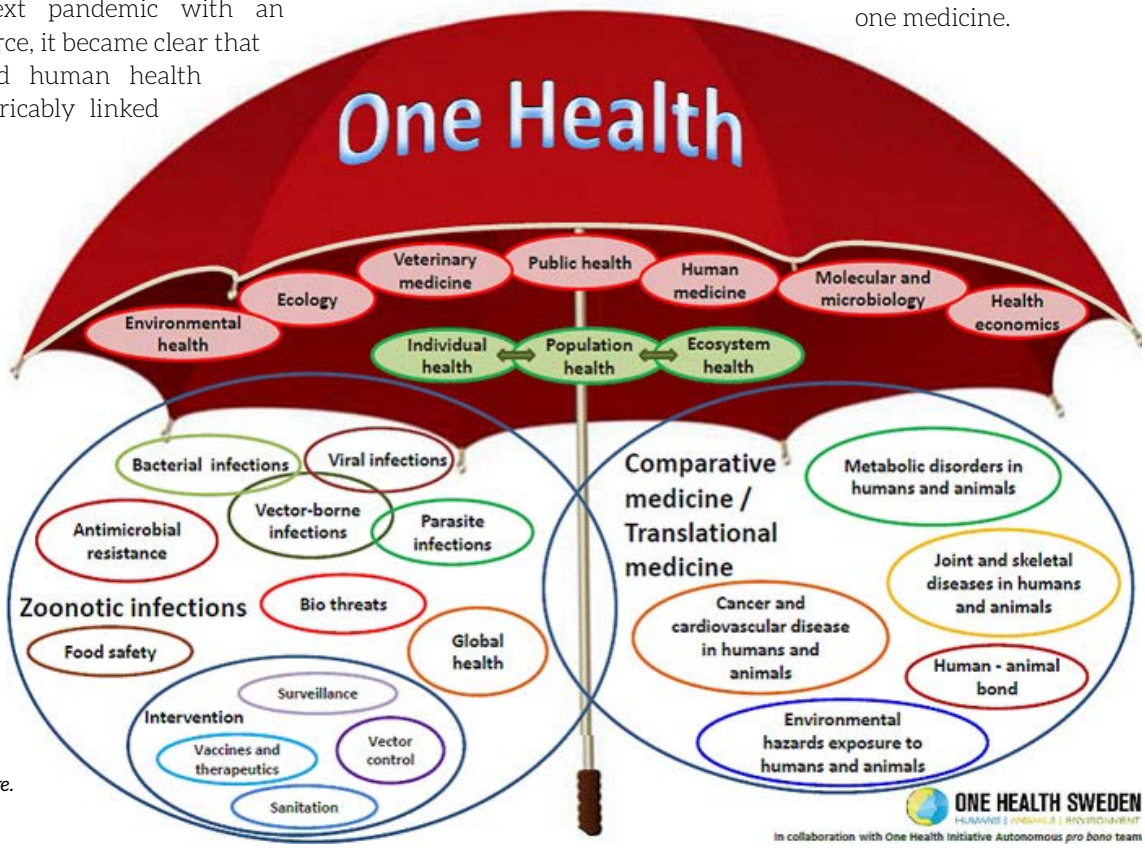
Evolution from One Medicine into One Health

While one medicine gained greater recognition through the work of Schwabe and like-minded colleagues, it was the series of emerging infectious diseases and the perceived risk of global pandemics in the late 20th and early 21st centuries that really galvanized support for One Health. In particular, the rapid global spread of severe acute respiratory syndrome (SARS) from one patient in Guangdong province in China in 2002 caused mass panic. Another example illustrating the cost of global pandemics was the auto-immune deficiency disease syndrome (AIDS) pandemic which affected an estimated 33 million people and cost US$7.7 billion. With concerns that the emergence of highly pathogenic avian influenza (HPAI) might result in the next pandemic with an animal source, it became clear that animal and human health were inextricably linked and to control them effectively required a more collaborative, multi-disciplinary approach. It was also very clear that health systems needed to be strengthened if we were to be able to effectively mitigate the disease threats of the 21st century. The global response to HPAI that was put into place in 2006 and the 2019 COVID-19 pandemic are prime examples of such a collaborative approach and has been described as One Health in action.

To many people, collaboration between human and animal health sciences remains the cornerstone of the One Health approach. However, this slightly simplistic approach ignores another important component in health. A key feature of many of the emerging disease threats has been the deterioration in the health of the ecosystems from which they emerged. The publication of the influential book, 'The Silent Spring' by Rachel Carson in the 1960s, helped to galvanize concern about the damaging impacts of expanding human populations on the environment and a powerful environmental awareness movement developed through the latter half of the 20th century. The book highlighted the vast number of pesticides and chemicals being released into the environment and, in particular, the damaging effect of the insecticide DDT (dichlorodiphenyltrichloroethane) and its persistence in the environment. This helped to raise the profile of environmental health, but it was the recognition of the role of ecological change in disease emergence, that really emphasized the need for a more holistic approach to health. This was addressed by the inclusion of ecosystem health within the One Health framework and the modern concept of One Health was born. The central principle is that health connects all living species.

Scope of One Health

The scope of One Health is broad and it separates itself from one medicine by the inclusion of ecosystem health. Although human health concerns may be considered paramount, there is recognition that the health of humans is inextricably linked to the health of the ecosystems in which they co-exist. One Health also reflects a more preventative approach to health in comparison to one medicine.



The scope of One Health. Credit: One Health Initiative.

Although emerging infectious disease was one of the main drivers in the evolution of One Health, the concept is not limited to either emerging diseases or infectious diseases. It is concerned with the much broader definition of health and issues like the human-animal bond are also within its scope. Gibbs identifies several 'megaconcerns' facing the planet in the 21st century that are within the scope of One Health, including emerging diseases, zoonoses, food security, food safety, antimicrobial resistance, wildlife conservation and global climate change. It is clear then that the scope of the modern One Health approach is much broader than its origins in one medicine and comparative medicine.

One of the key features is that it fosters a multi-disciplinary approach that is aimed at breaking down the traditional barriers between scientific disciplines – an attempt to break down what is referred to as 'silo thinking'. It also fosters increased cross-sectorial collaboration and attempts to break down barriers between institutions involved in the promotion of health. It may also be described as trans-disciplinary, reflecting the fact that it bridges across disciplines rather than being multi-disciplinary (this may be perceived as entrenching the traditional discipline-based approach, albeit with collaboration between disciplines).

A useful diagram to illustrate the scope of One Health is presented in Figure 1 below. One Health is presented as an umbrella spanning many traditional disciplines such as veterinary medicine, human medicine, ecology, environmental health etc. These disciplines work across scales from the individual level to the population level and the ecosystem level. Although the authors have attempted to incorporate all aspects of the scope of One Health, as with most schematics of this nature you will probably be able to identify deficiencies or inconsistencies within it. Nevertheless, it is a helpful aid in our understanding of what is meant by One Health.

Roaming pigs in western Kenya. [Credit: ZED group]

One Health in perspective

Drive into a shamba, a smallholding, and you observe first-hand the close relationship rural citizens have with their animals. Young men plough the fields with their team of cattle; women milk their cows and goats by hand and use fresh cow dung to floor their houses; a medley of poultry, cats, dogs and young children play happily together on the dusty ground. Pigs, goats and sheep wander in and out of houses, latrines and kitchens, picking at anything remotely edible, all categories of household wastes included.

The road you came in on is likely to be unpaved, highly pot-holed, and probably inaccessible by anything other than a bicycle or 4x4. Running water is a rarity, electricity even more so. Children, as happy as they are, often bear the tell-tale pot belly of a high worm burden, and it may have been years since any member of their household had contact with a healthcare professional. The livestock, mainly of indigenous breeding, often show overt signs of disease, ill thrift and anaemia being particularly common.

A stereotypical view of Africa, maybe, but one that is nonetheless a reality and which, when you stop to look, can give an insight into the diseases encountered by those living in such communities.

[The author is a One Health specialist Director - Transdisciplinary Consultants Email: momanyink@onehealthconsult.com]

Veterinary profession is on the rise: Regulator

Dr Ragwa Indraph, Kenya Veterinary Board Chief Executive Officer sheds light on how the board plans to weed out quacks messing up the profession and future plans.

By Dr Paul Kangethe

For starters, what is the mandate, vision, and mission of Kenya Veterinary Board (KVB)?

KVB was established in 1953. Our mandate has been to exercise supervision and control over the training, business, practice and employment of veterinary surgeons and veterinary paraprofessionals in Kenya. We envision to be a regional model regulating agency for veterinary training, business and practice. Our mission is to facilitate development of animal resource industry in Kenya through setting standards for veterinary training institutions; and registration and licensing of veterinary professionals, businesses and institutions.

There are some people in animal sector who masquerade as veterinarians. For the benefit of the public, who exactly is a veterinary professional?

We have two cadres of veterinary professionals in Kenya: veterinary surgeons and veterinary paraprofessionals or animal health assistants. A veterinary surgeon is someone who has studied Bachelor of Veterinary Medicine from University of Nairobi or Egerton University for five years and has undergone a one-year internship at a recognised internship centre and is registered by the board. A veterinary paraprofessional is someone who has pursued a certificate, diploma or degree in animal health in a recognised institution and has done a one-year internship and is registered by the board. Registration of a veterinary professional by the board also means that the person is issued with a KVB card. The card shows his/her photo, and credentials such as qualification, KVB number, and national identification number, year of validity and KVB office telephone number.

Through such identification it is easy for farmers or people seeking veterinary services to filter out quacks in the industry.

How many veterinary professions do we have in Kenya?

The registration of veterinary profession by the board is a continuous process. Since inception in 1953 the board has registered over 3,100 veterinary surgeons and 8,000 veterinary paraprofessionals, of whom the majority are certificate holders.

Where does Kenya Veterinary Board draw its membership?

The current KVB is established by Section Three of the Veterinary Surgeons and Veterinary Paraprofessionals (VSVP) Act , 2011. Its membership consists of an administrative member from the Ministry of Livestock and the Ministry of Finance. Other members include the Director of Veterinary Services, a Dean of the Faculty of Veterinary Medicine of a public university in Kenya, a veterinary surgeon who is a principal of a veterinary paraprofessional training institute. Others are four elected registered veterinary surgeons, three elected veterinary para-professionals, the chairperson of the Kenya Veterinary Association, one representative of veterinary research institutions; one veterinary surgeon or veterinary paraprofessional representative of the Kenya Wildlife Service. We also have two persons who are not veterinary surgeons or veterinary paraprofessionals.

What are the key responsibilities of the Board?

The board advises the government on matters relating to veterinary training, research, practice and employment, the use of veterinary medicines, poisons and the pesticides and other issues relating to animal welfare. It prescribes courses of training for veterinary surgeons and veterinary paraprofessionals and approves institutions for the training of veterinary surgeons and various categories of veterinary paraprofessionals;

Additionally, it considers and approves the qualifications of the various categories of veterinary paraprofessionals for the purposes of registration. It registers, licenses, controls and regulates veterinary practice and veterinary laboratories, clinics, animal hospitals and animal welfare institutions.

It formulates and publishes a code of ethics for all registered persons and ensures the maintenance and improvement of the standards of practice by the registered persons. The Board also assesses human resource and necessary training programmes to guarantee sound and efficient veterinary service delivery and advise the relevant ministries accordingly. It also regulates the use of technology for purposes of animal breeding.

Moreover, the Board create an inspectorate to work in collaboration with law enforcement agencies to locate, inspect, and close down premises or ambulatory clinics operated contrary to the practices prescribed in the Act, and take legal action against the offenders. Through this, the board has been able to weed out over 1,000 quacks since 2014.

Just how risky are quacks to the sector?

Vision 2030 recognises livestock development as a key player in national development. However, the performance of this sector is sometimes hampered by unethical practices where quacks and unqualified persons offer wrong and substandard services without regard to professionalism and animal welfare.

Such unprofessionalism puts to risk, according to the latest livestock census, an industry comprising the country's 3.35 million exotic cattle, 14.11 million indigenous cattle, 44.87 million sheep and goats, 2.97 million camels, 0.33 million pigs, 1.83 million donkeys and 31.82 million poultry. This is a huge livestock resource, which could contribute immensely to national development.

To effectively exploit the resource, competent and professional animal health service provision is critical. The minimum level of animal health and veterinary qualification and the quality of training need to be assured. It is the mandate of KVB to regulate this sector in order to protect the welfare of farmers, the professionals, other stakeholders and the animals as stated in the law.

What is continuous professional development (CPD) and how can veterinary professionals acquire its credit points?

Continuous Professional Development (CPD) are activities or programmes that provide added value to the capability of veterinary surgeons or veterinary paraprofessionals through enhancement of knowledge, skills and personal qualities for appropriate execution of the veterinary profession.

All veterinary surgeons and veterinary paraprofessionals get an opportunity to not only enhance their competence but also fulfil the requirements of Veterinary Surgeons and Veterinary Para-Professionals Act, 2011.

Veterinarians get CPDs through formal study for additional qualifications, short training and organisational activities, involvement in professional associations and committees, publication of scholarly articles in journals and book chapters, mentorship of students and interns, community service such as extension activities, among others.

What are the key focus areas for the next five years for the board?

We seek to work closely with all stakeholders, especially those in the animal sector.

We endeavour to maintain an updated register of all veterinary private practice in the country and create a conducive environment for those interested in veterinary education.

We shall promote stakeholders' participation to see how best the profession can offer competent veterinary services so that livestock and its products can be accepted anywhere in the world. Additionally, we shall facilitate income generating activities.

What is your parting shot?

The veterinary profession belongs to all of us as veterinarians. It is in our best interest to safeguard it and empower farmers to produce better and get profits out of their businesses as we inch a step closer to food security as a country.

Feedlot system
The highs and lows you need to expect

Though lucrative, the feedlots business is risky, capital intensive and knowledge driven.

By Sylvia Wakhisi

The demand for beef is on the rise in Kenya, because of rising populations and general household incomes.

Most The UN's Food and Agriculture Organisation (FAO), for instance, estimates that Kenya's population will hit 96 million people by 2050. This increase in population means the demand for food will also rise.

However, as the demand increases, the supply has been on a decline for a variety of reasons, leaving a gap in the market for beef and beef products.

"The demand for beef alone is estimated to rise by over 300 per cent," says Dr Moses Olum, a vet at the Kenya Agricultural and Livestock Research Organisation (KALRO).

Still, most meat buyers want beef that is tender and mouth-watering as opposed to the hard beef sold in most butcheries. Unfortunately, the suppliers of such premium cuts are few. In urban areas, the demand for this kind of beef, which grows by the day, has not been met.

It is estimated that over 60 per cent of the livestock that provides meat in Kenya comes from pastoralist semi-arid lands. However, due to their non-commercial inclination, the animals they supply to the market are usually too old (more than four years of age) and below the required weight (200kg).

To earn a good income, farmers need to improve quality of cattle to meet the requirements for high-end and export markets. These markets require young animals that attain an optimum weight of 320kg at a tender age of 24 months.

Demand for premium meat

This can only be achieved through feedlot farming, a modern technology where animals are reared in zero grazing units for rapid fattening.

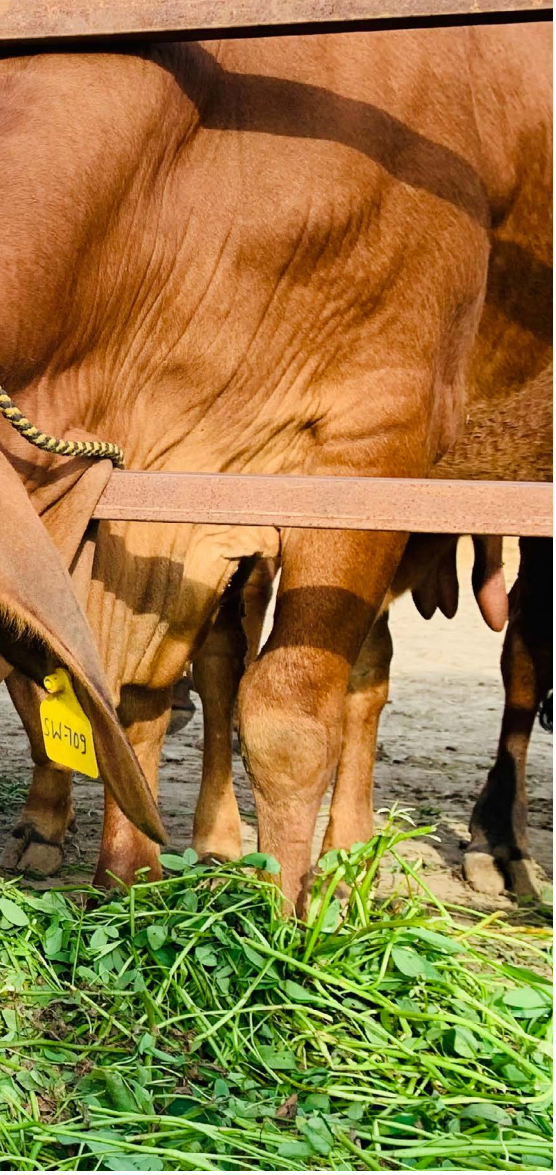
Indeed, feedlots are the most economical way of raising a large number of cattle for beef production in a small area.

This is because animals in a feedlot are managed in a manner that ensures they use most of their nutrient resources for body maintenance and weight gain.

"Feedlot beef production is a technical word for confining animals in a relatively small space and feeding them on the best food ratios to be ready for the market in the shortest time possible, say 60-120 days," Dr Olum explains,

This, however, has to begin with already grown animals that only need to optimally gain weight so that they are ready for slaughter in a short time.

"Ever wondered why a kilo of meat would cost Sh750 in places like Kakuzi (non-feedlot) and as low as Sh300 in Dagoretti? The secret is in the quality. The difference is like day and night," says Olum.



Olum says feedlot livestock do not also pick up common animal diseases, which can be transmitted to humans, because they are kept in confinement.

"Such cattle end up not being treated for over 90 days, and this ensures that their meat does not contain undesired chemicals," says the vet.

Few feedlots

Reports show that there are significantly few feedlots in Kenya as only a few people have ventured into the business.

Three young and daring investors took the risk and walked this journey. Eugene Mbugua, Victor Kagema and a third member, who sought anonymity, started Bullocks Farm on a less than eighth of an acre in Isinya, Kajiado County.

The three say that though lucrative, the feedlots business is risky, capital intensive and knowledge driven.

"This is a high risk business, but a high risk is also a high returns business," says Kagema.

For starters, the trio bought 20 emaciated but healthy cattle from pastoralists in Bisil, Kajiado County, Rumuruti and Narok at prices ranging from Sh20,000 to Sh30,000. The animals were then taken through an intense weight gain programme that lasted 90 days.

"We have had our ups and downs. It is like taking cattle in a delicate spa experience for 90 days from which they emerge having attained the ideal market weight and the leanest, sweetest and softest meat that is premium," explains Mbugua.

"For a while, the Kenyan meat market has been highly undeveloped as buyers have been used to poor quality, but as the economy develops, so does the hospitality industry and with it a clientele that can pay more for quality meat. We saw this gap and capitalised on it."

Succeeding in ensuring the animals gain weight starts with selecting the right animals. According to Dr Olum, the animal you select must be of a certain minimum weight and in good health.

"This is why it is critical for a vet to be involved from the start. The breed is also important. Also, to avoid disease attacks, given that the animals are weak when they are brought into the paddocks, vaccination is key. Equally critical is the feeding regimen that one must get perfectly right," he says.

The feed can be made from locally available products such maize grains, cotton or sunflower seed cakes and mineral premixes available from various manufacturers.

Formulation of such a diet depends on the cow's nutrient requirements for a desired level of performance, the nutrient content of feeds and the price and availability of the raw materials.

To solve this potential food crisis, there is a safer food production alternative — raising animals in feedlots. Animals raised in feedlots produce high grade beef as well as healthy food.

According to Dr Olum, feedlot meat has a desired characteristic called marbling. Marbling is the visible healthy intramuscular fat that accumulates within the muscle and between the muscle strands.

"To a layman's eye, for chilled meat, marbled fat appears white and will become less obvious as the meat comes up to room temperature since the fat begins to melt," he explains.

"The presence of marbling has an extremely positive effect on the eating quality of beef. It is more tender, juicier and full of good flavour. The fat makes the meat softer and easier to chew, as there is simply less muscle fibre per unit volume of meat."

> ***"It is critical for a vet to be involved from the start. The breed is also important. Also, to avoid disease attacks, given that the animals are weak when they are brought into the paddocks, vaccination is key." Dr Moses Olum, a vet at KALRO***

Countries like South Africa are ahead of other African nations on the feedlot business.

Dr Olum says, "They have done this for so long and this has made livestock a vibrant sector. As much as they experience the same challenges as Kenya, they have managed to create disease-free zones and compartmentalise their regions, thus are able to access prime markets such as countries in the European Union who have stringent measures on meat imports. Kenya however lags behind as we have not invested in our livestock sector."

Fueling the pandemic crisis: factory farming and the rise of superbugs

Factory farming is clearly destructive, reliant on appalling animal suffering, worker hardship and misuse of our planet's resources.

Dr Kelvin Momanyi

Factory farms use a lot of resources, considering the land for infrastructure, also water sources, monocrop land for animal feeding and contamination of soil and water around farms locations. Credit: World Animal Protection

The COVID-19 pandemic should be a worldwide wake-up call for factory farming and its regulators. The virus has changed our shopping habits, disrupted long and complex food supply chains, infected slaughterhouse workers' and condemned millions of factory-farmed animals to 'euthanasia' by mass suffocation.'

Factory farming is clearly destructive, reliant on appalling animal suffering, worker hardship and misuse of our planet's resources. Yet it is not looking to phase itself out. And governments, rather than reining in this unjust, inefficient and dysfunctional industry, are bailing out big agribusiness and subsidiSing unsustainably high levels of animal protein production.

This is despite a 2020 UN report finding intensive farming responsible for more than half of all infectious diseases that have moved between animals and people since 1940. The zoonotic transmissions of swine flu, bird flu and Nipah virus are well documented.

Factory farming is also laying foundations for another devastating health crisis currently sitting in COVID-19's shadow -antimicrobial resistance, the rise of the superbugs. If the pandemic is the flash flood that has taken us by surprise, the superbug crisis is the only too predictable slow rising tide.

Paying the price of antibiotic overuse

Some 131,000 tonnes of antibiotics are used annually in farming'- three quarters of all those produced in the world. Antibiotics are the silent props of the factory farming system, preventing stressed, confined animals from otherwise getting sick in the dismal conditions they live. There is ample science showing how antibiotics overuse on factory farms leads to superbugs (antimicrobial resistance) that spreads to workers, the environment and into the food chain.

High welfare systems

Yet, farm animals in high welfare systems have reduced stress,

improved immunity and so resilience to disease. This in turn requires fewer antibiotics.

For example, Sweden has regulations to ensure piglets remain with their mothers for a minimum 28 days following birth. Improved immunity and robustness of piglets allows farmers to significantly reduce antibiotics used. The reduction achieved was around 100-times fewer antibiotics being used than other countries including France, Belgium and Germany.

Impact of superbugs

Superbugs can make medicines less effective right at the time pandemics put health systems under extreme pressure. COVID-19 may be a virus which does not respond to antibiotics, but antibiotics are used to treat the secondary infections - such as bacterial infections of the lungs and blood- that it can cause.

Up to 50 per cent of COVID-19 deaths in one study in Wuhan, China involved secondary infections. In this study, up to 95 per cent of serious cases or hospital admissions were given antibiotics. But how is antibiotic effectiveness compromised by superbugs? Around 700,000 people die annually from superbugs and there could be a significant additional toll from superbugs during the pandemic and into the future.

World Animal Protection has found superbugs in the food chain in Kenya, Brazil, Spain, Thailand and United States. Some of these countries are some of the world's biggest producers and exporters of meat and illustrate factory farming's dependence on antibiotics 'critically important to humans'.

Global health crisis

Superbugs make antibiotics less effective in treating people and trigger a global health crisis. Some 10 million deaths are expected annually by 2050. These will disproportionately affect the poorest countries in the world.

The World Health Organisation (WHO) warns we could reach a stage where we are resistant to all antibiotics because of the superbug crisis - a post-antibiotic era. This means commonplace operations like caesarean sections or cancer treatment suddenly become dangerous, perhaps impossible because antibiotics will not protect against infection.

> ***For the sake of our health, it's time to stop factory farming and move to high welfare, sustainable food systems.***

A farm worker clips the teeth of a piglet 72 hours after he was born. This practice is associated with antibiotic overuse and can be avoided. Credit: World Animal Protection

Even without the pandemic crisis, the cost of antibiotic overuse in farming on our health and economy is significant. One study finds that for every kilogram of fluoroquinolone antibiotics used on meat chickens in the USA, the health and economic cost for people is US$1,500.

With 6,786 kilograms of these fluoroquinolone antibiotics used before the 2005 national ban, this tallies to many millions of dollars of hidden costs in one year to the public purse. This is just one example of one antibiotic class in one farming system in one country in one year.

Action to address the superbug crisis is surprisingly cost-effective. The World Bank considers that investment in containing and controlling superbugs should be a public policy priority. They argue it will pay off in the form of substantial reductions in the projected economic impact of superbugs.

Never has the public health case to end factory farming been clearer and more urgent. A WHO-funded study shows that restricting antibiotic use in food-producing animals is associated with a reduction in the presence of antibiotic-resistant bacteria in these animals. Reduced antibiotic use in food-producing animals is associated with up to 24 per cent lower antibiotic-resistant bacteria in people than the control group.

For the sake of our health, it's time to stop factory farming and move to high welfare, sustainable food systems.

To achieve this, we are calling for concerted action from the global retail, finance and animal protein production sectors, governments, and intergovernmental organisations to phase out factory farming. Stopping this cruel and inefficient system, dependent on antibiotic overuse, is vital to protect people's health, animals and economies from future pandemics.

[The author Dr Kelvin Momanyi is the Farming Campaigns officer, World Animal Protection

Email: KelvinMomanyi@worldanimalprotection.org]

Dr Paul Kang'ethe: Journalist by day, vet by night

Dr Paul Kang'ethe speaks on his experience being the only veterinary surgeon who also doubles up as a journalist

By Sylvia Wakhisi

Journalist by day, vet by night. This is how Dr Paul Kang'ethe best describes himself.

He is a veterinarian surgeon who also doubles up as a journalist, careers which he has great love and passion for.

As a young boy, Dr Kang'ethe says he used to shepherd a particular Guernsey cow which his dad owned. One day, his father sold it without informing him and he felt bad.

"This is where I drew my passion for veterinary medicine from. By shepherding that cow, I didn't know that God was preparing me for that career," he says.

Juggling two careers

However, to play both roles, it hasn't come easy. It took a lot of sacrifice, commitment and a spirit of resilience to achieve the titles.

He vividly recalls how while in vet school, he failed in two exams and had to sit for supplementary exams, prolonging the time he would complete his five-year course.

"I sat for my end of first year exams sometime in April 2014 and when the results were released while I was in Narok for my attachment, I had failed in the Histology unit and had to sit for a supplementary exam that same year in August. In the second year, I joined classes in September and when the results for the unit came, I had to do a retake for a whole year," says Dr Kang'ethe, a father of two.

"When I failed that exam in first year, it was the most difficult time of my life. All through primary and high school, I always emerged in the top positions. I couldn't understand why I failed those exams in campus. I was really depressed and didn't know what to tell my parents after all the struggles we had been through to see me join campus. I remember calling my parents and telling them the news and my mum told me to go back home and wait for the next intake since at that time there was a double intake. People would not understand why I was at home yet they had contributed school fees for me. January came and I went back to first year again," he explains.

He got an opportunity to apply for a work study programme at the University's restaurant where he would be paid Sh260 per day which he used to pay his school fees.

Humble beginnings

It took encouragement from his parents, determination and resilience to see to it that he wouldn't give up on his studies, but went on to pursue the course and graduate with a Bachelor of Veterinary Medicine from the University of Nairobi.

Dr Kang'ethe was born in 1992 in Engineer, Kinangop Constituency, Nyandarua County, in a family of 12 siblings-he is the sixth born.

He began his schooling at Mutamaiyu Primary School and later joined Muti-ini Primary School in Kinangop Constituency where

he sat for his KCPE and scored 365 marks. He later joined Mwenda-ndu Secondary School, a local day school in 2010 and scored an A- of 75 points which earned him a chance to study at the University of Nairobi.

"It took lots of hard work to earn that mean grade. I would be in school by 4.00 a.m. and leave at 10 p.m. The school was located about three kilometres from home and my dad used to wake me up at 3.00 a.m. to prepare myself. When back home at 10.00 p.m. I would do some studies then retire for the night. Sometimes I would go to school even on Sundays and my teachers really encouraged me to work hard. People used to think that I was in a boarding school because I was hardly at home," he says.

According to the doctor, he had always wanted to pursue Human Medicine but didn't qualify because of the cut off points. With a love for Mathematics, he went on to select Statistics as his first choice, Biostatistics as the second choice, Medical Laboratory third choice and Veterinary Medicine as the fourth choice.

He offers: "I was called to pursue Veterinary Medicine. However, there was a challenge since my parents could not afford to pay the school fees required. My dad used to work as a carpenter and mason at the high school I went to but didn't earn much. He was also a livestock farmer. On the reporting date, we had only Sh11,000 but the admissions officer said I needed to have Sh26,000 for me to be admitted. We had to go back home to look for the money."

One particular day, he attended an AGM at his former high school and the deputy principal invited him to give a speech and encourage the students.

"I told them about my fees predicament and a total of Sh32,000 was contributed and three weeks later I managed to go back to the university. This was in 2012. The classes were from 8.00 am to 5.00 pm and other students had really progressed with the studies. I tried to catch up but I was really straining. The course involved a lot of complex science," he says.

> ***"To play both roles, it hasn't come easy. It took a lot of sacrifice, commitment and a spirit of resilience to achieve the titles.***

Deal at The Standard

Despite failing in some units and having to sit for supplementary exams and even doing a whole year re-take, Dr Kang'ethe purposed to work hard in his studies.

"I would often visit the library and have early morning discussions with some of my classmates. I sailed through second and third year. In my fourth year, I was called by the dean who informed me that I had been awarded the Prof. Kiama Gitahi Award for being the best student in Histology and Embryology which I had repeated. I was given a trophy and Sh10, 000. In my fifth year, I got a supplementary in one of the units. I sat for it and passed and graduated in September 2019," he says.

Dr Kang'ethe decided not to go back to the village and secured a place to stay at Wangige. He got a job with Kenya Veterinary Association as a secretariat and would be paid Sh500 per day.

In June of 2019, there was an event-career fair- that had been organised by The Standard Group Plc which he took part in.

"There was an open forum in which I introduced myself as a veterinary surgeon and that is when Mwende Macharia, a radio presenter at Radio Maisha asked the current manager to offer me an internship opportunity.

I used to love watching Framers

[Continued to page 30]

Dr Paul Kang'ethe on assignment. His job as a journalist entails going to the field and interviewing sources.

TV and learnt many lessons from it," he says. In August 2019, Kang'ethe began his internship with The Standard Group and was taught on how to prepare and produce shows.

He offers: "The internship ended in November of 2019 and I requested for an extension. We were to start our vet school internship in April 2020 but it was postponed to September hence I continued with my shows at the media group. I would visit farmers at their farms, go back to the office and script stories. I found a way of blending the information I got in vet school to help farmers. Unlike in vet school where we use complex terms, I had to simplify my language when talking to farmers."

Connects with farmers

In March 2020, just a month after getting married, Dr Kang'ethe got a job with the media group and started writing articles on farming. Today, he is a resident vet at The Standard Group where he has a column that offers advice to farmers on various issues.

He is currently the only vet in Kenya who is into mainstream media.

Having grown up in Nyandarua County where there are a lot of farmers, he helps them make a business out of their animals. Through his column, he offers advice on some of the issues that farmers face and how they can handle them, and the contribution that farmers make in society.

The low moments

"As a journalist and veterinary surgeon, I juggle between telling stories and practicing my vet skills whenever a farmer calls me to go and help them handle something at their farm. The most fulfilling part of my career is being able to assist a starting or continuing farmer. Farmers work so hard yet they earn peanuts. No one is speaking for them but as a journalist, I am their voice," says Dr Kang'ethe.

Despite his achievements, there have been challenges which he has encountered in his line of work.

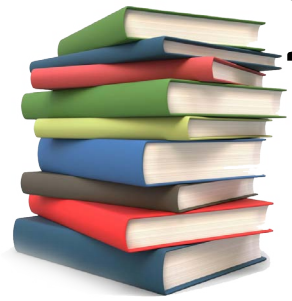
"As a vet, there are people who don't appreciate your work and just want to misuse you. A farmer tells you to travel all the way to his farm yet they are not willing to compensate. In this case, you have to be wise on how you deal with them. There is also the issue of burnout. I have to be in the office early in order to file my stories on time and then a client calls and tells me that their cat is sick. You have to spare time in the evening and go observe the animal and by the time you get home it's very late. There are times I have to delegate some assignments. It's not easy playing both roles," he says.

Strong support system

According to him, he has a very supportive wife who is his number one fan and encourages him to press on even when things seem difficult.

"She is understanding and very patient. She loves watching my shows on TV and ensures I am well groomed. My children are always happy to see me on TV. Despite my busy schedule, I have to create time for them during weekends. When they grow big, I want to teach them about animals and farming techniques because farming is the future," he says.

For Dr Kang'ethe, life is what you make of it. As long as you remain positive, you can be a veterinary surgeon and also a journalist. You can also be a veterinary surgeon and a farmer.

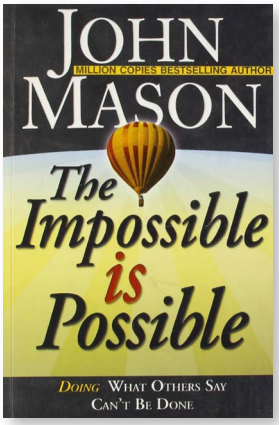


Books for success

The Impossible is Possible

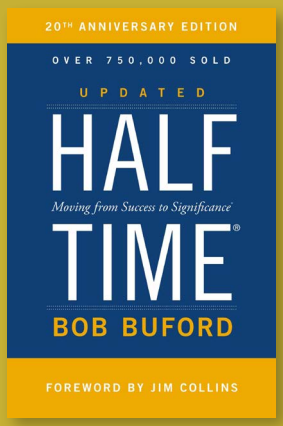
by John Mason

Interested in scaling new heights? This is the book for you. This gem is what legendary marathoner Eliud Kipchoge was reading ahead of the grand Eneos 1.59 challenge. Kipchoge achieved his moon-landing moment, running the marathon in under two hours and proving that no human is limited. In the book, Mason challenges readers who feel trapped by their circumstances to live by faith and to experience a fruitful life regardless of their circumstances. Uplifting and inspiring, this book can help busy readers escape their endless battles for the status quo.



Halftime: Moving from Success to Significance *by Bob Buford*

This is a book highly recommended by high achievers who have reached CEO level. Updated and expanded for a new generation of leaders, Bob Buford's bestseller shows you how to make the second half of life more rewarding than the first. Are you ready to move into the second half of your life? Buford believes the second half of your life can be better than the first. Much better. But first, you need time to figure out what you want to do with the rest of your life. In Halftime, Buford focuses on this important time of transition—the time when, as he says, a person moves beyond the first half of the game of life. It's halftime, a time of revitalisation and for catching a new vision for living the second half, the half where life can be lived at its most rewarding. As Buford explains, "My passion is to multiply all that God has given me, and in the process, give it back."



Interested in mentoring young people?

This is what it looks like

Our predisposition to joining a profession is often determined by what we see around us on the farm by observing what veterinarians do when they visit these farms to treat animals.

By Dr Marilyn Karani

Mentorship is a vast topic that is not well understood. It is defined as the guidance provided by an experienced person for as long as it may be required. There are many situations mentorship may be needed.

Who are the parties to a mentoring situation? This relationship has a mentor and mentee. A mentor is a person who coaches, advises or primes a mentee.

According to Michelangelo, the renowned Italian sculptor, "**a mentor is a skilled and thoughtful relationship partner who is dedicated to first understanding the mentee's ideal form and then reinforcing or drawing it out".** Mentors who strive to fulfil excellent mentorship should possess certain qualities.

James Cole says mentors must practice the three As of mentorship, which are availability, ***active listening and analytical thinking.***

Availability means the coach or mentor must make available their ideas, experiences, wisdom and understanding to the mentee.

The second attribute is active listening. This is a skill that is not part of the standard education curriculum but can be learned and acquired with purposeful practice. Active listening will guide the conversations to prevent close-ended questions and dead ends,

> *Studies by Chan and others have shown that mentored youth goes hand in hand with higher educational attainment, lower criminal activity, higher psychological well-being and better social relationships."*

LEFT. Some of the mentees that have benefitted from Dr Karani's mentorship programme. Above. A mentee receives a recognition certificate.

which encourages the mentee to engage in the discussions, leading to self-discovery.

The third attribute of a mentor is being analytical. This is key to understanding concerns and coming up with the most effective answers in the shortest time. Anyone can mentor others provided they strive to develop and nurture the 3As skills.

A mentor's effect on a mentee is motivation, advice, direction, coaching, support, training, facilitating goal setting and spurs the mentee to success.

The Insurance Institute of Canada defines a **mentee** as someone who has identified a specific personal or professional goal and believes that with guidance and help, being held accountable to the mentor can help them achieve their goals.

Mentees, therefore, must be willing to learn about themselves from others' experiences, committed to their personal and professional growth. Further, they should have strong interpersonal and exceptional listening skills, keep an open mind and be willing to learn and try new things. A willingness to accept feedback and learn from it, patience, good communication skills, flexibility and a strong work ethic are also important attributes.

Having defined the terms mentoring, mentor, and mentee, and described the attributes of the parties in a mentorship, we can now narrow our scope to mentorship in veterinary medicine.

Our predisposition to joining a profession is often determined by what we see around us on the farm of parents or communities who keep animals and by observing what veterinarians do when they visit these farms to treat animals. As we begin our elementary education, career talks on whether we want to be veterinarians or not take shape. When we decide to be veterinarians and study veterinary medicine, our real mentorship in the profession begins.

Right from the first year, we are assigned groups that remain in place until we graduate. Within these groups, peer mentoring occurs where we learn from each other. Furthermore, lecturers are assigned to each group as mentors. These are practical aspects of studies that play a key role in the mentorship process.

Higher institutions of learning that offer veterinary studies in Kenya have established ambulatory clinics and laboratories whose sole purpose is to assist students in gaining surgical skills through practical classes offered. Students are regularly attached to veterinary clinics to gain guidance and practical skills that are key to success in their profession.

One of the regulations stipulated for graduands is that they must undertake an internship in a veterinary organisation for at least one year to perfect their practical skills. This is an important avenue for mentoring graduands into acquiring hands-on skills needed to be a veterinarian. Graduands are offered internship programmes in veterinary departments and are then exposed to various services such as veterinary disease control, disease surveillance, monitoring and assisted reproductive technologies and others.

The animal keeper community also contributes to mentoring veterinarians by allowing students to observe the day-to-day running of their farms.

Once in service, mentoring continues throughout their career life under the guidance of more experienced colleagues in the same line of work. In addition, under the guidance of the Kenya Veterinary Board, veterinarians and veterinary paraprofessionals are required to undertake Continuous Professional

[Continued to page 34]

Dr Marilyn Karani with some of the mentees at a past mentorship session.

Development (CPD) programmes to stay abreast with new cutting-edge technologies for efficiency and service improvement.

Aside from professional mentoring, other forms of mentorship may occur be grouped as informal, workplace, social, just to name a few, and depend on the area a mentee may require mentorship from.

Many organisations offer mentorship. One such organsisation is the Kenya Veterinary Women Association (KVWA), a branch of the Kenya Veterinary Association. KWVA has been developing and implementing mentorship programmes for university students, graduands, veterinarians and veterinary paraprofessionals and continues to improve on these programmes to offer up-to-date programmes. The implementation of these programmes is accomplished through one-on-one initiatives by providing one mentor for one mentee, and group mentoring, which entails coaching veterinary medicine students in their final year of study. Mentorship can be done virtually, via face-to-face meetings and/or through simple phone calls.

The importance of mentorship cannot be underscored. Without mentorship, many young people cannot realise their full potential and thrive. Mentorship creates social capital, which are exponential networks known to the mentor, mentee and others. These networks are crucial in ensuring the expansion of mentee circles. This is an essential component of social and economic mobility.

In addition, mentorship creates social equity and is pivotal in getting young people out of the poverty cycle.

The other benefit of mentorship is the creation of a professional community of veterinarians and bilateral and shared power, which offers different types of resources such as financial, focus and inspiration.

Going forward, mentorship should be encouraged at the educational, professional and community levels. When mentorship is carried out effectively and efficiently, it establishes a web of support for all young people.

Studies by Chan and others have shown that mentored youth goes hand in hand with higher educational attainment, lower criminal activity, higher psychological well-being and better social relationships. Workforce related mentorship enhances better job retention and motivation.

In the spirit of Ubuntu (I have humanity. I am because "we are"), let us remember that it takes a village to raise a child and in the words of Bill Russell, the co-founder of the mentor.org website, "There is no such thing as other people's children." Let us mentor tomorrow's veterinarians.

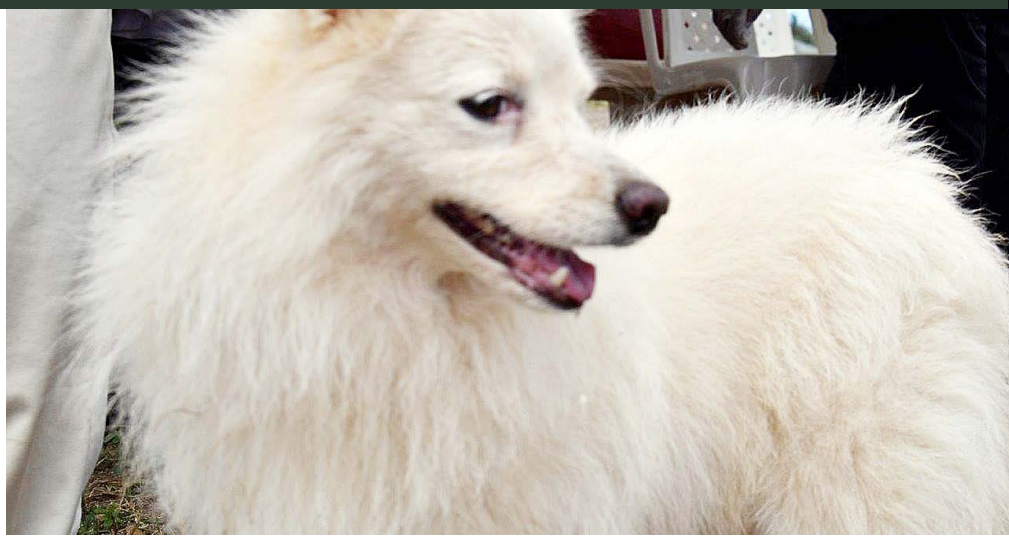
A day at a time, we pass the baton, take time to pass your baton.

[The author Dr Marilyn Adalo-Michoma Karani is CEO Gilead Oneglobalhealth Consultants Ltd and Drs Marilyn and Charles Karani Foundation]

Pets pick feed from the floor, outdoor grounds and dirty surfaces. This habit exposes animals to a number of organisms being ingested, with worms topping the list.

How to control parasite attacks in dogs and cats

Dr Isaiah Nchagwa Chacha



Introduction

A parasite is an organism that lives in or on another organism (host) of a different species and benefits by deriving nutrients at the host's expense. A parasite that lives inside the body of its host is called an internal parasite or an endoparasite while the one that attaches itself outside the body of its host is called and external parasite or an ectoparasite.

Internal Parasites

Internal parasites or endoparasites have different predilection sites. They can attach along the Gastro-intestinal Tract (GIT) occupying the oesophagus (Spirocerca lupi in dogs), stomach (Physaloptera ngoci in dogs and cats) or intestines- roundworms, tapeworms, hookworms (in dogs and cats). They can also be found in tissues like the muscle (Toxoplasma gondii in cats) and organs like the heart (Dirofilaria immitis in dogs) among others.

The most common internal parasites are gastrointestinal worms as seen in the faeces or vomitus of pets.

Animals generally feed on uncooked and/or unclean food. Our level of control even when clean, cooked and hygienic food is available may not prevent this behaviour fully even in pets that we closely interact with. Pets pick feed from the floor, outdoor grounds and dirty surfaces. This habit exposes animals to a number of organisms being ingested, with worms topping the list.

Given that animals relieve themselves in random places and the clean-up may not be immediate, this leads to poor sanitation which provides a conducive environment for proliferation of worms and other unwanted organisms.

Clinical signs of intestinal parasites

Dogs and cats maybe having internal worms without any significant manifestation. When the worm load is high, these animals will express some clinical signs like diarrhoea, scooting, dull and rough hair coat, anorexia and so on. There will also be presence of worms around the anal opening or tail, stool, vomit, and their bedding.

Treatment and prevention

Hygiene and sanitation are paramount. Once your dog and cat are kept clean by regular grooming, hygienic environment that is sufficiently ventilated with enough space and proper sanitation, regularly cleaned bedding, clean and enough healthy food and water then you will be almost 90 per cent free from these parasites.

As a routine practice, deworm your pet and in general all animals every three months. This is because they will always have worms in them regardless of the control and preventive measures in place.

As a first-time pet owner, please seek appropriate advice from a qualified veterinarian on the appropriate dewormer medicine for your pet and how to deworm. Since most pet dewormers are in tablet form and administered per os (orally), you can agree with your vet to administer it yourself or organise regular visits for the vet to administer it.

Other internal parasites that affect different tissues and organs like the heart worm, muscle worms, oesophageal worms may be more

[Continued to page 40]

serious and cause disease with symptoms like irregular breathing (apnea) and heartbeat (cardiac arrhythmia), body wasting (cachexia) and pronounced coughing (tussis) respectively.

When these and other abnormal clinical signs are observed, the pet owner should seek immediate attention of a vet.

External Parasites

These are parasites that are found on the body of the host animal, mostly attached to the skin. The most common external parasites encountered in dogs and cats are fleas, ticks and mites. These parasites suck blood from their hosts, causes discomfort, hair loss, itchiness, allergic skin reactions, wounds among other signs.

Fleas

Fleas are small insects that are brown to reddish and harbour on the skin under the hairs of dogs and cats among other animals. Fleas move on the skin, causing a lot of irritation. Infested animals will be seen rubbing themselves against walls, trees, the ground, or any other surface just to get some relief. Fleas are usually spread to clean pets by exposure to infested dogs, cats and rodents or infested environment, surface and objects in the form of eggs, larvae or adult stages.

Flea bites leave red marks on the skin and most pets react with the flea saliva leading to a severe allergic reaction on the skin generally called Flea Allergic Dermatitis (FAD). FAD presents as a hairless area with inflamed skin usually on the back of the dog or cat resulting in violent itching.

When these signs are observed, seek treatment for your pet from a vet and also discuss sustainable preventive measures.

Ticks

Ticks are blood sucking external parasites that also cause significant discomfort and diseases in dogs and cats. Comparatively to humans, ticks can be likened to mosquitoes in relation to the significant diseases and other blood parasites they transmit. In dogs they transmit blood parasites that cause ehrlichiosis, babesiosis among others which if not treated can lead to death of the pet. Some ticks also have chemicals in their saliva that causes paralysis of dogs once bitten; a condition generally called tick paralysis.

Presence of ticks on your pet should be taken seriously and appropriate measures taken immediately to avert the looming danger.

Mites

Mites are microscopic parasites that infest the ears and other parts of the pet's skin. A cat or dog infested with ear mites (Otodectes cynotis), will shake its head a lot, scratch the ears or rub them against objects and may have dark-brown to yellowish discharge from the ears.

If the mites are spread out on the rest of the skin, the pet will show itchiness usually around the neck, back and tail area with hair loss (alopecia). If the condition is severe there will be alopecia throughout the body, wounds on the skin, foul smell, emaciation with secondary infections leading to death.

Treatment and prevention

Hygiene and proper sanitation are also the easiest and simple ways of prevention and control of external parasites. By ensuring that the environment and the items around your pet are clean, you will significantly reduce infestation of external parasite.

Grooming is an integral part of pet hygiene that must be practiced by every dog and cat owner. The fresh feeling you get after a shower is the exact feeling pets get after grooming. Apart from making the pet clean, grooming also kills and reduces the external parasite by eliminating the dirt that forms a conducive environment for the survival of parasites.

Proper pet grooming

Proper pet grooming includes brushing the teeth and cleaning the mouth, cleaning the ears, nail clipping, anal gland expression, hair trimming, thorough wash of the pet with a medicated shampoo to kill and eliminate external parasites while observing all toxicity protocols, blow drying to enhance a quick dry and avoid the pet getting dirty before fully drying up. Then brush the pet's hairs and plait with application of hair band and apply pet cologne if available for a striking, fresh smelling and attractive pet.

For preventive measures, there are there are topical medications and oral tablets to be administered according to the vet's advice.

Significance of parasite treatment, prevention and control in Dogs and cats

A pet or an animal that is free from parasites lives a comfortable and quality life with optimum production or reproduction. Since we interact closely with pets and especially children who plays with them a lot with minimum health precautions, we should be cognizant of the fact that most of these parasites also affects humans (zoonotic) in a similar manner or even worse.

A case in point is a disease called Toxoplasmosis caused by the parasite Toxoplasma gondii. T. gondii is a definitive host in cats and has no effect in cats. The parasite's eggs (oocytes) are passed through the stool of cats and humans get infested by ingesting uncooked contaminated food like fruits and vegetables or eating with contaminated hands if for instance one was attending to a garden where cats do defecate. Among other symptoms and clinical signs, Toxoplasmosis causes blindness and abortion in pregnant women.

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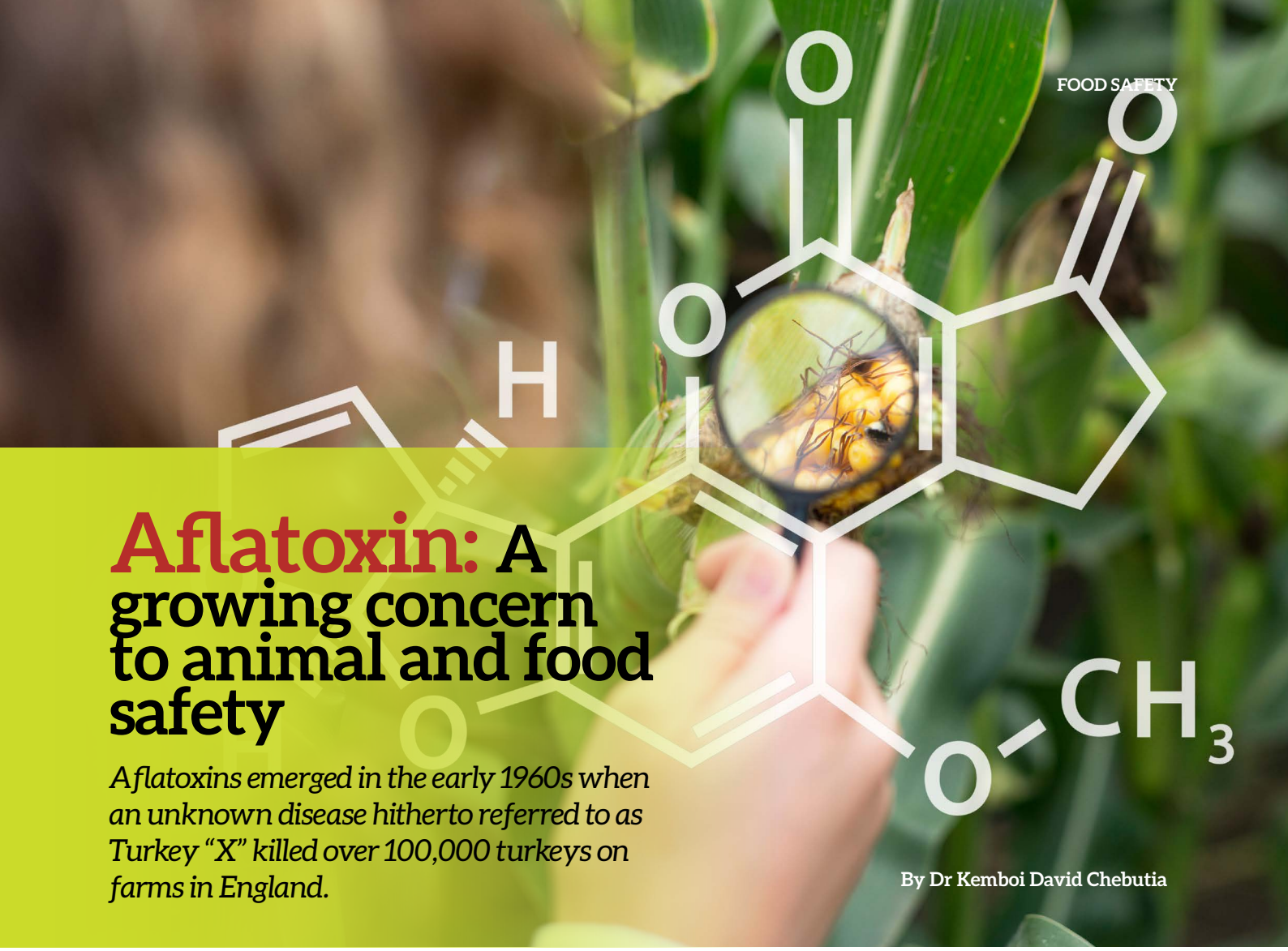

Aflatoxin: A growing concern to animal and food safety

Aflatoxins emerged in the early 1960s when an unknown disease hitherto referred to as Turkey "X" killed over 100,000 turkeys on farms in England.

By Dr Kemboi David Chebutia

In 2020, some dog owners and veterinarians in Nairobi and other major towns came into first hand contact with aflatoxins. Heart-wrenching stories were told by hurt broken pet owners as many veterinarians worked extra hard to keep their patients alive with mixed outcomes. This was a year after an "exposé" by the media on the high level of aflatoxins in maize flour being sold for human consumption raised national alarm.

Toxin peanut butter

In the months that followed, several peanut butter and maize flour brands were banned and recalled from the market due to aflatoxins. But this wasn't the start of the aflatoxin story in Kenya and the world. Aflatoxins emerged in the early 1960s when an unknown disease hitherto referred to as Turkey "X" killed over 100,000 turkeys on farms in England. The disease was associated with Brazilian groundnut meal contaminated with the fungus Aspergillus flavus, which produced a toxin that led to the observed signs. The toxin was named Aspergillus flavus toxin—aflatoxin—and this ushered in the second mycotoxicology era with more research on this toxin.

In Kenya, the story also started in the 1960s when 16,000 ducklings on a Rift Valley farm were affected, following consumption of contaminated peanut ration. Other recorded cases also occurred in subsequent years in dogs and poultry, with the first human cases reported in 1981 in Machakos.

The turning point

The turning point came in 2004 when the most unprecedented aflatoxin outbreak occurred in the Eastern counties, then districts, of Machakos, Makueni and Kitui, with 331 recorded cases and 125 deaths due to consumption of contaminated maize. This led to the counties being identified as aflatoxin hot spots, with human outbreaks reporting mortalities in 2005, 2006, 2007, 2008 and 2010.

Over the years, many studies have been carried out on aflatoxins, leading to identification of 20 types of aflatoxins and the demonstration of toxicity of aflatoxins in both animals and humans. This has led to the classification of aflatoxin as a class 1A carcinogen by the International Association of Cancer Research (IARC), meaning it causes cancer.

So what is this aflatoxin?

Aflatoxins are toxic secondary metabolites predominantly produced by Aspergillus flavus and A. parasiticus. The major aflatoxin compounds are aflatoxin B1 (AFB1), which is the most potent, aflatoxin B2 (AFB2), aflatoxin G1 (AFG1), and aflatoxin G2 (AFG2). Aflatoxin M1

[Continued to page 42]

(AFM1) and aflatoxin M2 (AFM2) are the product of hydroxylation in the liver of absorbed AFB1 and AFB2 ingested in feed, respectively.

How do animals get aflatoxins?

Animals get aflatoxins through feeding on contaminated feeds. Both fodder and concentrates can be contaminated with aflatoxins, with the latter being the major source of contamination. These concentrates are often compounded feeds, grain millings, and oilseed cakes. The compounded feed is made from mixing raw materials such as cereals, including maize, small grains; oilseed cakes such as cotton seed cake, sunflower cake, soy meal cake, copra, noug seed, and fish meal. All these ingredients are susceptible to aflatoxin contamination, with oilseed cakes being the most susceptible. Additionally, farmers frequently use spoiled mouldy maize unfit for human consumption as animal feeds, which may contain aflatoxins.

Which animals are susceptible to aflatoxins?

Animals are divided into three categories based on their susceptibility to aflatoxins. Category one is those with a LD50 of 1 mg/kg or less that include dogs and cats. Category two is those with a LD50 of 10 mg/kg or more, such as pigs, while category three is those that are resistant and include ruminants. The tolerance of ruminants to aflatoxin is due to the presence of the rumen, which has microbes capable of degrading aflatoxins into less toxic metabolites.

Is there legislation?

The government through the Kenya Bureau of Standards (Kebs) has set up regulatory limits for aflatoxin in animal feed and milk, as summarised in the table below.

What are the impacts of aflatoxin in the animal industry?

Aflatoxin has an impact on animal health, the economy as well as food security, and safety.

	REGULATORY LIMIT (µg/kg)		
FEED TYPE	Total AF	AFB1	MILK AFM1
Dairy feed	10	5	0.5
Poultry feed (Adults)	50	20	-
Poultry feed (Young)	50	10	
Dog food	10	5	-

2004

Year when the most unprecedented aflatoxin outbreak occurred in the Eastern counties of Machakos, Makueni and Kitui, with 331 recorded cases and 125 deaths.

Economic impact of aflatoxins

Economic impact occurs through the direct market costs associated with lost trade or reduced revenues due to rejection of contaminated animal products and reduced productivity, death of the animal, especially young ones which are more sensitive, and increased cost of treatment and mycotoxin mitigation. Based on a recent study on aflatoxin in the dairy sector in Kenya, feed manufacturers stand to lose 60 per cent of the feed due to AFB1 levels above Kenya's set limit of 5 µg/kg. This translates to a possible economic cost per year for dairy feed manufacturers of 22.2 billion US$. A further 37.4 million US$ is incurred in losses by farmers annually due to reduced milk yield as a result of feeding cattle with feed contaminated with AFB1. Additionally, 10 per cent of the milk samples had AF levels above the regulatory limit of 0.5 µg/kg, which would cost dairy farmers 113.4 million US $ per year, if legislation was enforced.

Animal health and productivity impact

Consumption of aflatoxin-contaminated feed causes aflatoxicosis. There are two forms of aflatoxicosis; acute aflatoxicosis, which occurs due to consumption of a high single dose of aflatoxin, and chronic aflatoxicosis due to chronic consumption of low levels of aflatoxin over time. The level of aflatoxins commonly found in feeds in Kenya makes animals in susceptibility category one more prone to acute aflatoxicosis than animals in categories two and three to chronic aflatoxicosis. Acute aflatoxicosis usually has a sudden onset and is manifested as sluggishness, loss of appetite, vomiting, jaundice, and/or diarrhoea. The mortality is usually high, especially in young and old animals, with some recovered individuals later showing signs of liver damage. On the other hand, chronic aflatoxicosis is usually low key, with the effects being on the animal productivity. The disease is usually manifested as reduced feed intake and feed conversion, reduced milk production, reduced reproduction capacity, lameness, immunosuppression, hepatotoxicity, and nephrotoxicity. Besides the effects on animal health, aflatoxin is passed to milk, compromising food safety and posing a hazard to human health.

Food safety impact

Once ingested by ruminants, part of the ingested AFB1 is degraded in the rumen. The remaining AFB1 is absorbed in the small intestines and hydroxylated in the liver to form AFM1, which is excreted in milk. This is a great public health concern worldwide since milk is one of the most consumed products, especially by children.

> *Decontamination is a method applied to contaminated feed to either eliminate the mycotoxin or reduce the bioavailability of the toxin by the use of detoxifiers.*

What are the aflatoxin mitigation strategies in the animal industry?

Due to the negative health and economic impact of mycotoxins, there is a need to carry out mitigation measures. Storage of feed in dry condition with low humidity, proper aeration, and free from rodents and pests is essential for minimising fungal contamination and mycotoxin production. However, complete prevention of mycotoxin contamination is not possible, making decontamination is an option.

Decontamination

Decontamination is used to either eliminate the mycotoxin or reduce the bioavailability of the toxin by the use of detoxifiers. These detoxifiers are grouped into binders that prevent the absorption of mycotoxins and modifiers that break down the mycotoxins in the intestines into less toxic metabolites. Binders usually include clay minerals or yeast products, while modifiers include microorganisms and enzymes.

What is the way forward?

Aflatoxicosis is a growing concern in the animal industry in Kenya. Adequate legislation on the regulation of aflatoxin

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to low levels of awareness of aflatoxin, food insecurity, and lack of adequate enforcement, animals will continuously be fed with contaminated feed, causing an impact on animal health and productivity as well as food safety.

Detoxifiers play an important role in preventing the effect of aflatoxins but little has been done to vet the quality of available detoxifiers in the market. More research and regulation on the use of these detoxifiers may therefore be an effective means of ensuring animal health as well as food safety and security.

But there is light at the end of the tunnel, with an increase in platforms to create awareness of aflatoxins. Universities and institutions have taken up the challenge, leading to an increase in the number of research works on aflatoxins in animals.

Cooperation between institutions and governments has also led to projects such as the LEAP Agri Mycosafe South project, a European–African partnership for safe and efficient use of mycotoxin-mitigation strategies in sub-Saharan Africa. The project intends to harness the expertise and infrastructure available in Europe by strengthening the capacity of the Southern partners to tackle the mycotoxin problem and the associated food safety issues. The main partners in the project are the University of Nairobi, Ghent University, Liege University, International Livestock Research Institute, University of Johannesburg, Norwegian Veterinary Institute, Biomin, Habro, and PACA. Such initiatives will lead to homegrown solutions to the problem of aflatoxins.

[The author Dr Kemboi David Chebutia is a veterinarian, a lecturer in Animal Science at Chuka University and a PhD student in Veterinary Science at Ghent University, Belgium]

A red-eye case

It was a blood chilling moment when a client's dad accidentally almost ran over her pet. Luckily it all ended well...

Wrapped in a yellow-brown towel, the large tabby cat was brought into the clinic by a frantic short, rotund lady, possibly in her early 20s. She had waited for us to finish with the client who had the chocolate-brown golden retriever, a water-loving dog breed.

When she finally did come into the consulting room, she could not fight her tears. Mutuma, my loyal veterinary assistant and I had to keenly listen to make head or tail of what she was saying.

"Rhonda was lying under the car, something that she loves to do... then dad got into the car...you see he was going back to the office..." she explained amid lots of sobs.

"I am being rude, my name is Harriet, by the way," she interrupted to introduce herself.

"Dad started the ignition and the car had barely moved when we heard a yelp from somewhere under the car," she continued as she stroked Rhonda the tan and black stripped cat.

"What happened?" I asked with a great deal of concern. "I think Rhonda was sort of ran over by one of the wheels... She was a sorry sight and so we rushed here for you to see her," she sighed.

The face looked off

"Ok, let's see," I said as Mutuma and I picked the cat. We started the general physical examination on the cat as was standard procedure. The examination yielded an elevated temperature at 39.2 degrees centigrade, and a dull, depressed cat with an injury on the left side of the head. With these results we moved on to the specific examination of head injury. "There is definitely something amiss about her face..." I said.

The specific examination of the left side of the head area revealed an enlarged, heavily red eye protruding from the eye socket. Further, the left side facial bones of the eye socket appeared abnormal displaced which was suggestive of a fracture.

"I suspect that Rhonda has what is called exophthalmos and this is an emergency," I broke the news.

"It is the forward movement of the eyeball meaning that it is abnormally sitting outside the eye socket," I explained to a perplexed Harriet. "What's going to happen?" she asked with great concern for her feline friend.

"We will stabilise Rhonda and manage the red eye surgically," I replied.

"Go ahead doc, do whatever you need to," she consented.

Mutuma having moved Rhonda from the consultation room into the mini-theatre, we began management of the red eye. I put Rhonda under general anesthesia. Some minutes later I thoroughly

washed the eye before embarking on the tarsorrhaphy. Tarsorrhaphy involves suturing or stitching the eyelids together. When the eyelids are sutured together, they act as a bandage to the eye allowing healing of the structures of the eye. Having completed the procedure, I instilled antibiotic eye-drops. "Place an Elizabethan collar on her Mutuma, will you."

The purpose of the Elizabethan collar on Rhonda's neck was to prevent pawing at the wound area.

"Place her in one of the cages so that she may rest and sleep-off the anesthesia, Mutuma," I directed.

I returned to the waiting room to update Harriet who had been anxiously waiting, "Rhonda is still under, asleep, but the procedure went well. We will admit her for medication and observation for some days." "Thank you, I am relieved." said Harriet.

Rhonda slept the night and come morning she was up and meowing her heart away...possibly due to hunger pangs. "Mutuma, let's see her then she can have some food and drink," I said. Mutuma with all his gentleness brought ravenous Rhonda onto the examination table. The tarsorrhaphy stitches were intact, but there was a slight colourless discharge on the medial canthus of the eye. Using the warm saline and a swab that Mutuma had readily prepared, we cleaned the stitched area. "Here are the antibiotic drops," said Mutuma as he handed me the bottle. I instilled them through the gaps between the stitches. I also gave a second antibiotic in injection form. "We shall repeat this in four hours," I indicated. "Return her to the cages. I am sure she will enjoy the hearty meal before her," I quipped.

Every day for two weeks, four times daily we cleaned Rhonda's eye area and instilled the drops. Her 'humans' visited her nearly every day to see her progress. Whenever Harriet would visit, Rhonda would cling onto her as if for dear life. Rhonda was still a kitten at heart, despite her enormous size.

The big day approached. This was the day that we would remove the eye stitches and see the progress. I was strangely nervous about it. "I have prepared the suture-remover and thumb forceps," Mutuma offered.

Eye was as perfect as normal

"Ok, bring her out, will you," I instructed Mutuma as I gloved in preparation. Rhonda was set on the table and held to steady her head. With forceps and stitch-remover in hand, I meticulously removed the stitches. Lo and behold, the eye was as perfect as normal! It had healed beautifully. All the redness had disappeared, the blood-shot red eye was now a perfect eye. There was no distinction from the non-injured right eye. "Oh thank God," I exclaimed with glee.

Mini-celebration

After the mini-celebration, I phoned to update Harriet. "Rhonda's eye has healed superbly. However, I want to keep her for the rest of the day for observation," I said.

"Tomorrow you may take her home."

"That is fantastic news," said the elated voice on the other end of the line.

"I will be there first thing in the morning to collect her. Thank you doctor."

Following morning after six hours of observation, I was confident that Rhonda could re-join her family at home. As promised, Harriet arrived to collect her felinepal. As per the usual routine, Rhonda clung onto Harriet for dear life as she walked out of the clinic.

Dr Chege: Trailblazing vet with a passion for wildlife management and rescue

For his love for animals, the veterinarian has stayed away from his family and braved the hot northern Kenya weather for years to rescue endangered wildlife.

By Sylvia Wakhisi

As a boy growing up in Central Kenya, Dr Stephen Chege loved nature. He loved planting trees and had a great love for animals.

It is this passion and love for animals that would later shape his destiny and land him into a most unique profession.

For the last 21 years, Dr Chege has worked as a veterinarian for different organisations, a profession that he has grown to love and which he strives to give his best.

Currently a Postdoctoral Fellow in Disease Investigations with the San Diego Zoo Wildlife Alliance, he manages a disease surveillance project in northern Kenya, working with the critically endangered Hirola antelope and other endangered species such as the Grevy's zebra. This work represents a collaboration between San Diego Zoo Wildlife Alliance, the Northern Rangelands Trust, and Kenya Wildlife Service.

According to Chege, his has been an amazing journey.

"As a boy, I would be asked by my parents to herd the family cattle, a task that I was happy to perform. I would herd the animals and in the evenings bring them back to their shelter and milk them," he says.

"At some point, it became so exciting and we turned it into a competition with my peers. As we would go out to herd the animals, we had a goal to establish whose animals by the end of the day would have a protruding stomach – this was our way to establish which cattle had been fed well. And we would always make fun and laugh at that boy whose cattle had a sunken stomach. It was fun."

Chege then managed to get his own rabbits.

Love for animals

"The first one was given to me by one of my young friends. I acquired the second one when I chased what looked like a hare, grabbed it and took it home only to realise it was a rabbit," he narrates.

"After about three weeks, some boy came and said the rabbit belonged to him. I knew I hadn't stolen it from anyone. But my mother said if the

> *I have been involved in the rehabilitation of elephants who were abandoned in northern Kenya. Once we rescue them, we take them back to the wild. In the last four years, we have managed to rewild 10 elephants."*

boy insisted it belonged to him then I had to hand it over. And that is what I did."

Chege's love for animals inspired him to pursue a course in veterinary medicine.

His dad owned two dogs, German Shepherds, which he assisted in taking care of.

Chege was born in Murang'a County in a family of five boys and three girls. His parents were peasant farmers who used to grow coffee.

"If it were not for coffee, we wouldn't have gone to school; we wouldn't be where we are today. I thank God for my parents' resilience and determination to see us through our young lives until we became adults," he says.

At Standard Five, Chege joined his dad at Kiambu, where he was working, and continued with his studies until he completed primary school.

He then joined Karuri High School in Banana where he sat his Kenya Certificate of Secondary Education (KCSE) examination in 1993.

In 1995, Chege joined the University of Nairobi to pursue a Bachelor of Veterinary Medicine.

"I went to school to study veterinary medicine knowing that I would become a doctor who treats cattle. That is the first picture people get when they learn you are pursuing that course. However, it is good to note that we were trained to be animal doctors. To take care of all animals ranging from chicken, dogs and even wildlife," he says.

Dr Chege says he did not see himself working in the wildlife sector. He did not see opportunities in wildlife conservation and how he could use his skills in it. He did not understand the sector. However, that changed and today he is very passionate about wildlife conservation.

Big zoos

"When I graduated, I realised we had been trained to do so much more. Between 2000 and 2004, I treated cows and chicken. God opened ways for me and I was employed as a veterinarian by the Kenya Wildlife Service (KWS) in 2004. My job involved going out and getting to see how the animals in the wild interact with others and even how to differentiate the species; for instance, what are the striking features that differentiate a leopard from a cheetah?" he says.

Between 2010 and 2017, Chege secured a job with one of the leading zoos in Abu Dhabi, United Arab Emirates, as a senior veterinarian.

"My work was to ensure the animals were healthy and viable. It was in 2018 when I joined San Diego Zoo Wildlife Alliance as a scientist in disease investigations," he says.

There have been great highlights in his career and he is proud of the success stories.

"I have been involved in the rehabilitation of elephants who were abandoned in northern Kenya. Once we rescue them, we take them

[Continued to page 48]

Dr Stephen Chege takes care of an animal in the wild.

back to the wild. In the last four years, we have managed to rewild 10 elephants. Additionally, we have rescued very young elephants, as young as three weeks old to one year old," he says.

"Elephants live in big families and follow their matriarch. If a mother dies due to natural causes such as disease or drought, the baby elephant is left on its own. During dry seasons, there is no surface water and the baby elephants end up falling into water wells, and this is also another reason why they get rescued. We intervene to ensure their welfare is not compromised, and if need be, we take them to an orphanage where we feed them on a special diet. When they reach the age of four to five years, we take them back to the wild," he explains.

Dr Chege says so far, they have managed to re-unite 15 young elephants with their families.

His other role includes establishing what diseases affect the wild animals, livestock and humans, following the One-Health approach.

Chege says: "When they die, I'll go and conduct a postmortem to see if there are any changes in the body and document them. Most importantly is to prevent that disease from recurring. In Ishaqbini where we have the critically endangered Hirola antelope, we try as much as possible to prevent disease spillover from livestock to Hirola," he says.

"We have started a livestock vaccination programme whereby in the last four years we have vaccinated an average of 60,000 head of livestock every year and this has not only prevented the disease from jumping from livestock to wildlife or vice versa but has also improved the livelihoods of the communities."

Despite the great success stories in his line of work, there have been challenges. Dr Chege says he works away from his family and it is not easy.

"The best thing you can do as an individual is to be close to your family. However, I have taken time to talk to them and make them understand the nature of my work. Anytime I get an opportunity, I go home to be with them," he says.

Dr Stephen Chege and his team attend to an antelope in need.

He also works in remote areas characterised by insecurity and harsh weather.

Dealing with insecurity

On insecurity, Chege says they liaise with the community and establish the situation on the ground before they venture into an area. They also have to move around in four-wheel vehicles to navigate harsh terrain, and due to the hot weather, rehydrating is important.

"Covid-19 was a big disaster for the whole world. My work was affected directly. With support from San Diego Zoo Wildlife Alliance, we wanted to construct a laboratory to avoid delays of sending samples to Nairobi. Sadly, when Covid hit, this work had to be delayed. The whole tourism industry was affected due to travel restrictions," he says.

"My work as a veterinarian involves a lot of travelling. Due to the restrictions that were put in place, we were not considered as essential service providers and had to convince the government that our work was important. Before we were allowed to move around a year had already lapsed.

"The positive thing is that people now appreciate the role of a vet in prevention of emerging and re-emerging zoonotic infections."

Chege says vets act as early warning systems since 70 per cent of diseases come from animals, with 60 per cent of those emanating from wildlife.

"A vet plays a big role in human health. We can avert diseases before they affect people because what you eat matters a lot. For example, you may never know where the meat you consume comes from," he says.

Though it is a difficult and demanding job, Dr Chege says alleviating the suffering of animals is what gives him the drive to push on.

He narrates that in 2008, together with his colleagues, he did a successful eye surgery to a black

For success in his missions, Dr Stephen Chege works with members of the community.

rhino that had a serious fight with others. He says whenever he visits the Ol Pejeta Conservancy and sees the rhino, 'Baraka', he feels proud of his achievement and his role as a vet to alleviate animal suffering.

"Between 2020 and 2021, we were able to move Rothschild giraffes (another critically endangered species) that were stuck on an island in Lake Baringo. Due to the rising water levels, they couldn't move and stayed there for many years. Together with officers from Kenya Wildlife Service, Northern Rangelands Trust, Ruko Conservancy and the County Government of Baringo, among other partners, we managed to move the giraffes to a safer ground. When I saw the eight giraffes finally moved to the mainland, I felt very happy and fulfilled."

Dr Chege is also proud that he has impacted his family positively.

"My first born daughter wanted to become a veterinarian but did not score the points required to pursue the course. She is now pursuing Wildlife Management. She chose that career path. I have an understanding wife who knows the nature of my job. There are times I feel like quitting but she encourages me to push on."

His biggest dream is to start mobile vet units across the northern landscape so that he can continue offering his services.

"Northern Kenya has been neglected and lacks enough vets to provide these services. Together with a colleague, we started the first Community Animal Health Initiative (CAHI) and in five years we hope to start another one. My dream is to improve animal and wildlife health and remain healthy so that I can accomplish my dreams," he says.

"With age catching up, I offer mentorship to young vets who want to venture into wildlife management and make them understand it's a process. Everything is possible in life as long as you follow your passion."

A step-by-step guide to planning for your retirement

By Graham Kajilwa

Planning to retire within the next 10 years? Taking these actions now could help bolster your portfolio as you approach your planned retirement date.

The thought of retirement is not pleasant to all individuals. Especially when one realises they are running out of time and have very little to depend on once they hit 60 years or their age or health fails them.

Olive Gitau, a certified public accountant speaking during a television interview shared some useful insights on how to plan for retirement.

How can one be ready when time to retire comes? What is the best way to prepare? Are there investments that can assure one of an income on retirement?

Start saving early

According to Ms Gitau, while one is in their 20s retirement is not a thought as majority have over 30 years in active service assuming that they will retire at the age of 60.

However, it is good to start early. And this is as soon as you start making money or get employed.

If you start early, you stand a chance of reaping big from the compound interest that comes with whatever small amount you set aside for the future.

"Whatever you are doing, no matter how small it is, it makes sense if you put aside little so that by the time you retire you have something solid," she says.

"Money grows over time. It multiplies over time. So you can imagine if I start saving at my 40s towards retirement, what will multiply will not be as much as I would have started early."

According to Capital Group, an American financial services company, when it comes to retirement planning, it' is never too early to start saving.

The more you invest and the earlier you start means your retirement savings will have more potential to grow," says Capital Group. "By investing early and staying invested, you will benefit from compound earnings."

One can as well start by saving through a pension plan either individually or through the employer according the United States Labour office.

What are your retirement needs?

Retirement is expensive according to the United States department of Labour. A write up by the government titled Top 10 Ways to

> *"The more you invest and the earlier you start means your retirement savings will have more potential to grow*

Prepare for Retirement estimates that you will need 70 to 90 per cent of your preretirement income to maintain your standard of living when you stop working.

"Take charge of your financial future. The key to a secure retirement is to plan ahead," it reads.

This then raises the question: how much do I need by the time I retire? T. Rowe Price, an investment company breaks this down to age groups.

If you are 30, you should have saved half of your salary. By 35, the amount should be full salary or 1.5 times of it. At 40, it is 1.5 times to 2.5 times of your salary. At 45, the amount should be 2.5 to four times your salary.

When you hit 50, target to have 3.5 to six times your salary while at 60, which is the retirement age in Kenya, it should be six to 11 times your salary.

"The range gets wider as you get older, so we also provide more detailed estimates for people approaching retirement. This helps someone find a realistic target based on income and marital status, which affect social security benefits," it explains.

An article by New York Times titled How to win retirement states that you should save as much as you can.

Do not over invest on asset

CPA Gitau notes that while assets are key in ensuring it protects the value of your money, do not fall into the trap of acquiring so many assets during your working days without a plan on how they can be turned into cash.

She says when one retires, the most important thing is cash flow.

"Do you have a consistent supply of cash to sustain your food or medical care?" she poses.

"You will find that some of us by the time we retire, whereas we have accumulated a lot of assets, that asset is not providing us continuous cash flow."

She says by the time you get to retirement you need to find that balance; do not be asset rich and cash poor.

"The point is not to amass too much land and have no liquidity. I know in Kenya there is this thing that you need to have a plot here or there. But land will not give you cash flow. At the point of retirement you need those assets that give you continuous cash flow."

If you have plenty of assets, do not wait until retirement to start figuring out which ones to keep and how to liquidate some. She says this should be done at least five years to retirement.

"Off loading some of the assets takes time," she says.

Get out of debt

Retiring with a debt, according to Forbes Advisor, is a cardinal financial sin. In a March 2022 article titled Retirement Planning: How To Get Out Of Debt Before Retirement, Forbes says every coin you owe reduces your income in retirement.

"But on the other hand, blindly prioritising debt reduction before retirement savings, particularly for low-interest debt, could short change your nest egg," reads the piece.

Brenton Harrison, a Nashville financial advisor says this is the reason why people nearing retirement need to weigh the costs and benefits of paying off debt vs. saving for retirement.

"If I wiped away all your debts tomorrow, you'd probably feel a huge sense of relief," he says.

Such situations may force individuals to use their retirement benefits to pay off the loan hence wiping away the many years of investment and compounding interest.

For example, if you retire and you have to pay Sh2 million debt off a car loan or property you took, you may be losing two decades of your savings. This then puts your next 20 years of life in jeopardy.

Fixed income

Instead of just having your money in cash stuck in the bank waiting for retirement, a fixed income investment may be sound strategy.

The advantage of this is that you will not be persuaded to withdraw the cash if you find yourself cash strapped. This investment basically ring fences your retirement plan.

Mbithe Muema, chief executive Infallible Group, a financial consulting firm, says retirement money is better when invested in long-term plans like money market or bonds. In a press interview she cited the infrastructure bond where one can invest for 20 years and get sound returns upon retirement.

"It is a long term investment and the returns are tax-free," she says.

According to Maxwell Gichuhi, a financial advisor, returns from fixed income investments range from eight per cent to upwards of 20 per cent.

The risks here as well are moderate.

A litter of calves! There is no sad day, in dairy

By David Maina

Of all the activities I get to do in a typical week of my dairy advisory work, training gives me the best feeling. My style is that of allowing the trainees to disrupt me and seek clarifications, throughout the lesson, and then ask the solid question at the tail end of the lesson.

Humour finds its way and warms up the class, and in most cases, it starts from me, the trainer. When I hear that spontaneous laughter, I know that it worked. Perhaps it's the reason why I get all my classes scheduled for Monday morning so that I could help demolish those start-of-the-week faces that people put on, especially when they think they wasted so much time or money over the weekend! But there was a class that stuck longer in my memory. That, I must admit was not a result of my usual humour-laden statements. No! it was because of the kind of trainees I got that day.

> *Humour finds its way and warms up the class, and in most cases, it starts from me, the trainer.*

Hot humour

You see, I had already been accustomed to getting an audience that knew something about dairy, but this time a got a 'green' lot. And for some reason, this was perhaps the only class in a long time, where I did not receive the profile of the trainees ahead of the lesson! For this class, I was served humour and it was served hot! And it was all in the kind of questions I got from my green lot. But wait, while the questions came across as funny to me, the rest of the class treated them as normal inquiries, and I could see them very eager to get the responses.

Extraordinary calf

So, imagine, a question is directed at me, I am supposed to burst out in laughter, but I can't! I could feel layers of laughter building up aggressively from within, but I had this tough duty of closing in.

A lady on the front row was the first to shoot her question, and it came way before the question and-answer section. "I have a burning question sir, when a cow is pregnant, how many babies is she pregnant with, on average?" she asked innocently. I never saw it coming, and I was supposed to answer that with a lot of clarity and composure. Oh dear! My imagination hit the roof, I could already picture a heifer, eight months pregnant, with a litter of (12) calves, all waiting to flow out in a month's time. Wow! That lady was so depressed to hear how low the probability of twinning was in the case of cows.

The next question was from a gentleman, who appeared to be in his late 20s. He began by explaining that he had grown up in the city and that he had never had a chance to interact with any agricultural knowledge in school or in practice.

That intro alone was enough preparation for the question that was coming! And so, my guy started, "If I started my dairy farm with a calf, and I rear the calf so well as you have taught us, how do I get to know that it's time to milk her?"

Huh! You see, I had lived all my life knowing that all humans on earth would know that a cow and many other animals, produce milk primarily for the offspring they give birth to. I had lived a lie, pu! We

were now in the last five minutes of my lesson, my time manager was already showing a small placard reading 'conclude please'. I knew there was another lesson after mine, but I could take one more question. I thought the outlier questions were over, but I was wrong.

Burning question

There was one hand that had remained raised up for some time. I quickly requested her to ask her question briefly because we were racing against time. She began by thanking me for a great lesson and went on to explain that she was a practicing farmer. I asked the class to clap for her because she had already made some steps by running a dairy farm.

She went on, "I have two cows and they both gave birth last month, I placed them in their own pens next to each other, but I have caught them licking each other's mouths severally. Is it normal for calves to kiss, and does it have any side effects?" she posed. I have had tens of lessons, and I have received hundreds of questions, but you agree with me that this day was a mouthful. There is no sad day, in dairy!

[David Maina is the Head of Business at Perfometer]

Rabies: Prevention, management and control

Dr Daniel Ksee

Introduction

Rabies is a preventable viral zoonotic disease most often transmitted through the bite of a rabid animal. It is estimated to cause over 60,000 human deaths annually, mostly in Africa and Asia. In Kenya, it is estimated to cause up to 2,000 deaths. The rabies virus infects the central nervous system of mammals, ultimately causing disease in the brain and death. Although fatal, once symptoms appear, rabies is preventable through prompt administration of post-exposure prophylaxis (PEP) after a person is bitten by a rabid animal, and the virus can be eliminated from source populations by means such as mass dog vaccinations. Most human rabies is transmitted by the domestic dog.

Transmission

The rabies virus is transmitted through direct contact (such as through broken skin or mucous membranes in the eyes, nose, or mouth) with saliva or brain/nervous system tissue from an infected animal. People usually get rabies from the bite of a rabid animal. It is possible for people to get rabies through non-bite exposures such as scratches, abrasions, or open wounds that are exposed to saliva or other potentially infectious material from a rabid animal.

Symptoms in animals

Initial signs of rabies in dogs include weakness (dog acts tired), followed by fever, vomiting, difficulty in swallowing, excessive drooling (excessive salivation), staggering, seizures, and even paralysis. As the virus progresses, the dog may act as though they are overstimulated and highly sensitive to light and sound. It might experience seizures. It then progresses to peculiar behaviour, including aggression, hallucinations (barking/snapping at nothing), and self-mutilation, such as non-stop gnawing at the infected wound, unsteadiness or disorientation. One of the other prominent signs of rabies is hydrophobia (fear of water). The dog may exhibit aggressive behaviour such as snapping and growling and attempting to bite anything they come into contact with (including the owner). Eventually the dog becomes weak and dies. This usually happens within 14 days of exposure.

2,000

Number of human deaths caused by rabies annually in Kenya.

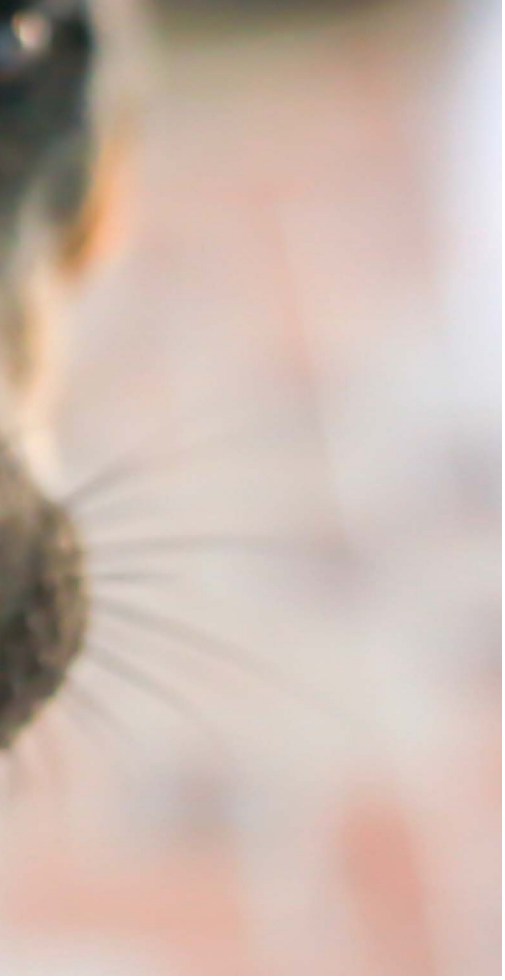
Rabies in milk?

a) There is no record of infectious rabies being isolated from milk of a rabid cow, hence no case of human rabies attributed to consumption of raw milk.

b) No case of human rabies resulting from consumption of raw meat from rabid animals has been documented.

Symptoms in humans

After a rabies exposure, the virus travels to the brain before it can cause symptoms. The incubation period may last for weeks to months, depending on the location of the exposure site (how far away it is



from the brain). The first symptoms of rabies may be similar to those of flu, including weakness or discomfort, fever, or headache. There may be discomfort, prickling, or an itching sensation at the site of the animal bite. These symptoms may last for days. Symptoms then progress to cerebral dysfunction, anxiety, confusion, and agitation. As the disease progresses, the person may experience delirium, abnormal behaviour, hallucinations, hydrophobia (fear of water) and insomnia. Once clinical signs of rabies appear, the disease is nearly always fatal.

Prevention

a) Managing bite wound

Once one is bitten by a dog suspected of rabies, it is important that the wound is cleaned thoroughly with soap or other detergent and water (preferably running) for at least 10-15 minutes. This should be done for some time. It helps in washing away the virus-contaminated bites and scratches thereby reducing the chances of infection. Iodine can be applied to the wound if available. Tetanus booster should be obtained. Suturing the wound should be avoided as it has the risk of spreading the virus.

b) Post-exposure prophylaxis (PEP)

Post-exposure prophylaxis is done to reduce the chances of infection once one is bitten by a dog suspected of being rabid. It can be in the form of rabies immune-globulin (RIG) or rabies vaccine. The two work complementarily. The RIG should be given immediately after exposure and injected around the bite wound as it neutralises the virus at the exposure/bite site. Rabies vaccine is then given following the regime of day of the rabies exposure (Day 0), and then a dose of vaccine given again on days 3, 7, 14 and 28. People who have been previously vaccinated against rabies need not be given RIG as it is very expensive in Kenya.

c) Pre-exposure prophylaxis

People whose work exposes them to rabies should consider rabies pre-exposure vaccinations. These include veterinary personnel working with dogs or those working in areas where rabies is endemic. Others include people who might be travelling in rabies endemic areas where PEP may not be accessible.

Rabies control and elimination

In order to control the spread of rabies, an effective surveillance system is important to detect any rabies before it spreads in the population. An effective surveillance system includes a system for detection, diagnosis and reporting. It has been proved that sustained vaccination of over 70 per cent of the population for at least three years will eliminate the virus from the population. It is therefore possible to eliminate rabies.

Role of governments in rabies control

The World Health Organisation (WHO), the World Organisation

[Continued to page 56]

15th World Rabies Day celebrations in Malindi

As part of the event, various animals underwent medical check ups.

Young pet lovers also attended the funtion.

Precision was key in the mixing of medicines and vaccinesw.

The event was attended by members of the Kenya Veterinary Association and other stakeholders in animal sector.

Nothing was left to chance as the experts did what they do best.

for Animal Health (OIE), Food and Agriculture Organisation of the United Nations (FAO), and the Global Alliance for Rabies Control (GARC) are working together to eliminate canine rabies worldwide by 2030. This will be done through mass dog vaccination, treatment of all exposed humans with wound washing and post-exposure prophylaxis, and the enhancement of education about rabies. In Kenya, the government developed a strategic plan for the elimination of dog-mediated rabies in Kenya by 2030. The plan has been undergoing piloting in various counties, including Makueni, and some results have been documented. It is now time for full-scale implementation. Among lessons learnt is that it takes approximately Sh100 to vaccinate a dog (all costs). Information from the pilot projects can be used by the national and county governments to roll out mass dog vaccination and other elimination strategies countrywide. The national government has a key role in coordinating rabies control through mobilising resources and coordinating the whole exercise. County governments and their partners have a role in setting aside resources to implement mass dog vaccination and ensure correct administration of PEP for any exposed persons. Both levels of government have a role of ensuring strong rabies surveillance system and community education on rabies.

Role of the community in rabies management

The community has a role in rabies control through proper dog management (feeding and restraining) to avoid stray dogs, participating in mass dog vaccination, supporting the surveillance by sharing information on any suspected rabies and ensuring they institute rabies prevention measures, including thorough washing of bite wounds and receiving the full PEP when they get exposed.

[The author Dr Daniel Ksee is the Acting County Director of Veterinary Services in Makueni County and has been involved in a rabies elimination pilot project in Makueni County]

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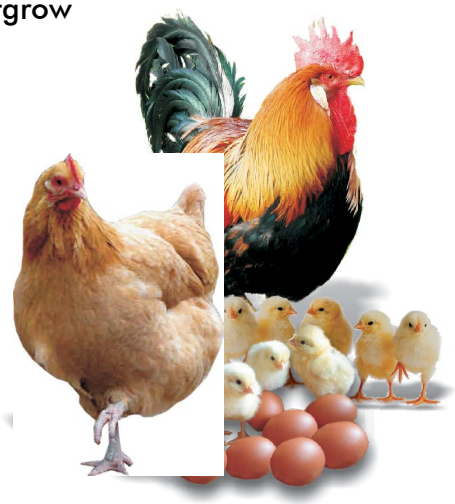

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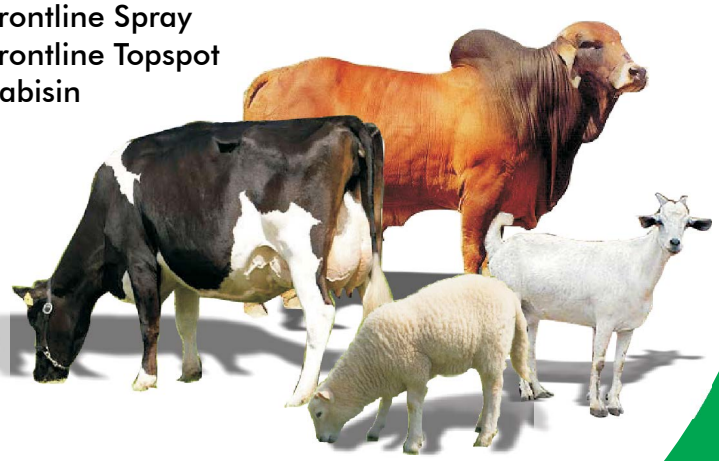

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