TVA Newsletter
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NEW INITIATIVE TO USE SASSO DUAL PURPOSE CHICKENS TO BENEFIT FARMERS

By Stewart Bradnick, Operations Director, Silverlands Tanzania Limited

The African Poultry Multiplication Initiative (APMI) aims to alleviate poverty, empower women and provide greater food security. One of the ways it is doing this is by helping Silverlands Tanzania Limited (STL) to implement a strategy that creates access to improved genetics for rural farmers through SASSO dual purpose chickens, provides technical assistance and training, and offers access to markets that may not have been possible before.

Randall Ennis, CEO of the World Poultry Foundation, says: "Our goal is to impact 2.5 million households across Tanzania and Nigeria by the end of this four-year initiative."

The SASSO bird being hatched by STL thanks to the initiative has the potential to fulfil the ever-increasing demand for a versatile, flexible chicken with lower inputs, that is easy to manage and readily marketable locally (see Figure 1). This will enhance farmers' incomes in rural Tanzania.

The bird has been extensively tested by the African Chicken Genetic Gain program (ACGG) in Tanzania, Nigeria, and Ethiopia. STL has conducted trials with various SASSO varieties and the preferred bird for Tanzania is the X Rainbow (see Figure 2).

Vaccination

STL prides itself in using the highest quality vaccines available on all its SASSO day old chicks. It uses the latest hatchery equipment to vaccinate the chicks. The program used includes Cevac MD HVT + Rispens for Marek's Disease; Cevac Transmune IBD for Gumboro Disease; and Cevac Vitabron L for Newcastle Disease (ND) and Infectious Bronchitis (IB) Disease.

With this vaccination program it is recommended that the farmer, in conjunction with their veterinarian, only needs to vaccinate for ND and IB at 10, 18, 28 and then every 6 weeks until sale.

Feed Program

STL formulates high quality poultry feed for both layers and broilers and provides recommendations on feeding. The males can be sold off when they reach the correct weight.

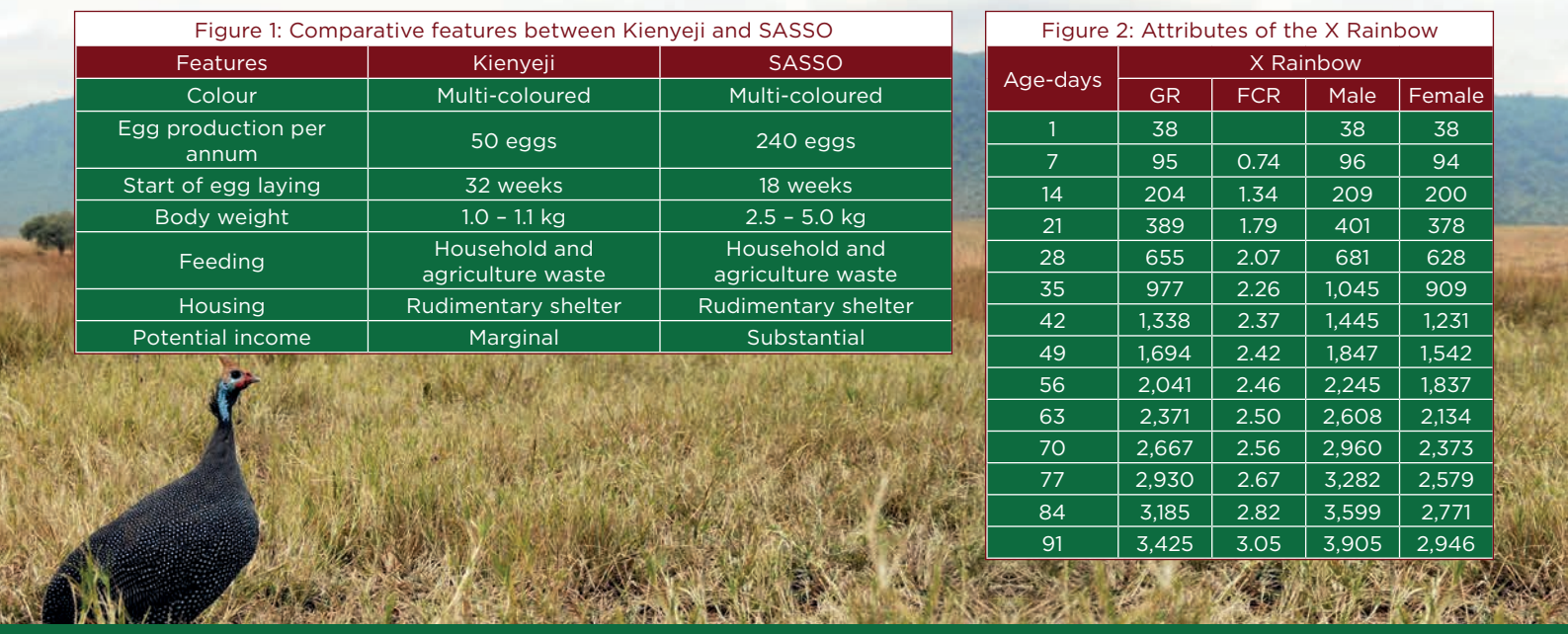
A trial is on-going using the SASSO as a Kienyeji in a rural environment, feeding only 10% of normal intake. The cost of the POL SASSO was TZS17,000.

Figure 1: Comparative features between Kienyeji and SASSO

Features	Kienyeji	SASSO
Colour	Multi-coloured	Multi-coloured
Egg production per annum	50 eggs	240 eggs
Start of egg laying	32 weeks	18 weeks
Body weight	1.0 – 1.1 kg	2.5 – 5.0 kg
Feeding	Household and agriculture waste	Household and agriculture waste
Housing	Rudimentary shelter	Rudimentary shelter
Potential income	Marginal	Substantial

Figure 2: Attributes of the X Rainbow

Age-days	X Rainbow			
	GR	FCR	Male	Female
1	38		38	38
7	95	0.74	96	94
14	204	1.34	209	200
21	389	1.79	401	378
28	655	2.07	681	628
35	977	2.26	1,045	909
42	1,338	2.37	1,445	1,231
49	1,694	2.42	1,847	1,542
56	2,041	2.46	2,245	1,837
63	2,371	2.50	2,608	2,134
70	2,667	2.56	2,960	2,373
77	2,930	2.67	3,282	2,579
84	3,185	2.82	3,599	2,771
91	3,425	3.05	3,905	2,946



ARTIFICIAL INSEMINATION: A PROMISING REPRODUCTIVE BIOTECHNOLOGY FOR DOG KEEPERS IN TANZANIA

By Dr. Isaac Pastory Kashoma, Department of Veterinary Surgery and Theriogenology / SUA Teaching Animal Hospital, College of Veterinary Medicine and Biomedical Sciences, Sokoine University of Agriculture, Morogoro, Tanzania.

Artificial Insemination (AI) – one of the earliest techniques for assisted reproduction in animals – has been used in cattle for a long time and is highly successful. In canines, the technology has taken a longer to be implemented successfully due to species-specific particularities of dogs, such as the reproductive physiology and unfavourable response of sperm to freezing.

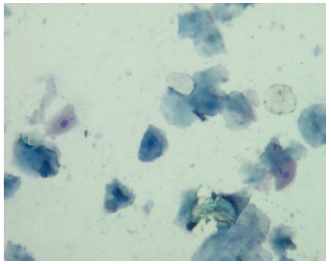
However, AI in dogs is now practiced in Europe and other industrialised countries, using fresh semen collected at veterinary clinics (50-55%), chilled (10%) and frozen semen (35-40%). As a consequence of increased demand for AI among dog breeders and owners, the Sokoine University of Agriculture Teaching Animal hospital (SUA Animal Referral Hospital) – in collaboration with the Department of Veterinary Surgery and Theriogenology – has started providing these services to dog owners here in Tanzania.

Why AI is needed for dogs?

The major drivers for the use of AI in dogs are: 1) availability of genetically valuable dogs, 2) combating inbreeding in stud dogs, 3) prevention of spread of sexually transmitted diseases ie those caused by Brucella canis or Herpes virus, 4) overcoming problems associated with the refusal to mate naturally (inexperience, physical deficiency, reduced libido, social and behavioural problems) and 5) for sanitary benefits, such as avoiding direct contact between the male and female.

The competence of the operator to perform the procedures is essential to avoid all technical/ethical related constraints to the use of AI in dogs. Before offering canine AI services, practitioners ought to acquire profound knowledge of the reproductive physiology and pathology of the animals and skills to collect semen and to inseminate the female without risking animal health or welfare. In a nutshell, AI in dogs involves the following procedures:

1. **Semen collection:** Semen can be collected from a male dog in a quiet and isolated room, where interruptions are prevented, although the presence of a bitch would allow better ejaculates. The most common method for semen collection in the dog is by digital manipulation. Briefly, the process starts with a massage of the dog prepuce at the level of the Bulbus glandis until the animal develops partial erection, followed by the quick retraction of the prepuce and penile expose. Some pressure may be applied with the thumb on the apex of the glans penis, at the level of the urethral process, to stimulate ejaculation. Canine ejaculate consists of three fractions; the pre-sperm portion (colourless fluid with a volume range of 1-5 ml), the sperm-rich portion (grayish-white in colour, 1-3 ml) and the prostate secretion (30-40 ml). Most often, artificial insemination with freshly collected semen is performed without fractioning the ejaculate, although only the second fraction is of interest.



2. **Semen assessment:** Semen assessment is an important part of the evaluation of fertility in males and it should be performed as routine element before AI takes place. Semen should be assessed immediately after collection and it must be handled carefully during all procedures. Different approaches are available to assess the quality of the dog semen that can be grouped in conventional and advanced techniques. The conventional approaches to semen evaluation include macroscopic evaluation of the semen (volume and colour) and microscopic assessment which will give the concentration and the number of viable cells in the ejaculate.

3. **Timing the moment** for insemination: Obtaining successful pregnancies and adequate number of offspring per litter depend upon correct timing for mating. Consequently, careful planning of mating time by timing ovulation is a key step in canine AI. Determining vaginal cell cornification on cytological specimens is the most widely used technique, as vaginal epithelial cells change their form in response to estrogen impregnation. During estrus, vaginal cytology presents its maximum cornification (larger, cornified, angular shaped-cells with small pyknotic nucleus) index (>70%).

4. **Insemination techniques:** Intrauterine insemination using non-surgical transcervical catheterisation is commonly used in bitches. The catheterisation should be made in a standing position. The catheter should be introduced into the vagina and pushed through the cervix up to the uterus. However, the technique demands skill and experience, and it is harder to perform in obese or nervous bitches and in giant breeds.

Worldwide, a success rate of about 60-80% with 5-8 litter size has been reported. In our practice, we have attained a success rate of 80% (4 out 5 AIs performed); with litter size of 5-8. Congratulations to SUA Teaching Animal Hospital staff for the great achievement!

Worldwide, demands for canine artificial insemination are growing and this also involves increased requests for semen preservation in sperm banks. It is important to note that adequate whelping rates and litter sizes can be achieved through proper timing and semen deposition. Client education and technical counselling is an integral part of AI services and is essential when breeding problematic bitches.

CLIMATE CHANGE PERCEPTION AND IMPACTS ON CATTLE PRODUCTION IN PASTORAL COMMUNITIES OF NORTHERN TANZANIA

By Dr Esther G. Kimaro

Findings from a study with pastoralists from 10 villages in Monduli District in northern Tanzania have revealed that there is a growing realization that climate change is happening in their local areas and impacting cattle production.

Most livestock keepers acknowledged that there have been significant changes in climatic conditions over the past three decades (1984–2014). Similarly, focus group discussions revealed a belief that the climate is continuously changing and the situation in relation to drought, for example, is getting worse. When participants were asked what climate change means, the concept was associated with variability in weather parameters in which the major concern was reduced, and erratic and unpredictable, rainfall.

Pastoralists are exposed to the impacts of climate variability and change, which means their perceptions will be based on their daily experiences and observations. The decline and increased variability of rainfall, as well as increased temperature, have been reported across Tanzania.

Findings from this study suggest that pastoralists are not simply more aware of climate change; they also feel deeply anxious about the impacts it is having on their livestock-keeping practices and day-to-day lives. Analysis of meteorological data for the period from 1984 to 2014 shows variability and general decline in rainfall. Pastoralists were able to recall years in which they experienced severe water and pasture shortages, many of which aligned with years of low total precipitation and/or extended periods of moderate dry as depicted in Standardized Precipitation Index (SPI).

The research shows that pastoralists were pessimistic about the future of their cattle keeping practices because of unpredictable rainfall patterns. This will severely impact availability of water and pasture and is likely to lead to conflicts over rangeland resources between pastoralists and crop farmers.

The ongoing shrinkage of grazing pasture, uncertainty about rainfall, and feed and water scarcity are not conducive to livestock keeping practices, and the frequent migration of livestock is less feasible. In recent times, there have been increasing reports of disputes between pastoralists and crop farmers. Further administrative requirements when pastoralists need to move from one village to another for grazing have also been introduced. These challenges make their normal ways of life more difficult. Establishing local perception of climate risk is a positive step toward involving pastoralists in the formulation of sustainable adaptation options.

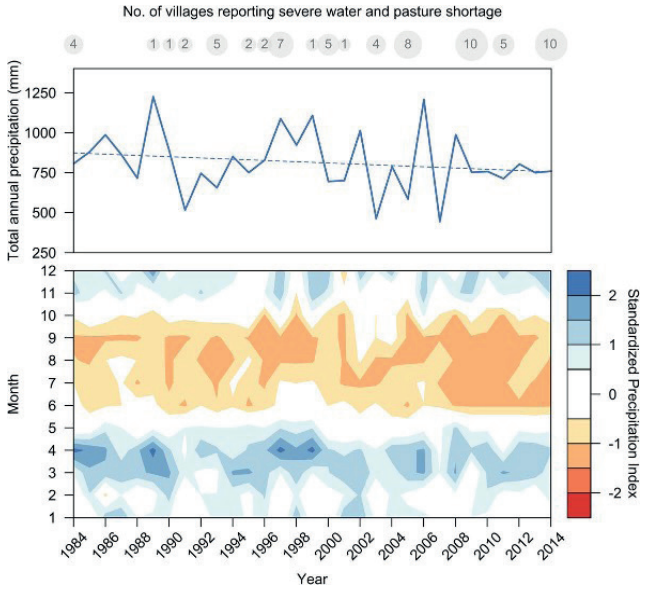


Figure 1. Total annual precipitation and Standardized Precipitation Index (SPI) for Monduli District, Northern Tanzania (1984–2014). Linear trend for rainfall is shown as a blue dashed line. SPI reflects the number of standard deviations from the long-term trend, with blue, white and orange reflecting moist, near normal, and dry periods, respectively. Drought periods are represented by relatively high negative deviations (SPI≤−1.0). For contrast, years recalled by pastoralists as having severe water and pasture shortage are shown as gray bubbles. The size of the bubble corresponds to the number of villages that reported this outcome in a particular year (range: 0–10)

Environmental destruction

Pastoralists tended to attribute climate change to environmental destruction, such as tree cutting for charcoal production, as well as the increasing human population. They believed these activities aggravate desertification in Monduli District. Cutting down trees is an effort to diversify livelihood options so not to rely on livestock production alone. Other studies in similar communities have reported the increasing trend for charcoal production.

Recent rapid population growth (human and livestock) was also associated with the climatic variations observed. Human population growth in the study area is estimated to be between 3.8 and 4.3% per year.

These observations are similar to the existing literature in which deforestation and population pressures are expected to exacerbate climate change. A small proportion of cattle owners perceived climate change to be related to factories and industry activities.

Lack of information

This study found that there are no clear district-level programmes on climate information or early warning systems in place. However, it was noted that a local non-governmental organization – the International Institute for Environment and Development-Arusha region office (IIED) – had just started a project on climate change risks and climate-resilient growth in three districts in the northern Tanzania, including Monduli.

The use of 'indigenous knowledge' by shine elders (lead elders with particular knowledge and responsibility in the community) and 'common sense' as frequent sources of climate information especially for pastoralists to forecast the onset of rainfall or predict a bad or a good year is common. Other studies in similar communities have also reported the use of 'indigenous knowledge' in this way. However, climate change means the traditional forecasting methods are now perceived to be less reliable.

Radio and television were not seen as a reliable means for gaining climate information, as the majority of pastoralists are rural dwellers with limited access to them. Information on climate risks is vital for improving resilience, particularly for the most vulnerable communities. When pastoralists are aware of possible extreme weather events and changes in weather conditions, they are more likely to apply appropriate coping strategies. This area needs to be strengthened as it is an integral part of the development and implementation of adaptive strategies in pastoral communities.

Serious consequences

Pastoralists revealed their belief in the seriousness of climate risk and its potential consequences, including high levels of cattle deaths, severe feed shortages and water scarcity; and resultant serious socio-economic impacts.

The study also associated climate change with the eruption of cattle diseases such as CBPP, cattle anaplasmosis, ECF, the depletion of bone marrow, as well as severe loss of body condition and sudden death. Micro-climate conditions, interactions between animals in grazing areas and water points during the dry season, coupled with weak immunity during feed shortages can contribute to epidemics of animal diseases. Climate change can also indirectly influence microbial communities (pathogens or parasites) and vectoral ecology which may lead to spread in livestock diseases. This study calls for further research to investigate in detail the dynamics of infectious diseases in a changing climate, and suggest livestock adaptation options as an important component to maintain resilience.

Pastoralists admitted that frequent droughts led to severe economic impacts due to poor livestock markets and declining prices for cattle. During these times many households tried to sell their livestock to earn income for living expenses. Another major problem reported was reduction in milk yield due to inadequate feed and water, as well as heat stress. Similar observations have been reported elsewhere in Tanzania.

Improvements in adaptive capacity

Milk is a staple food for pastoralists, thus climate change poses risks to their food and nutritional security, in particular for women and children. Those questioned in the study reported experiencing psychological stress due to the negative impacts of climate change on cattle production. This study calls for improvements to the adaptive capacity of pastoralist communities, including effective and sustainable animal health services. These services must include animal disease surveillance, coupled with sustainable cattle disease management programs in pastoral communities.

Next steps

The occurrence of climate change related cattle starvation and disease outbreaks – each leading to cattle deaths, and reduction in milk production and market price – are the distressing and serious consequences experienced by pastoralist communities in northern Tanzania. Local observations should be considered and integrated with scientific knowledge in order to form clear climate change adaptation strategies and policies.

Improvements in climate information and early warning systems are vital components for building pastoralist resilience, but are currently lacking in Monduli District. Detailed long-term scientific research is needed to quantify and verify the reliability and relevancy of indigenous knowledge in forecasting weather patterns. This study informs policy makers and animal health planners on development of appropriate measures including stable institutional support for adaptation and mitigation practices in pastoral communities.

These developments can be achieved through multidisciplinary approaches involving the Tanzania Meteorological Agency, climatologists, ecologists, epidemiologists, local government and animal health development partners working together through NGOs, civil society and community-based organizations to equip and to enhance the resilience of Maasai communities against climate change impacts.

This study drew empirical data from 130 pastoralists using a survey questionnaire and 81 participants from 10 focus group discussions in the study villages. Descriptive statistics and thematic analysis were used to analyse the data respectively.

THE OPERATIONAL FRAMEWORK OF DECENTRALISATION BY DEVOLUTION – WHAT VETERINARIANS NEED TO KNOW

From the Chairman's desk

Disease control through strategic and centrally-guided vaccinations in Tanzania used to be efficient during the era of free public veterinary services. Vaccination programmes started crumbling when Tanzania adopted the economic structural adjustment policies. The scenario worsened when Decentralisation by Devolution (see issue 1) was adopted. Despite the envisaged merits, the collapse of the disease vaccination programmes in Tanzania is thought to partly be ascribed to the failure of Local Government Authorities (LGAs) to plan and allocate funds for carrying out disease vaccination programmes.

It is now apparent that it is the primary responsibility of the Ministry of Livestock and Fisheries (MLF) to provide the financial resources and working materials required in undertaking various livestock sector activities, including vaccination programmes. This is clearly spelt out in the Local Government Laws (Miscellaneous Amendments) Act of 2006.

Stakeholders have therefore been calling for the ministry to assume its primary role of spearheading disease control programmes. Apparently, the outcomes of zonal consultative meetings involving TVA, the office Director of Veterinary Services (DVS), Office of Registrar, Veterinary Council of Tanzania (VCT) and animal health experts held in Makambako, Dodoma and Morogoro in 2013 also advocated for this. The view was premised on the fact that uncoordinated and fragmented vaccination programmes, reliant on LGA prioritisation were central to our failures in disease control.

Stakeholders have been calling upon the Ministry to devise vaccinations schedules; coordinate supplies by connecting suppliers and vaccinators; spell out charges/fees; indicate vaccination blocks (national and zonal); devise procurement mechanisms and undertake relevant promotional activities. The ministry is also expected to carry out post-vaccination sero-surveillance monitoring.

In 2017 the then Ministry of Agriculture, Livestock and Fisheries issued a circular that called upon animal keepers to shoulder costs of disease control, thereby moving away from the philosophy of control of major diseases being a public good. The new approach was also echoed during the 35th and 36th TVA conferences, the closing ceremony of the latter was graced by the Minister of Livestock and Fisheries, Honourable J. Mpina, MP.

In addressing this call and other pertinent issues, the Honourable Minister decided to form a taskforce to prepare a special paper, which was finally submitted to him in December 2018, during the launch of a nationwide dipping scheme in Chato district. The Ministry has since reiterated its commitment to revamp disease vaccination programmes. It has also taken bold steps in building the capacity of the Tanzania Veterinary Laboratory Agency (TVLA) in vaccine production; strategy formulation for control of key diseases and crafting regulations which make vaccination mandatory.

It is therefore hoped that MLF will further spearhead nationwide, or zonal national, campaigns to put the country in the best position to control key diseases. This is of utmost importance as we aspire to assume an advanced economic status, through transformative change of key sectors, including the animal industry.

RADIATION SAFETY AND PROTECTION FOR THE SMALL ANIMAL PRACTITIONER: THINGS TO REMEMBER

By Dr. Modesta J. Makungu, Department of Veterinary Surgery and Theriogenology, Sokoine University of Agriculture

Small animal practice is gaining popularity in our country due to increase in the number of dog breeders and pet owners. Consequently, small animal practitioners encounter a number of cases, which necessitate the use of radiography as the first diagnostic imaging modality for diagnosis, staging and monitoring healing processes of various diseases and conditions. This includes as fractures, metastatic cancer and heart failure.

Radiography is one of the diagnostic imaging modalities, which use x-rays for image formation. X-radiation is a form of electromagnetic radiation similar to visible light but with an extremely short wavelength. Therefore, when x-radiation interacts with body tissues, it is capable of causing ionisation within cells. The ionising property of x-radiation is the one which renders it hazardous and may lead to increased risk of cancer and genetic mutations. Due to its hazardous effects, radiation safety and protection procedures should be adhered to whenever working with x-radiation. This can be achieved by adhering to the ALARA (As Low As Reasonably Achievable) principle.

Radiation Safety and Protection

The ALARA principle is a requirement for all radiation safety programs and its main aim is to lower radiation doses received by radiation workers to acceptable levels. The radiation doses can be maintained 'As Low As Reasonably Achievable' by minimising the time of exposure, doubling the distance between radiation source and your body and shielding. The implementation of the ALARA principle requires a commitment from all relevant staff in the veterinary clinic or hospital.

The time of exposure can be minimised by rotating the radiology personnel and reducing the number of retake views needed. The number of retake views can be reduced by double checking the machine settings, planning the procedure careful, the use of technique charts, sedating or anaesthetising patients to avoid unnecessary movements – unless contraindicated by the clinical condition of the patient – (Figure 1A) and the radiology personnel should be familiar with the equipment operation.

Distance between the radiation source and your body can be doubled by using positioning aids such as troughs, sandbags, foam wedges, tapes and ties in sedated or anaesthetised patients; these avoid manual restraint of animals (Figure 1A). Patients should not be held for radiography unless there are good clinical indications for manual restraint. In cases of manual restraint appropriate shielding materials such as lead gloves, gowns and thyroid protectors should be worn (Figure 2). These materials must be stored properly and checked regularly for continued protection.

Further, the radiation badge (dosimeter) (Figure 1B) which measures radiation dose of the radiology personnel must be worn by the registered personnel whenever working with x-ray equipment. It may be changed quarterly by the responsible authority i.e. Tanzania Atomic Energy Commission depending upon the type of work the personnel is doing.

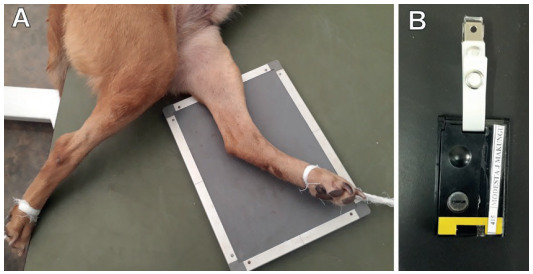


Figure 1A: Gauze bandage has been used in an anaesthetised dog as a positional aid. 1B: Radiation badge – Thermoluminescent dosimeter (TLD).

Figure 2: Appropriate shielding materials i.e. thyroid protectors, leaded aprons and gloves have been worn by radiology personnel.

HAPPY BIRTHDAY A.L.P.H.A.

By Bryan Kelly, Zoetis A.L.P.H.A. Initiative Country Lead, Tanzania

The Zoetis A.L.P.H.A. initiative – co-funded with the Bill & Melinda Gates Foundation – is celebrating its third anniversary having trained nearly 400,000 farmers in animal care, had more than 60 animal medicines approved for use and introduced new diagnostic and vaccine care initiatives in sub-Saharan Africa.

Initially launched in Nigeria and Uganda, the initiative was soon extended to Ethiopia and Tanzania to help accelerate sustainable livestock production and improve livelihoods for farmers.

Earlier this year, to help extend vaccination which prevents disease and increases the overall health of animals, the A.L.P.H.A. team launched a pilot 'pooled vaccinator program' in Dar es salaam Tanzania, where vet paraprofessionals help farmers to manage vaccine education, storage and administration and bio-security aspect.

This new entrepreneurial program helps not only enhance biosecurity measures on farms in facilitating access to quality medicines and technical experience, but it also supports employment of young people. More than 100 poultry farms in Tanzania have benefitted so far, and the extension is ongoing in other regions and other species will be included in the second phase. The model will also be rolled out to other countries in 2020.

I was proud and delighted that this scheme was selected as a highlight of the A.L.P.H.A. initiative's work this year and I helped organize filming with the mobile veterinary team and farmers that showed the success we've had with this initiative here in Tanzania to the whole world.

Other developments from A.L.P.H.A. include a new digital app and diagnostic portal called 'LabCards', to ensure detailed tracking in the field and timely feedback of diagnostic results. The app which is currently in use with our two existing labs facilitates sample data collection, results processing, and communication back to the attending veterinarian or para-veterinarian. As we know, in rural Africa, paperwork can be cumbersome and testing feedback is slow, and this has led to a higher mortality rate at farm level. But with LabCards, when a lab test is performed the results are immediately shared with veterinarians, who can quickly prescribe relevant treatments and follow-up on the progress with the farmer. This tool, which we describe as 'animal health in your pocket' brings value for farmers and veterinarians as it helps to improve health management of the farm and reduce mortality rates significantly, as treatment is carried out in a more timely manner.

LabCards and the pooled vaccinator program support the key pillars of the A.L.P.H.A. initiative: Veterinary Medicines & Services, Diagnostic Networks, and Training & Education. These fundamentals will make a positive difference to both vets and smallholder farmers in Tanzania.

"Unique in our approach is the sustainability angle which is essential to encourage a mindset shift in the livestock sector towards entrepreneurialism and ownership. Empowerment of the farming and veterinary sectors is critical to enable sub-Saharan Africa to meet the rising productivity needs of the region in a sustainable manner," says Dr. Gabriel Varga, Regional Director Sub-Saharan Africa at Zoetis and lead of the A.L.P.H.A. initiative.