Word from the editor

This is to thank all the people who contributed articles to this bulletin. The next issue of the bulletin is under preparation and we are requesting you to send your articles to noelinanantima@yahoo.com.

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The livestock sector has been globally recognized as a major opportunity and a vital tool for contributing to rural poverty alleviation. In Uganda, livestock production is a major component of the economy and it greatly contributes to the livelihoods of many farming households. Livestock is an important sector of agricultural production contributing 8% to the gross domestic product (GDP) and 21% to the agricultural GDP (UBOS, 2014). The sector plays an important role in the socioeconomic development of the country. Livestock plays a key role in food nutrition and income security of rural households. About 2.2 million households in Uganda are engaged in livestock production. In general, farming households keeping livestock have a lower level of poverty compared to those purely engaged in crop farming. According to the Uganda National Bureau of Statistics (UBOS), more than 60% of the rural households in Uganda derived their livelihoods from livestock in 2014.

Overall there has been a positive trend in the growth of the livestock sector in the recent past in Uganda. Livestock production has continued to grow at a rate of 4% per annum, in response to increasing demand for milk and meat at national, regional and international levels. Currently the livestock population consists of an estimated 15 million heads of cattle, 17.45 million goats, 4.48 million sheep, 4.24 million pigs, 67.93 million chickens. These estimates are based on projections from the 2008 livestock census by UBOS.

Milk production has increased to 2.2 billion litres in 2015 compared to 1.50 billion litres in 2010 and about 70% is marketed with projected revenue of US$ 1,103,030, 303. The collection capacity of the rural milk collection centres increased from 1,497,954 to 1,554,454 between 2013/15 and 2014/15 across the different milk shades of the country. Transportation of milk has also improved. Currently there are 243 milk road tankers with a total capacity of 1,599,900 litres.

Beef production has also more than doubled since 2010 with production in 2015 at 308,000 Metric tons contributing US$ 1,636,363,363 to the national income. Production of pork has increased fivefold since 2010 and the production in 2015 was 119,987 tons contributing US$
1.0 Background

1.1 The Directorate of Animal Resources
The Directorate of Animal Resources is responsible for spearheading the development of the livestock sector in the country. The mandate of the Directorate of Animal Resources is to support, promote and guide livestock, apiculture and sericulture production to enable the country to achieve and maintain quantitative and qualitative self sufficiency in animal protein, animal by products, honey, bees, wax, propolis and skill products. The overall objective of the Directorate is to support sustainable animal diseases and vector control market oriented Animal Production, food quality and safety for improved food security and household income.

1.2 The Departments
The Directorate of Animal Resources is organised into three Departments each mandated to carry out different tasks towards livestock production and marketing. These include; Animal Health, Animal Production and Entomology. Each of the three Departments is headed by a Commissioner.

The objective of the Department of Animal Health is to; prevent control and eradicate animal diseases and parasites, promote animal health and welfare and protect humans from diseases transmissible from animals to humans.

The Department of Animal Production supports sustainable market oriented animal production and value addition for improved food security and household income. The objective of the Department of entomology is to support national vector control and productive entomology for improved food security and household incomes.

1.3 The Semi-autonomous agencies
Semi-autonomous agencies affiliated to the Directorate include; Coordinating Office for the Control of Tsetse and Trypanosomosis in Uganda (COCTU), National Animal Genetic Resources Centre and Data Bank (NAGRC&DB) and Dairy Development Authority (DDA).

The Coordinating Office for the Control of Tsetse and Trypanosomosis in Uganda is mandated to coordinate the control of Tsetse and Trypanosomiasis control activities. The National Animal Genetic Resources Centre and Data Bank (NAGRC&DB) is mandated to support genetic improvement, multiplication and conservation. The Dairy Development Authority (DDA) is mandated to support Dairy Development and Regulation.

1.4 Local Development Partners
Local Development Partners affiliated to the livestock subsector include; Uganda Meat Producers Association (UMPCA), Renaissance livestock network (Reline), Uganda National Apiculture Development Organization (TUNADO), Uganda Dairy Farmers Association, Uganda Poultry Association, Uganda Pig Producers Association, Cattle Traders Association and the Uganda silk producers association among others.

2.0 Status of major transboundary Animal diseases and Zoonoses
The major priority transboundary animal diseases are Foot and Mouth Disease, Contagious Bovine Pleuropneumonia, New Castle Disease, African swine fever, Lumpy Skin Disease, Peste Petir Ruminants, Sheep and Goat Pox, Trypanosomosis, Tick borne Diseases (e.g. East Coast Fever, Anaplasmosis, and Babesiosis), Brucellosis, Tuberculosis, Anthrax, Brucellosis and Rabies. The country is also continuously challenged by new and emerging diseases such as Highly Pathogenic Avian Influenza and Viral Hemorrhagic Fevers including Ebola, Marburg, Rift Valley Fever, and Yellow Fever. The country has experienced the first outbreak of Rift Valley Fever affecting humans and animals in Kabale district, South Western Uganda in March 2016.

2.1 Foot and Mouth Disease
Foot and Mouth Disease (FMD) is one of the most important diseases of livestock that causes significant economic losses to the livestock farmers. The disease which is caused by a virus affects all cloven hoofed animals including cattle, goats, sheep and pigs and leads to high morbidity and mortality. FMD is a Notifiable disease in Uganda implying that the disease should be reported immediately to the veterinary authorities whenever outbreaks are suspected.

Figure 1: Signs of Foot and Mouth Disease

![Symptoms of FMD in cattle](image-url)
Figure 2: Spatial distribution of Foot and Mouth Disease outbreaks during 2014

Figure 3: Spatial distribution of Foot and Mouth Disease outbreaks in 2015
2.2. African Swine Fever:

2.2.1 Status of African Swine fever in Uganda

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African Swine fever (ASF) is an acute contagious disease of pigs. It is caused by a virus. Wild pigs carry the virus but do not get sick. Domestic pigs get affected when they get in contact with wild pigs and ticks. When an outbreak of African swine fever occurs, it can kill all the pigs on the farm leading to total loss of income and food security. This is especially hard for small holder farmers who depend on pigs for their livelihoods. There is currently no cure or vaccine for ASF.

The current strategy to control ASF in Uganda is implementation of improved biosecurity measures. These measures include: Improved hygiene, separating sick pigs from healthy ones, control of entry of pigs from outside into the herd, proper treatment and disposal of household leftovers, proper management of pig slaughtering including waste products, proper disposal of dead pigs, pig movement control and early reporting of outbreaks to veterinary officers.

Outbreaks of ASF occur every year and are widespread throughout the country as shown in the map below.

Figure 6: Spatial distribution of African Swine fever outbreaks between 2013-2015
2.2.2 Why African Swine Fever (ASF) visits many farmers in Mukono district? A pig farmer’s perspective

Mrs. Kiwazi Esta a farmer from Mukono district. Email: estakiwazi@gmail.com.

African Swine Fever is a severe disease affecting pigs. The local name for African Swine fever is omusujja gw’embizzi.

I bought a 5 months camberough boar at 300,000/= (three hundred thousand shillings only) from one renown pig-farmer in Mukono at the recommendation of Dr. Kiwanuka, the Mukono District Veterinary Officer. We named the boar Asante and sure he did his God given role very well until ASF visited our village Kawuga of Mukono-Uganda. I had at the time 6 gilts/sows and Asante served them well, needless to mention, each at least twice a year. Although Dr. Kiwanuka had cautioned me against sharing boars with other farmers as it is a known way of transmitting ASF but I did not take heed because; Asante was a proven camberough breed which is well sought after for its good pork quality, refusing to share coupled with peer pressure from other pig-farmers would discredit me and my farm family and an additional one month-male piglet on my herd each time Asante mounted another pig-farmer’s sow-on-heat was tempting enough.

Asante was the first victim of ASF in my flock. One Kalema who runs a relatively modern pork joint a kilometre off the Uganda Christian University (UCU) Mukono campus was always scouting around for pigs. I had never sold him a pig for slaughter until this day. I looked for him and Kalema, hands akimbo, set a price for the then 3 year–old 90kg Asante at 200,000/= (two hundred thousand shillings only)! Kalema sells a kilogram of raw pork at 8,000/= (eight thousand shillings only) and a plateful of well garnished roasted pork at 15,000/= (fifteen thousand shillings only)!

One day, Ruth who owned two gilts of the local breed decided to improve her stock through cross breeding. Earlier, Ruth had complained that one of her pigs had high fever, developed unusual red around ears and tail. Ruth brought her other sow-on-heat the next day for service as had been the practice and it was served by Asante. After Asante served Ruth’s sow he became dull, docile and started to develop high fever two days later. The skin around ears and tail turned particularly red the until the edges of ears became dark red tending to blue. Asante developed red spots all over his body as shown in Fig.4 and refused to eat. All the 6 gilts/sows started to show the same signs and in addition started huddling together. I joked that the sows were taking on Asante’s ways after the Luganda saying.

“Ekwata omwami tereka muganzi literally meaning that any sickness that affects the husband will affect the spouse”.

Ruth reported that both her sows had succumbed to ASF as Dr Kiwanuka had confirmed. The Mukono District Veterinary Office put a temporary quarantine on the area. However, Kalema’s business on the other hand continued booming until a group of veterinarians came and slaughtered two pigs belonging to some farmers. The following signs were seen among the slaughtered pigs:

- The spleen had enlarged enormously and was breaking easily
- The very enlarged dark red (haemorrhagic) gastro hepatic lymph node in each pig
- Enlarged dark red renal lymph node was noted.

The signs confirmed that ASF had affected Kawuga area of Mukono district. Full Quarantine was then put by the Ministry of Agriculture Animal Industry and Fisheries. That is when Mr. Kalema’s pork business closed for a few days. The pig- farmers lost many pigs including Asante and the good camberough boar breed to ASF.

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The LCI chairman though a Muslim intervened in the control of ASF because the disease did not only affect the pig farmers but it also affected the social and economic status of the whole community of Mukono. Many children who could not go to school because of lack of school fees became a menace in the village. The religious leaders complained of the dwindled tithe and market dwellers were throwing away a lot of waste.
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2.3. Tick Borne Diseases

Dr. Kenneth Mugabi, Ag. Principal Veterinary Officer, Ministry of Agriculture, Animal Industry and Fisheries. Department of Animal Health. Telephone 07724466478 Email: kmugabi@gmail.com

Tick Borne Diseases (TBDs) include East Coast Fever (ECF), anaplasmosis, babesiosis and heart water. These are a major challenge to the livestock farmers. The management of tick borne diseases is largely in the hands of the private sector farmers. The high cost of inputs (Acaricide, water. These are a major challenge to the livestock farmers. The management of tick borne diseases is largely in the hands of the private sector farmers. The high cost of inputs (Acaricide, pumps and drugs) and knowledge gaps on proper acaricide application has resulted in tick resistance in the country especially in the cattle corridor.

MAAIF analysed a total of 522 Dip-wash samples submitted by farmers from various districts in the country between July 1st 2014 and June 30th 2015 for concentration analysis. Out of the 522 samples collected, 451 (86.4%) were found to be below normal concentrations, 27(5.2%) above Normal Range and 44(8.4%) within the normal range implying that 92% of the farmers were using the wrong concentration.

This has resulted in tick resistance with increased incidences of tick borne diseases such as East coast fever (ECF), heart water, Babesiosis and Anaplasmosis with profound losses to the farmers due to deaths of animals.

A vaccine known as the "Muguga Cocktail" is available for immunising cattle against ECF. Originally, it was imported and distributed by MAAIF. In line with government’s policy of privatisation and commercialisation, MAAIF sought for private partners to take up the role of importation and distribution and delivery of the vaccine. After thorough vetting, two private veterinary pharmaceutical companies, namely Scopevet Developments (U) Ltd and Erarn (U) Ltd were granted permission to import and sole the Muguga Cocktail vaccine in the country.

2.4. Trypanosomosis

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Trypanosomosis covers approximately 70% of the country. A tsetse fly is a cosmetic pest meaning that even a single tsetse fly can cause damage, through disease transmission, to sizeable population of livestock. In addition all the touristic centres are tsetse infested and cases of sleeping sickness have been reported in some of these areas. Uganda is one of the countries participating in the Pan African Tsetse and Trypanosomiasis Eradication Campaign but the challenges are still many.

Tsetse control is a public good but resources are still limiting for implementing an Area-Wide approach. Community based approaches like use of insecticide treated tsetse traps, application of insecticide on livestock are encouraged but use high technology like aerial spraying is the way to go if we are to achieve a long lasting solution. The tool box is full and the troops are ready for implementing an integrated area wide program.

There are currently eleven tsetse sub-species of Glossina in Uganda. Currently three species are receiving significant verification and publicity; i.e G.f.fuscipes, G.pallidipes and G. Morsitans as vectors responsible for Human African Trypanosomiasis, HAT (Sleeping sickness) and African Animal Trypanosomiasis AAT (Nagana) transmission. About 70% of livestock in Uganda is exposed to the risk of AAT with an average prevalence of 4.5%. Prevalence rates of up to 35% have been recorded in some parts North Eastern Uganda.

Animal trypanosomiasis leads to direct and indirect costs and losses. The direct costs include: cost of controlling the tsetse fly vector and cost of treating sick animals. The indirect costs include: deaths of affected livestock, increased rates of abortion, reduced yields of meat and milk, loss of draught power, hides and skins, infertility as well as inability of people to maximally utilize land that is infested with tsetse flies.
The most recent efforts to control tsetse and trypanosomiasis have been undertaken by Uganda government through development projects like: Farming in Tsetse Control Areas (FITCA) 2001-2010 implemented in south eastern Uganda; National Livestock productivity improvement project (NLIPP)-2001-10, and “Creation Of Sustainable Tsetse and Trypanosomiasis Free Areas” in an area covering 15,000 sq Km.;

Ongoing initiatives include: (i) An IAEA/GOU project “Demonstrating the Feasibility of Sterile Insect Technique SIT as Part of AW-IPM 50 sqkms in Kalangala islands (LVictoria) is ongoing under which a tsetse mass rearing unit was established for Gossina fuscipes fuscipes in Tororo (ii) Use of Insecticide Treated Targets to control Tsetse Flies in the Trypanosoma brucei gambiense region (Liverpool School of Tropical Medicine/GOU Collaboration) 2500sq km of north Western Uganda, with over 10000 targets deployed (iii) FAO project “Improving food security in Sub Saharan Africa by Supporting the progressive reduction of tsetse transmitted trypanosomiasis in the frame work of NEPAD”( GTFS/RAF/474/ITA) during which 35 entomologist from Northern Saharan Africa were trained in basic GIS data analysis techniques and 30 Global Positioning System(GPS) equipment procured.

These interventions have contributed to tsetse population reduction by 75%-95% in the intervention areas. In spite of all these control efforts, the tsetse and trypanosomiasis problem still exists in many parts of the country and continues to be a major constraint to livestock productivity and economic development of Uganda. The Successes from past control efforts have always been reversed because; they were not sustainable due to resource constraints; they have been only addressing tsetse pockets and not of an area-wide nature and they have been addressing tsetse control rather than eradication

It is on this basis that The Ministry of agriculture Animal Industry and Fisheries (MAAIF) in its five years Sector Strategic Plan(ASSDP) has proposed the phased implementation of the National tsetse Eradication and trypanosomiasis elimination Program under the following projects:

• The Eastern Uganda Regional Tsetse and trypanosomiasis eradication project(EURTTEP) covering 33000sq km along the Kenya Uganda boarder estimated at USD 29,974,857. (The draft document was submitted to the EAC for harmonisation with the Kenyan tsetse program).
• The North Western Uganda Tsetse project covering the tsetse infested river length of 16256 km.

The proposed “Uganda Tsetse and Trypanosomes Eradication Programme” (UTTEP) is aimed at addressing area-wide control of tsetse flies and trypanosomiasis using an integration of environmentally friendly technologies including application of the Sequential Aerosol Technique (Aerial spraying) in the entire tsetse fly belt of Uganda. Aerial Spraying technique will ensure: coverage of a wider area in a short period of time, quick knock down of the tsetse populations and coverage of hard to reach areas by other methods.

This program is in compliance with the decision made during the summit of the African Heads of state and Government which took place in the year 2000; to eradicate tsetse and Trypanosomiasis from the African continent.

2.5 Farmers perspective about brucellosis disease

Brucellosis is an infectious disease that affects animals and people. In animals the disease causes abortions and infertility. In humans brucellosis causes undulant fever. Brucellosis is controlled through vaccinations of unaffected animals and stumping out of confirmed cases.

While on my routine field work, I noted that one of my best farmers had suffered from it. He was diagnosed with brucellosis few months before, and his perspective /experience about the disease was; Brucellosis is the sickness that presents itself with signs similar to those of malaria. In the beginning, one feels very weak, with pains especially in the joints, muscles, coldness, and headache. The signs start slowly and later intensify.

After contracting the disease, the farmer learnt that it is transmitted through contaminated animal products especially milk, meat, hides, skins and contact with animal fluids while attending to sick animals or while animals are delivering.

The farmer suspected that he contracted brucellosis; through drinking milk and meat from up country since he was a driver. He said that after consuming the milk and meat he started developing malaria like signs. He therefore self-medicated himself with anti-malarial drugs. When he completed the dosage, there was no improvement. He repeated the treatment again but he did not improve. The signs of coldness/chills, joint pains, and headache intensified.

He then visited a Medical Doctor at TASO where he was working. The doctor tested his blood and diagnosed that he was suffering from brucellosis. He was shocked by the Doctors report because he had never had about brucellosis. He received a lot of counselling and encouragement from TASO. The doctor told him that since the organization had drugs, it was possible to treat the disease and to completely recover as along as the treatment regime was adhered to. He told him that the disease was contagious and of animal origin. He was put on special diet to speed up recovery.

The medication was through injections and tablets. He kept the medical reports in his Medical personal file at TASO Uganda Limited in Mbole.
However he became very weak and took sick leave for 3 weeks. While on treatment at home, he was not productive and could not look after his farm resulting in loss of daily income.

The cost of treatment was quite high especially the laboratory tests, consultations, drugs, transport to the hospital for reviews. He did not experience any stigma because his family members and workmates were very supportive. The community was not aware of his sickness since he was confined at home. He lost income due reduced production from the farm and field allowance since he was not working. He spent almost all his savings on treatment and special diet.

His recommendations after this experience were; i) people should obtain products like milk and meat from properly registered dealers ii) farmers to be vigilant to report illnesses to trained health workers, iii) Farmers should report cases of animal sicknesses to veterinarians and not to quack doctors iv) veterinarians should accurately screen, confirm and treat animals to prevent spread of brucellosis, v) the government including MAAIF and local governments should carry out regular sensitization of farmers and should put in place measures to eradicate brucellosis, and vi) animal product dealers should avoid bad habits and practices such as selling uninspected meat and meat products.

In conclusion, he said that there is urgent need to sensitize the public about this disease as it seems to be a silent killer especially for people that self-medicate themselves.

2.6. Rabies continues to finish school-going age children in Arua district

Dr. Willy Nguma, District Veterinary Officer, Arua District, Email: dvoarua@gmail.com> Telephone 0794616046

Rabies a zoonotic viral disease that affects all warm blooded animals including humans is usually fatal when the victim is not immediately treated. It is transmitted from the saliva of an infected to uninfected animal or human. Clinically the affected animals and humans become mad and show aggressive behaviour. Rabies is controlled through mass vaccination of dogs and cats, sensitisation of the public on its prevention and destruction of stray dogs. In humans, treatment of rabies victim is through proper cleaning of the wound with soap and water, application of detergents followed by Post-Exposure Prophylaxis with human rabies vaccine and hyper-immune sera

Globally rabies has been recognised as an important disease that kills at least 55,000 people per year half of which are children. As such the World Health Organisation declared the 28th day of September a World Rabies Day. The World Rabies Day is a unique campaign that brings together hundreds of people across the world to reinforce the message that rabies is a preventable disease.

In Uganda, World Rabies Day celebrations were held in Arua district on 28th September 2015. The celebrations were organised and funded by the Ministry of Agriculture, Animal Industry and Fisheries, Ministry of Health, Uganda Veterinary Association, Arua Local Government and other partners and stakeholders. During the celebrations, 1,000 dogs were vaccinated to raise awareness on the dangers and prevention of rabies. However, the drive to create public awareness on the dangers and prevention of rabies has not yet been fruitful in Arua district. Rabies continues to be a major killer of animals and humans in Arua district. This is because of; its proximity to the Democratic Republic of Congo where the health and disease control systems are still weak, proximity to Ajai Game Reserve, which provides good interface between the domestic & the wild hosts of the virus and hosts to many refugees from Southern Sudan in Rhino Camp. For instance when the refugees were repatriated in 2009-2010, they left behind all their dogs and cats which eventually became stray animals thus increasing the risk of rabies in the district.

There has been an increase in the number of reported rabies cases in Arua district as shown in Table 2 & 3.

Table 1: Reported Rabies cases & actions taken by veterinary in 2015-2016;

<table>
<thead>
<tr>
<th>Month of occurrence</th>
<th>Number of suspected cases in animals</th>
<th>Number of bites by suspected animals</th>
<th>Number of cases in humans</th>
<th>Vaccinations</th>
<th>Number of pets Destroyed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deaths</td>
<td>Emergencies vaccinations referred</td>
<td>Dogs</td>
<td>Cats</td>
<td></td>
</tr>
<tr>
<td>January 2016</td>
<td>18</td>
<td>01</td>
<td>07</td>
<td>31</td>
<td>02</td>
</tr>
<tr>
<td>February 2016</td>
<td>16</td>
<td>01</td>
<td>17</td>
<td>12</td>
<td>00</td>
</tr>
<tr>
<td>Totals</td>
<td>431</td>
<td>16</td>
<td>17</td>
<td>12</td>
<td>00</td>
</tr>
</tbody>
</table>
The most recent rabies incidence in the district was reported on 22nd February 2016 involving a boy aged 9 years and a resident of Adumi Sub County, Arua district. It was reported that this boy was bitten by a stray dog in November 2015. The dog was killed immediately by the father. Unfortunately the boy was not taken to hospital nor the case reported to the District Veterinary Office.

In February 2016, the boy developed clinical signs characteristic of rabies including restlessness, barking/shouting and biting every object/person around him. He was admitted at Arua Referral Hospital and put under quarantine in the isolation room as shown in Figure 6.

The boy was being attended to at the hospital by his parents including his father, mother and 2 step mothers whom he had all bitten exposing them to the high risk of rabies. These rabies victims were not given post exposure prophylaxis due to the high costs of the vaccine. A single dose cost 29,000/= UGX and yet each patient needed four doses to complete the course amounting to 464,000/=.

These patients were in extreme poverty and could not afford the cost of treatment. As a result, they escaped from the hospital and went back to their village due to challenges of feeding, medical care and other maintenance issues as they await the demise of their helpless boy at the hospital.

Figure 9: Recent cases of rabies in Arua district involving a boy aged 9 years

He had just bitten his step mother on the hand, right he looks on restless & shouting

The Districted Veterinary Officer responded by posting the information on social media which resulted in people contributing 500,000/= towards medical care of the boy and the family. The boy passed on 25th February 2016 before the family received the money. However, the money was used to buy rabies vaccines for the parents that had been bitten by the rabid boy.

Challenges cited by District Veterinary Officer Arua:
- Very low levels of awareness by the public on the dangers of rabies and its prevention
- Shortage of animal rabies vaccine
- High numbers of stray dogs & cats in the district
- High cost of human rabies vaccine
- Absence of the district veterinary laboratory services
- Very poor coordination in handling rabies cases by key stakeholders
- Inadequate technical and logistical support including; transport, allowances and personnel
2.7. Peste Des Petits Ruminants
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Peste des Petits is a disease affecting sheep and goats and it is endemic in Uganda. It is caused by a morbillivirus, which belongs to the Paramyxovirus family. The disease was first diagnosed and confirmed in Uganda in 2007 in Karamoja region. The disease led to deaths of over 500,000 goats and sheep in a very short time during the outbreak. This led to very significant economic, food security and livelihood impacts in the region.

To date, there are foci points of this disease in goats and sheep entrenched in Karamoja pastoral area and the disease has since been reported in other parts of the Country. Over 5,000,000 goats and sheep are estimated to be at risk and outbreaks can occur any time. The Government has put in place effective surveillance systems that have included active and passive surveillance. Participatory disease surveillance methods have also been used to give information on the prevalence of the disease hence contributing greatly to disease control. With assistance from development partners who have included FAO and AU-IBAR, Government has undertaken vaccination activities for the diseases and this has greatly led to the decrease of the disease in the country.

Figure 10: Signs and Symptoms of PPR

2.8 Rift Valley Fever Outbreak In Kabale District South Western Uganda
Dr. Noelinan Nantima, Ag. Ass. Commissioner Animal Diseases Control MAAIF, Mob: 0772515962, Email: noelinananantima@yahoo.com

The country is currently experiencing an outbreak of Rift Valley Fever, a severe viral zoonotic disease of humans and animals. The disease was first confirmed by Ministry of Health after two patients in Kabale district, Western Uganda tested positive on 11th March 2016. The presence of the disease in humans was an indicator that the animal population was affected. Rift Valley Fever is transmitted by mosquitoes and other biting insects. Humans get infected through close contact with infected animals such as handling meat and body fluids during slaughter or delivery. Humans also get infected through consumption of raw milk or uncooked milk and meat from infected animals. In addition, humans may get infected indirectly through being bitten by infected mosquitoes. Clinical signs in animals include stormy abortion, high mortalities, high fever, nasal discharge and weakness among others. Clinical signs in humans include; fever, headache weakness, muscle pain, dizziness, nausea, discomfort, vomiting, coughing blood and bleeding from the nose among others.

Following the confirmation of the disease in humans, teams from Ministry of Health, Centre for Disease Control (CDC), Uganda Virus Research Institute and Ministry of Agriculture, Animal Industry and Fisheries with support from FAO collected samples from animals and humans in Kabale district. Samples from a farm in Kashenyi village, Kicumbi parish, Kamuganguzi Sub County were confirmed RVF positive on 24th March 2016 by CDC/UVRI.

Rift Valley Fever had never been diagnosed in humans and animals before this outbreak. The outbreak of RVF in animals was therefore declared to the World Animal Health Organisation (OIE) and neighbouring countries on 1st April 2016.

Risk Factors to RVF outbreak in Kabale district
- It was noted that RVF outbreak occurred in Rwanda adjacent Kabale district three weeks before the disease was confirmed in Uganda.
- Previous RVF outbreaks in Rwanda occurred in 2012 (first report) and consequently in 2013 but on the southern part of the country bordering Burundi.
- Possibility that the disease could have spread from Rwanda due to porous borders. Detailed investigation is required to confirm actual source of the disease.
- Kabale has recently been invaded by mosquitoes due to climate change.
- Heavy rains and floods creating breeding ground for the vector mosquitoes and increase the risk to RVF.
- Goat production in Kabale district is predominantly small holder sedentary mixed farming with significant movement of livestock within the district and into neighbouring districts.
- Possibility that the disease has spread to other districts in Uganda. One goat recently introduced as bride price from Ibanda to Kabale also tested RVF antibody positive. Need to confirm extent of spread of the virus.

Measures undertaken to control the outbreak
- A multisectoral National Task Force met weekly
- District Epidemic Task Force is active was meeting daily. It includes a Coordination Committee which is chaired by the RDC and is composed of, CAO, LC5, DHO and Director Kabale Referral Hospital.
- Detailed investigation by MAAIF to map out infected areas, ascertain the extent of spread...
of the disease and implement appropriate control measures.

- Strengthening of the National Diagnostic Laboratory in Entebbe to undertake rapid diagnosis and confirmation
- Preparation of response plans and contingency plans.
- Development and production of awareness raising materials and sensitisation

2.9 Facts about Rift Valley Fever

What is Rift Valley Fever (RVF)?
Rift Valley fever (RVF) is a severe zoonotic disease affecting animals and humans.

What causes Rift Valley Fever?
The disease is caused by a virus which is transmitted by mosquitoes and other biting insects. Other viruses in the same family are Ebola, Marburg and Yellow fever.

What animals get affected by RVF?
Both domestic and wild animals suffer from RVF.
- Sheep, cattle, and goats are the most severely affected domestic animals however camels, cats, dogs, and horses can also be infected.
- Buffalos, antelopes, wildebeests, monkeys, rodents and others suffer from the disease.
- The disease is mostly severe in young animals than adult ones

Are there animals which don’t suffer from RVF?
Birds and reptiles are resistant to RVF.

How do animals get affected by Rift Valley fever?
- Animals get affected through the bite of an infected mosquito.
- Also biting flies like stable flies, tsetse flies, sandflies, biting midges, blackflies and ticks can transmit the disease mechanically.
- The disease is not spread from one animal to another through contact

How do people get affected by Rift Valley fever?
- The disease is transmitted from animals to humans through close contact with infected animals such as handling meat and body fluids during slaughter or delivery of infected animals
- Consumption of raw milk or uncooked milk and meat from infected animals
- Humans may also get infected indirectly through being bitten by infected insects

What are the clinical signs of the disease in animals?
Clinical signs depend on the species of animal affected and conditions such as age and pregnancy. Rift Valley fever is usually most severe in young animals. During epidemics the occurrence of
- Numerous or stormy abortions in animals is the most characteristic sign in adult sheep, goats and cattle.
- Very high mortalities among newborn animals (in these mortality can be between 80 – 100%) but mortalities in old animals are low (about 20%)
- Very young lambs and kids with clinical signs rarely survive for long and often die within 24 hours.
- Young lambs, kids and calves develop very high fever
- They become weak and die very suddenly
- Adult sheep, goats and cattle may have nasal discharge
- There is excessive salivation in the affected animals
- The animal losses appetite (anorexia)
- The animal becomes very weak
- The animal develops diarrhea producing bad smelling faeces which may contain blood.
- Regurgitation in ruminants
- Signs of abdominal pain
- Bloodstained mucopurulent nasal discharge
- Elevated abdominal respiratory rate may be seen prior to death
- Excessive eye discharges (Lachrymation)
- Excessive salivation

What are the clinical signs of the disease in humans?
- Fever (37.5–40°C), Headache, Weakness, muscle pain, Back ache, Abdominal pain, Dizziness, Nausea and epigastric discomfort, Vomiting, Weight loss, Hemorrhagic syndromes like coughing of blood, vomiting of blood bleeding under the skin bleeding from the nose etc., Jaundice,
- Blood in feaces (Melena) or blood in urine (haematuria)
- Encephalitis (inflammation of the brain) leading to altered mental state
- Ocular disease (inflammation of the eye, retinopathy, blindness etc) and sudden change in vision
- Influenza-like syndrome

Can RVF be treated in animals?
There is no specific treatment for sick animal but supportive treatment and care to the animals.

Can RVF be treated in humans?
- As most human cases of RVF are relatively mild and of short duration, no specific treatment is required for these patients.
- For the more severe cases, the predominant treatment is general supportive therapy.

What can one do to control the current RVF outbreak?
- Report any suspected RVF patient to a nearby health facility
- Report any suspected sick animals to the nearest veterinary or local authority
- Avoid direct contact with body fluids of animals suspected to be suffering from RVF by using protective materials like gloves.
- Avoid eating dead animals or animals not certified by veterinarians
3.0. Strategic Interventions to address vectors and diseases

Dr. Noelin Nantima, Ag. Ass. Commissioner Animal Diseases Control MAAIF, Mob: 0772515962, Email: noelinanantima@yahoo.com

The following interventions are applied to control vectors and diseases; vaccinations, tick control, tsetse control-area wide approach, continuous surveillance and reporting, strengthening disease control infrastructure and human capacity development.

3.1. Vaccinations

The government of Uganda embraced structural adjustment programmes of liberalisation, privatisation, decentralisation and civil service reform. In line with the policy of liberalisation and privatisation, the provision of clinical animal health services was privatised. Although the delivery of veterinary drugs and vaccines was liberalised, the government remains with a responsibility of supplying vaccines for epidemic diseases such as Rinderpest, Contagious Bovine Pleuropneumonia, Foot and Mouth Disease and Rabies with the actual vaccination being the responsibility of the local governments.

The government continues to be fully responsible for ensuring that pests and diseases are controlled at field level. Wherever vectors and disease prevalence exceed the ability of the farmers and local authorities, the central government declares an epidemic and assumes responsibility for countering it. In this respect MAAIF procured 450,000 doses of FMD, 500,000 doses of CBPP, 2,000 doses of Rabies and 500,000 doses of PPR during 2015 and these were dispatched to various districts to contain specific outbreaks.

What are the implications of the RVF outbreak in Uganda?

- The outbreak will lead to a ban on livestock and livestock products,
- Illness and death of animals
- Illness and death of humans
- Effect on tourism.

How can I protect myself from Rift Valley fever?

- Reduce mosquito bites by sleeping under insecticide treated mosquito nets
- Control the vector (mosquito) population through spraying and management of mosquito breeding grounds
- When assisting animals to deliver or if handling animal tissues, wear gloves, a mask and other protective clothing.
- Always wash your hands after touching animals.

Figure 11: National Animal Disease Diagonostic and Epidemiology Serology Labaratory MAAIF.

Figure 12: Vaccination aganist Foot and Mouth Disease
3.2. Surveillance
The World Organisation for Animal Health (OIE) requires each member state to report all diseases present in a country to OIE on a regular basis. Prompt and accurate reporting can only be achieved if all stakeholders including livestock owners, local government personnel, private veterinarians and the general public are aware of the dangers of diseases.

The Farmers should report suspected outbreaks immediately to the nearest veterinary personnel or field officer through telephone, text message or physically indicating date, locality, species affected and number of affected animals.

The field officer reports immediately to the District Veterinary Officer who should in turn report within 24 hours to the Commissioner Animal Health in the Ministry of Agriculture Animal Industry and Fisheries. The Commissioner will immediately commission an investigation to collect samples and epidemiological data to confirm the outbreak, prepare report and take action.

3.3. Reporting of animal diseases using digital technologies
Uganda launched use of mobile phones for real time reporting of animal diseases in 2013. The activity that started as a pilot in ten districts of Busia, Nakasongola, Masaka, Mityana, Mukono, Isingiro, Mbale, Rakai, Kibaale and Sironko was supported by Food and Agriculture Organisation.

Figure 13: Districts using mobile phone reporting.

After the successful completion of the pilot project, the number of districts using mobile phones for reporting has increased from 10 to 17 to date. The additional seven districts include; Abim, Amudat, Kaabong, Kotido, Moroto, Napak and Nakapiripirit. This has also been possible thanks to the support from the Food and Agricultural Organisation (FAO).

Dr. Kiconco of MAAIF demonstrating the use of a mobile phone to the veterinary service providers in Moroto

The benefits of using this system has been; transformation of disease reporting from the districts to MAAIF from monthly to real time, wider range of diseases being reported and significant improvement of interaction and communication between the field and decision makers. The Ministry is seeking for support from partners to expand the programme to cover the whole country.

3.4. The National Veterinary Laboratory Systems in Uganda
The National Animal Diagnostic and Epidemiology Centre (NADDEC) within the Department of Animal Health of MAAIF is responsible for animal disease surveillance, monitoring and laboratory diagnosis. The NADDEC Laboratory is the national Reference centre and it is located in Entebbe (airport road) and it is able to confirm most of the diseases occurring in the country using international recommended diagnostic tests. The major diseases for which the laboratory has capacity to confirm include; Foot and Mouth Disease, Contagious Bovine Pleuropneumonia, Peste des Petits Ruminants, Contagious Bovine Pleuropneumonia, Lumpy Skin Disease, African Swine Fever, all Tick Borne Diseases, Brucellosis, Rabies, Tuberculosis, Gumboro among others. The NADDEC laboratory also has a chemistry laboratory capable of analysing chemical residues and other residues in food.

The College of Veterinary Medicine, Animal Resources and Biosecurity and the National Animal Livestock Resources Research Institute located in Tororo have diagnostic laboratories although there are mainly tailored to training and research.

Regional and district laboratories serve the local governments although with varying capacities. Private laboratories involved in diagnostic activities also exist.
4.0. Veterinary service quality versus veterinary service uptake

Dr. Mwesige Theophilus, Principal veterinary Officer, Ibanda District, Email: drmwesiget@yahoo.com, Telephone contact 0772911287

In his presentation on one health approach to the 16th International Trans boundary Animal Diseases (ITAD) course on 26th Sept 2014 at Greenport - New York, Robert Fathke gave the following quotation:

“Professionals that cannot change themselves from within, or cannot respond to the needs of their clients, and cannot enforce standards of behaviour so as to maintain the confidence of their constituents are in trouble”

A few years ago, while interacting with my supervisors; Professors Muwazi and Kabasa, on the observed low veterinary services uptake in this country, I was tasked to prove this observation and also explain the associated causes. This led me to research on what constituted quality veterinary services and how it influenced service uptake in Ibanda District. Because no clear definition was attached to veterinary service quality then, some quality dimensions in service and product marketing were identified and tested in relation to veterinary services.

During the study, a cross-sectional survey research was designed to collect both qualitative and quantitative data. The study that included animal farmers and veterinary service providers (VSP) was guided by an interview questionnaire and focus group discussions to generate data for analysis. The factors associated with uptake of veterinary services, were derived from the chi-square statistics ($\chi^2$) at bivalent level and, a multinomial logistic at multivariate level of analysis. At the same time the most important items explaining quality of veterinary services were determined with the Cronbach alpha ($\alpha$) statistics.

From the study findings, all the quality dimensions tested were important in veterinary service delivery. However reliability, tangibles, and empathy were the best depending on whether one sought services from public, private or quack service providers respectively. This according to the farmers was what drove them to where they sought and utilised services from irrespective of the VSP’s qualification or service costs. Further findings indicated that in Ibanda, service uptake was low due to lack of the above dimensions in the services provided. Contrarily to this, when the VSP were asked why they thought farmers were utilizing services from quacks, the majority gave the farmers’ interest in cheaper services as the reason.

The two divergent responses indicated a level of misunderstandings between two key stakeholders in the animal industry. Ironically as in most programs where such misunderstandings exist, the mission undertaken is bound to fail.

When questioned further on what should be done to improve veterinary services, the farmers suggested a partnership with veterinarians. This option though tricky, need not be ignored but studied further. At Colorado State University (CSU) for example there is a state of the art Veterinary Teaching Hospital (VTH), a client supported initiative which I believe resulted from client-vet cooperation. In Uganda, although we are not as sophisticated, such partnership cannot throw us on a wrong track.
Back to the quality dimensions above, reliability or ability to perform the services can be associated with one’s level of training and responsiveness or willingness to serve. For this dimension to be felt it has to be supported by a policy addressing; tangibles or possession of facilities, equipment’s and personnel. This is where items like transport, communication, reference materials and kits come in. The personal issue can best be applied by deploying staff according to the Tropical Livestock Units, farming systems, and topography as opposed to the current set up based on sub counties. It should also involve frontline staff unlike in our system where the fate of ParaVets is unclear. As for empathy and other related dimensions like assurance, these are values that should be instilled in our prospective veterinarians during their formative years. The same can be relied on to colleagues during their continued professional development courses, workshops or during induction. When done, this can surely build a people centred and respectable profession able to deliver services that can be appreciated by all.

Now considering the state of veterinary services in this country and structural reforms ever implemented since 1986, we seem to be on try and error strategy since no satisfactory results have ever been realised. However a close analysis of livestock development policies following independence, one finds that the above quality dimensions were somehow addressed during the 1960’s which could partly explains the successes recorded then. In addition, a look at the South African Agriculture Departments (where veterinary falls) vision and mission, you find that some of these quality dimensions are embedded there meaning that, all strategies drawn for the subsector are focused on realising them.

Therefore, our policy makers and their advisors should explore more on the findings above to come up with what exactly the farmers’ want from veterinary, and hence review and implement livestock development strategies aimed at addressing these wants. This will enable increased service utilisation and thus a reduction in animal health and production problems thus making the industry vibrant and profitable as desired by all stakeholders. On the other hand, veterinarians need to realise that the social, economic, political and professional challenges they are currently need to realise that the social, economic, political and professional challenges they are currently experiencing are focused on realising them.

5.1. Introduction.
Maintaining animal health requires a team effort. It is also a chain of events starting with the animal at the farm or in the wildness, and coming back to the animal in the same location, but with many essential links in between including veterinarians, paraveterinarians, veterinary assistants and laboratory workers.

A major constraint to improving productivity in Ugandan livestock is the presence of animal diseases and linked to this, the provision of animal health services. Livestock diseases impose heavy costs on producers and reduce incentives to invest in higher yielding crossbred or exotic animals that tend to be more vulnerable.

Important endemic diseases in Uganda include: Foot and mouth disease, contagious bovine and caprine Pleuropneumonia; Peste des petit ruminants; a host of tick –borne diseases(including babesiosis, anaplasmosis and theileriosis; helminthosis; tsetse-transmitted Trypanosomiasis; contagious ecthyma; Newcastle disease; infectious bursal disease; coccidiosis; salmonellosis; African swine fever; tuberculosis; brucellosis; and anthrax.

5.2 The value of diagnostics and surveillance.
Diagnostics are important beyond the field level and the individual animal, herd or flock. While awareness and ability to diagnose disease helps the animal affected and the producer, it is a critical in establishment of a national database. The database is used to make fact based decisions for the best nation-wide control programs to finance and support, leading to greater animal health for the national herd and flock.

Surveillance is the act of monitoring disease and taking action based on findings. It is at the core of all national health programs. Central to surveillance is the submission of samples to the diagnostic laboratory. Without diagnostics activities, there is no surveillance. Without surveillance; there is no overall assessment of animal health. There are two categories of surveillance: active and passive. Both are important for the national health program.

• Active surveillance targets a specific disease. (i.e. Foot and Mouth Disease.) Samples are collected pro-actively to determine if a specific disease is present and to what extent. A good example might be Rinderpest, where during the eradication program; serum samples were collected specifically for the purpose of determining the extent of the disease distribution in order to enhance eradication procedures.

• Passive surveillance refers to those samples that might be collected spontaneously from diseased animals. It is what “bubbles up” from the field observations, and depends to a large extent on the awareness of the field veterinarian and the overall capacity of the laboratory. For Uganda as a country to maintain international recognition for her ability to monitor diseases, and so participate in global trade, diagnostic and surveillance activities are essential.

Everyone in the animal health chain is part of the overall system that allows for optimal disease control and economic success.
A key element of this chain event is diagnosing disease in the laboratory. Although a few diseases can be diagnosed at field level; most require some form of laboratory testing. Laboratories depend on field personnel to collect samples that will be used for diagnosis. The quality of the samples and information accompanying the samples greatly facilitate the ability to pick the best tests and get results that will be useful for the field diagnostician.

5.3. Laboratory Testing – An overview.
Specimen samples are submitted to the laboratory to help determine what might be causing illness in the field or to determine the extent of infection in animals in the field. A myriad of different tests exist. These can be categorized according to two different questions:

i. Are we looking for the disease causing agent or the antibody? And, if agent, what type of agent – Bacteria, Virus, Fungus, Parasite or Toxins?

ii. What is the test technique?
   The technique used may depend on the location of the technician or the veterinarian but also the costs involved. Some samples may be in satellite Laboratories i.e. Kiboga, Mbole, Wakiso, Mpigi, and Mbarara. For comprehensive and specialized diagnostic services, samples may be submitted to the National Animal Disease Diagnostic and Epidemiology Centre (NADDEC).

5.4. Collecting samples in the field.
The key elements of sample collection may be summarized as below:

- Sick Animal
- Visit by Animal Health Professional
- Samples taken
- Prescribe Treatment Protocol by the Health Professional
- Samples submitted to Laboratory
- Laboratory testing
- Report back to Veterinarian

5.5. Constraints to the animal health maintenance chain identified by some of the Field Practitioners
- Laboratory services and technicians/personnel – Low funding and failure to recruit laboratory technicians and staff at district and regional levels.
- Need for PPE/formalin/other reagents /essential equipments – should the government provide these to DVOs /districts?
- Shyness of Reporting by farmers due to fear of the possible monetary loss due to outbreaks

In any disease investigations in animals; there are six consistent routine steps as indicated below.

i. Obtaining animal history.
ii. A complete individual animal and herd history should be obtained from the farmer preferably one who is closely in contact with the affected animal(s).
iii. Examining the animal(s) externally.
iv. This may include the environment /surroundings, general body nutrition and hydration status, discharges, skin lesions and parasites.
v. Opening the body (necropsy).
vi. Removing the organs and setting them aside for detailed examination and sampling.
vii. Examining and sampling the organs.
viii. Writing the report

No necropsy is complete until all findings have been recorded in a written form. The report should include at least the following information: species, breed, age, sex, History, died or euthanized, nutritional and hydration status. Findings from organ systems:- Lymphoid (spleen, lymph nodes), Respiratory, Digestive, Urogenital, Musculoskeletal and Nervous.

When describing Tissues, keep these four qualities in Mind - Colour, Consistency, Distribution and Size.
or condemnation of carcasses.

- Farmers resisting carcass disposal and preference to keep/sell the meat and other byproducts.
- Farmers little understanding and appreciation of necropsy benefits.
- Lack of routine refresher Training of field extension workers.
- Difficulty in accessing Equipment/Excavator for disposal of carcasses during large outbreaks.
- Sample collections after farmers have treated the animals due to unregulated drug use—delays in case reporting.
- Need for meat inspection enforcement and certification.
- Funding for routine disease diagnostic services/surveillance.
- Continuous Education/training for field staff and technicians.
- One button Communication between NADDEC and Districts – more efficient reporting of results.
- Incentives for sample submission of reportable(notifiable) diseases –DVOs must submit samples and transport them in compliance with the established safety guidelines – the need for courier services between districts and national laboratories.
- Establishment of functional laboratories in every region with well trained, facilitated and motivated laboratory personnel.
- Reports and updated statistics of food-borne illnesses from animal origin and deaths in humans are rarely shared with most stakeholders. There is a need for improved communication between health and agriculture ministries.

There are about 1.2 million beekeepers producing 24,000 metric tonnes of honey generating about 360 trillion Uganda shillings (102,857,143 USD) and 720 metric tonnes of beeswax worth 10,800,000,000 Uganda shillings (3,085,714 USD) Other promising beehive products are propolis, bee venom, pollen and royal jelly. These are all estimates; data is a very big problem.

Cost of inputs required for bee keeping

The willingness and ability of an individual beekeeper, a group/association of beekeepers or a beekeeping company to afford various beekeeping inputs will dictate on the choice of the beekeeping inputs from the list in the table 1 below.

<table>
<thead>
<tr>
<th>Input</th>
<th>Cost, UGX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Traditional hive</td>
<td>10,000</td>
</tr>
<tr>
<td>2. Kenyan Top Bar (KTB) hive</td>
<td>140,000</td>
</tr>
<tr>
<td>3. Langstroth hive</td>
<td>250,000</td>
</tr>
<tr>
<td>4. Catcher box</td>
<td>60,000</td>
</tr>
<tr>
<td>5. Smoker</td>
<td>55,000</td>
</tr>
<tr>
<td>6. Overall</td>
<td>100,000</td>
</tr>
<tr>
<td>7. Bee veil</td>
<td>30,000</td>
</tr>
<tr>
<td>8. Bee gloves</td>
<td>40,000</td>
</tr>
<tr>
<td>9. Gumboots</td>
<td>20,000</td>
</tr>
<tr>
<td>10. Air tight bucket</td>
<td>25,000</td>
</tr>
<tr>
<td>11. Honey centrifuge extractor</td>
<td>2,800,000</td>
</tr>
<tr>
<td>12. Storage tank</td>
<td>2,500,000</td>
</tr>
<tr>
<td>13. Honey sieving cloth (1metre)</td>
<td>10,000</td>
</tr>
<tr>
<td>14. Labour per month</td>
<td>80,000</td>
</tr>
</tbody>
</table>
6.2 Honey production and productivity levels of the different types of beehives in Uganda

The success and profitability of a beekeeping endeavor will depend largely on the type of hive, its production and productivity and the package of apiary management practices. The average honey production and productivity levels of the different types of beehives used in Uganda are indicated in Table 2 below.

Table 4: The honey production and productivity levels of the different types of beehives used in Uganda:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Traditional hive</th>
<th>KTB hive</th>
<th>Langstroth hive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average honey production/hive/season</td>
<td>8 Kgs</td>
<td>10 Kgs</td>
<td>20 Kgs</td>
</tr>
<tr>
<td>Average honey production/hive/year</td>
<td>16 Kgs</td>
<td>20 Kgs</td>
<td>40 Kgs</td>
</tr>
<tr>
<td>Average hive duration</td>
<td>5 years</td>
<td>10 years</td>
<td>10 years</td>
</tr>
<tr>
<td>Total honey production in the hive duration</td>
<td>80 Kgs</td>
<td>200 Kgs</td>
<td>400 Kgs</td>
</tr>
<tr>
<td>Total income accruing to the beekeeper in the</td>
<td>480,000/=</td>
<td>1,200,000/=</td>
<td>2,400,000/=</td>
</tr>
<tr>
<td>hive duration from sale of combed honey at</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>farm gate price of 6,000/=</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Pollination Value Of Bees:
Insect pollinators (bees being the main) are responsible for at least one-third of the annual sales of agricultural products worldwide, including Uganda.

Figure 16: Modern Beef hives

7.0 New Export Abattoir to open in Uganda

Dr. Nicholas Kauta, Director Animal Resources, Tel: 0772693257, Email: nicholaskauta@yahoo.co.uk

The Uganda Egypt Food Security Company limited has constructed an abattoir along Bombo road with the aim of providing Hygienic meat for the local and export market. The operational capacity of the abattoir is to slaughter 200 herd of cattle per day with a target of 1000 herd of cattle in the next 5 years. The abattoir has cold storage capacity of 700 to 1000 tons of meat with excellent bio security. The role of MAAIF is to provide inspection and certification services to ensure international standards. The waste from the abattoir will be used for production of biogas. In addition the investor is planning to establish a strong aquaculture farm to utilise the abattoir waste. The investment will not only benefit Uganda through provisional of safe meat, but will also create employment for Ugandans.

Figure 17: Uganda Egypt Export Abattoir
9.0 Projects & Programmes

9.1. Emerging Pandemic Threat phase 2 (EPT-2) programme

The Emerging Pandemic Threat phase 2 (EPT-2) programme, in Uganda is addressing the continued threat and drivers of emerging and re-emerging diseases. Under the overall programme of the Global Health Security Agenda (GHSA), EPT-2 will build on progress made under the previous programmes to strengthen prevention, detection and response to emerging and re-emerging infectious diseases. The programme is implemented through inter-disciplinary and inter-sectoral collaboration.

- Funded by USAID/FAO
- Project began in 2016 and will last over 3 years
- Indicative budget for Uganda is US$ 3.6M

**Outputs**

1. Livestock production, marketing systems, and animal-human interfaces (particularly where wildlife and livestock intersect) characterized
2. Risky practices and ‘hot spots’ for emergence and spread of filoviruses (including Ebola) identified.
3. Risk-based surveillance to detect filoviruses (including Ebola) in livestock systems particularly where these animals interface with wildlife and/or people conducted
4. Laboratory capacity for detection of filoviruses (including Ebola) strengthened
5. Interventions to reduce exposure of livestock to filoviruses (including Ebola) developed and introduced

**Activities**

1. Characterize livestock production & marketing systems;
2. Identify risk practices & hot-spots;
3. Conduct risk based surveillance to detect filoviruses – interfaces;
4. Develop risk mitigation measures; and
5. Strengthen laboratory capacity for detection of filoviruses

**Key Partners**, MAAIF, District Veterinary Services, Makerere University, Ministry of Health, WHO, Uganda Virus Research Institute, USAID EPT-2: PREDICT-2, P & R, One Health Workforce, ILRI, CDC, AU-IBAR, IGAD and EAC among others

9.2. Improving Surveillance of Trade Sensitive Diseases Project

**Funder:** EU/African Union Inter-African Bureau of Animal Diseases

**Amount:** Euro 173,712

**Duration:** 2014-2017

**Outputs:**

i. Animal Identification, Traceability and Health Certification Systems Improved
ii. Surveillance Systems and Disease Control Strategies at National and Regional Levels Improved

**Achievements**

i. Developed regional guidelines on LITS and AHC
ii. Regional coordination mechanism established on LITS and AHC;
iii. National training sessions held on epidemiological data collection and reporting using ARIS and other systems;
iv. Train and Sensitize Key Stakeholders for Improved Disease Reporting & LITS

8.0. A poultry Abattoir/ Processing Plant Constructed in Ssemuto Luwero

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Hudan Manji Holdings Ltd –Yo Kuku constructed a big abattoir/processing plant in Ssemuto Luwero district, the biggest in Uganda and East Africa. The Company has two broiler farms one at Ssemuto and another at Kabira with production capacity of 260,000 birds every eight weeks in the environmental controlled houses with strong bio security. The farm produces 32,500 birds per week at its abattoir. The farm has a feed mill which absorbs raw materials from the local community at a rate of 200 tones per month and trains farmers in post harvest handling. The abattoir processes 2500 birds per hour.

**Figure 18: Uganda Poutry Abattoir**
9.4 Projects to support Tsetse and trypanosomiasis control

Table 5: Tsetse and trypanosomiasis control Projects

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Location/Area</th>
<th>Proposed Funder</th>
<th>Amount</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Uganda tsetse and trypanosomiasis eradication project</strong></td>
<td>In south eastern Uganda 30000 sq km</td>
<td>Arab bank for Economic development in Africa</td>
<td>USD 13,797,362</td>
<td>Pipeline project in the Ministry of Finance</td>
</tr>
<tr>
<td>Tsetse control in North western Uganda</td>
<td>2500 sq km</td>
<td>Bill and Melinda Gates Foundation</td>
<td>Ongoing in Arua, Koboko, Maracha, Yumbe, Mayaro</td>
<td></td>
</tr>
<tr>
<td>UGA/5/036 <em>Demonstrating the Feasibility of the Sterile Insect Technique (SIT) as part of an Area-Wide Integrated Pest Management (Aw-IPM) against Glossina</em></td>
<td>Kalangala Island 50 sq km</td>
<td>GOU/IAEA</td>
<td>Ongoing starting with tsetse colony establishment</td>
<td></td>
</tr>
<tr>
<td>Tsetse control in North Eastern Uganda</td>
<td>Karamoja region</td>
<td>N/A</td>
<td>USD 29,974,857</td>
<td></td>
</tr>
<tr>
<td>Submitted to the EAC for resource mobilisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.3. Standard Methods and Procedures in Animal Health Project

**Funder:** USAID/African Union Inter-African Bureau of Animal Diseases

**Duration:** 2014-2016

**Outputs:**

i. Framework for surveillance and control of trade related animal diseases established

ii. Laboratory testing procedures for the priority diseases harmonized in IGAD.

**Achievements**

i. Manual on syndromic surveillance to support passive surveillance especially by grassroots stakeholders developed and disseminated.

ii. Capacity building in Surveillance and epidemiology of RVF and other TADs

iii. Capacity building in Management Skills Development to support delivery of veterinary services- control of RVF and other TADs;

iv. Capacity building in Laboratory techniques

v. Capacity building in Laboratory techniques for testing of TADs and diagnosis of TADs;

vi. Cross border harmonization activities for coordination and harmonization of prevention and control of TADs in the region

vii. Supported improved information sharing through training on use and application of Animal Resources Information System (ARIS), provision of information and communication equipment and publication of the Animal Health information in Bulletins

viii. Support vaccination of Foot and Mouth Disease in 14 districts that were most affected by FMD outbreaks. These were Masaka, Mpigi, Rakai, Luwero, Nakaseke, Nakasongola, Mukono, Wakiso, Kabuga, Kyankwanzi, Kasasa, Ntungamo, and Isingiro. AU-IBAR provided funding to create awareness, conduct vaccinations and to support surveillance, monitoring and post vaccination sero-monitoring

National Awareness creation workshop on Livestock identification, traceability and animal disease reporting 5th - 6th October 2015 EUREKA PLACE Kampala Uganda
The Participatory Epidemiology Network in Uganda (PENU) is a non-Governmental organization that was voluntarily formed by members with the aim of spearheading community-based response to national, regional, and global health through multidisciplinary participatory epidemiology approaches that enhance community participation in disease investigation and response to animal health, public health, environmental health, and other catastrophes.

The vision of PENU is to achieve healthier and wealthier communities in Uganda. The mission is to provide effective and sustainable resources to critical needs of animal, public and environmental health concerns through a one health participatory approaches.

Membership is open to all experts in public health, animal health, environmentalists, sociologists, agriculturalists, and other relevant disciplines.

The use of Participatory Epidemiology approaches in Uganda started way back in 2002 when the first Veterinary pioneers were trained in Arusha, Tanzania by AU-IBAR to support the final eradication of rinderpest. This technology however became useful in supporting countries to control/prevent epidemic outbreaks of Highly Pathogenic Influenza in the country between 2008-2009. It was at this time when it became apparent that all disciplines including public health, animal health, environmentalists, sociologists, agriculturalists had to be trained to combat avian influenza outbreaks using a One Health Multidisciplinary Approach.

After realising that it was important to work as multidisciplinary teams to curb the various zoonotic epidemic outbreaks that were occurring including: Ebola in Kibaale and Luwero in 2012, Marburg in 2012 in Kamwenge, Ibanda, and Kabale and considering that there was a critical mass of practitioners that had been trained in participatory epidemiology approaches at the time, it became necessary to form the participatory epidemiology network in Uganda. The formation of the network drew lessons and experiences from other countries like Pakistan and India where such networks existed.

The Global Participatory Epidemiology Network supported the creation of this network in 2012.

PENU has been instrumental in controlling Transboundary Animal Diseases (TADs), human communicable and non-communicable diseases, and zoonoses in Uganda. PENU participated in the control of Anthrax outbreaks in Sheema and Mbarara districts as well as Plague in West Nile and Ebola outbreaks in different parts of the country.

In 2013 PENU in collaboration with AFRISA of the College of Veterinary Medicine, Animal Resources and Biosecurity with support from Land ‘O’ Lakes facilitated the mainstreaming of CAHWs in the delivery of animal health services in Liberia. PENU spearheaded the evaluation and training of veterinarians and Community Animal Health Workers (CAHWs) in Participatory Disease Surveillance in Karamoja region in 2015 with support from the Food and Agriculture Organisation (FAO). The objective was to build capacity in Karamoja region in delivery of animal health care services, animal disease surveillance and control.

The Participatory Epidemiology Network in Uganda was officially launched by the Honourable Lt. Col. Rtd. Dr. Bright Rwamirama, Minister of State for Animal Industry in the Ministry of Agriculture Animal Industry and Fisheries on 25th November 2015 at Hotel Africana.