TRANSBOUNDARY THREATS
TO FOOD AND NUTRITION SECURITY IN SOUTHERN AFRICA

ISSUE 2: OCTOBER - DECEMBER 2017
EDITORIAL

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Welcome to the quarterly Bulletin that highlights outbreaks of transboundary pests and diseases that have the potential to impact food and nutrition security in southern Africa. This Issue focuses on diseases that are naturally transmittable between animals and humans, also called zoonoses.

The Bulletin also captures recently concluded and upcoming events that are being organized by Food and Agriculture Organization of the United Nations (FAO) and stakeholders to improve the capacities of partners in preparedness and response to crop and livestock emergencies in the region.

It is published by FAO Resilience Hub of the Subregional office for Southern Africa.

This publication is a one-stop source of information collected from FAO and other partners’ sources.

We hope you will find it informative and useful.

Your comments and contributions are always welcome at FAO-SFS-REOSA@fao.org

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Zoonotic Threats
Animal Diseases That Also Affect Humans

Zoonoses are diseases that are naturally transmissible between animals and humans. It is estimated that about 60 percent of known human infectious diseases originate from animals, and that 75 percent of newly emerging diseases affecting humans are zoonotic, with most coming from wildlife. Zoonoses can cause severe and potentially fatal illness in animals and humans, as well as serious epidemics and pandemics. These diseases negatively impact on the health and productivity of animals and undermine the ability of humans to live healthy and productive lives and on livelihoods.

Important zoonoses that have newly emerged in various parts of the world the last decade include Highly Pathogenic Avian Influenza (HPAI) viruses H5N1, H1N1 (swine flu), severe acute respiratory syndrome (SARS) and Middle East Respiratory coronavirus (MERS-CoV). Human Immunodeficiency Virus (HIV), the virus that causes acquired immunodeficiency syndrome (AIDS) and Ebola virus disease (EBOV) are other examples of serious human diseases with animal origins.

Some zoonotic diseases are of global importance, affecting many countries in many regions of the world and have the potential to cause global pandemics. Others have a more limited geographical distribution but with the potential to expand to other regions. There are a number of zoonoses of importance in Southern Africa that cause the following diseases:

**BOVINE TUBERCULOSIS (bTB)**

Zoonotic tuberculosis (TB) is a form of tuberculosis in people caused by Mycobacterium bovis, which belongs to the M. tuberculosis complex. It often affects sites other than the lungs (extrapulmonary), but in many cases is clinically indistinguishable from TB caused by M. tuberculosis. Within animal populations, M. bovis is the causative agent of Bovine tuberculosis (bTB). The disease mainly affects cattle, which are the most important animal reservoir, and can become established in wildlife (buffalo, kudu, lion and elephant), as seen at the wildlife/livestock interfaces in **South Africa** (Kruger National Park) and **Zimbabwe** (Gonarezhou and Hwange National Parks). The epidemiological situation of bTB in livestock and human populations in Southern Africa is highly variable, with reports of
up to 50 percent prevalence at herd level, in some cattle populations. The disease has also been reported in cattle populations in Mozambique, Tanzania and Zambia. It results in significant economic losses and trade barriers with a major impact on the livelihoods of poor and marginalized communities.

While the most common route of transmission of M. bovis to humans is through contaminated food (mainly untreated dairy products or, less commonly, untreated meat products), airborne transmission also poses an occupational risk. The high prevalence of HIV in some Southern African rural populations is also an important additional risk factor for bTB.

Despite the apparent public health concern about bTB in the region, little has been done to highlight the zoonotic importance of the disease and to raise awareness of the community to prevent it. Furthermore, the presence of multiple hosts, inefficient diagnostic techniques, absence of defined national controls and eradication programs also hamper its control.

Preventing and controlling bTB at its animal source is crucial to avoid its transmission to humans, improve food safety and protect the livelihood of many rural communities.  


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**BRUCELLOSIS**

Brucellosis is caused by Brucella bacteria, which include Brucella abortus, which originate in cattle (contagious abortion or Bangs disease) and Brucella melitensis, which originate in goats. The disease is endemic throughout most of Southern Africa having been detected and reported in Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. It is notifiable in several countries in the region, and surveillance, movement control, and stamping out or vaccinations are implemented in Botswana, Lesotho, Namibia, and South Africa.

Generally, human infection occurs through direct contact with infected materials such as, the aborted foetus, afterbirth or consumption of poorly prepared meat and dairy products in the form of milk, cheese and butter, and sometimes the inhalation of airborne agents. Symptoms include an acute or sub-acute febrile illness usually marked by an intermittent or remittent fever accompanied by malaise, anorexia and prostration, and which, in the absence of specific treatment, may persist for weeks or months.

Control and prevention of Brucellosis in cattle is through vaccination. However, infected animals remain carriers and risk spreading the disease to other animals in the herd. It is best to remove them. Bulls should not be vaccinated, as they may become infertile and females, if pregnant, should also not be vaccinated, as they may abort.
Pasteurization or boiling of milk has been found to be effective in reducing the number of human infections.

For additional information on the impact and management of Brucellosis please refer to the following FAO resources;

1. A Video (Our Livestock Are Our Mother -- Doing Community One Health in Kaabong, Uganda) - https://www.youtube.com/watch?v=RFtiUyJpz0

2. FAO works to curb the burden of Brucellosis in endemic countries - Case studies from Eurasia and the Near East - http://www.fao.org/3/a-i3916e.pdf


Weather predictions for October – December point to below normal rains in some parts of Southern Africa. This will result in drought-like conditions, leading to scarcity of water and grazing pasture for livestock. Consequently, farmers living in close proximity to national parks or wildlife conservancies may encroach into these areas, in search of grazing pasture and water sources, thereby widening the interface between livestock and wildlife. This can potentially increase the risk of transmission of transboundary animal diseases such as FMD and zoonotic diseases such as bTB and Brucellosis, as buffaloes play an important role in the maintenance and transmission of these livestock diseases at the wildlife and/or livestock interface.

WHAT IS THE “ONE HEALTH” APPROACH?

The “One Health” approach has been devised to address the multiple factors influencing the emergence of infectious diseases and pandemic threats at the animal-human interface.

The approach recognizes that the health of people is connected to the health of animals and the environment.

The goal of “One Health” is to encourage the collaborative efforts of multiple disciplines-working locally, nationally, and globally-to achieve the best health for people, animals, and our environment.

The Food and Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (OIE) and the World Health Organization (WHO), recognizing the interdependence of human and animal health sectors partnered to address the major health and economic impacts of emerging and re-emerging infectious diseases at the animal-human interface.

Whilst FAO plays a critical role in raising the levels of nutrition, improving agricultural productivity, bettering the lives of rural populations and contributing to the growth of the world economy, there is increasing recognition that global health and food security form twin objectives.

HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI) H5N8

There are many serotypes of HPAI, some of which are zoonotic - some are low pathogenic and others highly pathogenic. The HPAI H5N8, serotype has been implicated in outbreaks in central and Southern Africa, which have so far remained confined to the Democratic Republic of Congo (DRC), South Africa and Zimbabwe. However, the overall risk of spread to other countries in Southern Africa is expected to increase due to the seasonal southward migration of wild birds. As such, the risk for the poultry industry also remains “HIGH” for future spread in the region. Whereas the HPAI H5N8 virus has so far not been shown to affect humans, the World Health Organization (WHO) advises that its zoonotic potential cannot be discounted.

National authorities should therefore strengthen HPAI H5N8 passive and active surveillance and monitoring of illness and mortalities in wild birds. All poultry keepers should strengthen biosecurity measures in their farms, as the risk level is likely to increase in the coming months.
ANTHRAX

Anthrax is caused by the bacillus anthracis bacterium. It is primarily a disease of grazing mammals, but all warm-blooded species can contract it. The disease is characterized by sudden death of apparently healthy looking animals. Humans are affected through direct exposure to the spores in infected or dead animals, ingestion of contaminated carcasses and by inhalation of the spores. The human disease takes two distinct forms – the respiratory and intestinal forms of anthrax. It also commonly affects people who are involved in shearing infected sheep or sorting wool ("wool sorter’s disease"). Anthrax has been reported in wildlife, specifically hippos in Zimbabwe and Namibia.

In endemic areas, cases and outbreaks of Anthrax are likely to increase during the early rainy season which promotes growth of fresh grass shoots and increases exposure of animals to anthrax spores. Animals tend to graze close to the ground thereby increasing contact with the anthrax spores found in alkaline soils. Early rains have already started in some areas and with we are likely to see an increase in anthrax cases.

Find more information about Anthrax here-
http://www.fao.org/3/a-i2530e/i2530e02.pdf

RABIES

Rabies is caused by the rabies virus. The disease is endemic in most countries in the SADC region, where it is mostly caused by the bite or scratch of a rabid dog. Worldwide, exposure to dog transmitted rabies is still the cause of more than 99 per cent of human and animal deaths from the disease.

Globally, an estimated 60 000 people die from rabies each year, of which, 40 per cent are children, bitten by rabies-infected dogs. Other livestock such as cattle, horses and donkeys are also infected mainly through bites from dogs, jackals, the yellow mongoose, but also from the bite of vampire bats as in parts of Latin America.

Once bitten by a rabid animal, the disease is
progressive, with mainly neurological symptoms and once clinical signs appear, it is nearly always fatal.

In Southern Africa, most deaths from rabies occur in countries with inadequate rabies vaccination programmes in dogs and lack of stray dog control programmes. The prevention and control of rabies include, vaccination of dogs and control of stray dogs, including management of their populations, for example by neutering, raising public awareness on rabies, promotion of responsible dog-ownership and strengthening monitoring and reporting of dog bites in humans and domestic animals. In humans, rabies vaccination is available, as well as post-exposure treatment (prophylaxis) in cases of dog bites. However, a single dose of human rabies vaccine can costs at least two-three times more than the single dose for livestock. It is therefore more cost-effective to invest in controlling the disease in the wild and domestic animal reservoir.

Overall, under-reporting of rabies downplays the relative animal and public health importance of the disease and thus hinders resource allocation for its control and elimination. A number of major rabies elimination programmes have been implemented in Tanzania and KwaZulu Natal Province of South Africa in recent years, as part of a global initiative to eradicate dog transmitted rabies.

In recent years, FAO and partners have supported the development of a STEPWISE APPROACH FOR RABIES PREVENTION AND CONTROL (http://www.fao.org/3/a-i3467e.pdf), which provides practical advice on the progressive control and elimination of dog-transmitted rabies.

World Rabies Day was held on 28 September 2017, during which FAO, OIE and WHO collaborated on a number of joint activities as part of the shared goal to eliminate human rabies and control the disease in animals. More information is available here - http://www.fao.org/news/story/en/item/198087/icode/.

A link to the recorded webinar screened by FAO and titled ‘United Against Rabies’ is provided here - http://fao.adobeconnect.com/ph1h3akqq175/

TRANSBOUNDARY ANIMAL DISEASES - UPDATES

Foot-and-Mouth Disease (FMD)

Foot-and-Mouth Disease or FMD impacts negatively on livestock production and regional and international trade in animals and animal products. It results in production losses, reduced household income and food insecurity especially among subsistence farmers. Outbreaks in Southern Africa have been reported in Botswana, Malawi, Mozambique, Namibia, South Africa, Swaziland and Zimbabwe. Find more information about FMD here - http://www.fao.org/ag/againfo/programmes/en/empres/disease_fmd.asp
CURRENT THREATS TO CROPS

FALL ARMYWORM (SPODOPTERA FRUGIPERDA)

The fall armyworm presence is confirmed in all Southern African countries except Lesotho and the Island States (although it is suspected in Seychelles). The pest has been observed in some irrigated maize crops in Namibia, Malawi, Zambia and Zimbabwe. There is a likelihood of carryover of the pest from irrigated winter to summer crops. In addition, high temperatures that favour multiplication of the fall armyworm as well as the forecasted normal to below normal rainfall during the October – December period for the major part of the region might be conducive conditions for the pest to resurge. There is a need to strengthen surveillance and monitoring of the fall armyworm, as main maize planting season starts in Southern Africa.


TOMATO LEAF MINER - TUTA ABSOLUTA

The Tomato Leaf Miner remains a pest of high concern in the region. It has been causing losses in tomato production and in some cases farmers had to abandon tomato planting to other cash crops. Outbreaks have been reported in the whole region, except Lesotho, Madagascar, Mauritius and Swaziland. As temperatures are high during October to December, which favour multiplication of Tomato Leaf Miner, its spread is likely to occur.

Find more information here - http://www.fao.org/3/a-i7796e.pdf

CASSAVA MOSAIC DISEASE

Cassava mosaic disease (CMD) is one of the most severe and widespread cassava diseases, limiting production of the crop in sub-Saharan Africa. It can be transmitted through infected stem cuttings and by grafting infected budwood onto healthy cassava plants. The disease has
been reported in Malawi and Zambia. Strict quarantine procedures during international exchange of cassava germplasm and the use of resistant/tolerant varieties and virus-free planting material are key for the control of CMD. Cassava is produced mostly by smallholder farmers and is an important source of carbohydrate and a potential alternative to maize, especially in drought-prone areas. The crop is adapted to a wide range of environmental conditions and tolerant to drought and acidic soils.

**BANANA FUSARIUM WILT DISEASE**

Banana fusarium wilt disease is a soil-borne disease caused by a fungal pathogen that cannot be eradicated once established in a plantation. It attacks banana plants of all ages and spreads mainly through the soil. Prevention is the most effective way of combatting the disease. Implementation of appropriate regulations and phytosanitary measures, along with guidelines provided by the International Plant Protection Convention (IPPC) is essential to stop entrance of the fungus into a country or region. Specific actions needed to prevent the spread include use of certified disease free tissue culture planting material, avoiding sharing of farm equipment, border controls, regular surveys, early detection and containment. In case of outbreaks, infested areas should be fenced in promptly, infected plants destroyed and quarantine measures employed. It is already present in two farms in the Nampula province of Mozambique since 2013 and it might further spread.

Find more information here -

**BANANA BUNCHY TOP DISEASE (BBTD)**

Banana bunchy top disease (BBTD) caused by the Banana Bunchy Top Virus (BBTV) is considered to be the most economically destructive virus disease affecting bananas worldwide. So far, the virus has been reported in Malawi.

Find more information here -

The Banana crop is made up of a diverse set of cultivar groups, each with a different genetic makeup and is among the top ten crops worldwide. The crop is a source of income, food supply and dietary diversity for millions of rural and urban households throughout the tropics and subtropics.

Bananas (Musa spp.), including dessert banana, plantain, and cooking banana, are the eighth most important food crop in the world, and the fourth most important in the least developed countries (FAOSTAT, 2015). The vast majority of producers are smallholder farmers who grow the crop for either home consumption or local markets (less than 15% of the global production of more than 130 million metric tonnes is exported).
RED LOCUSTS SWARMS OBSERVED

Red Locust swarms are still present in some parts of Southern Africa and are about to start breeding. Their movements and further increase of populations in the region could result in severe damage on crops and in particular, in the absence of early detection and control operations. High density swarms of Red locusts have been observed in Malawi, Mozambique, Tanzania and Zambia. Concerted efforts are required to carry out active surveillance, scouting, monitoring and to the extent possible, implement preventive interventions in the outbreak areas and abate further spread.

Find more information here - http://www.fao.org/3/a-i7796e.pdf

THREATS TO THE FORESTY SECTOR

BLUE GUM CHALCID

Blue Gum Chalcid is a gallinducing wasp species currently spreading in many countries and causing damage to young eucalypt plantations and nurseries. The pest is likely to continue to spread between October and December in Malawi, South Africa, Tanzania, Zambia and Zimbabwe.

RED GUM LERP PSYLLID

The Red gum lerp psyllid insect pest is also likely to continue spreading in Malawi, Mozambique, Zambia and Zimbabwe, causing severe damage in Eucalyptus plantations.

BRONZE BUG

Bronze bug spread is likely to occur between October and December 2017, damaging Eucalyptus woodlots in Zimbabwe. However, pest management activities are in progress.

THREATS TO FISHERIES AND AQUACULTURE

EPIZOOTIC ULCERATIVE SYNDROME

Epizootic ulcerative syndrome or EUS is likely to occur during October – December, if the water temperatures will range between 18 °C and 25 °C, which is the optimal temperature for the development of the oomycete fungus.

Areas that have such water temperature range during this forecast period may be at risk. Outbreaks of EUS have been reported in Botswana and Zambia.

RECENTLY CONCLUDED EVENTS

REVIEW OF HPAI PREPAREDNESS AND RESPONSE CAPACITIES

Following the outbreak of HPAI H5N8 in South Africa and Zimbabwe, FAO, in collaboration with the SADC Secretariat organized a three-day regional meeting (2-4 August 2017) to review the preparedness and response capacities to the HPAI outbreaks in Member States. The meeting provided a platform for sharing information, experiences and knowledge on the ongoing outbreaks, the challenges in the control of the disease, its impacts, lessons learned and good practices in the management of H5N8 HPAI. The meeting allowed countries to assess their preparedness, response capacities and actions, and to identify key constraints and opportunities for more effective response and collaborative management of H5N8 HPAI outbreaks at national and regional levels. A review of the existing regional strategy was done and action plans developed.


STRENGTHENING CAPACITY TO MANAGE ANIMAL DISEASE EMERGENCIES IN SOUTHERN AFRICA

In its efforts towards building country capacities in preparedness and response to animal health emergencies, the FAO organized a regional workshop on Good Emergency Management Practices (GEMP) for Southern Africa. The GEMP is...
a set of guiding principles on best practices for the management of disease outbreaks in emergency situations. It provides veterinary services with the knowledge and skills to effectively control, contain and prevent spread of animal diseases through better preparedness, coordination and timely response. Twenty six veterinary and public health officials attended the three-day workshop from 08 - 10 August 2017, in Johannesburg, South Africa.

Find more information here -

INTERNATIONAL TRAINING OF TRAINERS (TOT) ON LIVESTOCK EMERGENCY GUIDELINES AND STANDARDS (LEGS)

From 25-30 September 2017, an international Livestock Emergency Guidelines and Standards (LEGS) ToT course was conducted in Johannesburg, South Africa by the Vetwork UK, in collaboration with the FAO Subregional Office for Southern Africa. Trainees who included livestock specialists, policy makers, rural developers, and humanitarian specialists were drawn from 12 African countries.

The LEGS project exists to improve the quality and accountability of responses to emergency situations that affect communities that depend on livestock for their livelihoods. The overall aim is to protect the welfare of the livestock owners, the livestock themselves, and the livelihood system within which they exist together with the natural resource base.

Recently, climate change appears to be resulting in more frequent and diverse types of disaster. Especially vulnerable are livestock-dependent communities in fragile arid and semi-arid environments who are experiencing increasing drought followed by severe flooding. From a global perspective, the most pressing need is to improve relief interventions aimed at livestock for their social and economic wellbeing. LEGS covers livestock interventions in these usually pastoral areas, but also addresses livestock support to settled farming communities and livestock kept by people in urban areas.

The trainees who graduated from this course will go on to roll out LEGS training courses in their respective countries and organizations. To date 23 ToTs have been held globally.

Find more information about LEGS here -
http://www.livestock-emergency.net/ and
http://www.fao.org/emergencies/resources/

SOUTHERN AFRICA REGION FOOT AND MOUTH DISEASE (FMD) ROADMAP MEETING

A regional FMD roadmap meeting for the SADC Member States was held from 11-13 September 2017, in Dar es Salaam, Tanzania. The objectives of the meeting were sharing of information on FMD circulating virus and assessing the progress on FMD control in the region. The meeting deliberated on the challenges facing the livestock sector in Southern Africa, and assessed the status of FMD control in each country, based on the FAO/OIE progressive Control pathway for FMD approach. It was jointly organized by FAO and OIE – under the framework of the FAO/OIE Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs). The meeting was attended by Chief Veterinary Officers, Heads of Veterinary Epidemiology, and laboratory experts from 12 SADC Member States, and representatives from international and regional bodies, international reference laboratories and development partners.
NEW FALL ARMYWORM MANAGEMENT PROGRAMME FOR SMALLHOLDER FARMERS

The FAO “Framework for the coordinated management of the fall armyworm” identifies farmer education and community action through Farmer Field Schools (FFS) as one of the key strategies for sustainable management of the infestation. Developed by FAO and partners over 25 years ago, the FFS methodology involves groups of 20 – 30 farmers who meet regularly in one of their own fields, under the guidance of a trained facilitator to learn about their agricultural production challenges. The methodology is anchored on Integrated Pest Management (IPM), an ecological pest management approach that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides.

From 20 – 27 September 2017, FFS Trainers and other extension staff from the SADC region underwent a training in fall armyworm management, using FFS principles in Blantyre, Malawi. The training focused on the fall armyworm diagnostic features, surveillance, monitoring, impact assessments and management options.

The trainees will cascade the training, through existing FFS and national extension services, farmer groups, organizations and associations, and other community-based systems across the SADC region.

FALL ARMYWORM SURVEILLANCE AND EARLY WARNING SYSTEM

FAO has set up a mobile phone-based fall armyworm surveillance system in 12 SADC countries (Angola, Botswana, Lesotho, Madagascar, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe). The system is anchored on a grid of pheromone traps and will operate during the 2017/18 summer season. In addition, FAO procured and distributed to countries, 2 600 pheromone traps to enhance surveillance services in the countries.
Timely and secure dispatch, transportation of infectious materials and samples to specialized laboratories (e.g. FAO/OIE/WHO Reference Centers) is essential for confirmatory diagnosis, and to initiate disease control measures. International regulations on the transportation of infectious materials stimulates the requirements for packaging and handling and in addition, require that the senders of such substances be trained and certified under an internationally recognized program. Unfortunately, many national veterinary laboratories in developing countries do not have appropriately trained and certified staff. This often causes delays in preparation and dispatch of samples to reference laboratories for advanced disease diagnosis and characterization and therefore hinders outbreak response.

FAO will soon conduct a training and accreditation on transportation of infectious substance by air for ten technicians from the SADC region. The date and venue will be communicated in due course.

For more information, please contact SFS-REOSA@fao.org and Elma.Sikala@fao.org
PILOTING A NEW SYSTEM TO IMPROVE SURVEILLANCE AND EARLY WARNING OF ANIMAL DISEASES

FAO has developed the EMA-i (Event Mobile Application) tool for data collection to facilitate real-time disease reporting and to enhance the capacity of veterinary services in disease surveillance. The smartphone-based disease reporting system will be piloted in Lesotho and Zimbabwe, starting from November 2017.

Surveillance and Early Warning of animal disease outbreaks, including zoonotic diseases enables national authorities to implement more timely and targeted interventions including information and advice to livestock keeping communities. Good-quality and timely disease information and reporting are also needed to understand the disease situation, to generate disease distribution maps in real time, support decision-making, prevent potential disease incursion and respond quickly.

For more information about the EMA-i tool, please contact Patrick.Otto@fao.org and Elma.Sikala@fao.org

Find more information here - http://www.fao.org/3/a-i4853e.pdf
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