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FAO ANIMAL PRODUCTION AND HEALTH



report

FAO's SUPPORT TO THE ONE HEALTH REGIONAL APPROACH

Towards integrated and effective animal health–food safety surveillance capacity development in Eastern Africa

Report of the Workshop
Entebbe, Uganda
23–24 January 2013

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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Contents

Acronyms

AH	animal health
ARIS	Animal Resources Information System
ASF	African swine fever
AU-IBAR	African Union Interafrican Bureau for Animal Resources
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
ECTAD	Emergency Centre for Transboundary Animal Disease Operations
EMPRES-i	Global Animal Disease Information System (FAO)
EU	European Union
EW	early warning
FAO	Food and Agriculture Organization of the United Nations
FMD	foot-and-mouth disease
FS	food safety
HPAI	highly pathogenic avian influenza
IDWG	Interdepartmental Working Group
IGAD	Intergovernmental Authority on Development
INFOSAN	International Food Safety Authorities Network
NGO	non-governmental organization
OHCEA	One Health Central and Eastern Africa
OIE	World Organisation for Animal Health
PH	public health
PPR	peste des petits ruminants
RA	rapid alert
REC	regional economic community
RVF	Rift Valley fever
SADC	South African Development Community
SOP	standard operating procedure
SMS	short message service
TAD	transboundary animal disease
TB	tuberculosis
USAID	United States Agency for International Development
VHF	viral haemorrhagic fever
WAHIS	World Animal Health Information System
WHO	World Health Organization

Acknowledgements

FAO would like to thank the Government of Ireland for the generous support that made this workshop possible. We also wish to thank the Ministry of Agriculture, Animal Industry and Fisheries of Uganda, the hosting country, the governments of East African countries for supporting their representatives' attendance at the workshop, all the speakers who enriched the quality of the workshop, and the FAO Representation in Uganda.

We are particularly grateful to all participants for their active contributions throughout the workshop, in focus group discussions and presentations. The workshop was designed, planned and delivered by FAO in collaboration with One Health Central and Eastern Africa (OHCEA) using the guiding principles of the One Health approach. The organizing team consisted of staff from FAO's Animal Production and Health Division (Drs Julio Pinto and Fairouz Larfaoui), Food Safety and Codex Unit (Dr Andrijana Rajic), and Emergency Centre for Transboundary Animal Disease Operations (ECTAD) Kenya office (Drs Bouna Diop and Samuel Okuthe), with Makerere University representing OHCEA. We are grateful for the collaborative efforts provided by the following individuals from Makerere University: Drs Geoffrey Kabagambe Rugambwa, William Bazeyo, Juliet Kiguli and Samuel Majalija and for technical assistance; and their administrative staff for on-site assistance. Particular acknowledgment is given to Makerere University/OHCEA and Mr Timothy Wakabi for developing this technical report under FAO guidance.

The role played by the representative of the African Union's Interafrican Bureau for Animal Resources (AU-IBAR) in sharing AU-IBAR's experiences in One Health and exploring opportunities for supporting partnerships in animal health–food safety surveillance deserves special mention.

Background and rationale

Globally, the frequency of emerging and re-emerging diseases and food safety threats, and their impact on human health have increased over recent decades. Many of these threats originate from the interfaces among humans, animals (including wildlife), the agrifood production and distribution chain and the environment. These diseases and hazards/threats have major impacts on animal and human health, agrifood trade and national and global economies. Pandemic threats such as avian influenza, global food safety emergencies such as chemical or biologic hazards, and other biological threats such as antibiotic-resistant bacteria have considerable impacts on social stability and security at the global level.

The Food and Agriculture Organization of the United Nations (FAO) Strategic Action Plan (2011–2012) on "Sustainable Animal Health and Contained Animal-Related Human Health Risks – In Support of the Emerging One Health Agenda" extends the lessons learned from FAO's successful response to H5N1 highly pathogenic avian influenza (HPAI) to other threats that could arise from the complex interfaces among human and animal populations, the agrifood system and the environment. The key objective of the action plan is a world in which such risks and their adverse impacts on food security, livelihoods, trade and economic development are minimized through effective prevention, early detection, rapid response, containment and elimination.

FAO's regional One Health workshop Towards Integrated and Effective Animal Health–Food Safety Surveillance Capacity Development in Eastern Africa was designed and delivered as a participatory regional event, with the main goal of enhancing regional collaboration in animal health (AH) and food safety (FS) surveillance, using the principles of the globally endorsed One Health approach.

Workshop objectives

The workshop objectives were to:

- enhance existing regional collaborative surveillance networks covering the broad AH-FS interface (including zoonoses and veterinary public health), using One Health principles and practices;
- improve existing early warning (EW) and rapid alert (RA) surveillance capacity in AH-FS at the regional and country levels, within the context of the One Health approach;
- promote the One Health approach for managing AH-FS issues at the interfaces among humans, animals, the food chain and the environment at the country and regional levels.

The workshop agenda is shown in Annex 1.

Workshop participants and organizing team

Participants from 11[1] countries were invited, representing expertise in animal health, food safety and wildlife. The workshop was attended by 42 participants: 28 employees of government ministries (primarily agriculture) from ten East African countries; five from One Health Central and Eastern Africa (OHCEA)/Makerere University; eight from FAO Headquarters and the Emergency Centre for Transboundary Animal Disease Operations (ECTAD) regional office; and one from the African Union Interafrican Bureau for Animal Resources (AU-IBAR). A list of workshop participants is provided in Annex 2.

The workshop was designed, planned and delivered by FAO in collaboration with OHCEA. The team included staff from FAO's Animal Health Service and Food Safety and Codex Unit groups (at Headquarters in Rome), its ECTAD Eastern Africa office, Makerere University, and OHCEA. OHCEA is a network of 14 public health (PH) and veterinary higher education institutions located in six countries in the Central and East African region, which includes the Congo Basin – considered a "hot spot" for emerging and re-emerging infectious and non-infectious threats. The team members are shown in bold in Annex 2.

The participants were addressed by the ECTAD Regional Manager for Eastern Africa (Dr B. Diop) on behalf of the FAO Representation in Uganda and FAO's Chief Veterinary Officer; the Chief Veterinary Officer of Uganda (Dr Nicholas Kauta); and the Program Manager for OHCEA (Dr Geoffrey Kabagambe). A summary of the opening remarks is given in Annex 3.

[1] Burundi, Djibouti, the Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Uganda and the United Republic of Tanzania sent representatives. The Sudan's representatives were unable to arrive on time.

Workshop approach

The two-day workshop was designed, planned and delivered as an interactive participatory forum employing short presentations for setting the stage, followed by focus group discussions based on previously designed guidelines.

On the first day, participants were divided into five focus groups of six to eight members each, ensuring a representative mix of multidisciplinary, multisectoral expertise/jurisdictions and countries in each group. Each group had a facilitator and a recorder selected from the FAO/OHCEA organizing team, or colleagues. Facilitators were asked to encourage inclusiveness and effective discussions, with predetermined timings for each step of the focus groups' proceedings. They were cautioned against allowing anybody to dominate discussions. Group recorders used laptops to record everything mentioned, and narratives were created to enable formal thematic analysis (led by A. Rajic and J. Moss). Each group identified a reporter to present a verbal summary of the group's discussion of each question.

Before the start of the focus group discussions, two presentations were made to establish a common understanding of major AH and FS issues at the regional level. A summary of the two presentations – "Current State of Animal Health–Food Safety Surveillance in the East Africa Region" and "Food Safety in Selected African Countries: Issues, Gaps and Needs" – is available in Annex 4. Groups were provided with the same five questions to guide discussions of approximately two hours, after which each group made a ten-minute presentation of its discussion. A list of the participants in each focus group on day 1 is shown in Annex 5.

Day 2 consisted of four focus groups. Two discussed the major gaps and basic needs in AH-FS surveillance at the national and regional levels that need to be addressed to allow the implementation of a One Health approach. The other two groups discussed gaps and needs in EW-RA systems at the national and regional levels. Groups were again provided with previously developed questions to guide their discussions. Before the start of the focus group discussions, two presentations were made to establish a common understanding of major EW-RA systems for AH-FS at the national, regional and international levels. A summary of the two presentations – "Towards Improved Food Safety through Prevention and Effective Response" and "EMPRES-i: an FAO Information System for Improving Disease Surveillance at the Regional and Global Levels" – is available in Annex 4. The discussions lasted approximately three hours. Each group made a 15-minute presentation after its discussion. A list of the participants in each focus group on day 2 is shown in Annex 6.

The questions used to guide discussions on days 1 and 2 are shown in Annex 7. The overall focus group discussion coordinator for days 1 and 2 was Dr Andrijana Rajic (FAO) assisted by Dr Juliette Kiguli (Makerere University/OHCEA).

Key results of the workshop

A summary of presentations made by invited speakers from FAO, AU-IBAR and OHCEA is given in Annex 4.

FOCUS GROUP DISCUSSIONS: HIGHLIGHTS

Day 1

Major emerging/re-emerging AH-FS threats include Rift Valley fever (RVF), tuberculosis (TB), brucellosis, chemical residues, biological hazards, and Ebola and Marburg haemorrhagic fevers. Significant gaps in AH-FS surveillance systems are inadequate financial and human resources, poor infrastructure and diagnostic capacity, and weak information systems and legal frameworks. The main technical and organizational needs for AH-FS surveillance initiatives in the East African region include capacity assessment and building, resource mobilization, and harmonization of information systems. A summary of focus group discussions, recommendations for higher-level ideas, and major needs for improving AH-FS surveillance at the regional level are captured in Table 1.

Day 2

The ideas generated through focus group discussions on the establishment and enhancement of basic AH-FS surveillance capacity at the regional level to allow implementation of the One Health approach within the context of food security are summarized in Table 2.

The main gaps and needs for improving EW-RA AH-FS surveillance at the regional and national levels within the context of food security and One Health are shown in Table 3.

OVERALL FINDINGS

- There are important gaps in existing AH (including surveillance) and – particularly – FS capacities (including surveillance) at the country and regional levels.
- One Health is a promising paradigm for improving surveillance systems at the interfaces among human, animal, plant, food chain and environmental health.
- Pragmatic strategic approaches to AH-FS capacity assessment and development are strongly encouraged, for both the country and regional levels. The main objective is to establish basic AH-FS surveillance capacity in most countries in the region, allowing them to apply the One Health surveillance approach more effectively.
- To establish One Health surveillance at the regional level, an enabling environment based on political will, strong commitment and efforts from top to bottom and vice versa must be in place.

Table 1: Summary of the focus group discussions on day 1

Issue	Group 1 (Jean Kamanzi/Fairouz Larfaoui)	Group 2 (Juliet Kiguli)	Group 3 (Patrick Otto/Jim Zingeser)	Group 4 (Julio Pinto/Sam Okuthe)	Group 5 (Samuel Majalija/Bouna Diop)
Emerging/re-emerging AH-FS threats	1. Chemical residues 2. Biological hazards (salmonellosis) 3. Ebola 4. Bovine TB 5. Anthrax 6. Rabies 7. RVF 8. Avian influenza 9. Parasitic diseases 10. Brucellosis	1. Ebola 2. Marburg 3. RVF 4. Avian influenza 5. Foot-and-mouth disease (FMD) 6. Peste des petits ruminants (PPR) 7. African swine fever (ASF) 8. Anthrax 9. Rabies 10. Brucellosis	1. RVF 2. Brucellosis 3. Rabies 4. Anthrax 5. TB 6. Avian influenza 7. Parasites (cysticercosis, *T. soleum)* 8. Residues 9. Salmonellosis (poultry) 10. Aflatoxins	1. Cholera 2. TB 3. Trypanasomiasis 4. Brucellosis 5. Rabies 6. Anthrax 7. Residual drugs and pesticides 8. Ebola 9. Marburg 10. RVF	1. Chemical residues (pesticides and acaricides, veterinary drugs) 2. Biological hazards (salmonellosis in poultry; aflatoxins) 3. Ebola 4. Bovine TB 5. Anthrax 6. Rabies 7. RVF 8. H5N1 HPAI 9. Parasitic diseases (trichinelosis and cisticercosis) 10. Brucellosis
Five priority AH-FS threats	1. Chemical residues 2. Biological hazards 3. Bovine TB 4. RVF 5. Brucellosis **Ranking criteria:** Not specified	1. Ebola 2. Marburg 3. RVF 4. FMD 5. ASF **Ranking criteria:** PH importance, mortality, morbidity, disease management and socio-economic impact	1. RVF 2. Avian influenza 3. Salmonellosis in poultry 4. Brucellosis **Ranking criteria:** Risk analysis principles	1. TB 2. Brucellosis 3. Rabies 4. Anthrax 5. Viral haemorrhagic fevers (VHFs) **Ranking criteria:** Not specified	1. Chemical residues 2. Biological hazards 3. Bovine TB 4. RVF 5. Brucellosis **Ranking criteria:** Food security

cont.

Table 1 (cont.)

Issue	Group 1 (Jean Kamanzi/Fairouz Larfaoui)	Group 2 (Juliet Kiguli)	Group 3 (Patrick Otto/Jim Zingeser)	Group 4 (Julio Pinto/Sam Okuthe)	Group 5 (Samuel Majalija/Bouna Diop)
Current main AH-FS surveillance initiatives (regional and country levels) and networks addressing issues and threats	**Initiatives** - Community-based surveillance systems with information from the grassroots to the central level (Burundi, Eritrea, Kenya, South Sudan and Uganda) - Ante- and post-mortem inspection forms sent to central authorities - Digital pen technology for notifiable diseases (Kenya and United Republic of Tanzania) - SMS reporting system (pilot in Uganda) - Active surveillance for outbreaks - Networking of universities, research institutions and governments (Kenya) - Regional network for information sharing on prevention and control of transboundary animal diseases (TADs) - Zoonotic working group (Kenya) **Gaps** -Technology not available - Poor infrastructure - Insecurity - Inadequate human and financial resources	**Gaps** - Inadequate diagnostic capacity - Inequalities in diagnostic capacities across the region - Inadequate trained personnel - Lack of funding **Needs** - Harmonization of diagnostic capacity across countries - Capacity building - Increased mobilization of financial resources	**Initiatives** - National AH-FS surveillance systems (active and passive) - National food sampling programmes - Imported food sampling programmes - Export food sampling programmes (to confirm conformity with importing country requirements) - Regional initiatives: East African Laboratory Network East Africa Epidemiology and Early Warning Network **Gaps** - Limited resources for surveillance - Poor information sharing among sectors and countries - Lack of appropriate legal and institutional frameworks - Weak or lack of information systems - Lack of a harmonized information system across countries - Unclear roles, responsibilities and obligations for reporting	**Initiatives** - TB management (Uganda and Ethiopia) - Monthly disease reporting for RVF, PPR, FMD and brucellosis (Ethiopia) - Surveillance in abattoirs (Ethiopia and Uganda) - Joint disease investigation (Ethiopia) - Monthly rabies reporting (Eritrea) - Rehabilitation of laboratory with plant and animal diseases addressed at one site (Eritrea) - National task forces for disease outbreak management at the national and local levels (Ethiopia and Uganda) - Monitoring of risk levels at mass graves of hippos during anthrax outbreak (Uganda) - Anthrax vaccination (Democratic Republic of the Congo) - Production of anthrax vaccines (Ethiopia) - Laboratory development for analysis of residual drugs and antimicrobials - Plans to produce bacterial vaccines (Eritrea), anthrax, black leg and pasteurelosis	**Initiatives** - Boiling milk to address brucellosis (community level) - TB and brucellosis surveillance (national level every six months) - Zoonotic working group - Disease surveillance at the community and national levels - Ante- and post-mortem inspection - Government collaboration with research networks for information sharing - Regional approach to TAD prevention and control **Gaps** - Technology for surveillance systems not available at all levels - Poor infrastructure - Insecurity - Inadequate finance and human resources - Insufficient political will - Poor or inadequate communication and coordination - Lack of awareness - Cultural beliefs (against boiling milk) - Lack of institutional policies and legal frameworks

cont.

Table 1 (cont.)

Issue		Group 1 (Jean Kamanzi/Fairouz Larfaoui)	Group 2 (Juliet Kiguli)	Group 3 (Patrick Otto/Jim Zingeser)	Group 4 (Julio Pinto/Sam Okuthe)	Group 5 (Samuel Majalija/Bouna Diop)
Current main AH-FS surveillance initiatives (regional and country levels) and networks addressing issues and threats (cont.)		- Lack of political will - Poor coordination/communication - Lack of awareness - Cultural beliefs (against boiling milk) - Legal framework		**Needs** - Allocation of adequate resources - Capacity development (policy, institutional and technical) - Infrastructure development - Awareness creation - Harmonization of reporting	**Gaps** - Poor collaboration on One Health issues - Lack of wildlife platform and poor laboratory infrastructure (Eritrea) - Lack of knowledge on causes of anthrax - Poor coordination of FS issues (Uganda) (no single body responsible) - Poor infrastructure and technology for vaccines	
Would the One Health approach help address gaps/needs?	Yes: One Health principles, practices and approaches	- Multisectoral gaps/needs addressed through multisectoral One Health approach	- Bringing together of animal and human disease surveillance units - Joint disease outbreak investigations and fieldwork	- Coordination of various initiatives - Holistic approaches - Multidisciplinary and multisectoral collaboration - Transparence within and among states - Networking	- Bringing together of people dealing with surveillance and human and animal health; development of One Health curricula and conducting of joint field activities, refresher courses	- Multisectoral gaps/needs addressed through multisectoral and multidisciplinary One Health approach
	No: Other options and explanation of why not	- Issues such as insecurity (socio-economic, political) cannot be addressed through One Health approach		- Difficulty in securing political support and will		- Insecurity and weak political will cannot be addressed through One Health approach
Three higher-level ideas for improving AH-FS surveillance at the regional level		Establish desk officers at regional economic communities (RECs) to address AH-FS issues Develop an REC/regional policy for AH-FS Map and harmonize regional AH-FS networks; establish networks where none exist	Develop a harmonized information system for AH-FS surveillance Develop standard operating procedures (SOPs) for the region Strengthen capacity of surveillance for AH-FS diagnostics	Strengthen surveillance systems and networks in RECs (COMESA, EAC, SADC, IGAD) Strengthen regional enforcement of sanitary and phytosanitary regulations Harmonize surveillance systems and protocols Strengthen/build regional laboratory capacity	Improve infrastructure Collaborate through information networking Develop the political will for effective implementation Improve collaboration among WHO, OIE, RECs and FAO to support member states	Implement the Animal Resources Information System (ARIS) 2 Mainstream One Health in government institutions Provide financial support for awareness and communication campaigns on One Health

Table 2: Summary of ideas generated through the focus group discussions on day 2

Item	Group 1 (Sam Okuthe/Julio Pinto)	Group 2 (Jean Kamanzi/Fairouz Larfaoui)
Proposal/idea	**Improving AH-FS surveillance systems in the East Africa region**	**Improving AH-FS surveillance systems in the East Africa region**
Why is this idea a priority?	- Lack of harmonization and networking of AH-FS at the regional level (existing network not well coordinated)	- Biological hazards, e.g. salmonellosis (Uganda) and aflatoxins - Priorities affecting PH and FS - Adaptable for other countries - Ranked according to priority areas affecting FS - Use of existing systems - Use of One Health approach
How will this idea improve AH-FS surveillance?	- Capacity building and coordination in food safety, testing capacities, country meetings, e-mails, alert systems for AH and FS systems - Surveillance, testing and training	- Training on disease investigation, quality control and information systems - Strengthening of national laboratories (Eritrea) and identification of regional reference laboratories - Information system for data reporting and sharing at different levels - Development and use of SOPs - Legal framework for operating the system, with defined roles and regulations - Communication - Policy regulation - Coordination and collaboration - Communication among sectors/ministries - Integration among sectors and countries - Accreditation system, with criteria for valid laboratory results
Main objectives	- Increase countries' awareness of AH and FS threats - Share information on disease outbreaks and FS. - Enhance responsiveness and cost-effectiveness of interventions - Coordinate activities and harmonize data sharing	- Improve AH status - Protect consumers - Facilitate trade - Improve food security
Proposed approach(es)	Regional network on FS-AH linked to a regional community body	Incorporate FS into existing surveillance for TADs
Main players	Member states, RECs, livestock industry/traders, AU-IBAR, FAO, OIE, WHO, EU	
Timelines	Five years to establish the network	
Main gaps	Varying capacities for AH-FS surveillance among countries	
Main needs	- Funding - Legal framework - Capacity building in information technology, inspection and certification, data analysis, epidemiology and risk analysis	
Anticipated challenges	- Inclusion of countries not associated with REC - Political instability/sustainability - Information and dissemination for effective response - Potential conflicts with existing networks - Language barriers	

cont.

Table 2 (cont.)

Item	Group 1 (Sam Okuthe/Julio Pinto)	Group 2 (Jean Kamanzi/Fairouz Larfaoui)
FS aspects to be addressed, and AH-FS-PH objectives and outcomes	Aspects addressed: Improved availability and accessibility of healthy animals and food Objectives/outcomes: - Harmonized regional approaches to AH-FS surveillance - Enhanced capacities on AH and FS - Improved quality of and access to animal products for local communities - Regional trade development	Aspects addressed: Availability of safe food of animal origin for consumers Objectives/outcomes: - Improved availability of safe food for consumers - Improved AH status - Improved FS and consumer protection - Increased trade in animals and foods of animal origin - Reduced disease outbreaks - Safe trade within the region
Measurement of outcomes	- SOPs for data sharing (when, how and who) - Number and frequency of meetings - Number of training events and attendance - Certification systems, tests of product samples for residues - Statistics on imports and exports - Consumer statistics reports (index), quality assurance systems for products	- Baseline
How is OH part of the idea?	Involvement of multidisciplinary/cross-sectoral teams	Veterinarians, PH workers and agriculturists (farmers) involved in developing the system
Why should donors invest in the proposal?	- Improves the socio-economic welfare and development of local communities	- Reduces poverty and hunger - Improves animal and human health - Improves livelihoods by improving food security - Improves incomes by facilitating trade - Is cost-effective

Table 3: Gaps and needs identified during focus group discussions

Item	Group 3 (Bouna Diop)	Group 4 (Sam Majalija/Juliet Kiguli)
Current state of national and regional EW-RA surveillance systems covering AH, FS and PH	- AH network generally in place at the country level, but functioning with limited resources - PH network in place - Inadequate collaboration between human and animal health, but some collaboration to address zoonotic diseases (Kenya's Zoonotic Disease Unit) - Rwanda: Animal Board, veterinary laboratory for epidemic infectious diseases, Rwanda Biomedical Board in the Ministry of Health - Uganda: Zoonotic department in the Ministry of Health led by a veterinarian - United Republic of Tanzania Food and Drugs Authority Regional level: Eastern Africa Region Epidemiology Network, East African regional laboratory networks	
Main gaps and needs	National-level: - Inadequate laboratory capacity for AH-FS - Insufficient collaboration/coordination among ministries - Inadequate funding - Limited trained human resources - Weak information sharing - Insufficient political will	

cont.

Table 3 (cont.)

Item	Group 3 (Bouna Diop)	Group 4 (Sam Majalija/Juliet Kiguli)
Main gaps and needs (cont.)	Regional-level: - Lack of regional policy - Lack of an AH-FS-PH regional network - Inadequate regional AH-FS-PH information system - Absence of an AH-FS-PH authority	
Proposal	**Improving the AH-FS-PH surveillance system**	**Capacity building for the national and regional levels**
Why is this idea a priority?	- Recent increase of emerging and re-emerging AH-FS threats at the human–animal–ecosystem interface, with limited information and actions for mitigating this situation	- Food security closely intertwined with AH throughout the production system - FS of PH importance because of hazards - FS of economic importance because of trade requirements - Healthy animals required for FS - A "farm-to-fork" One Health approach
Main objectives	Goal: Contribute to ensuring food security National-level objectives: - Improve understanding of AH-FS threats for better prevention and control - Establish efficient and effective EW-RA systems Regional-level objectives: - Enhance and harmonize AH-FS surveillance across the region/REC	Goal: Strengthen the surveillance and reporting of EW-RA systems Objectives: - Improve reporting along the food value chain at the national and regional levels - Strengthen farmers' capacity to identify and report diseases - Harmonize regional EW systems with global AH systems - Improve surveillance capacity for AH-FS systems - Improve the livelihoods and well-being of humans, animals and the ecosystem
Approach	National level: - Conduct situational assessment of AH-FS at the country level - Create awareness about the needs for addressing constraints - Build capacity to address needs - Develop/strengthen/implement an appropriate legal framework based on international guidelines - Establish a national authority responsible for coordination of AH-FS activities, with adequate budget Regional level: - Establish a regional AH-FS network within the REC - Develop a regional AH-FS policy for harmonizing national policies and guidelines - Establish an AH-FS information management system	Capacity building: - Train human resources - Ensure community-based participation of stakeholders - Establish and link communication centres and information sharing platforms at the national, regional and global levels - Establish an electronic information system with national, regional and global links Network strengthening: - Establish and manage a national surveillance network - Establish a clear management structure and mechanism for network sustainability Network capacity building for improved surveillance: - Develop laboratory capacity and carry out laboratory mapping - Provide technical support, and develop/improve infrastructure - Continue support with laboratory supplies and equipment - Standardize laboratories and accreditation - Develop partnerships at the regional and global levels

cont.

Table 3 (cont.)

Item	Group 3 (Bouna Diop)	Group 4 (Sam Majalija/Juliet Kiguli)
Main players	Country level: - Key ministries – heath, agriculture/livestock, wildlife, finance - Universities - Research institutions - Non-governmental organizations (NGOs) involved in AH-FS - Local authorities Regional level: - RECs - Technical and financial partners – AU-IBAR, FAO, World Bank, USAID	Farm level: - Farmers, private sector, government, academic institutions, food manufacturing industry, input suppliers (pharmaceuticals, feed, etc.) Processing plant level: - Transporters, traders, consumers, regulatory agencies, processors
Timeline		Five-year project
Main gaps	National level: - Inadequate integrated information and knowledge on AH-FS-PH issues - Inadequate legal framework and policies - Lack of an AH-FS-PH national authority - Inadequate formal linkages among veterinary departments and focal points for Codex and the International Food Safety Authorities Network (INFOSAN) - Inadequate laboratory capacity for AH-FS - Insufficient collaboration/coordination among ministries - Inadequate funding - Limited trained human resources - Weak information sharing - Insufficient political will	National level - Poor reporting system along the value chain - Poor linkages along the value chain - No EW/weak reporting system - Lack of institutional autonomy for sustainability – need for financial support - Lack of sustainability of institutions that are project-based - Need to define the roles of different players during project design - Inadequate capacity of laboratories - Lack of or weak detection capacity of laboratories - Laboratories not accredited at international standards
Anticipated challenges	- Acceptance of the concept by member states (relevant authorities) and REC - Availability of resources (financial) - Support from technical partners	- Resource mobilization - Political will of participating member states - Differences in capacity among countries in the region - Lack of enabling policy documents and guidelines
FS aspects to be addressed, and AH-FS-PH objectives and outcomes		Aspects to be addressed: - Increased animal production - FS - Biological and chemical hazards Outcomes: - Minimized drug and chemical residues - Improved household incomes, food availability, accessibility and safe foods - Increased volume and quality of animals and animal products from the region - Improved functional electronic regional AH system in place - Standard procedures for AH-FS surveillance in place - Functional laboratory facilities in place

- There is critical need to establish stronger AH-FS surveillance capacities in all participating countries, building on existing collaborative and participatory regional networks and developing and implementing coordinated and strategic AH-FS capacity at the country and regional levels, to allow better use of scarce resources.
- The implementation of such an approach would result in faster detection of One Health threats, increased resilience to such treats, enhanced nutrition-sensitive food security at the household level, and improved public health and well-being from increased production and trade of safe agrifood products.
- FAO and other regional stakeholders should increase awareness of One Health approaches at the national and regional levels and contribute to establishing an appropriate regional environment for One Health by implementing sound, participatory and regionally relevant AH-FS capacity assessment and building initiatives.

Recommendations

1. Conduct transparent, structured capacity assessment for AH-FS surveillance at the country and regional levels, including EW aspects, and prioritize needs using structured and transparent assessment tools and participatory approaches.
2. Use One Health principles – holistic, cross-sectoral, multidisciplinary, coordinated participatory approaches – for developing and implementing AH-FS surveillance initiatives.
3. Establish or enhance effective AH-FS networks at the country and regional levels, to allow implementation of One Health approaches. FAO should provide a list of all participants' contact details, to enable information sharing and communication on potential follow-up initiatives.
4. FAO should strengthen cooperation with countries and advocate at different fora on the need to build and enhance coordinated and robust AH-FS surveillance systems and networks.
5. Countries and RECs should consider developing proposals with the assistance of FAO and other relevant organizations, and should seek funding for these projects.
6. Based on collective inputs from this workshop, FAO will follow up with Makerere University/OHCEA and other key regional collaborators (AU-IBAR, the International Livestock Research Institute, etc.) to explore opportunities for developing potential funding proposals.

Annex 1

Workshop agenda

Meeting

Agenda

FAO's support to **One Health** Regional Approach

Towards integrated and effective animal health-food safety surveillance capacity development in Eastern Africa

One Health Surveillance Workshop

Entebbe, Uganda,
23-24 January 2013

DAY 1

23 January 2013

Building integrated AH-FS surveillance capacity using a One Health approach

SESSION 1: OPENING & INTRODUCTIONS

8:30–9:00	Registration	
9:00-9:45	Opening ceremony	
	-Introductory note by ECTAD Regional Manager for Eastern Africa	*B. Diop*
	-Welcoming remarks by Chief Veterinary Officer	*N. Kauta*
	-Remarks by FAO Representation in Uganda	*FAO Uganda*
	-Round of introduction	*Participants*
	-Opening remarks by National Authorities	*MAAIF*
9:45-10:15	Project/workshop overview and objectives	*J. Pinto*
10:15-10:45	**Group picture & Coffee break**	

SESSION 2: SHAPING ONE HEALTH

Chair: B. Diop

10:45-11:00	One Health in Central and Eastern Africa: Key Highlights	*William Bazeyo, Makerere University*
11:00-11:30	One Health activities	*Partners/Organizations*
11:30-11:45	One Health in FAO	*A.Rajic*
11:45-12:00	Questions/Discussion	*B. Diop/Participants*
12:00-13:30	**Lunch**	

SESSION 3: AH-FS SURVEILLANCE IN THE REGION: KEY ISSUES, INITIATIVES, GAPS AND NEEDS

Chair: A. Rajic

13:30-13:45	Current state of AH-FS surveillance in participating countries: main gaps and needs	*S. Okuthe*
13:45-14:00	Questionnaire results	*A. Rajic/S. Okuthe*
14:00-15:30	Focus group discussions using *a priori* developed questions	*Participants*
15:30-16:00	**Break**	
16:00-17:30	SESSION 3 *(cont'd)* Group discussions/Group presentations	*Participants*

DAY 2

24 January 2013

Addressing key surveillance needs and relevant priority issues at the interface of AH-FS using One Health principles, practices and tools

SESSION 4: AH-FS SURVEILLANCES/EW-RA SYSTEMS: KEY GAPS, NEEDS AND OPPORTUNITIES

Chair: J. Pinto

8:30–8:40	Recap of Day 1/Overview of Day 2	*P. Otto*
8:40-9:10	Surveillance/EW-RA tools to improve prevention, detection and response to FS/other threats	*A. Rajic*
9:10-9:40	EMPRES-i: an FAO information system to improve disease surveillance at regional and global level.	*F. Larfaoui*
9:40-10:00	Questions/Group discussion	
10:00-10:30	**Break**	

SESSION 5: DEVELOPING RELEVANT AH-FS SURVEILLANCE (EW-RA) IDEAS AND PROPOSALS

10:30-12:00	Focus group discussions using *a priori* developed questions	*Participants*
12:00-13:30	**Lunch**	
13:30-15:30	SESSION 5 *(cont'd)* Group discussions using *a priori* developed questions Group presentations	*Participants*
15:30-16:00	Summary of key outcomes, next steps Final remarks and closing of the workshop	*J. Pinto/B. Diop*

BACKGROUND

The Food and Agriculture Organization's (FAO) Strategic Action Plan (AP 2011-12), *"Sustainable animal health and contained animal related human health risks–in support of the emerging One-Health agenda"*, extends the lessons learned from FAO's successful response to H5N1 Highly pathogenic avian influenza (HPAI) to other threats with potential adverse impacts on animal and human populations, the agri-food system and environment. The key outcome of the Action Plan is: "a world in which risks to animal and animal-related human health due to a wide range of emerging and re-emerging zoonotic and other threats, and associated impacts on food security, livelihoods, trade and economic development are minimized through effective prevention, early detection, rapid response, containment and elimination".

PURPOSE

The workshop objectives are to:

- Enhance existing regional collaborative surveillance networks covering broad animal health-food safety (AH-FS- including zoonoses and veterinary public health) interface, using the OH principles and practices.
- Improve existing early warning and rapid alert (EW-RA) surveillance capacity in AH-FS at the regional and country level within the context of OH approach.
- Promote OH approach in managing AH-FS issues arising from the interface of humans, animals, food chain and environment at the country/regional level.

TARGETED AUDIENCE

Animal health, food safety, public health professionals working in various governmental agencies covering the interface of humans, animals and food chain at the community, country and regional level in East Africa.

Annex 2

Workshop participants

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Annex 3

Summary of opening remarks

Dr Diop informed the workshop that this was a FAO week in Uganda and that in addition to the workshop two other FAO events were running. In his remarks, Dr Kabagambe observed that OHCEA was formed to strengthen collaboration between animal and human health. He thanked Dr Patrick Otto for initiating the collaboration between FAO and OHCEA. On behalf of the FAO Representation in Uganda, Dr Diop informed participants that the workshop was held within the framework of implementation of the project "Enhancing Disease Surveillance, Risk Analysis and Early Warning Activities in Africa", funded by the Government of Ireland. This project aims to assist selected sub-Saharan African countries in developing tools to improve disease surveillance and risk management at the human–animal–ecosystem interface that can be realized through locally adapted approaches and joint strategies for the prevention and control of diseases with impacts on public health, poverty and human livelihoods. The Director of Veterinary Services of Uganda informed the workshop that Uganda would host a One Health conference in February 2013 and that this workshop was a very good input into that conference. He emphasized the need to use integrated approaches rather than working in silos.

Annex 4

Summary of presentations

Julio Pinto: FAO's Support to One Health Integrated Surveillance
Dr Pinto presented the objectives and outcomes of FAO's support to One Health in integrated surveillance at the human–animal–food safety–ecosystem interface. Objectives include enhancing regional collaborative AH-FS surveillance networks, improving EW-RA capacity in AH-FS, and promoting One Health in managing AH-FS issues. Dr Pinto observed that the workshop's three activities were linked to One Health. He also noted that no one solution fits all the needs for One Health implementation.

Geoffrey Kabagambe: One Health in Central and East Africa – Highlights
Dr Kabagambe provided participants with the background to OHCEA, which operates in six countries at seven schools of public health and seven veterinary medicine schools. It has United States partners from the University of Minnesota and Tufts University. He presented OHCEA's successes and activities that it plans to implement in the future. During a question session following the presentation, Dr Kabagambe informed the workshop that OHCEA has not yet established formal collaboration with the Southern African Centre for Infectious Disease Surveillance (SACIDS), but was in contact with SACIDS with a view to establishing such collaboration.

Samuel Wakhusama: AU-IBAR One Health Activities
Dr Wakhusama presented a paper on AU-IBAR's One Health activities, noting that the AU is working on a common framework for management of TADs and zoonoses using the One Health approach. AU-IBAR's One Health activities include integrated mechanisms for prevention and control of TADs and zoonoses in Africa, collaborative training on One Health, drafting of a One Health curriculum for Africa, and regional One Health workshops. A key challenge is sustaining and using the enthusiasm for One Health that has been generated.

Patrick Otto: Overview of the Workshop on Implementing One Health at the Community Level
Dr Otto briefed the workshop on a one-day FAO workshop on implementation of One Health at the community level, which was conducted in Kampala on 22 January 2013. One Health is to be piloted in Kaabong, a remote district of Uganda, located in Karamoja region. This had been an inception workshop with varied participants from government ministries, international agencies, Makerere University, OHCEA, and districts and communities where the project is to be implemented. A major objective of the pilot project is to identify priority livelihood issues that can be addressed through the One Health approach. Dr Otto reported that the workshop had been opened by Uganda's Minister for Agriculture, who expressed support for One Health.

Andrijana Rajic: One Health in FAO

Dr Andrijana reviewed One Health momentum around the world, with veterinarians at the forefront. She presented FAO's strategic objectives within the context of its food security mandate, noting that collaboration across disciplines is key to achieving strategic objectives. One Health examples relevant to FAO include the potential for food hazards and contamination at any point of the food chain, from inputs to final consumers, and antimicrobial use and resistance across various sectors. A multidisciplinary approach is therefore needed to realize food security and safety. In November 2012, FAO established the One Health Interdepartmental Working Group (IDWG), which has been adapting One Health to FAO, developing FAO's One Health concept and planning the mainstreaming of One Health throughout FAO. Dr Rajic noted that One Health is still in its infancy in FAO and mainstreaming is a major exercise that will need strong support and commitment from senior management. During the question session that followed the presentations, participants observed that there are still problems with convincing physicians to embrace One Health. They also emphasized the importance of involving the community and top-level policy-makers in advancing the One Health approach.

Sam Okuthe: Current State of Animal Health–Food Safety Surveillance in the East Africa Region

Dr Okuthe observed that AH surveillance networks are very weak at the national level and are characterized by inadequate staffing, poor linkages with the private sector and weak reporting until outbreaks of TADs or VHFs occur. AH risk assessment capabilities are also weak at the regional level. FS surveillance is not clearly defined until there is an outbreak of public health importance, such as cholera or food poisoning. Information systems for AH are inadequate and vary greatly across the region, with one country still using a paper-based system. Gaps in addressing AH issues are weak AH infrastructure, inspection, surveillance and diagnostic services; inadequate staffing; lack of stakeholder awareness; lack of SOPs; and weak animal identification.

Following the presentations, it was observed that the workshop participants were predominantly veterinarians, with little representation from other important One Health disciplines such as public health. One explanation for this situation was that this was a preliminary workshop, which was not intended to include all stakeholders. As the workshop was an FAO initiative in collaboration with FS and AH programmes, the focus was bound to be on veterinarians. Other issues discussed included the challenges of attributing causes of food-borne diseases, and poor traceability. Participants also observed that there are no institutional arrangements for addressing FS issues using a One Health approach. AU-IBAR's project on standards, methods and procedures in AH addresses traceability, and information from this project is available to workshop participants.

Andrijana Rajic and Sam Okuthe: Food Safety in Selected African Countries: Issues, Gaps and Needs

Drs Rajic and Okuthe presented a summary of preliminary results from a survey of FS gaps and needs, which was carried out in the Democratic Republic of the Congo, Ethiopia, Kenya, Uganda and the United Republic of Tanzania. Findings

indicate that the primary ministries responsible for FS are those of public health, animal health and fisheries. Top-rated FS issues among respondents include veterinary drug/pesticide residues and selected microbiological hazards. The report summary is provided in Annex 8.

Andrijana Rajic: Towards Improved Food Safety through Prevention and Effective Response

Dr Rajic observed that global events such as human population increase, urbanization, climate change and increased customer awareness have led to more adverse food chain events and are underreported. FAO has a food safety and quality programme to provide scientific advice, capacity building for FS, and prevention and management of emerging risks. Countries are encouraged to adopt a food chain approach, covering all stages from the input to the consumer level. Dr Rajic informed the workshop that FAO can help countries to improve their national legislation, including by assessing FS capacity. An FS capacity assessment tool was being developed and was expected to be ready in June 2013. She also discussed INFOSAN, whose major purpose is rapid information exchange; the FAO/WHO framework for emergency response planning; and recent and new initiatives in EW-RA systems for FS. She informed participants that money is available from FAO for capacity building and advised them to take advantage of this opportunity.

Fairouz Larfaoui: EMPRES-i: an FAO Information System for Improving Disease Surveillance at the Regional and Global Levels

Dr Larfaoui made a presentation on FAO's Global Animal Disease Information System (EMPRES-i), which aims to improve disease surveillance at the regional and global levels. EMPRES-i is a Web-based application that supports FAO, veterinary services and the international animal community by facilitating global information sharing, risk analysis and EW. The system is in English, French and Spanish, and has modules for disease events, genetics, surveillance, laboratories and configuration, as well as the EMPRES-i Event Mobile Application (EMA), a library and a directory. Dr Larfaoiu presented screen shots of each module to show how the database functions and what its outputs look like. Data can be entered into the system manually, via mobile device or by Excel-automated upload. Following the presentation, participants observed that EMPRES-i is not interoperable with systems such as the World Animal Health Information System (WAHIS), but the official data available in WAHIS are also available in EMPRES-i. FAO is exploring the possibility of linking EMPRES-i with other regional and international information systems, such as WAHIS and AU-IBAR's ARIS 2.

Annex 5

Focus group participants – day 1

Group 1 facilitated by Jean Kamanzi/Fairouz Larfaoui
Ndikuriyo Didace (Burundi)
Michael Cheruiyot (Kenya)
Kwal Arop (South Sudan)
Robert Mwebe (Uganda)
Tekle Weldeabzgih (Eritrea)

Group 2 facilitated by Juliet Kiguli
J.J. Nkangaga (United Republic of Tanzania)
Mekonnen Alemayehu (Ethiopia)
Ekofo Claude (Democratic Republic of the Congo)
Mbabu Rees Murithi (Kenya)
Jean Felix Kinani (Rwanda): recorder

Group 3 facilitated by Patrick Otto/Jim Zingeser
Nshimiramana Yves (Burundi)
David Adwok (South Sudan)
Sero Luwongo Hassan (United Republic of Tanzania)
Teklezghi Zeru (Eritrea)
Kyouwijuka (Uganda)
Mohamed (Djibouti)
Bolock (Djibouti)

Group 4 facilitated by Sam Okuthe / Julio Pinto
Lazare Butunungu (Burundi)
Dgedion Yilma (Ethiopia)
Tesfay Joseph (Eritrea)
Roger Madiamba Mponda (Democratic Republic of the Congo)
Margaret Driciru (Uganda)
Aluma Ameri Ama (South Sudan)

Group 5: facilitated by Samuel Majalija/Bouna Diop
Aluma A: recorder
Karitu (Kenya)
Naga (Ethiopia)
Dibwe Kalamba (Democratic Republic of the Congo)
Samuel Wakhusama (AU-IBAR)

Annex 6

Focus group participants – day 2

Group 1 facilitated by Julio Pinto/Sam Okuthe
Butunungu (Burundi)
Adwoko (South Sudan)
Mponda (Democratic Republic of the Congo)
Aluma (South Sudan)
Ali Bolock (Djibouti)
Mounia Goumaneh (Eritrea)

Group 2 facilitated by Jean Kamanzi/Fairouz Larfaoui
Teklezghi Tekie Zeru (Eritrea)
Tesfai (Eritrea)
Didace Ndikuriyo (Burundi)
Yves Nshimirinana (Burundi)
Alor Kwaja Arop (South Sudan)
Claude Ifasso Ekofo (Democratic Republic of the Congo)
Floribert Dibwe Kalamba (Democratic Republic of the Congo)
Ali Ibrahim (Djibouti)

Group 3 facilitated by Bouna Diop
Nkangaga J. Japhet (United Republic of Tanzania)
Yilma Gedion (Ethiopia)
Michael Cheruiyot (Kenya)
Karitu James (Kenya)
Robert Mwebe (Uganda)
Samuel Wakhusama (AU-IBAR)
Jean Felix Kinani (Rwanda): recorder

Group 4 facilitated by Samuel Majalija/Juliet Kiguli
Nega (Ethiopia)
Luwongo (United Republic of Tanzania)
Mbabu Rees Murithi (Kenya)
Margaret (Uganda)
Benon (Uganda)

Annex 7

Focus group discussion guidelines

Day 1: group questions – all five groups

1. Identify between five and ten emerging/re-emerging AH-FS threats (including zoonoses and veterinary PH threats) and cross-cutting issues arising from the interface of animal and human health, agrifood chains and the environment, at the country and regional levels (East and Central Africa).
   - Rank them in risk analysis/or threat form (Juliette Kiguli to explain at the workshop).
2. Evaluate the impact on food security (food access, food availability, etc.) of each threat/issue: prioritize five threats based on their relevance to food security within the region.
   - List/describe current main (national, regional, community) AH-FS surveillance initiatives and networks addressing these main issues and threats. What are the current gaps (technical, organizational, etc.)? What are the main needs (technical, organizational, etc.)?
   - Indicate how One Health is integrated into the various sectors at the regional, national and local levels.
3. Would the One Health approach help in addressing these gaps/needs?
   - If yes, which One Health principles, practices and approaches would be useful? How could these practices and approaches be applied within the context of improving AH-FS surveillance at the regional and country levels?
   - If no, what other options are there? Please explain why a One Health approach would not help. How could the alternative approach(es) be applied within the context of improving AH-FS surveillance at the regional and country levels?
4. Identify and propose three key higher-level ideas for improving AH-FS surveillance at the regional level. These ideas can be completely new, related to One Health, building on other initiatives, etc. Feel free to be creative and pragmatic.

Day 2: group questions

Groups 1 and 2

Develop a detailed proposal for implementing one of One Health surveillance ideas from day 1. Each group should select a different idea. The idea selected should be relevant to the region, and also clearly directed towards improving AH-FS surveillance at the regional level, within the context of food security and, preferably, One Health.

The following questions might help in elaborating/summarizing the idea/proposal:

- Why is this idea a priority? How will it improve AH-FS surveillance within the regional context?
- What is the main objective?
- How can the idea be implemented? Who are the main players, and what are

the timelines, main gaps, main needs and likely challenges?
- What aspects of food security will be addressed? What are the AH, FS and PH objectives/outcomes likely to be? How will progress towards these objectives be measured? Is the One Health approach part of the idea? If yes, how does it fit in?
- Why should organization [X] invest in this proposal?

Groups 3 and 4

1. What is the current state of national and regional EW-RA surveillance systems covering the AH-FS-PH interface, or any of these aspects individually?
2. What are the main gaps and needs?
3. Develop a detailed proposal for implementing one of the One Health surveillance ideas from day 1. Each group should select a different idea. The idea selected should be relevant to the region, and also clearly directed towards improving AH-FS surveillance at the regional level, within the context of food security and, preferably, One Health.

The following questions might help in elaborating/summarizing the idea/proposal:

- Why is this idea a priority? How will it improve AH-FS surveillance within the regional context?
- What is the main objective?
- How can the idea be implemented? Who are the main players, and what are the timelines, main gaps, main needs and likely challenges?
- What aspects of food security will be addressed? What are the AH, FS and PH objectives/outcomes likely to be? How will progress towards these objectives be measured? Is the One Health approach part of the idea? If yes, how does it fit in?

Annex 8

Food safety survey preliminary results

- A total of 17 individuals responded to the survey, representing five African countries: the United Republic of Tanzania (n = 6), Kenya (n = 4), the Democratic Republic of the Congo (n = 3), Ethiopia (n = 3) and Rwanda (n = 1).
- The primary areas of work mentioned were animal health/production (100 percent) and animal food safety (76.5 percent).
- The primary national ministries responsible for FS were the ministries of public health (88.2 percent), animal health (70.6 percent) and fisheries (58.8 percent).
- Primary surveillance activities among respondents included ante-mortem veterinary inspections (100 percent), post-mortem meat inspections (100 percent), epidemiological outbreak investigations (94.1 percent) and notifiable disease reporting by field veterinarians (94.1 percent).
- The top-rated food safety issue among respondents was microbiological hazards/contamination (64.7 percent); the most commonly noted specific hazards were *Salmonella* (35.3 percent), *Escherichia coli* (29.4 percent), echinococcus (29.4 percent) and cysticercosis (29.4 percent)
- Respondents rated veterinary drug and pesticide residues as the most important issue for their respective countries (with > 80 percent awarding them 5 on a five-point scale); *Salmonella, E. coli* and mycotoxins were also rated as very important (awarded 5 by > 70 percent).
- Respondents rated all the FS needs noted as highly important (with > 75 percent awarding each of the needs 5 on a five-point scale).
- According to respondents, meat/meat products were the first or second most important agrifood import and export commodity in terms of value and volume. Other important import products included dairy/milk, eggs and fish; export products included live animals, horticulture vegetables/pulses, coffee/tea, dairy/milk and cereals/grains.

Note: The main purpose of the survey was to obtain basic information on regional and national gaps and needs in FS. However, the survey findings should be interpreted with considerable caution because they represent the views of 17 individuals from only five countries from the region. The process used to recruit countries and individuals was limited by administrative and organizational constraints.

Table 1: Key characteristics of survey respondents

Characteristic	No. of respondents	% of respondents
Participants		
United Republic of Tanzania	6	35.3
Kenya	4	23.5
Democratic Republic of the Congo	3	17.6
Ethiopia	3	17.6
Rwanda	1	5.9
Areas of work		
Animal health/production	17	100.0
Animal food safety	13	76.5
Public health	9	52.9
Food safety (food chain)	5	29.4
National ministries responsible for FS		
Public health	15	88.2
Animal health	12	70.6
Fisheries	10	58.8
Environment	5	29.4
Agriculture	5	29.4
Prime Minister's office	3	17.6
Wildlife	2	11.8
Other	4	23.5
National ministries/institutions collecting and storing FS data		
Public health	13	76.5
Animal health	9	52.9
Fisheries	8	47.1
Agriculture	4	23.5
Food and drugs authority	3	17.6
Wildlife	2	11.8
Prime Minister's office	2	11.8
Environment	1	5.9
Other	4	23.5
Country surveillance activities		
Ante-mortem veterinary inspection at slaughter	17	100.0
Post-mortem meat hygiene inspection at slaughterhouses and/or processing plants	17	100.0
Formal epidemiological outbreak investigations	16	94.1
Field veterinary practitioners reporting notifiable diseases and unusual events	16	94.1
Medical (public) health practitioners reporting notifiable diseases and unusual events	15	88.2
Routine laboratory diagnostic (AH) testing	15	88.2
Syndromic surveillance	14	82.4
Routine laboratory diagnostic (PH) testing	12	70.6
Official inspection of feed mills	7	41.2
Chemical agrifood monitoring programmes	4	23.5

cont.

Table 1 (cont.)

Characteristic	No. of respondents	% of respondents
Microbiological agrifood surveillance programmes	4	23.5
Targeted/project-based surveillance	3	17.6
Participatory disease surveillance	2	11.8
Other	4	23.5

Table 2: Respondents' top-rated food safety issues

Issues	No. of respondents	% of respondents
Microbiological hazards/contamination	11	64.7
Specific organisms/diseases:		
Salmonella	6	35.3
E. coli	5	29.4
Echinococcus (hydatidosis)	5	29.4
Taeniasis/cysticercosis	5	29.4
Brucellosis	4	23.5
Bovine tuberculosis	3	17.6
Leptospirosis	2	11.8
Campylobacter	2	11.8
Other	4	23.5
Chemical residues	6	35.3
Veterinary drug residues	5	29.4
Mycotoxins	4	23.5
Food safety production practices/inspection	4	23.5
Antimicrobial use/resistance	3	17.6
Animal movement controls	3	17.6
Other	3	17.6

Table 3: Respondents' top-rated import/export agrifood commodities in terms of volume

Commodities (n = 17)	No. of respondents	% of respondents
Imports		
Meat/meat products	8	47.1
Dairy/milk products	7	41.2
Eggs	7	41.2
Fish (canned/fresh)	6	35.3
Rice/maize/wheat and other grains	4	23.5
Pesticides	2	11.8
Veterinary drugs	2	11.8
Other products	4	23.5
Exports		
Meat/meat products	12	70.6
Live animals	5	29.4
Horticulture vegetables/pulses	5	29.4
Coffee/tea	5	29.4
Dairy/milk products	3	17.6
Cereals/grains	3	17.6
Honey	2	11.8
Other products	2	11.8

Table 4: Respondents' top-rated import/export agrifood commodities in terms of value

Commodities (n = 16)	No. of respondents	% of respondents
Imports		
Dairy/milk products	7	43.8
Meat/meat products	5	31.3
Eggs	5	31.3
Fish (canned/fresh)	5	31.3
Rice/maize/wheat and other grains	4	25.0
Sugar	2	12.5
Other products	4	25.0
Exports		
Meat/meat products	10	62.5
Cereals/grains	4	25.0
Dairy/milk products	4	25.0
Coffee/tea	4	25.0
Live animals	3	18.8
Horticulture vegetables/pulses	3	18.8
Fish/fish products	3	18.8
Honey	1	6.3
Eggs	1	6.3

Figure 1
Respondents' top-rated food safety issues for their respective countries

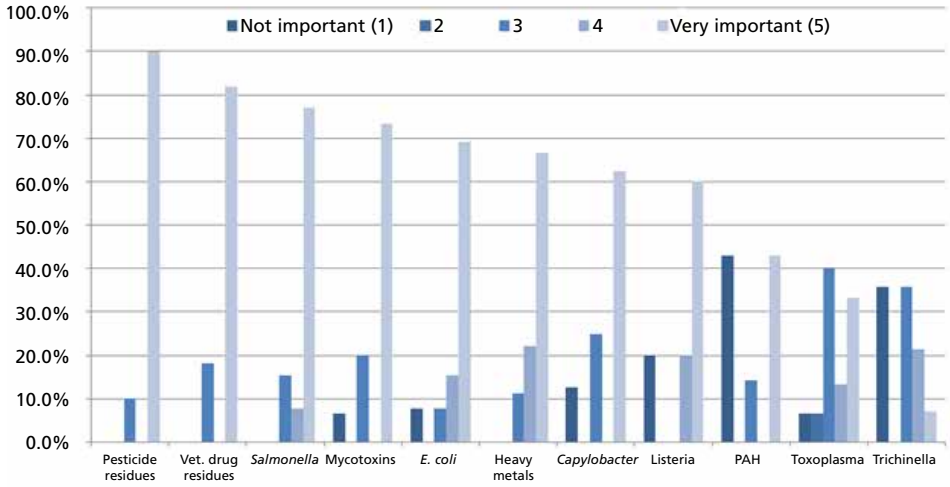

Figure 2
Respondents' top-rated food safety needs