Challenges in Plant Protection, Animal Health, and Food safety

FAO’s Activities

Dr. Jean-Michel POIRSON
Senior Officer, EMPRES Food Safety
_Nutrition and Consumer Protection Division_
Food and Agriculture Organization of the United Nations
The United Nations has stated that access to a safe and secure food supply is a basic human right.

**FAO Mandate:**

- Food safety and food security,
- Safeguard of animal and veterinary public health, and
- Sustainable intensification of crop protection,

are at the heart of FAO’s mandate.

FAO HQ - Rome
Impact of food safety incidents

- **Melamine contamination of dairy products** (2008)
  6 deaths, 300,000 illnesses and 115 types of contaminated food products

- **Salmonellas in peanuts in US** (2009)
  9 deaths, 22,500 illnesses

- **Dioxin contamination of pork from Ireland** (2008)
  Culling of 100,000 pigs, destruction of 125 million € worth of food, and total economic losses in excess of US$ 1 billion

- **Aflatoxin in maize in Kenya** (2004)
  317 cases and 125 deaths

- **Contaminated green onions in Mexico** (2003)
  3 deaths, over 600 illnesses, resulted in closure of markets in the US for most Mexican agricultural products
**Impact of Animal Health**

**Figure 1:** Economic Impact of Selected Infectious Diseases: Recent Livestock Disease Outbreaks and SARS

- **SARS**
  - China, Hong Kong, Singapore, Canada
  - $30-50 bn

- **Foot & Mouth**
  - UK
  - $25-30 bn

- **BSE**
  - UK
  - $10-13 bn

- **Foot & Mouth**
  - Taiwan, $5-8 bn

- **Classical Swine Fever**
  - Netherlands, $2.3 bn

- **Nipah**
  - Malaysia
  - $350-400 m

- **HPAI**
  - Italy
  - $400 m

- **BSE**
  - Japan
  - $1.5 bn

- **Avian Flu**
  - NL
  - $500 m

- **BSE**
  - Canada
  - $1.5 bn

- **Avian Flu, Asia**
  - $5-15 bn

- **BSE, US**
  - $3.5 bn

- **Foot & Mouth, Brazil**
  - $1 bn+

*Figures are estimates and are presented as relative size.*
Impact of plant health Capacity Building

Desert locust in Africa

- 1985-1986 plague cost US$ 900 million to control (today’s value)
- Importance of capacity building:
  - little capacity building until 2001 in the North/western region
  - East/central region: US$ 12 millions over 10 years in capacity building
- 2003-2005 plague
  - North/western region US$ 270 millions + US$ 120 millions in food aid
  - East/central region US$ 7 million

Impact of new pests:

- RIFA (Red Imported Fire Ant): US$ 150 million (8yrs), another US$ 110 million (5yrs)? Potential loss was estimated at US$ 4.5 billion over 30 yrs
- Papaya Fruit Fly eradication: US$ 80 million & 5 years
FAO’s Activities

• International Standardization and harmonization (in cooperation with OIE, WHO: Codex Alimentarius Commission, IPPC)

• Scientific advice

• Capacity building programmes

• Emergency Prevention: Food Chain Crisis management framework with EMPRES Programmes (with OIE: GLEWS and WHO: INFOSAN)
FAO adheres to a risk based approach in managing hazards as they may arise at different stages of the agricultural production and food chain supply.

Move from REACTIVE to PREVENTIVE approach.

- Vehicle emission
- Agricultural practices
- Waste
- Industrial emissions and effluents
- Crops
- Livestock
- Seafood
- Processing
- Storage
- Distribution
- Retail
- Preparation

FAO Comparative Advantage
• Capacity Building is at the heart of development, and improving countries' ability to improve agriculture and food production.

• Successful Capacity Building is based on:
  » National Ownership
  » Building on Existing Capacities
  » Training individuals
  » Institutional Development

• HOW DO WE DO IT? WHAT ARE OUR MECHANISMS?
Plant Health

Number of broad but related areas

- Transboundary pests (EMPRES – locusts)
- Integrated Pest Management (sustainable systems and biocontrol)

IPPC (transboundary movement)

- 172 contracting parties
- def. of pests & scope (environment)

Institutional development

- framework (commitment and legislative), resources, facilities, cooperation of all stakeholders

Technical assistance
Plant Health Capacity building

International Standards for Phytosanitary Measures (SPM)

- pest risk analysis (PRA): pathways & commodities
- surveillance, monitoring
- reporting, including global information exchange
- diagnostics
- certification (revising) & non-compliance
- emergency response / contingency planning

National capacity

- variable
  - *very poor* compared to animal health
• Main activities
  – Global Ridnerpest Eradication Program (GREP)
  – H5N1 HPAI
  – Foot and Mouth Disease
  – African Swine Fever
• Shift from long term capacity building toward emergency prevention
**Food safety hazards?**

### BIOLOGICAL
- Zoonotic microorganisms (Salmonella spp, *Campylobacter, E. coli*, Brucella, Trichinella, Toxoplasma, Echinococcus)
- Other bacteria – *Cl. botulinum, S. aureus*
- Parasitic – *Giardia intestinalis, Cryptosporidium*
- Viruses in food - Noroviruses, Hepatitis A.
- Fungal - Aflatoxins
- Prions – e.g. BSE
- Antimicrobial resistant microorganisms

### CHEMICAL
- Pesticide, veterinary drugs residues
- Heavy Metals (e.g. mercury, lead)
- Persistent Organic Pollutants (POPs) persist in the environment and accumulate in food chain – DDT, industrial chemicals (PCBs), dioxins, furans
- Naturally occurring toxins e.g. aflatoxins in peanuts, ciguatoxin in coral fish, biotoxins in filter-feeding shellfish
- Radioactive Isotopes (accidental release)

**Sources:** Human and Animal Reservoir, Environmental, Food Production Practices.
Key elements of FAO work on strengthening food safety?

• Development of **Codex standards, Scientific Advice** and their use in national food control programmes

• **Official food control programmes**
  – Government = regulators and supporters to food producers and food industry
  – Farm to fork approach
  – Risk analysis and risk based approach for food control
  – Communication with consumer

• **Best practices in food supply chain**
  – Primary responsible for food safety
  – Preventive measures throughout the food chain
  – GAPs, GHPs, HACCP
Examples of activities to build capacity on food safety and quality

• **National implementation of Codex** standards and compliance with **SPS** requirements;

• Provision of **guidance on food safety risk analysis**;

• **Training** of extension workers/government officials/food industry personnel in GAPs, GHPs, and HACCP;

• Upgrading and development of **laboratory capabilities**
• **Early warning** of food safety, animal health and plant pests threats at global, regional and local level (identification and dissemination of information)

• **Prevention of emergencies**: targeted advice and guidance aimed at prevention (predictive systems, horizon scanning)

• Facilitate the provision of **rapid support** as and when needed to deal with agriculture and food chain threats and crisis

• **Facilitate preparedness** to react in timely manner should a specific treat become a crisis
EMPRES programmes

- EMPRES programmes are a part of FAO’s Food Chain Crisis Management Framework (FCC)

- 3 EMPRES programmes
  - EMPRES Animal Health (AH)
  - EMPRES Plant Protection (PP)
  - EMPRES Food Safety (FS)
Chart of the Food Chain Crisis Management Framework

**Coordination**
Intelligence and Coordination Unit

**Prevention & early warning**
EMPRES Animal Health
EMPRES Plant Protection
EMPRES Food Safety

**Response**
Animal Health (ECTAD)
Plant Protection (including ECLF)
Food Safety

Food Chain Crisis - Emergency Management Unit
Operational Arm
Rapid-, medium- and longer-term response
Rapid-, medium- and longer-term response
Rapid-, medium- and longer-term response
Plant Protection Emergencies / Challenges

- Large number of hosts
- Very large number of pests
- Rel. environmentally sensitive
- Rel. strong varietal variation (environ. & expression)
- Staple foods not central to all countries economies
- No such thing as a global plant pest list
  - very artificial & favours developed / export economies
  - minor pests have greater impact in many small countries (e.g. SIDS) than major pests of staple crops
• food security and economic importance;
• epidemic spread to other countries;
• Their control requires co-operation between countries
EMPRES for Transboundary Animal Diseases

- **EMPRES** - created in 1994, as part of FAO’s Regular Programme.

- FAO’s conceptual framework for addressing infectious animal diseases.

- Four key components:
  - early warning/risk assessment;
  - research/science/technology support;
  - strategy and policy design; and
  - partnerships and technical communication.

- **EMPRES** and **ECTAD** reinforce each other.
Which Diseases?

**Non zoonotic**
- African Swine Fever (ASF)
- Classical Swine Fever (CSF)
- Contagious Bovine Pleuropneumonia (CBPP)
- Foot and Mouth Disease (FMD)
- Peste des Petits Ruminants (PPR)
- Rinderpest
- Bluetongue
- etc...

**Zoonotic diseases**
- Highly Pathogenic Avian Influenza (HPAI)
- Rabies
- Rift Valley Fever (RVF)
- etc...
GLEWS (FAO/OIE/WHO) compiles the alerts and feeds into the response mechanisms of different organizations, enabling the sharing of information on disease alerts.

Early warning of animal disease outbreaks enables FAO and OIE, WHO to step up surveillance and take appropriate preventive action.

GLEWS enables FAO and others to provide a rapid, efficient and coordinated response to countries experiencing animal and zoonotic epidemics.
GLEWS performance

- Between 25 September and 26 June, there have been 617 communications shared through the GLEWS Task Force. Of these, 75% were related to HPAI. There were 44 (7%) communications about RVF, 85 (14%) about other diseases and 23 (4%) about unknown/mysterious diseases,

- Other diseases tracked include: anthrax, African swine fever (ASF), brucellosis, Crimean Congo Haemorrhagic Fever (CCHF), peste des petit ruminants (PPR), cysticercosis, dioxins, Ebola Reston, equine influenza, foot and mouth disease (FMD), leptospirosis, low pathogenic avian influenza (LPAI)
• Concerns are increasing
• Often have a global element
• Far reaching consequences in:
  – human health
  – economic impact
    • product destruction
    • market loss etc.
Recent crisis have highlighted...

• Vulnerabilities along the food chain
• Need for early identification of threats
• Need for preparedness
  – effective preventive systems
  – emergency response strategies
• Need for coordinated and interdisciplinary approaches
  – importance of an integrated food chain approach
• Need to enhance awareness of additional factors
  – climate change
  – counterfeiting, etc
Main aim of EMPRES Food Safety

• Provide guidance to member countries in order to prevent and control food safety risks

• EMPRES Food Safety provides early detection, early warning* and rapid response support to food safety emergencies at global, regional and national (local) levels

* through joint FAO/WHO INFOSAN programme
EMPRES Food Safety Outputs

• Predictive system output:
  – Food Safety expert report with trend analysis
  – EMPRES Food Safety recommendations for immediate actions
  – Identified research/knowledge gaps for future international food safety risk assessment activities

• Reactive system outputs:
  – Early warning (INFOSAN Alert) is issued as necessary
  – Rapid response support to food safety emergencies in collaboration with WHO and/or other relevant organizations/agencies
Challenges

• Cooperation at international and regional level

• Capacity building needs and impact

• Reference laboratory network

• Emergency prevention
Lessons Learnt

• International assistance and support needs to be balanced and sustainable
• Need to first evaluate national existing capacity, national priorities and the national global strategy (possibly ≠ donors objectives)
• Cross-cutting action between sectors
• Comparative advantage of FAO for coordination and holistic strategic approach
Lessons Learnt

• Global surveillance, hazard prediction and early warning supports member countries,

• But it relies also on minimal national or regional capacities (surveillance/laboratories)

• Need to reduce gaps between emergency rapid response support and longer term capacity building: support preparedness, it is highly cost effective to build capacity before anything happens
Thank you for your attention