Risky Business: Food Safety Concerns in Agricultural Development

Speakers

Ahmed Kablan, USAID/Bureau for Food Security

Delia Grace, International Livestock Research Institute

Jagger Harvey, Kansas State University

Angela Records, USAID/Bureau for Food Security (moderator)

Facilitator

Julie MacCartee, USAID/Bureau for Food Security

July 13, 9:30-11 am

Bio

Dr. Ahmed Kablan serves as International Public Health and Nutrition Advisor with the USAID Bureau for Food Security. He is the activity manager for the Feed the Future Innovation Labs for Soybean and for Postharvest Loss. His major focus at USAID is on the factors that lead to negative nutritional outcomes and ways to achieve nutrition integration into Feed the Future's research programs. Dr. Kablan is a pharmacologist with a biotechnology and drug discovery background. He has over 12 years of postdoctoral research, teaching and science policy and regulatory experience. He earned his PhD in Biotechnology & Pharmacology from the University of Bologna, Italy, and his PharmD from Jordan University of Science and Technology, Jordan.

Bio

Jagger Harvey recently became Director of the Feed the Future Innovation Lab for the Reduction of Post-Harvest Loss, at Kansas State University. His work on addressing fungal toxin (mycotoxin) contamination of crops spans more than 15 years, from basic research in graduate school through to developing and leading a flagship international research for development program in East Africa. His recent work as an early member of the Biosciences eastern and central Africa-International Livestock Research Institute (BecA-ILRI) Hub in Nairobi, Kenya, included establishment of a mycotoxin capacity building and research platform which has hosted over one hundred African researchers and their international partners. Now that he has joined the Innovation Lab, he is working with the team to ensure that their work is effectively translated into information, interventions and capacity to address mycotoxin contamination and other post-harvest loss issues in Bangladesh, Ethiopia, Ghana, Guatemala, Afghanistan and beyond.

Bio

Delia Grace is an epidemiologist and veterinarian with 20 years experience in developing countries. She graduated from several leading universities and currently leads research on zoonoses and foodborne disease at the International Livestock Research Institute in Kenya and the CGIAR Research Program on Agriculture for Human Nutrition and Health. Her research interests include emerging diseases, participatory epidemiology, gender studies and animal welfare. Her career has spanned the private sector, field-level community development and aid management, as well as research. She has lived and worked in Asia, west and east Africa and authored or co-authored more than 100 peer-reviewed publications as well as training courses, briefs, films, articles and blog posts. Her research program focuses on the design and promotion of risk-based approaches to food safety in livestock products in sub-Saharan Africa and South Asia. She is also a key player on ILRI's Ecohealth/ One health approach to the control of zoonotic emerging infectious diseases project for Southeast Asia.

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International Concerns in Food Safety/Food Security

Ahmed Kablan, PharmD, Ph.D.
International Nutrition and Public Health Adviser
USAID/BFS
July 2016

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- **How Does Food Safety Fit here?**
- **Why is it important to consider?**

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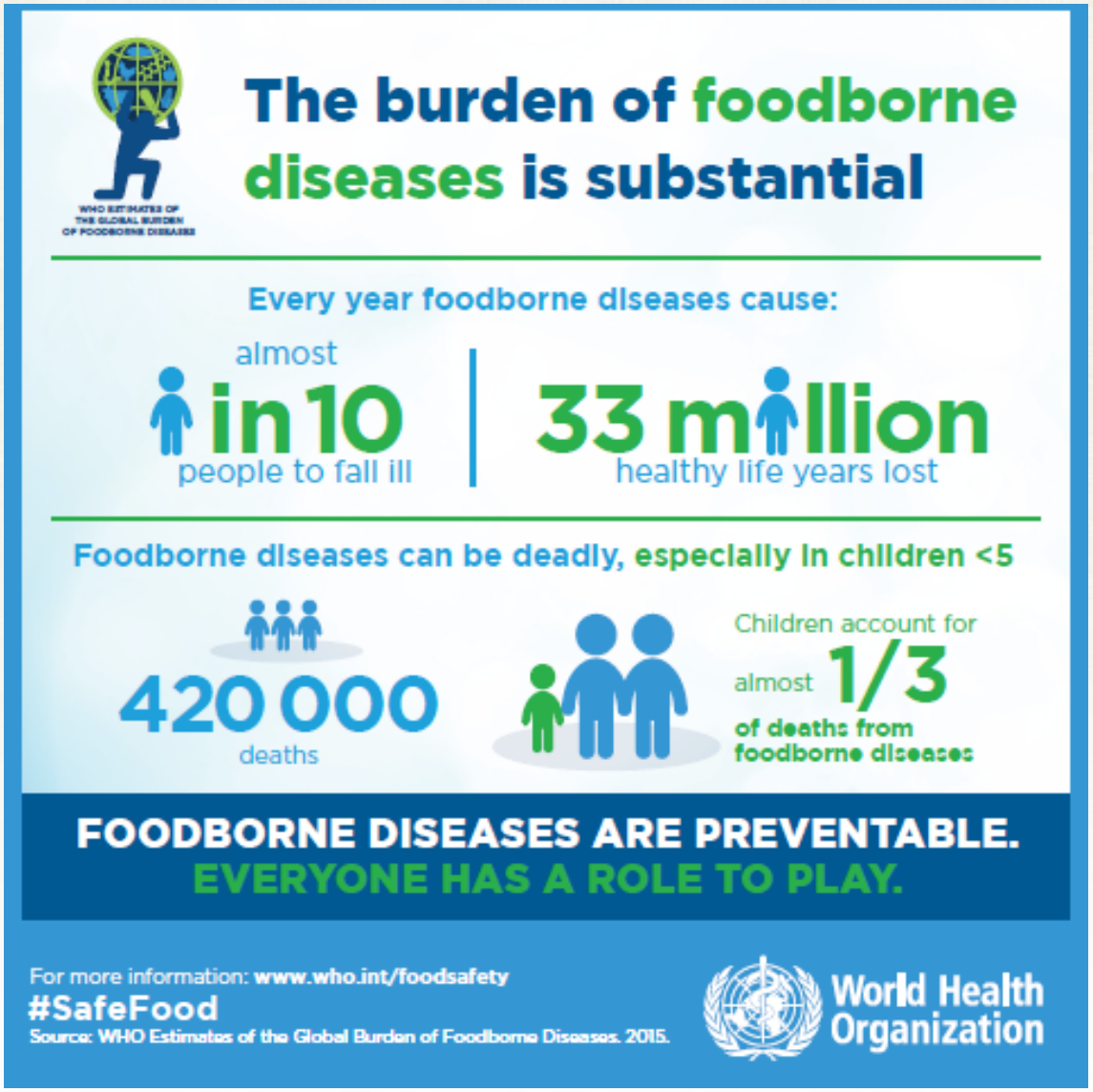

An estimated 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food and 420,000 die every year, resulting in the loss of 33 million healthy life years (DALYs).

Children under 5 years of age carry 40% of the foodborne disease burden, with 125 000 deaths (or 30%) every year

In Africa, more than 91 million people are estimated to fall ill and 137 000 die each year.

Some 60 million children under the age of 5 fall ill and 50 000 die from foodborne diseases in the South-East Asia Region every year.

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Pathogenic sources causes the majority of all FBD

Havelaar et al., 2015

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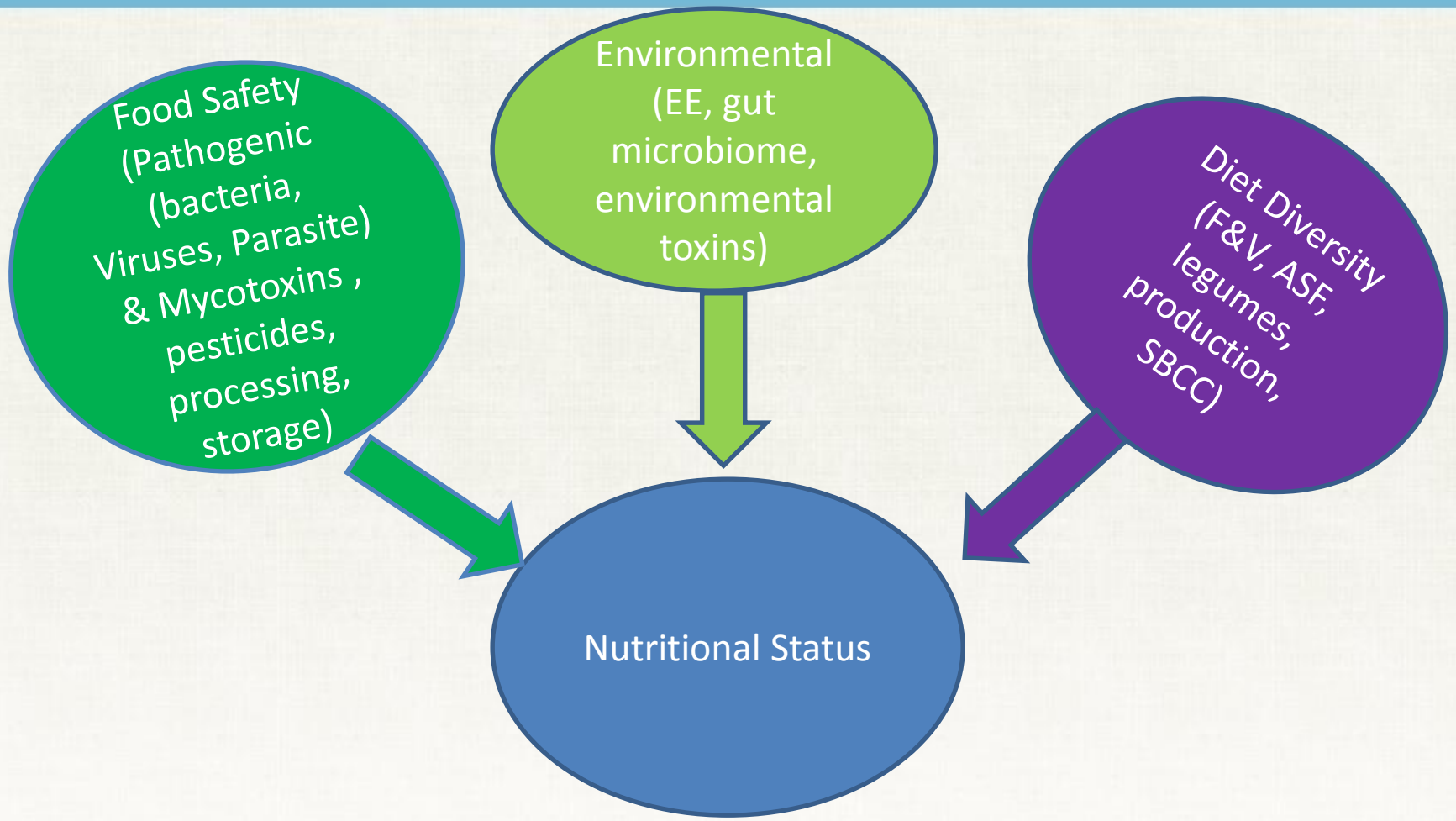


Key factors affecting Nutritional Status

Our Goal!

Improve Diet Diversity

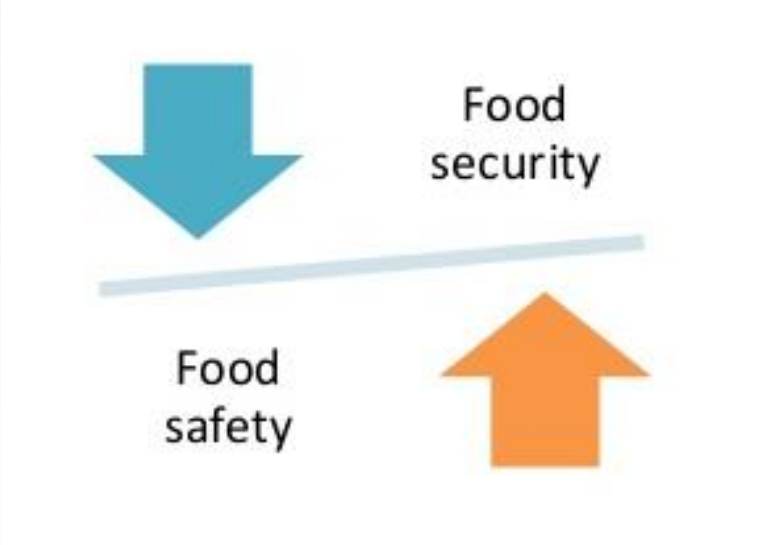
Better Nutrition

My Theory?

Why Food Safety is a concern for FTF?

Correlation between Diet diversity and Food Safety

Food Safety & Food Security?!



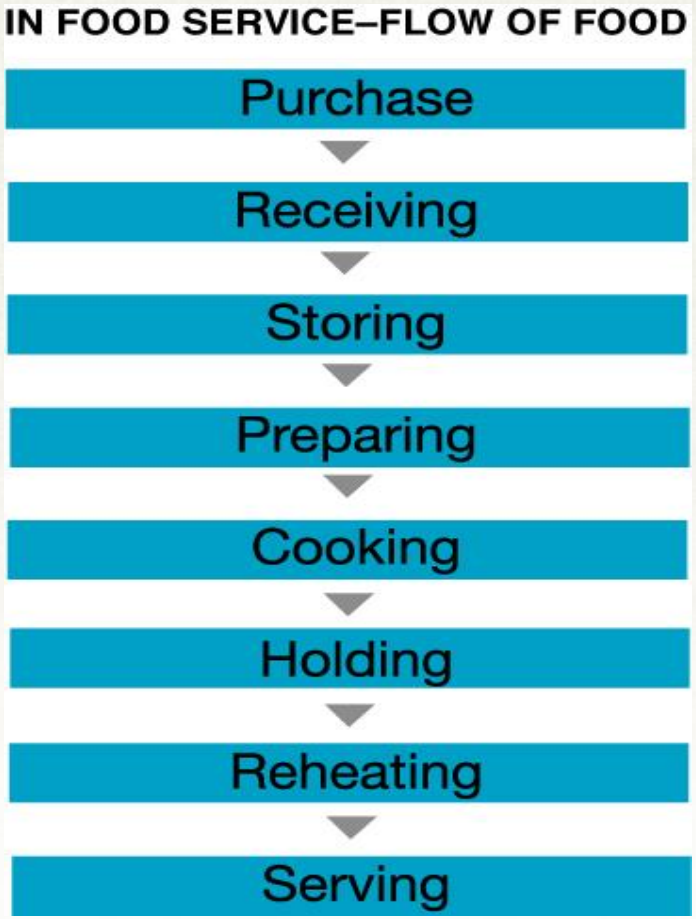
From the Farm to the Fork!

Concerns:
Mycotoxins only?!?!?

Germs in soil & water

- Enter the food supply on the farm
- Or… in harvesting
- Or… in processing & packaging
- Or… in food service

Production



TYPES OF CONTAMINATION

OF Special concern for Feed the Future and Agriculture

- **CHEMICAL:** Pesticides sprayed on fruit or vegetables, freezer refrigerants, drugs, food additives, chemicals from cleaning products and metal or non-food-grade cookware and storage; soil arsenic, etc…

BIOLOGICAL - Bacteria, viruses, fungi, parasites

•**PHYSICAL**: hair, glass, paper, plastic, scabs, rodent droppings, flies, bones from meat/ fish

CAUSES OF CONTAMINATION

- Cross Contamination
- Poor Personal Hygiene
- Improper Cleaning and Sanitation
- Time and Temperature Abuse…

WHAT IS THE TEMPERATURE DANGER ZONE?

USAID Food Safety Challenges:

1) Low budget level, lack of stand-alone FS projects

2) Too much focus on mycotoxins – forced to limit work due to low budget

3) Need more coordination and integrated project design between GH, DCHA, BFS

4) Need more coordination with USDA, FDA & other donors

USAID Food Safety/Food Security Challenges:

1) Need to build the evidence base between stunting mitigation and FS
2) Drive for diet diversity – as a stunting intervention – has serious FS implications
3) Value Chain Focus: Overconfidence that sound practices in VCs will handle FS issues

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Food Safety: Why It's Important to Foreign Assistance

1) Advancing Trade

2) Improving Public Health

3) Enhancing Food Security and Nutrition

USAID has Established an Agency-wide Food Safety Working Group (BFS/Global Health/DCHA-FFP)

- USAID acknowledges that food safety continues to be a challenge in terms of foodborne diseases, particularly impacting areas/regions where the Agency is supporting development activities as well as programming food aid, and ***particularly impacting children***

- USAID has integrated food safety and quality as part of its global nutrition strategy, including acknowledging it's critical relevance ***during the first 1000 days***

- USAID embraces a ***preventive model*** in food safety, as a more cost-effective and sustainable approach

- USAID applies the fundamentals, when it comes to supporting and encouraging food safety and quality practices

- USAID acknowledges ***mycotoxins as a particular relevant challenge*** in food safety, as well as its link with malnutrition

Thank you!
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Food safety in low and middle income countries

Risky Business: Food Safety Concerns in Agricultural Development

AGRILINKS, 13th July, 2016

Delia Grace, ILRI and CRP A4NH

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FOOD SAFETY AND INFORMAL MARKETS

Animal Products in Sub-Saharan Africa

Edited by
Kristina Roesel and Delia Grace

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Franz and Oliver Schlüter

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ase (FBD) in low and middle income countries
nt studies in recent years have broadened our
eloping country consumers are concerned about
FBD disease comes from biological hazards; and,
ption of fresh, perishable foods sold in informal
LMICs as the result of massive increases in the
nd fish products and produce) and lengthening and
ification of agricultural production is a strong trend,
dern retail have not demonstrated clear advantages
e is limited evidence on effective, sustainable and
safety in domestic markets. Training farmers on
its those farmers trained, but has not been scalable
tices are linked to eligibility for export. Training
e business benefits from being trained has been
owing public concern and increased emphasis on
e food safety.

health burden

ssue. The full health effects, as well as the full economic
e global impact on health, trade, and development is

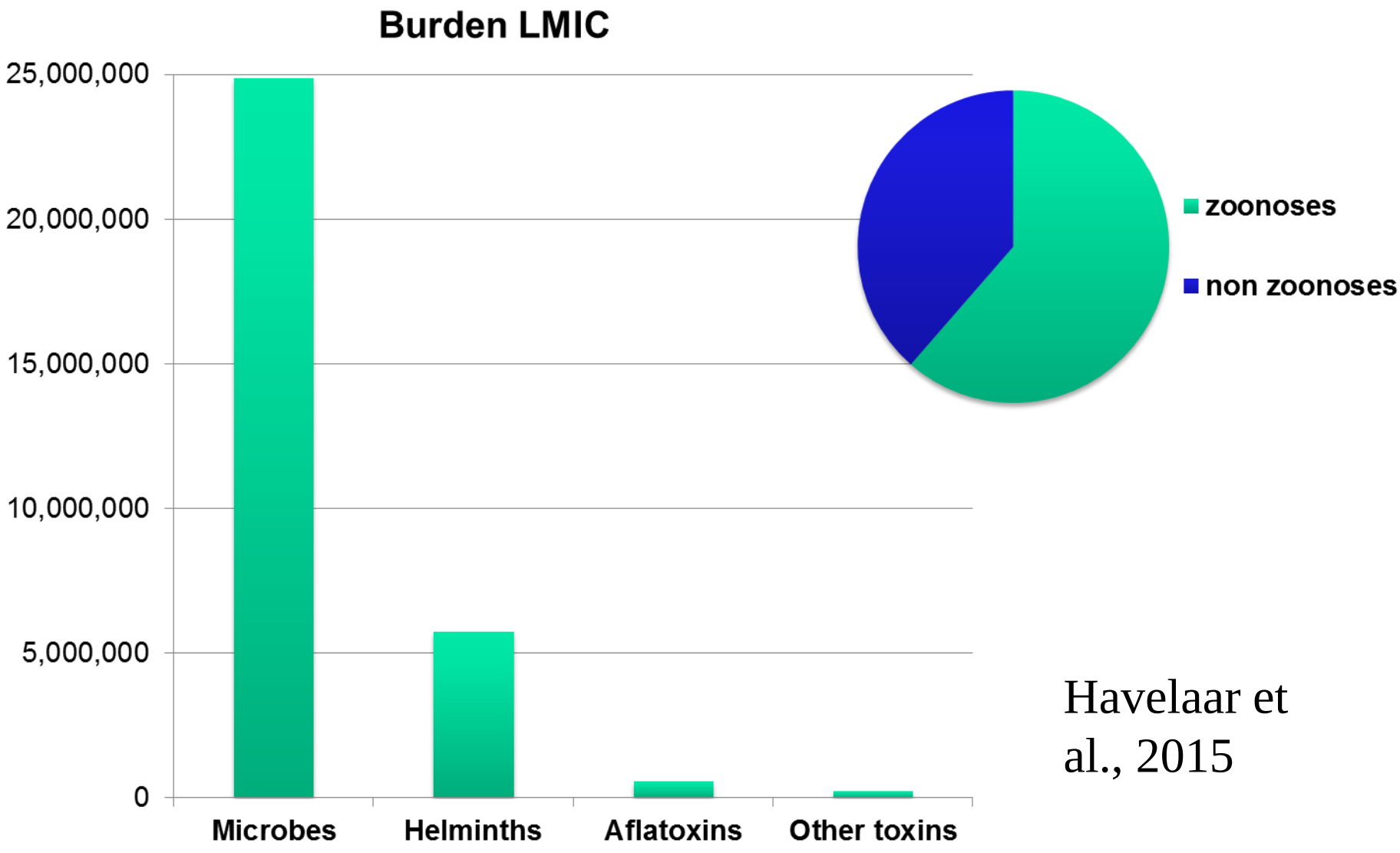
Overview

- Why food safety matters for development
- Food safety solutions
- Evidence gaps and take home messages

Foodborne disease matters for development

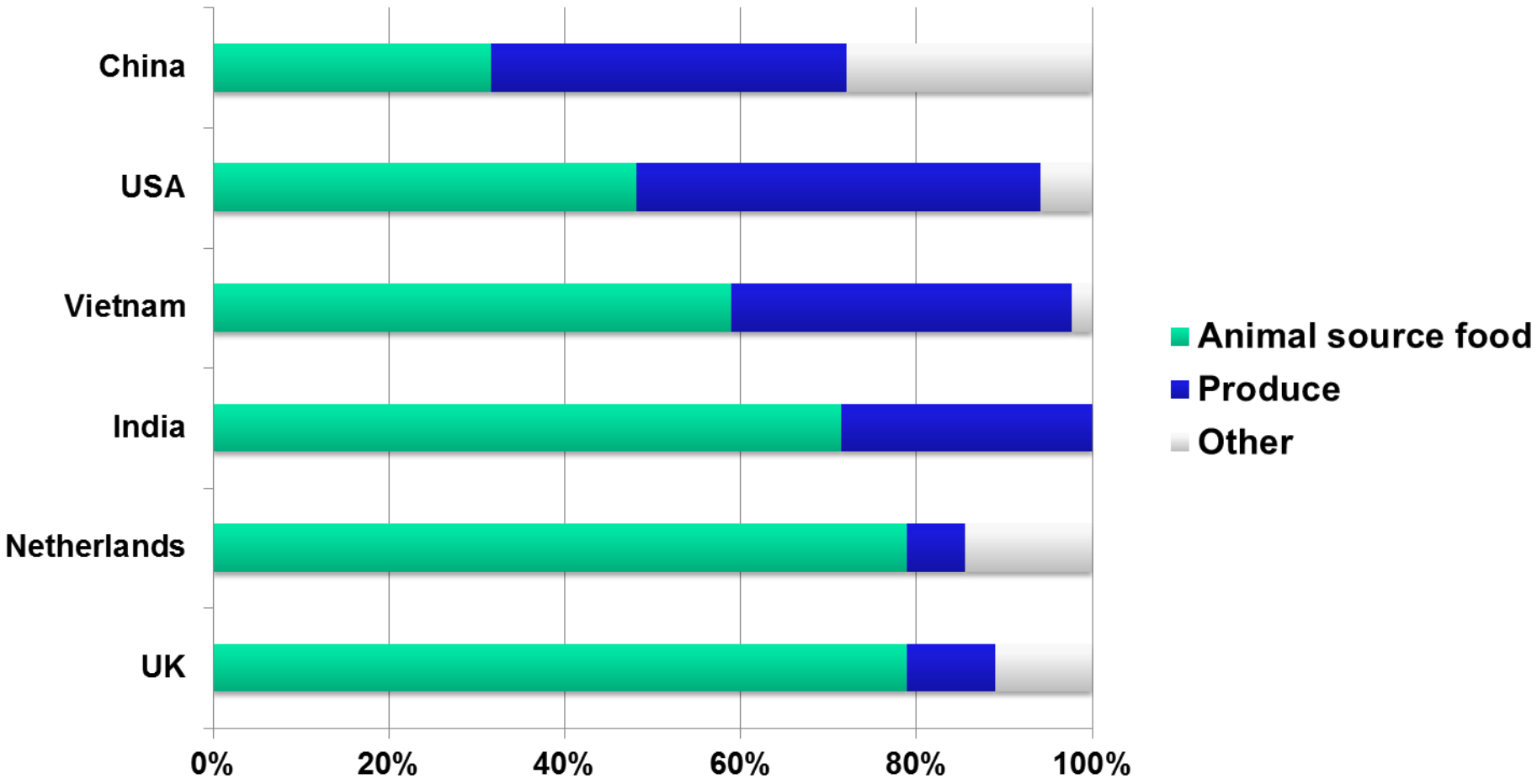
- **High health burden**: The huge health burden of FBD is borne mainly by developing countries
- **High concern**: Developing country consumers show high concern over FBD
- **High cost**: costs of disease and market access
- **High risk of un-intended consequences** of conventional approaches to improving food safety in informal markets

Causes of FBD

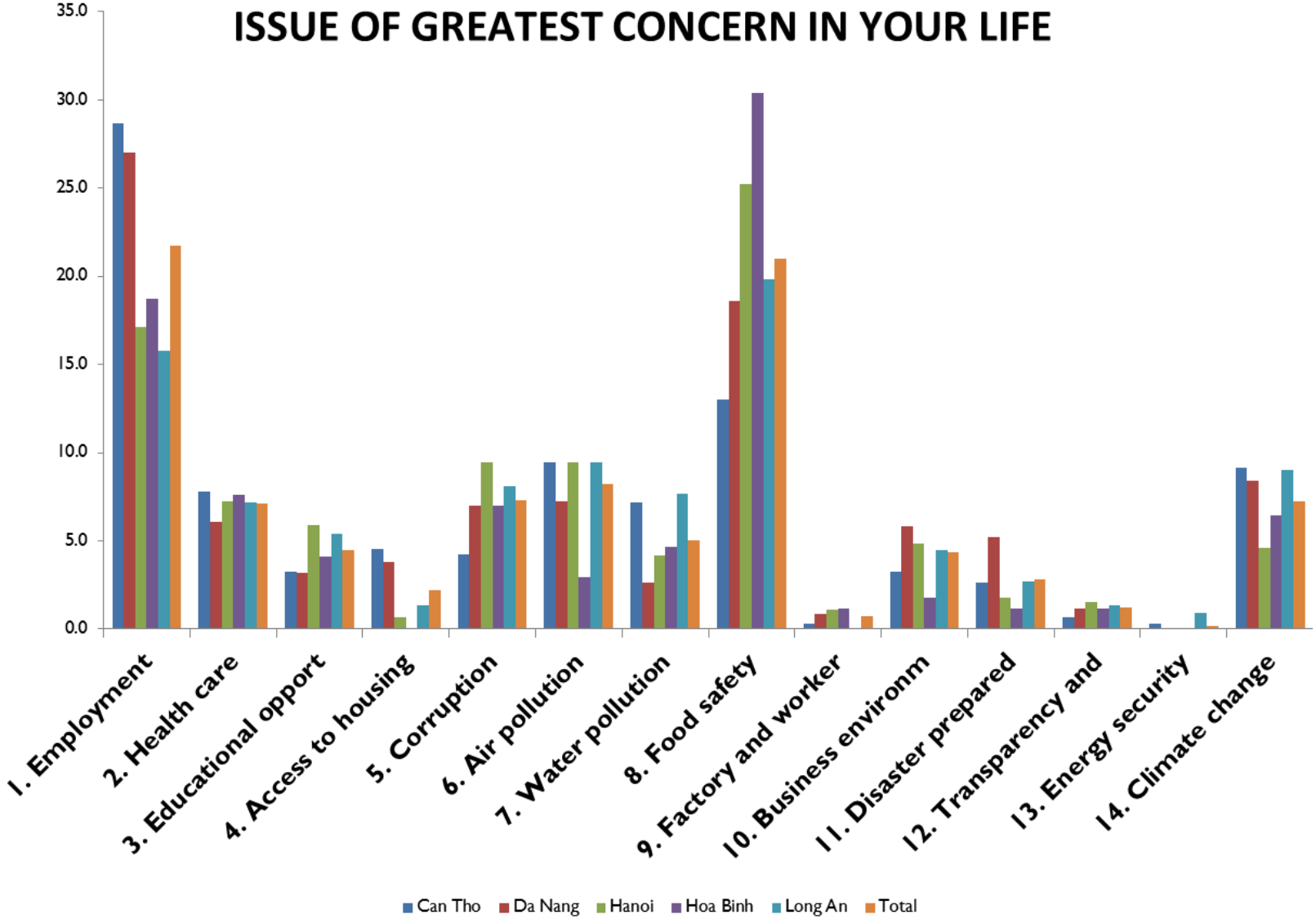


Havelaar et al., 2015

Foods implicated in FBD



Painter et al., 2013, Sudershan et al., 2014, Mangan et al., 2014; Tam et al., 2014; Sang et al., 2014 ; ILRI, 2016



USAID, NATIONAL OPINION SURVEY VIETNAM 2015

Economic costs: cost of FBD and market access

- Cost of illness: USA over $15 billion annually (Hoffmann 2015);
  - Australia $0.5 -$2 billion per year (Abelson P 2006).
  - Vietnam: hospitalisation for FBD $6 million a year (Hoang, 2015)
  - Nigeria: $3.6 billion (Grace, 2012)

- Food safety standards often exclude small firms and farms from export markets
  - Kenya and Uganda saw major declines (60% and 40%) in small farmers participating in export of fruit and vegetables to Europe under Global GAP
- Farmers supplying supermarkets are richer, better educated, more likely to be male and located near cities

Un-intended consequences: nutrition and health

Benefits of wet markets

Cheap,
Fresh,
Local breeds,
Accessible,
Small amounts
Sellers are trusted,
Credit may be provided

(results from PRAs with consumers in Safe Food, Fair Food project)

	Wet market milk	Supermarket milk
Most common price /litre	56 cents	One dollar
Infants consume daily	67%	65%
Boil milk	99%	79%

- When markets differentiate by quality, substandard food is targeted to the poor

Un-intended consequences: Food safety & livelihoods

Milk (cow)
Production: men (x Nairobi)
Processing: women
Marketing: women (x Abidjan)
Consumed: both

Milk (goat)
Production: men (w milk)
Processing: women
Marketing: women
Consumed: both

Beef/goat
Production: men (w assist)
Processing: men
Marketing: men (butcher,pub)
Consumed: both

Poultry
Production: women
Processing: women
Marketing: women
Consumed: both

Pigs
Production: women
Processing: men
Marketing: men
Consumed: both

Fish, crabs
Fishing: men
Processing: women
Marketing: women)
Consumed: both

Overview

- Why food safety matters for development
- Food safety solutions
- Evidence gaps and take home messages

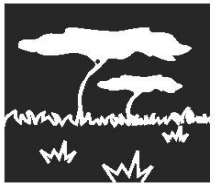
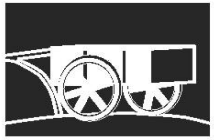
Can we regulate our way to food safety?

- **100%** of milk in Assam doesn't meet standards
- **98%** of beef in Ibadan, **52%** pork in Ha Noi, unacceptable bacteria counts
- **92%** of Addis milk and **46%** of Nairobi milk had aflatoxins over EU standards
- **36%** of farmed fish from Kafrelsheikh exceed one or more MPL
- **30%** of chicken from commercial broilers in Pretoria unacceptable for *S. aureus*
- **24%** of boiled milk in Abidjan unacceptable *S. aureus*

Risk mitigation

Average of 17.25 risk mitigation strategies used

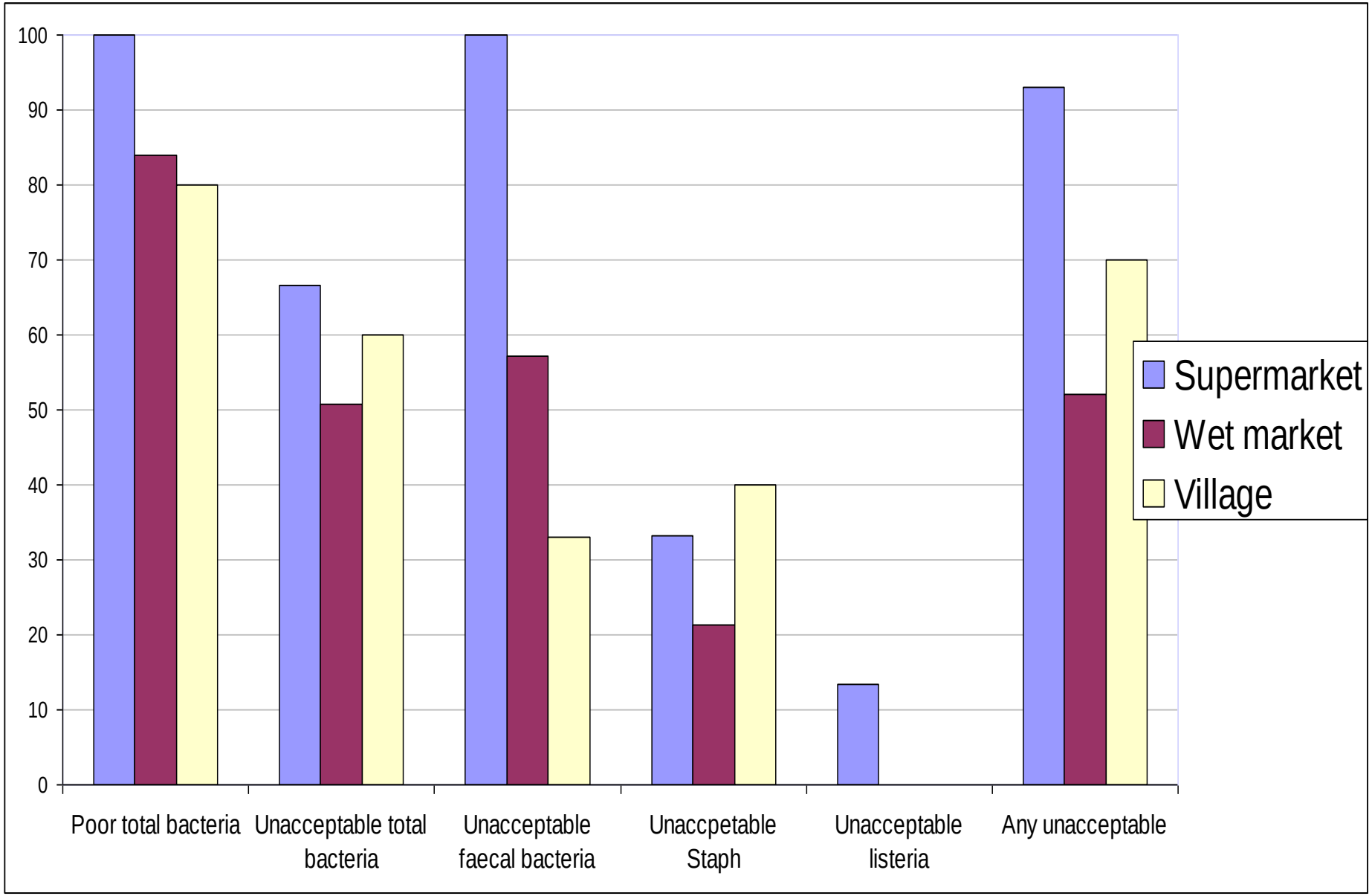
Farmers who believed UA was legal used more strategies

Hazard Transmission	Risk mitigation strategies currently practiced (%)			
 Ecosystem to cow	Keep only one species	29%	Treat cattle often	31%
	Zero-graze	38	Don't keep calves	39
	Use own land only for feed	41	Use Artificial insemination	44
	Avoid common grazing	56	Vaccinate against brucellosis	1
	Keep local breeds	27		
Milk shed to cow	Use feed/water trough	94	Stack manure	11
	Have concrete/stone floor	96	Have a waste disposal strategy	96
	Use bedding	41		
Milk shed / dairy to milk	Have washable shed wall	100	Use just metal/ glass vessels	19
	Have metal/tin roof	96	Use piped water	75
	Store containers off floor	29	Keep premises clean	51
	Keep milk bar dry	45	Depose waste >5m away	38
Milk handler to milk	Use hot water to clean	18	Have no discharges/ wounds	97
	Use soap to clean	81	Have clean hands	79
	Wear protective clothing	1	Have clean/short nails	81
	Wash hands with soap before handling milk	59	Access to latrine	98
			Good personal hygiene	49
 Transport to milk	Don't drink unsold milk	10	Don't sell/store unsold milk	90
Milk to consumer	Treat milk	50	Sell milk quickly (=6 hrs)	82
	Avoid drinking raw milk	93	Don't consume milk until withdrawal period passed	64
	Check milk quality by smell/taste	48		

Can we modernise our way to food safety?

- Supermarketisation is slower than thought.
- Formal sector food is risker than thought.
- Modern business models have often run into problems
  - *Co-ops, abattoirs, market upgrades*

Formal worse than informal



Will GAP get us safe food?

- Smallholders have been successfully integrated into export chains
- Small scale pilots show short term improvements
- But domestic GAP has limited reach and limited impact
  - In 4 years VietGAP reached 0.06%
  - In Thailand GAP farmers have no better pesticide use than non-GAP farmers
  - FFS systematic review: farmer field schools could be used selectively to solve particular problems in particular contexts, but are not useful to solve large-scale problems.

Participatory Risk Analysis

Hazards are high, but risk area variable

Fail standards: bacteria

- 100% milk in Assam, India
- 98% of raw meat in Ibadan, Nigeria
- 94% of pork in Nagaland, India
- 77% farmed fish in Egypt

Fail standards: chemical

- 92% milk in Addis Ababa
- 46% milk in Kenya

Diarrhoea in last 2 weeks

- 0.02% consumers in Canada
- 0.02% raw milk buyers in Kenya
- 23% consumers in Nagaland
- 43% Nigerian butchers

Improvements are feasible, effective, affordable

- Peer training, branding, innovation for Nigerian butchers led to 20% more meat samples meeting standards; cost $9 per butcher but resulted in savings $780/per butcher per year from reduced cost of human illness

- Providing information on rational drug use to farmers, led to four-fold knowledge increase, two-fold improvement in practice and halving in disease incidence

- Branding & certification of milk vendors in Kenya & Guwahti, Assam led to improved milk safety.
- It benefited the national economy by $33 million per year in Kenya and $6 million in Assam
- 70% of traders in Assam and 24% in Kenya are currently registered
- 6 million consumers in Kenya and 1.5 million in Assam are benefiting from safer milk

ILRI CGIAR

Take home messages

- FBD is important for health and development
- Most is due to microbes & worms in fresh foods sold in wet markets
- Hazards in wet markets are always high but risks are sometimes low and perception is a poor guide
- Control & command approaches don’t work but solutions based on working with the informal sector more promising

Acknowledgements

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Questions and Answers

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