



***Nutrition and Food Safety Correlation
and Reflection to Food Security***

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Introduction and Background



1996 World Food Summit defined food security as:

- When “all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active healthy life”

This implies:

- Production of enough food
- Access, acquisition and entitlement to purchase food
- That food is safe to consume
- Utilisation is efficient
- Preferences and cultural prohibitions are met

Absence of these elements leads to food insecurity





Globalisation of Trade :“The World on your Plate”



Chicken Kiev

Herb Butter

- Salted butter- Ireland
- garlic puree - China, USA, Spain
- garlic salt - China, USA, Spain
- lemon - USA
- parsley - France, UK
- pepper - Indonesia
- water - Ireland

Chicken Breast: Chicken - Ireland, Belgium
UK, France etc.

Batter: Flour - Belgium, France
Water - Ireland

Bread Crumb: Bread crumb - Ireland, UK
Rape-seed oil - EU, Australia
Eastern Europe

Courtesy A. Reilly, FSAI, Ireland



Basic concepts:

➤ Nutrition:

- Food and nutrition are the way that we get fuel, providing energy for our bodies, A healthy diet includes a lot of natural foods. A sizeable portion of a healthy diet should consist of fruits and vegetables.
- While sufficient *quantity* of food is an obvious requirement for food security, food *quality* is essential to fulfill basic nutritional needs.

➤ Food safety:

- Those conditions and measures necessary for food production, processing, storage, and distribution in order to ensure a safe, wholesome product that is fit for human consumption (FAO 2014).

➤ Food security:

- Food security has been described by the United Nation's Food and Agriculture Organization (FAO), as “a situation that exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life

Food Safety...



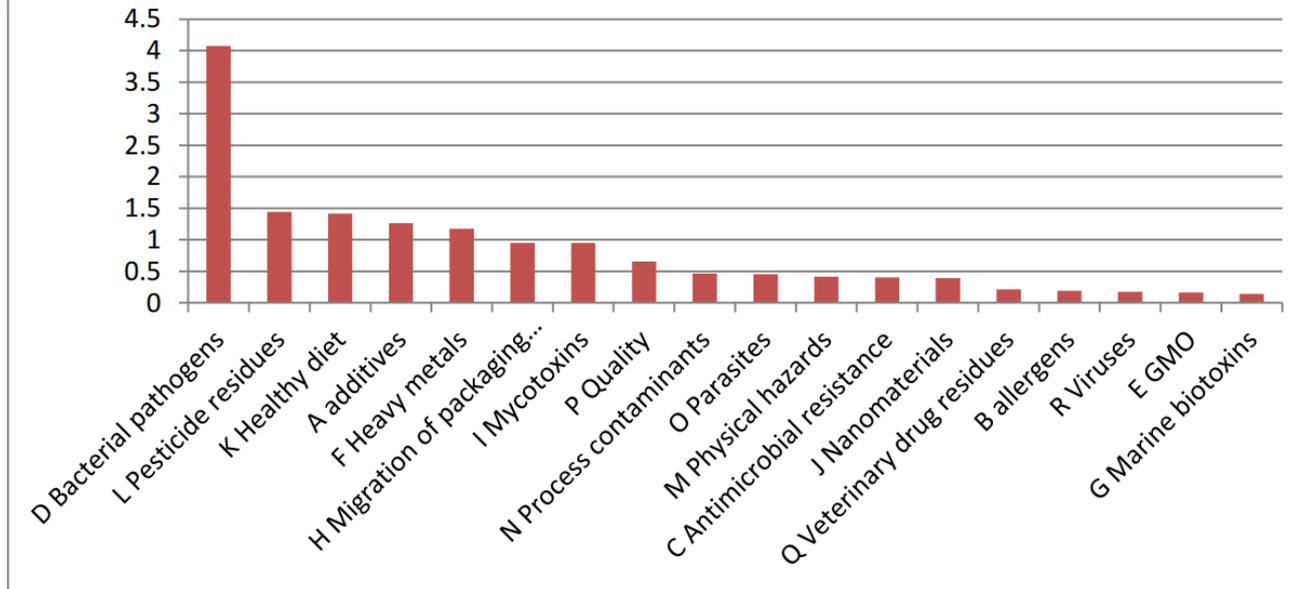
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Food Safety...



Food safety issues



Mieke Uyttendaele et al. (2016) / Procedia Food Science 6 (2016) 16 – 22

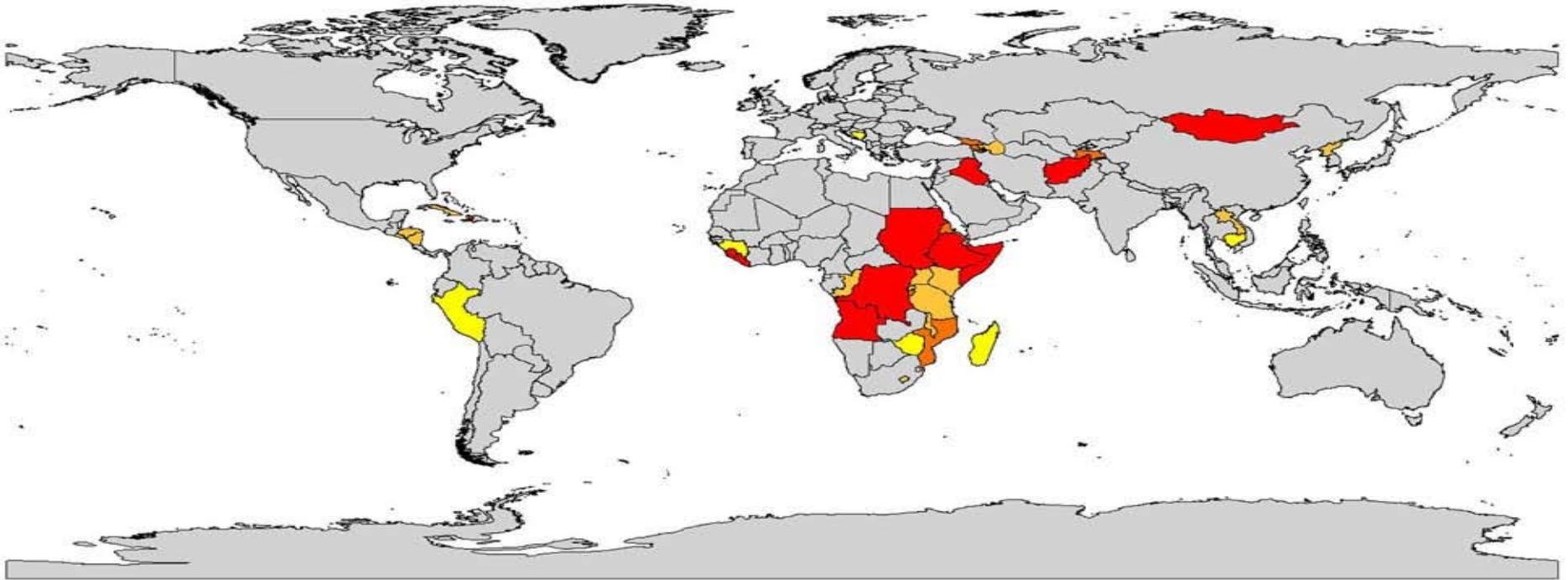
Food Security...



- ✓ Food and nutrition security has four dimensions that encompass both chronic and transitory situations
- ✓ Food safety must be systematically integrated into policies and interventions to improve nutrition and food availability.



Food insecurity exists when people do not have adequate physical, social or economic access to food as defined above.



Countries facing food emergencies (1986 - 2005)
(consecutive years including 2005)



Published by FAO's Agriculture and Development Economics Division (ESA) with support from the FAO Netherlands Partnership Programme (FNPP) and the EC-FAO Food Security Programme

FAO Agricultural and Development Economics Division: <http://www.fao.org/es/esa/>

EC-FAO Food Security Programme: <http://www.foodsecinfoaction.org/>

Food Insecurity...



- ✓ Causes: lack of access to farming land, climate change, wars and violence, unfair trade rules, fast-paced population growth, natural disasters.
- ✓ Efforts to secure food include : reduction of food waste, Improve Existing Infrastructural Programs, Improve Trade Policies, soil and land management, apply technology based solutions to improve/ increase the production including using **GMO**, hybridization and bio fertilization for domestic crops and probiotics for domestic animals.



Food Losses...



Food losses have an impact on food security for the people, economic development and on the environment. Food losses should be kept to a minimum.

Food Losses...



Food losses starts in the field, transportation, storage, marketing and consumption at the household level.

Food Losses...



Wheat is strategic crop in Egypt as bread is the main staple food for people



Reasons behind the food security deterioration related to the losses in horticultural produce:



- ➔ The production operations
- ➔ Small part was consecrated to the defects of the postharvest cycle, handling improvement and marketing.



Reasons behind the food security deterioration related to the losses in horticultural produce:

- ➔ Lack of adequate training on postharvest handling practices.
- ➔ Slow or no development of appropriate postharvest infrastructure.
- ➔ Neglect of other aspects of the postharvest chain during transport and marketing.





Reasons behind the food security deterioration related to the losses in horticultural produce

- ➔ Cold stores
- ➔ Packaging stations
- ➔ Qualified wholesale markets.





Reasons behind the food security deterioration related to the losses in horticultural produce

- ➔ Lack of consciousness about the good agricultural practices and lack of the hygienic consciousness of the consumers.





Reasons behind the food security deterioration related to the losses in horticultural produce

- ➔ Lack of postharvest infrastructure for the small and medium scale farmers such as storage, packaging, transport and handling technologies.





Reasons behind the food security deterioration related to the losses in horticultural produce

➡ Inadequate Marketing Systems.





Reasons behind the food security deterioration related to the losses in horticultural produce

➔ Unavailability of Needed Tools and Equipment.



Reasons behind the food security deterioration related to the losses in horticultural produce



- Unavailability of Needed Tools and Equipment.



Upcoming Challenges of food Safety,,,

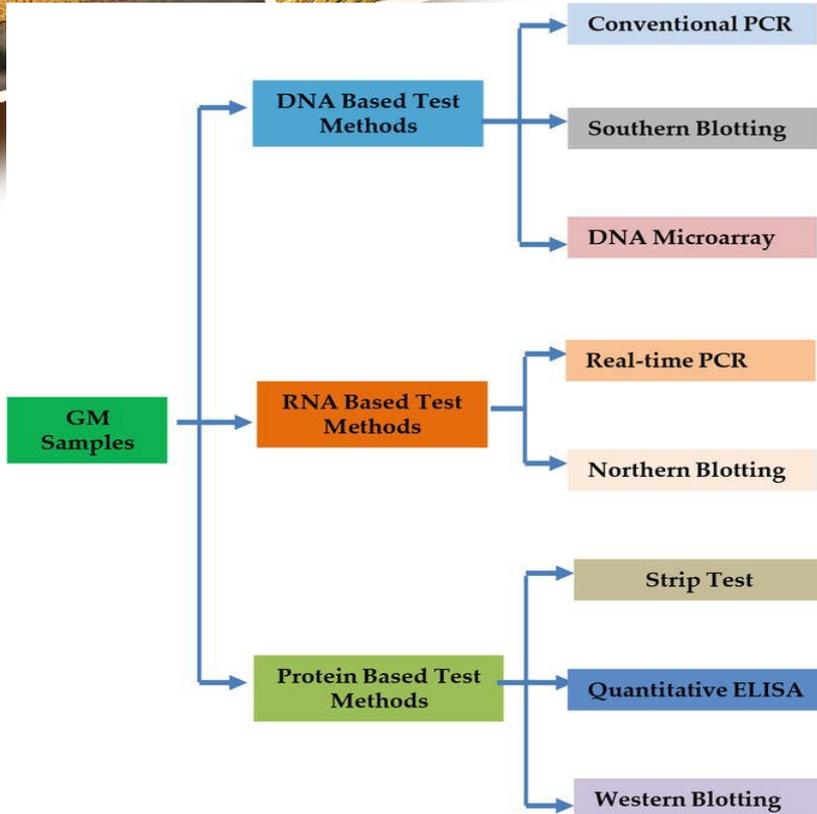


- ✓ Application of new technological solutions to improve crops and allow it to adapt to climatic changes such as the production of genetically modified organisms has risen a new challenge for food safety practices
- ✓ Current legal framework on GMOs needs to be revised and gene-editing research needs to be encouraged to bridge the gap with other major producing countries
- ✓ With this new technology on gene manipulation what are the risks of “tampering with Mother Nature”?....
- ✓ Traceability systems document the history of a product and may serve the purpose of both marketing and health protection. Also to enable the segregation and identity preservation systems allow for the separation of GM and non-GM products from “farm to fork”





Upcoming Challenges of food Safety,,,



- ✓ the feasibility of traceability systems depends on a number of factors, including unique identifiers for each GM product, detection methods, permissible levels of contamination, and financial costs. Progress has been achieved in the field of sampling, detection, and traceability of GM products, while some issues remain to be solved.
- ✓ DNA and protein based methods have been adopted for the detection and identification of GMOs which is relatively a new area of diagnostics.
- ✓ New diagnostic methodologies are also being developed, the microarray-based methods that allow for the simultaneous identification of the increasing number of GMOs on the global market in a single sample.



FOOD SAFETY – The way forward

- » “Farm to table” policy
- » Responsibilities
- » Traceability
- » Risk analysis



- » “Other Legitimate factors
- » Precautionary Principle
- » Transparency



» Other Legitimate Factors

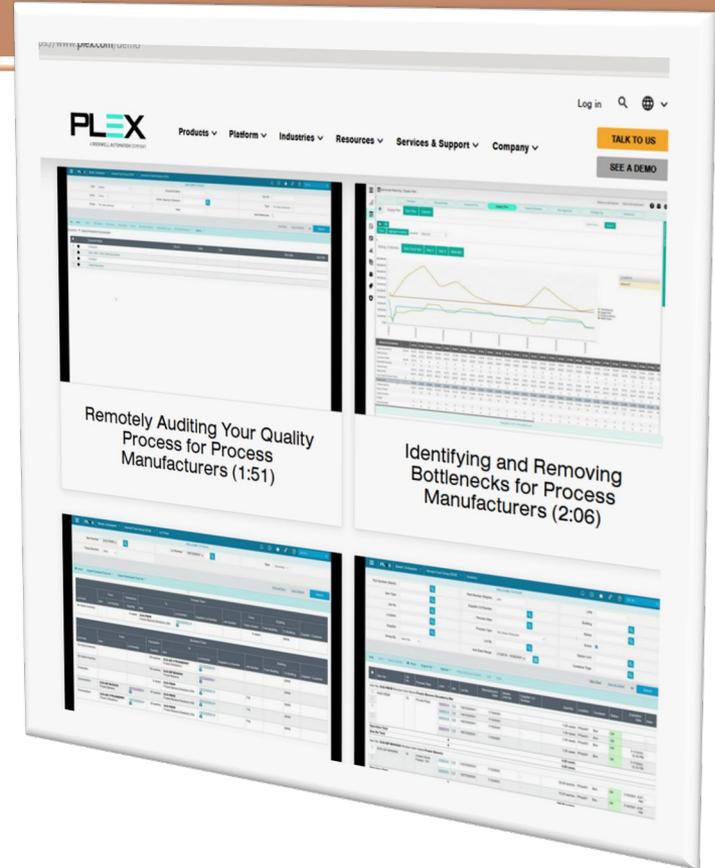
- » Farm to table” policy
- » Environmental considerations
- » Animal welfare
- » Sustainable agriculture
- » Consumers’ expectations regarding product quality, fair information and definition of the essential characteristics of products and their process and production methods.

Upcoming challenges of food safety,,,



The online tool:

- ✓ Technology gives organizations the ability to trace a problem with a finished product all the way back through the production process, through the suppliers and, in many cases, all the way back to the farms that produced their raw ingredients.
- ✓ Software products, such as No. 1- rated Plex Online, provide integrated solutions for food and beverage processors, including advanced product traceability functions.
- ✓ Such software can rapidly isolate problems with pinpoint precision. The software provides detailed historical information related to production, inspection, genealogy and usage





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Thank you
Questions?