ROLE OF FOOD SAFETY AND NUTRITION IN FOOD SECURITY

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FOOD SECURITY (FAO)

A condition 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 and healthy life. The joint FAO/WHO World Declaration on Nutrition from 1992 states that “...**access to nutritionally adequate and safe food is a basic individual right**”.
The distribution of hunger in the world is changing
Number of undernourished by region, 1990–92 and 2010–12

<table>
<thead>
<tr>
<th>Region</th>
<th>1990–92</th>
<th>2010–12</th>
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</thead>
<tbody>
<tr>
<td>Developed regions</td>
<td>20</td>
<td>16</td>
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<tr>
<td>Southern Asia</td>
<td>327</td>
<td>304</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>170</td>
<td>234</td>
</tr>
<tr>
<td>Eastern Asia</td>
<td>261</td>
<td>167</td>
</tr>
<tr>
<td>South-Eastern Asia</td>
<td>134</td>
<td>65</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>65</td>
<td>49</td>
</tr>
<tr>
<td>Western Asia and Northern Africa</td>
<td>13</td>
<td>25</td>
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<tr>
<td>Caucasus and Central Asia</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Oceania</td>
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</tbody>
</table>

Total = 1,000 million
Total = 868 million

FAO
NEED FOR GROWTH IN FOOD PRODUCTION

• FAO estimates indicate that to meet the projected global demand for 2050, agricultural production must grow 60% above the level of 2005-07.

• There are limited opportunities for expanding agricultural land. Livestock sector is the largest user of agricultural land.

• Intensification of production on land could have negative impacts.

• Reduction in postharvest losses and wastage is important.
Food Losses and Food Waste

• FAO study estimates that one third of food produced, amounting to 1.3 billion tons is lost every year
Figure 3. Part of the initial production lost or wasted, at different FSC stages, for cereals in different regions

Food losses - Cereals
Figure 6. Part of the initial production lost or wasted at different stages of the FSC for fruits and vegetables in different regions.

Food losses - Fruits & Vegetables

- Europe
- North America & Oceania
- Industrialized Asia
- Subsahara Africa
- North Africa, West & Central Asia
- South & Southeast Asia
- Latin America

Legend:
- Consumption
- Distribution
- Processing
- Postharvest
- Agriculture
Figure 8. Part of the initial catchings (fish and seafood harvested) discarded, lost and wasted in different regions and at different stages in the FSC.

Food losses - Fish & Seafood

- Europe
- North America & Oceania
- Industrialized Asia
- Subsahara Africa
- North Africa, West & Central Asia
- South & Southeast Asia
- Latin America

Legend:
- Consumption
- Distribution
- Processing
- Post catch
- Fisheries
Poor infrastructure and transportation, lack of refrigeration

©FAO/Diana Giampiero
Bangladesh: rickshaws transporting milk from farm to processing plant

©SIK/Friederike Ziegler
Nicaragua: truck loaded with mangoes
PROBLEMS OF NON-COMPLIANCE

• Import refusals
• Market recalls
• Import Alerts (eg EU RASFF)
• Detentions
• Estimated loss due to rejections in EU market about $70 million annually.
• Similar value in US market
FISH AND FISH PRODUCT EU ALERTS

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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<tbody>
<tr>
<td>Microbiological</td>
<td>68</td>
<td>70</td>
<td>65</td>
</tr>
<tr>
<td>Chemical and residues</td>
<td>135</td>
<td>123</td>
<td>149</td>
</tr>
<tr>
<td>Histamine</td>
<td>51</td>
<td>35</td>
<td>32</td>
</tr>
<tr>
<td>Parasitic infestation</td>
<td>70</td>
<td>85</td>
<td>96</td>
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<tr>
<td>Others</td>
<td>120</td>
<td>123</td>
<td>137</td>
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</table>

Source: Rapid Alert System for Food and Feed, European Commission
CRUSTACEANS ALERTS

Source: Rapid Alert System for Food and Feed, European Commission
BIVALVES MOLLUSCS ALERTS

Source: Rapid Alert System for Food and Feed, European Commission
CEPHALOPODS ALERTS

<table>
<thead>
<tr>
<th>Hazard Category</th>
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<th>2011</th>
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<tr>
<td>Microbiological</td>
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<td>Chemical and residues</td>
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<td>17</td>
<td>22</td>
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<tr>
<td>Histamine</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Parasitic infestation</td>
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<td>21</td>
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<tr>
<td>Others</td>
<td>0</td>
<td>25</td>
<td>34</td>
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</table>

Source: Rapid Alert System for Food and Feed, European Commission
GASTROPODS ALERTS

<table>
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<td>0</td>
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<tr>
<td>Chemical and residues</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Histamine</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Parasitic infestation</td>
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<td>0</td>
</tr>
<tr>
<td>Others</td>
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<td>7</td>
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Source: Rapid Alert System for Food and Feed, European Commission
# NUMBER OF DESTRUCTIONs

<table>
<thead>
<tr>
<th>Year</th>
<th>Fish</th>
<th>Bivalves</th>
<th>Crustaceans</th>
<th>Cephalopods</th>
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<tbody>
<tr>
<td>2011</td>
<td>67</td>
<td>4</td>
<td>3</td>
<td>6</td>
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<td>2010</td>
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<td>2009</td>
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<td>11</td>
</tr>
<tr>
<td>2008</td>
<td>41</td>
<td>3</td>
<td>17</td>
<td>2</td>
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<tr>
<td>2007</td>
<td>50</td>
<td>9</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2006</td>
<td>24</td>
<td>3</td>
<td>15</td>
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</tbody>
</table>
RESPONSIBLE FISH UTILIZATION
GUIDELINES FOR THE ECOLABELLING OF FISH AND FISHERY PRODUCTS FROM MARINE CAPTURE FISHERIES
Revision 1

DIRECTIVES POUR L’ÉTIQUE TAGE ÉCOLOGIQUE DU POISSON ET DES PRODUITS DES PÊCHES DE CAPTURE MARINES
Révision 1

DIRECTRICES PARA EL ECOETIQUETADO DE PESCADO Y PRODUCTOS PESQUEROS DE LA PESCA DE CAPTURA MARINA
Revisión 1

TECHNICAL GUIDELINES ON AQUACULTURE CERTIFICATION

DIRECTIVES TECHNIQUES RELATIVES À LA CERTIFICATION EN AQUACULTURE

DIRECTRICES TÉCNICAS PARA LA CERTIFICACIÓN EN LA ACUICULTURA
Code of practice for fish and fishery products

First edition
**PRIMARY PRODUCTION: GUIDELINES/STANDARDS**

| • FAO Code of Conduct for Responsible Fisheries: Technical Guidelines on Aquaculture Development |
| • FAO Technical Guidelines for Aquaculture Certification |
| • Codex Code of Practice for Fish and Fishery Products |
| • OIE Aquatic Animal Health Code |

| • FAO Code of Conduct for Responsible Fisheries: Technical Guidelines |
| • Codex Code of Practice for Fish and Fishery Products |
| • FAO Guidelines for Ecolabelling of fish and fishery products from marine capture fisheries |
POSTHARVEST HANDLING: GUIDELINES/STANDARDS

- Codex Code of Practice for fish and fishery products
- Codex Food Hygiene basic texts
- GMP/GHP Guidelines
- National or Private standards and traceability schemes
PROCESSING ESTABLISHMENTS: GUIDELINES/STANDARDS

- Codex Code of Practice for fish and fishery products
- Codex Food Hygiene Basic Texts
- HACCP
- Codex product standards
- Codex General Standards for food additives
- Maximum residue limits for veterinary drugs
- Guidelines on application of general principles of food hygiene for control of specific pathogens eg. Listeria monocytogenes
STREET FOODS

• Important for supply of affordable food for large section of population

• Provides employment, livelihoods
Basic steps to improve safety of street-vended food

SUMMARY NOTES

- The street food sector plays an important role in providing accessible, low-cost meals for urban populations, particularly those in many developing countries.
- Contamination of street food by chemical and microbiological pathogens is believed to be a significant contributor to foodborne diseases.
- Poor environmental sanitation, inadequate infrastructure and improper food handling are the main risk factors associated with street foods.
- Greater awareness of vendors of the basic principles and measures necessary to ensure food safety, offers one of the most cost effective options for reducing health risks posed by street foods.
- The WHO Five Keys to Safer Food have been adopted for the street food sector and should be considered for use as the basis for training of vendors in all countries.
KEY MESSAGES FOR OPERATORS IN STREET FOOD SECTOR

• Keep clean
• Separate raw and cooked food
• Destroy hazards when possible
• Minimise growth of microorganisms
• Use safe water and raw materials
FAO EFFORTS TO REDUCE POSTHARVEST LOSSES IN FISHERIES
FAO/WHO guidance to governments on the application of HACCP in small and/or less-developed food businesses
SOME CASE STUDIES

TCP/CPR/3203 (D)
Improvement of Aquaculture Food Safety in Hubei Province

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Problems Faced

• Low production levels
• Frequent disease problems
• Frequent use of veterinary medicines
• Low economic returns
Discussion of aquaculture practices with fish farmers

Desiltation of ponds
Support for disease diagnosis and water quality monitoring laboratory

Training of trainers
Good Aquaculture Practices Developed

• Desiltation and pond preparation before stocking
• Improvement of water intake channels
• Selection of healthy seeds from hatcheries adopting good practices
• Quarantining the seeds before stocking
• Modifying the stocking ratio as grass carp (56%), silver carp (12%), bighead carp (12%), crucian carp (10%), blunt snout bream (2%), mandarin fish (8%).
Good Aquaculture Practices Developed

• monitoring water and sediment quality at regular intervals and taking remedial actions such as water exchange and aeration
• reducing feed wastage
• minimizing use of chemicals, use of some herbal remedies for infection and occasional use of water disinfectant in case of disease outbreak in neighbouring ponds
• use of laboratory services for technical support like monitoring pond water and sediment quality and disease diagnosis.
Economics (US$ per ha)

Gross Revenue increased by 14%

Cost of production reduced by 18%

Profit Doubled over the year
Chapter 3
Shrimp Farmers in India: Empowering Small-Scale Farmers through a Cluster-Based Approach

Fig. 3.2  MPEDA/NACA Project development since 2000. The figure indicates the adoption of the strategies by different states and increasing number of farmer groups (A – Andhra Pradesh, G – Gujarat, K – Karnataka, O – Orissa, T – Tamil Nadu)
Fig. 3.5 Comparison of the prevalence (%) of disease in BMP and non-BMP shrimp ponds
Fig. 3.6 Profit made by BMP (demo) and non-BMP farmers for every thousand rupees (US$ 25) investment
SUMMARY

• Need for improving practices at primary production
• Need for improving postharvest practices to comply with food safety requirements
• Minimise postharvest losses
• Prevent loss of nutritional quality
• Minimise value loss
• Reduce vulnerability for food insecurity.
THANK YOU