Agriculture & Food Traceability Workshop
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Traceability: Introduction, terms, definitions and general principles

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This presentation

1. Brief recap of what traceability is, and of chain traceability in particular
2. Drivers for traceability
3. Costs and benefits related to the introduction of a new traceability system
4. The importance of standards when implementing traceability
Welcome to Tracing your food!

This page tries to provide you with an introduction into the world of food traceability. Traceability is simple and a legal requirement in some parts of the world, such as the European Union. However, different people think very differently about traceability. We have tried to respect this variety of mindsets by giving a space to each of the different viewpoints about traceability. Whatever is your particular viewpoint, the people behind TraceFood (see Who we are) are trying to make your life easier by providing easy to follow good Traceability Practices and a standard for exchanging traceability data. You can read more on this website or on our sister website www.tracefood.org.

www.foodtraceability.eu
Definition - ISO 8402

Traceability:
Ability to trace the history, application or location of an entity by means of recorded identifications.

In a product sense, it may relate to:
- the origin of materials and parts
- the product processing history
- the distribution and location of the product after delivery
Two types of traceability

- **Internal traceability**
  Your own data

- **Chain traceability**
  The data you get (and give)

**Traceability control mechanisms**

Methods and instruments used for authentication and testing that what we receive is what the documentation says.
What traceability is and isn’t:

• Traceability does not refer to the (product) data itself
• There is no such thing as “traceability data”
• Traceability does not mean “ability to identify origin”; that is only part of traceability

• Traceability is the name of your systematic ability to access the data you have stored
• Traceable data elements are connected to identifiers, and traceable data elements are connected to each other
Chain traceability visualization:

This is the traceability ‘The ability to trace …’

Information (systematic recordings)
Traceability drivers in the food sector:

- Food safety
- Trace contamination, Enable recall
# Some noteworthy food scandals

<table>
<thead>
<tr>
<th>Outbreak</th>
<th>Company / sector</th>
<th>Threat</th>
<th>Source</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>Hudson Foods (meat)</td>
<td>E. coli</td>
<td>Local (mix)</td>
<td>1996</td>
</tr>
<tr>
<td>Belgium+</td>
<td>Chicken</td>
<td>Dioxin</td>
<td>Local (scope)</td>
<td>1999</td>
</tr>
<tr>
<td>Europe+</td>
<td>Meat</td>
<td>BSE / CJD</td>
<td>Local</td>
<td>2001+</td>
</tr>
<tr>
<td>Japan</td>
<td>Snow Brand (meat)</td>
<td>Origin (BSE)</td>
<td>Local / Australia</td>
<td>2002</td>
</tr>
<tr>
<td>Ireland+</td>
<td>Sheep</td>
<td>Scrapie</td>
<td>Local</td>
<td>2002</td>
</tr>
<tr>
<td>Norway+</td>
<td>Salmon</td>
<td>Cadmium, Lead</td>
<td>China</td>
<td>2004</td>
</tr>
<tr>
<td>UK+</td>
<td>Spices+</td>
<td>Sudan Red</td>
<td>China</td>
<td>2005</td>
</tr>
<tr>
<td>Asia+</td>
<td>Poultry</td>
<td>Bird flu (H5N1)</td>
<td>Asia+</td>
<td>2005+</td>
</tr>
<tr>
<td>US</td>
<td>Spinach</td>
<td>Salmonella</td>
<td>Local (water)</td>
<td>2007</td>
</tr>
<tr>
<td>US+</td>
<td>Wheat protein</td>
<td>Melamine</td>
<td>China</td>
<td>2007</td>
</tr>
<tr>
<td>Italy+</td>
<td>Mozzarella</td>
<td>Dioxin</td>
<td>Local</td>
<td>2008</td>
</tr>
</tbody>
</table>
Traceability drivers in the food sector:

- Food safety
  - Common Food Law
  - §18, §19 Labeling laws
- Legislation
  - Trace contamination, Enable recall
- Traceability
Europe: Common Food Law 178/2002

• Applies to feed and all foodstuffs.
• Each Food Business Operator must be able identify all who delivered food, feed or ingredients that were used in the production.
• Each Food Business Operator must be able identify all those they deliver food, feed or ingredients to.
• Food or feed items that will or might be sold in the EC should be labeled in accordance with sector specific requirements and the code on the label should facilitate identification and enable (targeted) recall.

More detailed sector-specific requirements will follow.
US: Bioterrorism Act PL107-188

- In effect from December 12\textsuperscript{th} 2004
- Mandatory registration in FDA database of all who export food to US
- Must have US agent / representative with emergency telephone number
- At least 4 hour prior notice (for air freight) of shipment
- Prior notice must be given electronically
- Penalty: Refusal of entry (goods returned), goods impounded in secure storage, civil monetary penalties
Mandatory food item information

- Submitter name, telephone, fax, e-mail, address
- Transmitter name, telephone, fax, e-mail, address (if different)
- Entry type and company customs identifier
- Food item specification, including FDA product code, common name, quantity and lot or code number for each individual package
- Identification of manufacturer, grower, farmer, (vessel)
- Country of production
- Country being shipped from, shipper, plans for further shipment
- Anticipated arrival location, date and time
- Identification of importer, owner, ultimate consignee
- Identification of carrier and mode of transportation
Traceability drivers in the food sector:

- Certification (BRC, IFS, ISO 22000, ..)
- Traceability requirements
- HACCP
- Food safety
- Trace contamination, Enable recall
- Common Food Law
- §18, §19
- Labeling laws
- Legislation
- Avoid re-punching
- Optimal production
- Industrial statistics
- Labour/cost reduction

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### Evaluation of cost/benefit

<table>
<thead>
<tr>
<th>Traceability System &amp; Supply Chain</th>
<th>Use</th>
<th>OLD</th>
<th>NEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) The <strong>time from production to make the product available to the customers is:</strong></td>
<td>1: very short 7: very long</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) The information about the <strong>production process is:</strong></td>
<td>1: very accurate 7: not accurate at all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) <strong>Seeking information about a specific product batch is:</strong></td>
<td>1: very easy 7: very difficult</td>
<td></td>
<td></td>
</tr>
<tr>
<td>•And</td>
<td>1: very accurate 7: not accurate at all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>•And</td>
<td>1: very fast 7: very slow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) The out-of-date <strong>inventory that you track with the system is:</strong></td>
<td>1: very low 7: very high</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5) <strong>The process to enter data in the system is:</strong></td>
<td>1: very slow 7: very fast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...</td>
<td>...</td>
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</tr>
</tbody>
</table>
New traceability system
- Investment costs

- Hardware, Communication equipment
- Software, off-the-shelf and custom made
- Data input and conversion
- System integration
- Education and training
- Business process re-engineering
New traceability system
- Ongoing costs

- Hardware maintenance and upgrade
- Software maintenance and upgrade
- Internal and external support needed
- Ongoing training
- Staff-related cost
- Consumables
- Licences
New traceability system
- Perceived benefits

• Supply Chain (old/new)
• Marketing/Competitive Advantage (old/new)
• Food Safety and Control (old/new)
• User Satisfaction (new)
• Information, System and Service Quality (new)
• (Benefits to other stakeholders?)
Cost/benefit conclusions so far...

• Method is fairly new, not applied in many cases, difficult to conclude in general.
• Difficult to do cost/benefit before investment.
• After investment, benefits > costs per def.
• Highest (perceived) cost related to business process re-engineering.
• Regardless of the original driver, the highest benefits are reported related to reduced inventory and increased throughput.
• Return on Investment typically 6-18 months.
• More research is needed!
Traceability drivers in the food sector:

- Certification (BRC, IFS, ISO 22000, ..)
- Food safety
- Legislation
- HACCP
- Common Food Law

- Traceability
- Traceability requirements
- Trace contamination, Enable recall
- §18, §19
- Labeling laws
- Non-IUU fish
- Environmental load, food miles, emissions, resource use, animal treatment

- Chain communication
- Profiling Feedback-loops
- Make or buy
- Integration of systems
- Consumer preference

- Labour/cost reduction
- Avoid re-punching
- Optimal production
- Industrial statistics
- Labour/cost reduction

- Competitive advantage
- Make or buy
- Profiling Feedback-loops
- Integration of systems
- Consumer preference

- Documenting ethics, welfare, sustainability
- Non-IUU fish
- Environmental load, food miles, emissions, resource use, animal treatment

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