Food Safety for Farm to School

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Topics:

- **Section 1:** Overview of Food Safety, Outbreaks and Pathogens
- **Section 2:** Food Safety Modernization Act
- **Section 3:** Rules, Regulations and Food Safety in the Kitchen
Section 1: Overview of Food Safety, Outbreaks and Pathogens
Food safety of fresh produce is a global public health concern.

World distribution of research in microbial food safety of leafy greens:

- 30-40% contribution to world published articles
- 20-30% contribution to world published articles
- 10-20% contribution to world published articles
- 0-5% contribution to world published articles
Over the Decade in the US Produce Sickened more People than any other Single-Ingredient Category

Source: Outbreak Alert! 2013 Updated Report
Vegetable-Associated Outbreaks

Source: Outbreak Alert! 2013 Updated Report
### Produce-Pathogen Combinations

<table>
<thead>
<tr>
<th>Produce Type</th>
<th>STEC*E. Coli</th>
<th>Norovirus</th>
<th>Salmonella</th>
<th>Hepatitis A</th>
<th>Cyclospora</th>
<th>Shigella</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Leafy greens</td>
<td>42</td>
<td>187</td>
<td>17</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>281</td>
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<tr>
<td>Sprouts</td>
<td>6</td>
<td>0</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>35</td>
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<tr>
<td>Tomato</td>
<td>0</td>
<td>7</td>
<td>22</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>Melons</td>
<td>0</td>
<td>6</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>Leafy green herbs</td>
<td>5</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>8</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>Carrots</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Berries</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Peppers</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Fruit(s)</td>
<td>3</td>
<td>32</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>56</td>
</tr>
<tr>
<td>Vegetable(s)</td>
<td>3</td>
<td>20</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>311</strong></td>
<td><strong>136</strong></td>
<td><strong>15</strong></td>
<td><strong>17</strong></td>
<td><strong>21</strong></td>
<td><strong>643</strong></td>
</tr>
</tbody>
</table>

Source: Scoping review data, Ilic 2011
Emerging Combinations

Cantaloupe 2011
Jensen's Farms
147 ill, 28 states, 33 deaths

Listeria monocytogenes

Source: CDC
Greenhouse Cucumbers

Cucumbers
greenhouse grown
2013
84 cases, 18 states, 17 hospitalized

Salmonella Saintpaul

Source: CDC
Salad mix

Leafy greens 2013 US
631 cases, 25 states, 49 hospitalized

*Cyclospora cayatanensis*

Source: CDC

Source: Prepared from data provided and calculated by USDA, Economic Research Service; http://www.ers.usda.gov/Publications/VGS/
Tomato Production – US 1990-2010

~ 50% of tomatoes and 30% of sales of both peppers and cucumbers are generated from greenhouse-grown produce.

Source: Prepared from data provided and calculated by USDA, Economic Research Service; http://www.ers.usda.gov/Publications/VGS/
Minimally Processed Leafy Greens

Sales, $ (billion)

Year


Source: Information Resources, Inc. & Roberta Cook, UC Davis Extension
Farm-to-Fork Production Chain

Pre-harvest

Irrigation
Fertilization
Soil Amendments
Workers

Post-harvest

Storage
Packing
Cooling
Retail

Consumer

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COLLEGE OF EDUCATION AND HUMAN ECOLOGY
ON-Farm Contamination (seasonality)

Spinach contamination with *E. coli*

Source: Ilic et al 2008; Ilic et al 2011
On-Farm Contamination Routes

Equipment: **Whatever touches the crop**

Source: HPOP
Section 2: Food Safety Modernization Act
FSMA Produce Safety Rule

- Signed into Federal Law, January 4, 2011
- Risk-Based approach
- “high risk” practices vs. “high risk” commodities
- Allows for different practices
- No prescriptive requirements for uncontrollable factors (i.e. wildlife)
Applying the FSMA Produce Safety Rule

- Applies to raw agricultural commodities, including fruits, vegetables, mushrooms, tree nuts, sprouts and mixes of intact fruits and vegetables
Why include fruit with peels?

- Pomegranate Seeds – Hepatitis A, 2013
- Mangoes – Salmonella, 2012
- Cantaloupe – Salmonella, 2012
- Cantaloupe – Listeria monocytogenes, 2011
- Papaya – Salmonella, 2011
- Melons – Salmonella, 2011
- Mamey – Salmonella, 2010
FSMA Produce Safety Rule
Who is Covered?

- Farms that grow, harvest, pack or hold certain types of produce:
  - Less than $25,000 in sales exempt
  - Small or very small farms who sell directly to consumers
  - In-state or within 275 miles
  - Packaging or point-of-sale labeling required
Fresh-Cut Produce
Preventive Controls for Human Food

- If cut or minimally processed the food facility has to be registered with FDA
- Must develop and implement a written preventive controls plan and to maintain records
- Risk-based inspections for adulterated food
- Authority to issue a mandatory recall or suspend registration
Section 3: Rules, Regulations, Food Safety in the Cafeteria
Into the Cafeteria
Using Local Produce
Cottage Foods/Permitted Foods
Cottage Foods/NOT Allowed Foods

The Ohio State University

College of Food, Agricultural, and Environmental Sciences
College of Education and Human Ecology
Farm Market
Farmers’ Market
Locally Produced Specialty Crops

http://www.youtube.com/watch?v=QIB2C6_FE3I
Food Safety in the Kitchen

- Check
- Clean
- Rinse
- Separate
- Chill
- Throw Away
Check

- Check for bruising and damage.
Clean

- Wash hands, all utensils and surfaces.
Rinse

- Rinse fruits and vegetables under running water.
- DO NOT wash prewashed packaged foods.
Separate
Cook
Chill
Throw Away

*When in Doubt,*

*Throw it Out!*
Summary

• Why is food safety important?
• Food Safety concerns on the Farm
• Food Safety concerns in the Cafeteria
• How can producers and food service directors work together to put more local produce in the cafeteria?
References:

- [http://www.agri.ohio.gov/foodsafety/](http://www.agri.ohio.gov/foodsafety/)
  - Ohio Food Code
  - Cottage Food Rules
  - Rules for Farm Markers and Farmers’ Markets
- [http://fcs.osu.edu/food-safety](http://fcs.osu.edu/food-safety)
  - OSU Extension Family and Consumer Sciences webpage
- [http://www.fda.gov/Food/GuidanceRegulation/FSMA/default.htm](http://www.fda.gov/Food/GuidanceRegulation/FSMA/default.htm)
  - Food Safety Modernization Act