Good Agriculture Practices for Melons

Western Kentucky University

General Information

Commonly consumed melons include cantaloupe, honeydew, and watermelon. Melons have a rich, vibrant taste and great nutritional benefits, making them a popular fresh produce that is often eaten raw in salads, desserts, or by themselves.

Melons are highly susceptible to microbial contamination, particularly varieties of melons with netted rinds. Extra caution must be taken during all stages of growth, harvest, and storage of melons to ensure that contamination is prevented.

Notable Foodborne Illness Outbreaks Linked to Melons, 2006-Present (Outbreak Database, 2015)

Between 1996 and 2008, 507 illnesses and 2 deaths were attributed to contaminated melons. Several notable foodborne illness outbreaks caused by melons occurred in 2011. A *Salmonella* outbreak severely affected the state of Kentucky, causing 8 deaths. A *Listeria* outbreak in the same year from melons produced in Colorado resulted in 133 illnesses, 33 deaths, and 1 miscarriage, making it one of the deadliest recorded foodborne illness outbreaks in American history.

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Year</th>
<th>Food Vehicle</th>
<th>Location</th>
<th>States Affected</th>
<th>Illnesses</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Salmonella</em></td>
<td>2012</td>
<td>Cantaloupe</td>
<td>Indiana</td>
<td>11</td>
<td>261</td>
<td>3</td>
</tr>
<tr>
<td><em>Listeria</em></td>
<td>2011</td>
<td>Cantaloupe</td>
<td>Colorado</td>
<td>12</td>
<td>147</td>
<td>33</td>
</tr>
<tr>
<td><em>Salmonella</em></td>
<td>2011</td>
<td>Cantaloupe</td>
<td>Guatemala</td>
<td>6</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Norovirus</td>
<td>2008</td>
<td>Melons</td>
<td>California</td>
<td>1</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td><em>Salmonella</em></td>
<td>2008</td>
<td>Cantaloupe</td>
<td>International</td>
<td>8</td>
<td>53</td>
<td>0</td>
</tr>
<tr>
<td><em>Salmonella</em></td>
<td>2007</td>
<td>Honeydew</td>
<td>New Jersey</td>
<td>4</td>
<td>26</td>
<td>0</td>
</tr>
<tr>
<td><em>Salmonella</em></td>
<td>2006</td>
<td>Melons</td>
<td>International</td>
<td>6</td>
<td>41</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1. Selected Foodborne Illness Outbreaks Attributed to Melons, 2006-Present (Outbreak Database, 2015)
Storage and Cooling Conditions

Storage conditions for melons vary by variety. Generally, storing melons at 7-10°C is ideal. Ripe melons prefer 2-5°C. Before and after storage, melons should be inspected for mold, bruising, or sunken areas, as these defects indicate fruit which has become contaminated. Melons should never be stored at room temperature.

<table>
<thead>
<tr>
<th>Produce</th>
<th>Optimal Storage Temp., °C</th>
<th>Optimal Humidity (%)</th>
<th>Cooling with top ice acceptable</th>
<th>Cooling with water sprinkle acceptable</th>
<th>Ethylene Production</th>
<th>Ethylene Sensitivity to</th>
<th>Storage Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melons</td>
<td>Varies; 7-10 Typical</td>
<td>85-100</td>
<td>Yes</td>
<td>-</td>
<td>Yes</td>
<td>Yes</td>
<td>15-21 Days</td>
</tr>
</tbody>
</table>

Table 2. Storage and Cooling Conditions for Lettuce (Suslow, Cantwell, & Mitchell, 1997)

Good Agriculture Practices (FDA, 2009)

- If unusually heavy wildlife pest infestations or evidence of wildlife pest infestations occurs (i.e., presence of wildlife feces), consider discarding affected produce.
- If melons are turned by hand to reduce ground spot formation, carefully consider employee hygiene practices, especially hand washing and glove use.
- If melons directly contact soil, careful consideration should be given to the use of all soil amendments to reduce or eliminate the potential for human pathogen contamination of soil.
- Heavy rains may increase the likelihood of soil-to-melon contamination. Consider delayed harvest, extra washing, etc., when heavy rains have recently occurred.
- If cups or plastic sheeting are used, clean, sanitary materials should be used.

Pathogenic Behavior

Melons present one of the highest risks to consumers for microbial contamination. Melon rind is a particular challenge to food safety, as it is extremely susceptible to harboring bacteria. Harmful pathogens such as *Salmonella* and *E.coli O157:H7* have been shown to stick to the exterior of melons, multiply, and travel though the porous rind to the interior of the fruit. The high water content of melons, combined with their low acidity, are further conducive to bacterial growth. Furthermore, because melons grow on the ground, they can come directly into contact with soil and manure, and rainwater runoff may contaminate the fruit.

References


This publication is supported by a grant from the United States Department of Agriculture, National Institute of Food and Agriculture. Grant #11281827

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This food safety factsheet can be downloaded at http://www.wku.edu/agriculture/index.php