**STONE FRUIT RIPENING**

Mealiness  
Lack of Flavor  
F. Browning  
Uneven Ripening

Carlos H. Crisosto  
University of California, Davis  
chcrisosto@ucdavis.edu

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**Effect of Temperature on 'Carnival' Peach Chilling Injury After Storage Plus 2 Days at 68°F**

- 32°F  
- 36°F  
- 41°F  
- 46°F  
- 50°F


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**Yellow Flesh Peach Consumer Acceptance - 1995**

- CONSUMER ACCEPTANCE (%)  
- FIRMNESS (lb.)

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**Production**

- Tree Ripe  
- Well Mature (10-14 lb.)

**Store**

- Consumption (10-8 lb.)
  
- Warehouse

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**Production**

- Tree Ripe  
- Well Mature (10-14 lb.)

**Store**

- Consumption (2-4 lb.)  
- "Ready to Eat"
  
- "Ready to Buy"

- Warehouse

- Ripening (°F)  
- Flesh Softening (6 lb. P/N)  
  (5 lb. plums)
Stone Fruit Ripening Terminology

• “Mature” (14-10 pounds)
• “Ready to Eat” (2-4 pounds)
• “Ready to Transfer” (4-6 pounds)
• “Ready to Buy” (6-8 pounds)
• Preconditioned (4-8 pounds)

Weak position on the fruit

Firmness Measurements

Collecting data and using it

Stone Fruit Transport

• Stone fruit temperature measured upon arrival at the retail warehouse after 3 days truck shipment, 1996

Peach Delayed Cooling

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Plum</th>
<th>Peach</th>
<th>Nectarine</th>
</tr>
</thead>
<tbody>
<tr>
<td>°F</td>
<td>% Mealy</td>
<td>% Mealy</td>
<td>% Mealy</td>
</tr>
<tr>
<td>&lt;20</td>
<td>14.7</td>
<td>5.9</td>
<td>4.8</td>
</tr>
<tr>
<td>20-50</td>
<td>69.3</td>
<td>17.1</td>
<td>17.1</td>
</tr>
<tr>
<td>&gt;50</td>
<td>14.7</td>
<td>14.7</td>
<td>26.0</td>
</tr>
</tbody>
</table>

Product Flow Through the Preconditioning Process
**Do we need to apply Ethylene?**

**NO**

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**Peach Market Life**

Increase in market life of preconditioned peaches during 48h at 68°F compared to untreated (no cooling delay) based on development of chilling injury during storage at 32°F or 41°F.

<table>
<thead>
<tr>
<th>Change in delayed cooling treatment</th>
<th>Change in maximum market life at 32°F (weeks)</th>
<th>Change in minimum market life at 41°F (weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elegant Lady</td>
<td>0</td>
<td>1 +</td>
</tr>
<tr>
<td>Summer Lady</td>
<td>1 +</td>
<td>2</td>
</tr>
<tr>
<td>O’Henry</td>
<td>1</td>
<td>1 +</td>
</tr>
<tr>
<td>Zee Lady</td>
<td>0</td>
<td>1 +</td>
</tr>
<tr>
<td>Ryan Sun</td>
<td>2 +</td>
<td>2</td>
</tr>
</tbody>
</table>

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**Basic Requirements of the Preconditioning Program**

- Infrastructure such as a ripening room and forced air capacity should be available for a reliable preconditioning/pre-ripening program
- Trained quality assurance personnel and a “ripeners” are key components of this program
- Make quality data accessible

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**Critical Points for a Successful Preconditioning Program**

- Optimize your fungicide application operation. Slow down fruit softening after preconditioning-pre-ripening process.
- Control fruit and chamber temperature conditions and fruit firmness evolution during the preconditioning-pre-ripening process.
- Monitor and determine the end of the preconditioning-pre-ripening process.
- Retail handling instruction for preconditioned fruit.

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**Optimize Your Fungicide Application Operation**

<table>
<thead>
<tr>
<th>Chemical Names</th>
<th>Trade Names</th>
<th>Usage Residue*</th>
<th>Tolerance (MRL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluodioxonil</td>
<td>Scholar</td>
<td>0.5-1</td>
<td>5</td>
</tr>
<tr>
<td>Fenhexamid</td>
<td>Judge**</td>
<td>1-3</td>
<td>10</td>
</tr>
<tr>
<td>Propiconazole</td>
<td>Mentor***</td>
<td>0.5-1</td>
<td>2</td>
</tr>
</tbody>
</table>

* Based on application method. Improved coverage (e.g., high volume systems) allows lower residues.
**Formerly named Elevate (preharvest name).
***Mentor 45WP was registered under an emergency registration (Section 18) for the 2006-2008, (pending for 2009) seasons and is in the IR-4 program for full Section 3 registration. International CODEX MRL is 1 ppm.

Communicate with Your Growers, Merchandisers or Supervisors