Quality Measurements at Receiving Mango and Pear

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Flavor Quality

Harvest Maturity

- Mangos harvested immature will never develop good flavor quality and will disappoint consumers
- Mango maturity can be difficult to determine
- Internal color is the best indicator

Harvest Maturity

Mangos should be harvested at a minimum internal color stage of 2.
- At least light yellow internal color, not green or white
- Fruit will still be firm
- Refer to the National Mango Board Maturity & Ripeness Guide as a reference to harvest maturity for each variety

Mango Maturity At Receiving

- At receiving, you can expect the mangos to be mature, but not necessarily ripe
- A mature mango will ripen normally with increasing soluble solids content (degrees Brix) and decreasing firmness (lbs. force) to become ready to eat within 10 days at ambient temperatures
Mango Maturity At Receiving

- Maturity can be judged by a combination of factors, including internal color, firmness, and fruit shape
- Red skin is not an indicator of maturity, quality or ripeness and should not be used to evaluate mangos at receiving except for appearance quality

Relationships Among Quality & Maturity Factors

Upon fruit arrival, check internal color, firmness and soluble solids content
Penetrometer will be much more accurate than hand feel
Internal flesh should be at least yellow in color; better with 50% orange-yellow color
Soluble solids content will vary depending on stage of ripeness
Remember, soluble solids increase as the fruit soften further
Very firm mangos should have approximately 7 to 9% SSC
Fully ripe mangos generally have as much as 13 to 20% SSC
Check for defects, especially chilling injury

Firmness

Penetration Force

Use 5/16-inch (8-mm) tip

Source of Equipment: http://postharvest.ucdavis.edu
Yellowpages

Methods of Measuring Mango Firmness

Soluble Solids Content

- Collect flesh tissue
  - Entire half of fruit
  - Plug taken down to seed
- Juice pieces of flesh, place drop onto refractometer
- Will continue to increase in fruit not yet ripe

Chilling Injury

- Damage to mango appearance and eating quality caused by exposing the fruit to temperatures below 12°C (54°F)
  - Loss of flavor
  - Lenticel spotting
  - Surface pitting
  - Poor color development
  - Uneven ripening
  - Grayish or black skin color
  - Internal browning
Mango Storage Temperatures

- Mature green mangos
  - Store/ship at 54°F (12.2°C)
- Ripe mangos
  - Store/ship at 46 - 50°F (8 - 10°C)

European Pears

Starkrimson
Bartlett
Forelle

Comice
Bosc
d’Anjou

Pear Quality at Receiving

- Firmness
  - Penetrometer with 8-mm tip
- Defects – may develop with ripening
  - Roller bruising
  - Scald
  - Internal browning

Roller Bruising of Pears

Clamshell package or corrugated master container
Suspended tray
Know the history of your fruit to understand its resistance to ripening

- Variety
- Growing region
- Harvest date
- Length of Cold Storage
- CA vs. RA storage
- Ripening Initiated?

Conditioning Pears for Ripening

<table>
<thead>
<tr>
<th></th>
<th>Comice</th>
<th>Bartlett</th>
<th>Bosc</th>
<th>Anjou</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold Storage @ 30-32°F</td>
<td>4</td>
<td>2-3</td>
<td>2</td>
<td>8 wks</td>
</tr>
<tr>
<td>100ppm Ethylene @ 68°F</td>
<td>3</td>
<td>1-2</td>
<td>1</td>
<td>3 days</td>
</tr>
</tbody>
</table>

Cold storage requirements may be longer when fruit are stored in CA

Options for Receiving Pears

- Obtain pears without prior treatment and ripen yourself
- Need for ethylene depends on prior history
- Obtain pears that have been ripening-initiated by the shipper and complete ripening
- Obtain partially-ripened pears from the shipper

Questions?

http://postharvest.ucdavis.edu