



# Peaches

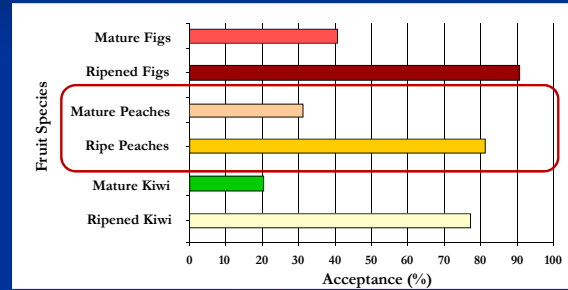
## Managing the Postharvest Environment to Optimize Consumer Acceptance

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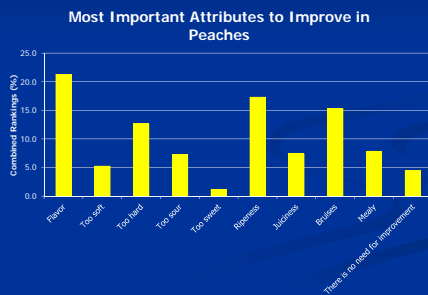


### RIPENING MAGIC ON CONSUMER ACCEPTANCE OF FRESH FRUIT CROPS



Crisosto et al., 2010

### Percent of the combined rankings for consumers' two most important attributes to improve in peaches.



Crisosto

There is a need for improvement.

## Ripening Pattern

- Commodities that have a "ripening phase" are called "Climacteric".

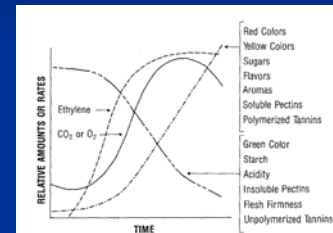


Fig. 22.4. Schematic presentation of compositional changes associated with fruit ripening in relation to ethylene production and respiration (CO<sub>2</sub> production or O<sub>2</sub> consumption).

From: Peaches, Plums, and Nectarines – Growing and Handling for Fresh Market

## Ripening

- Optimum temperature for ripening are ~ 68 to 72F (20 to 22C) with RH of 90-95%.
  - Temperature above 30C inhibits ethylene biosynthesis.
- Ethylene treatments of 10 to 100 ppm can be used to accelerate ripening.

Table 22.3. Ethylene effects on stone fruit ripening as indicated by flesh firmness (means ± standard deviation)

Days at 68°F (20°C)	Treatment	Flesh firmness (pound-force)		
		Nectarine	Peach	Plum
0	At harvest	11.6 ± 2.1	15.3 ± 1.5	6.1 ± 1.9
4	Without added ethylene	2.3 ± 1.0	2.8 ± 1.2	3.7 ± 2.1
4	With 20 ppm	1.8 ± 0.4	2.2 ± 0.6	1.8 ± 1.0

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## Mechanical Injury

- Stone fruit are very susceptible to mechanical injury.



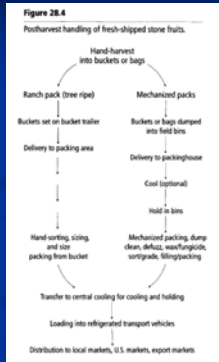
Photos courtesy of UC Davis

## Minimizing Injury

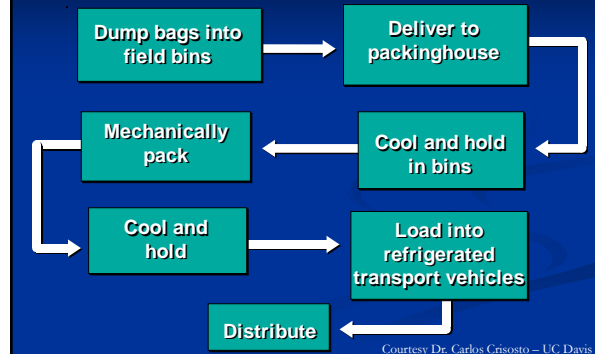
- Careful handling of all produce containers.
- Use **bubble plastic liners and top pads** in field bins.
- Minimize distance** of forklift movement of field bins to loading point.
- Grade farm roads** and **restrict travel speed** of transport vehicles relative to road quality.
- Use **good (i.e., "air") suspension systems** on all trucks and **reduce tire pressure**.
- Keep all packing equipment clean** to avoid abrasive surfaces.
- Immobilize fruit** within shipping containers.

## Postharvest Handling

- Two main ways to handle the fruit.
  - Mechanized packing**
    - Requires firmer, less-mature fruit
    - Allows various postharvest treatments such as cleaning fungicide application, etc.
  - "Ranch" packing**
    - Required when handling "tree ripe" fruit



## Mechanized Packing of Fruit Harvested into Bins



## Receiving

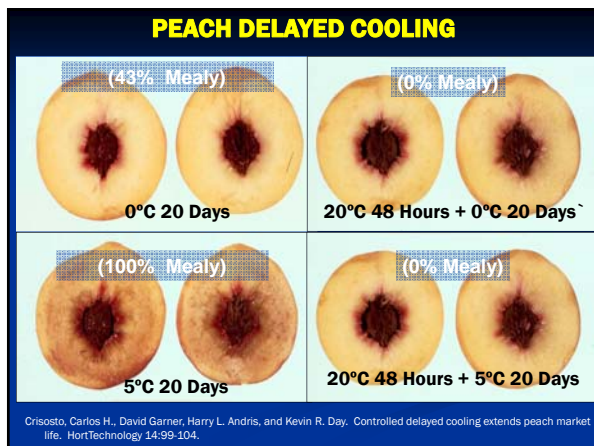
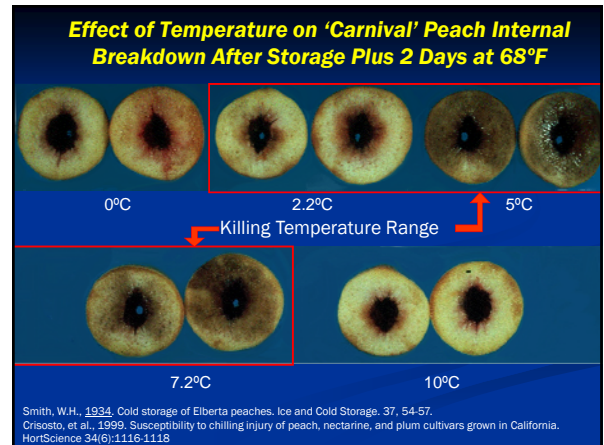
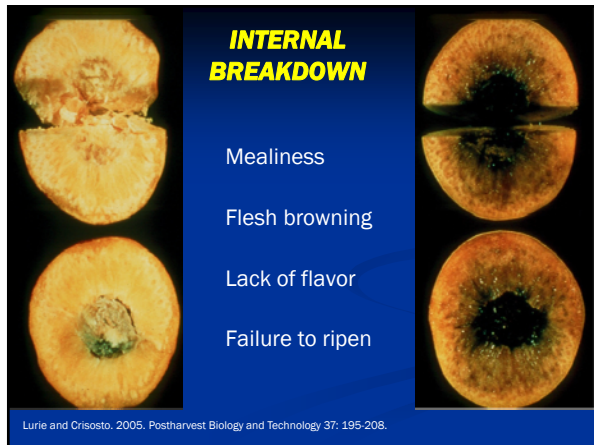
- Provide shade** to prevent heating and sunburn.
  - Shade can also be provided within the field (e.g. cover with palm fronds or use shade cloth).
- Move into packing operation quickly.

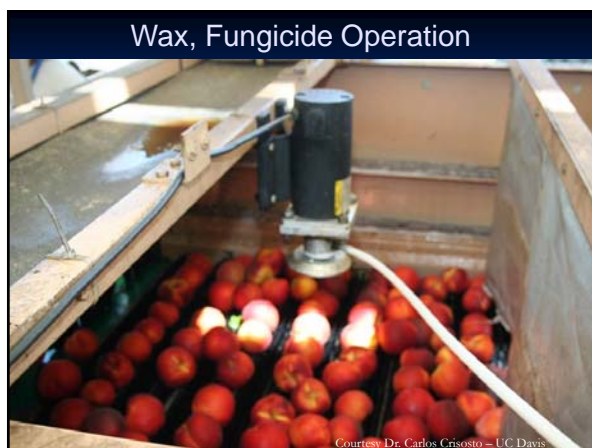
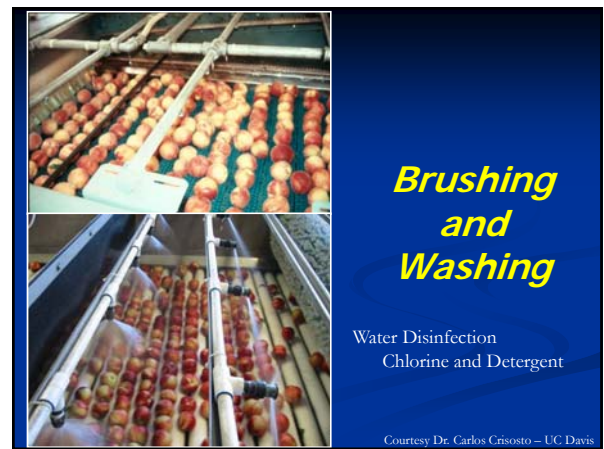


Photo Courtesy Dr. Carlos Crisosto – UC Davis

## Cooling

- Minimize time between harvest and cooling.
- Cooling before grading** (e.g. in field containers):
  - May extend storage life (esp. slows softening).
  - Extra expense of cooling unmarketable product.
  - Energy to cool will be lost if commodity is allowed to warm during packinghouse operations.
  - Re-warming & condensation may cause additional decay.
  - In some cases, delayed cooling may reduce IB.







### Packing

- By hand - place pack.

Photo Courtesy Dr. Carlos Crisosto – UC Davis

### Packing

- Mechanized - Volume fill

### Packaging Requirements of the Commodity

- Protect the commodity.
  - Immobilize the product.
  - Protect against crushing (stacking), impacts, vibration damage, etc. Possible use of trays, cups, liners, pads, etc.
  - Withstand packages stacked at least one pallet high.
  - Maintain strength under high humidities (or free moisture in some cases).
  - Protect against contamination (fungi, insects, bacteria).

## Packaging Requirements of the Commodity

- Provide (or modify) gas exchange.
- Prevent/slow water loss.
- Allow cooling and/or insulate from heating.
  - Recommended 5% side venting (adequate air flow with good structural strength). ~3% venting in the top and bottom.
    - Vents should align even when cross stacking.
  - Internal packing should not restrict air movement.

## Assembly – Unitizing in pallets, bins, etc.

- Protects the commodity (e.g. product shifting).
  - Systems such as gluing, interlocking packages, wrapping pallets, bracing, etc. help maintain unit integrity during transport.



## Quality Control (QC)

- One person should be responsible for an operation's QC and given enforcement authority.
- Effective QC measures must be established throughout the entire postharvest system.



Photo Courtesy Dr. Carlos Crisosto – UC Davis

## Forced Air Cooling



## Optimal Storage Conditions:

-1 to 1°C  
90 to 95% RH

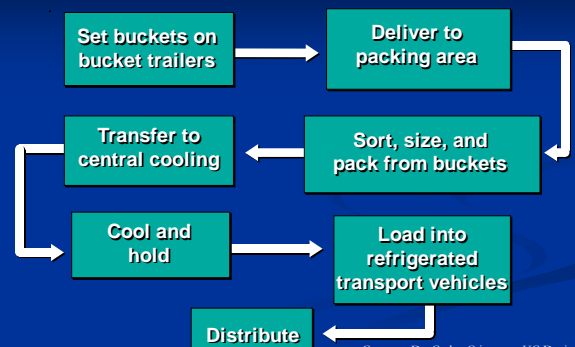
## Storage Duration:

2 to 6 weeks,  
depending on cultivar



Courtesy Dr. Carlos Crisosto – UC Davis

## Ranch Packing of Fruit Harvested into Buckets



Courtesy Dr. Carlos Crisosto – UC Davis



**BRUISING IN DIFFERENT BOXES**  
Measured at Atlanta, Distribution Center

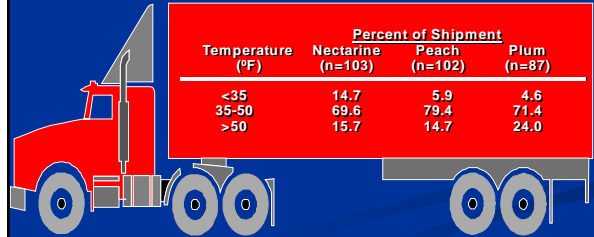


BOX-TRAY	YELLOW	WHITE
CORRUGATED-SHOE BOX STANDARD	1.4%	2.5%
CORRUGATED-EURO HAMMOCK	2.0%	0.6%
RPC-EURO STANDARD	2.0%	0.5%
RPC-EURO HAMMOCK	0.25%	0.4%

Firmness from 2-8lbs

Courtesy Dr. Carlos Crisosto – UC Davis

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



Courtesy Dr. Carlos Crisosto – UC Davis

*Thank You*

