



Value Added Opportunities with Tropical Fruits

Charles Sims

Food Science & Human Nutrition

University of Florida



Opportunities

- Convenience to consumers
 - Mango
- Introduce new fruits to consumers
 - May not try otherwise
- Increase profitability



Examples

- Fresh-cut fruits and vegetables
 - Carambola, mango, others
- Juices, purees, smoothies
- Wines
- Other



Concerns

- Food Safety!
 - Ready to eat product
 - Sanitation, temperature control, HACCP?
- Quality
 - What are the limitations in quality, shelf-life?
- Markets
- Economics



Fresh-Cut Carambola

- Can “lock-in” optimum quality, maturity
- Outside appearance is not so critical
- Nice, unique appearance as slice
 - May encourage more people to try
- Opportunities in food service, other markets



General Process for Carambola

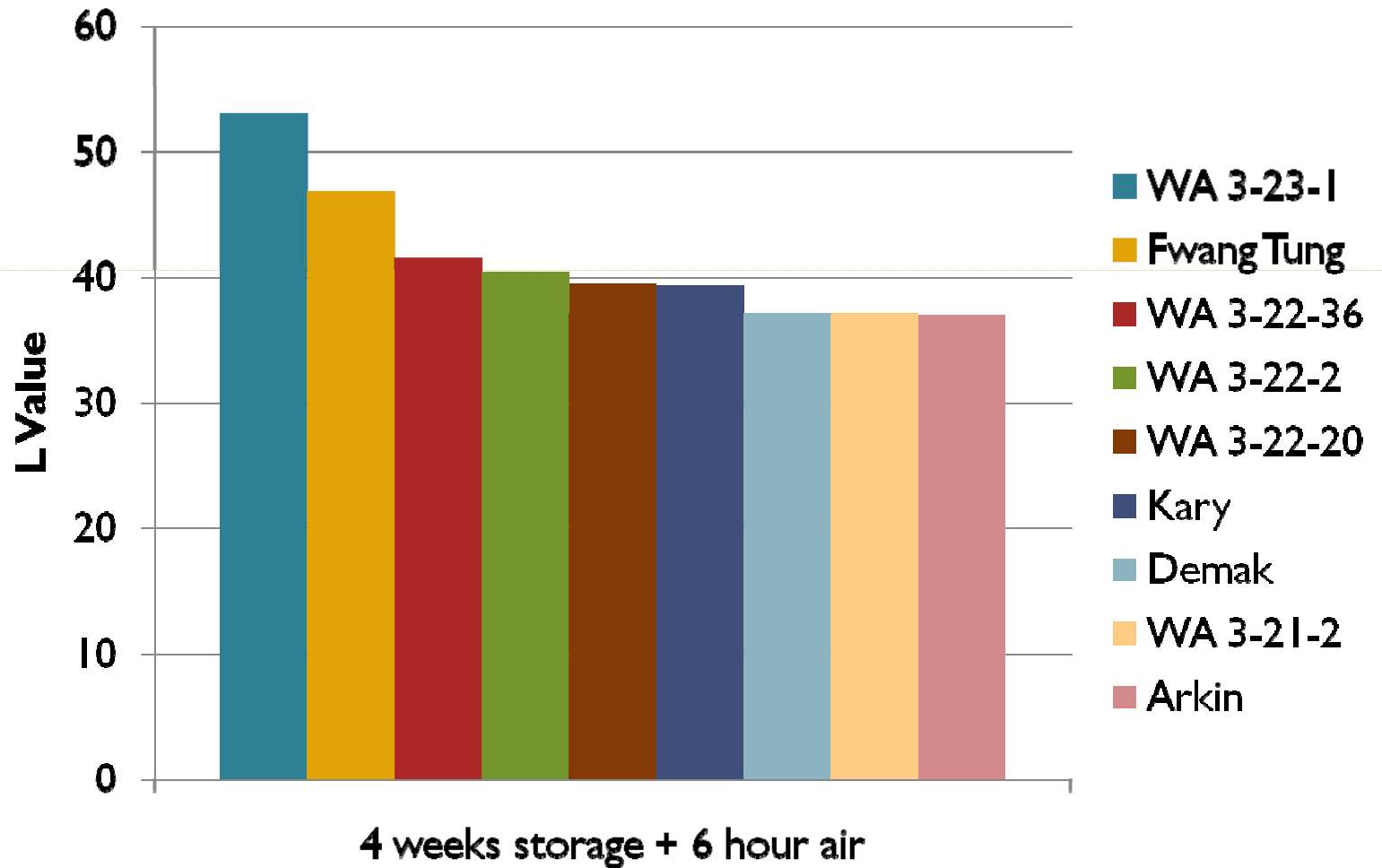
- Cultivar is important
- Optimum maturity, ripeness
- Washing is critical
- Slicing
- Treatment to limit browning
- Vacuum package
- Maintain refrigerated



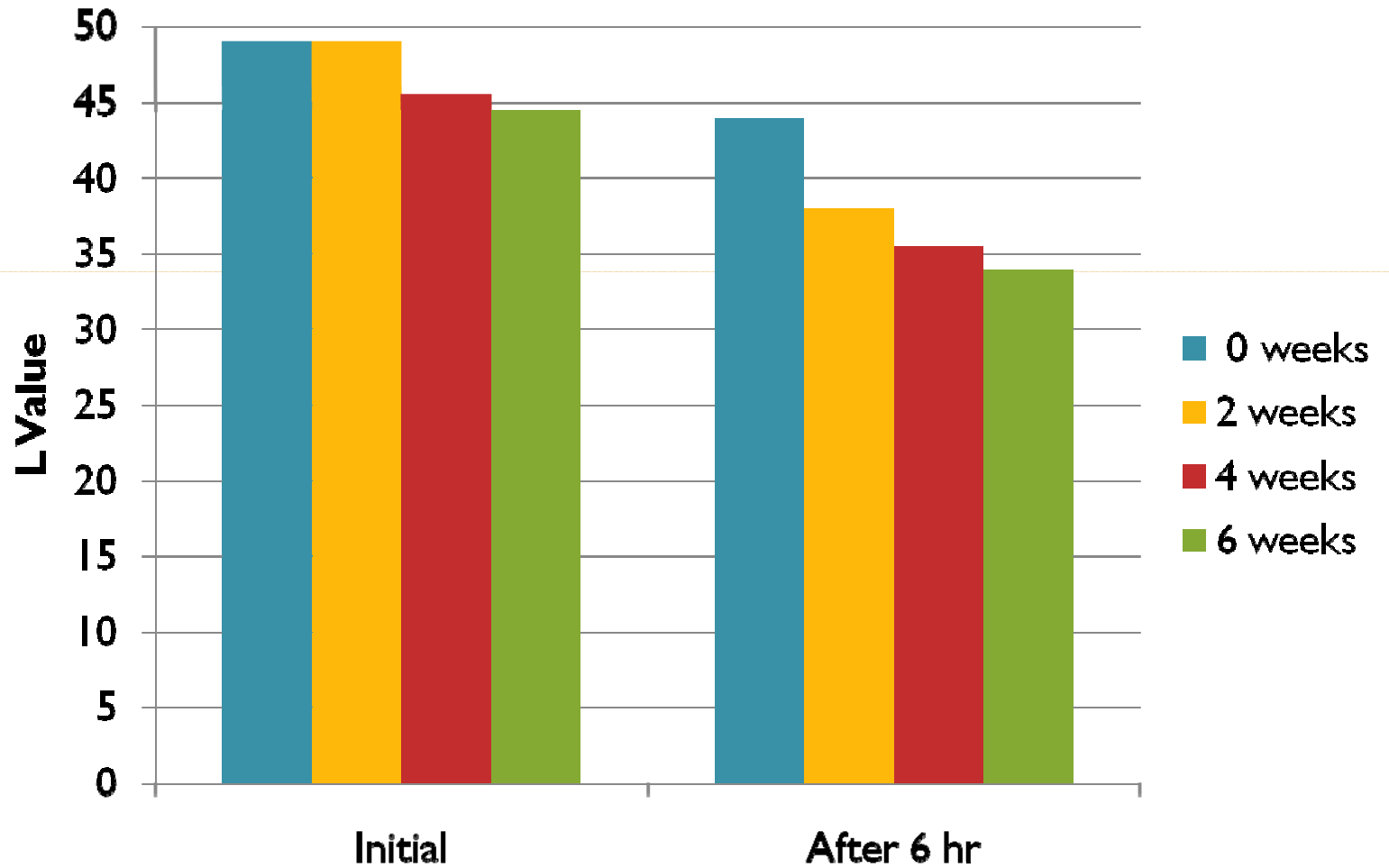
Research on Pre-Cut Carambola

- Cultivar is important
- Browning doesn't start until package is opened, slices exposed to air
- Browning becomes worse with storage
- Ascorbic acid also decreases storage
- Browning can be limited with treatment
- Shelf-life?
 - 2-4 weeks (color, microbial concerns limit)

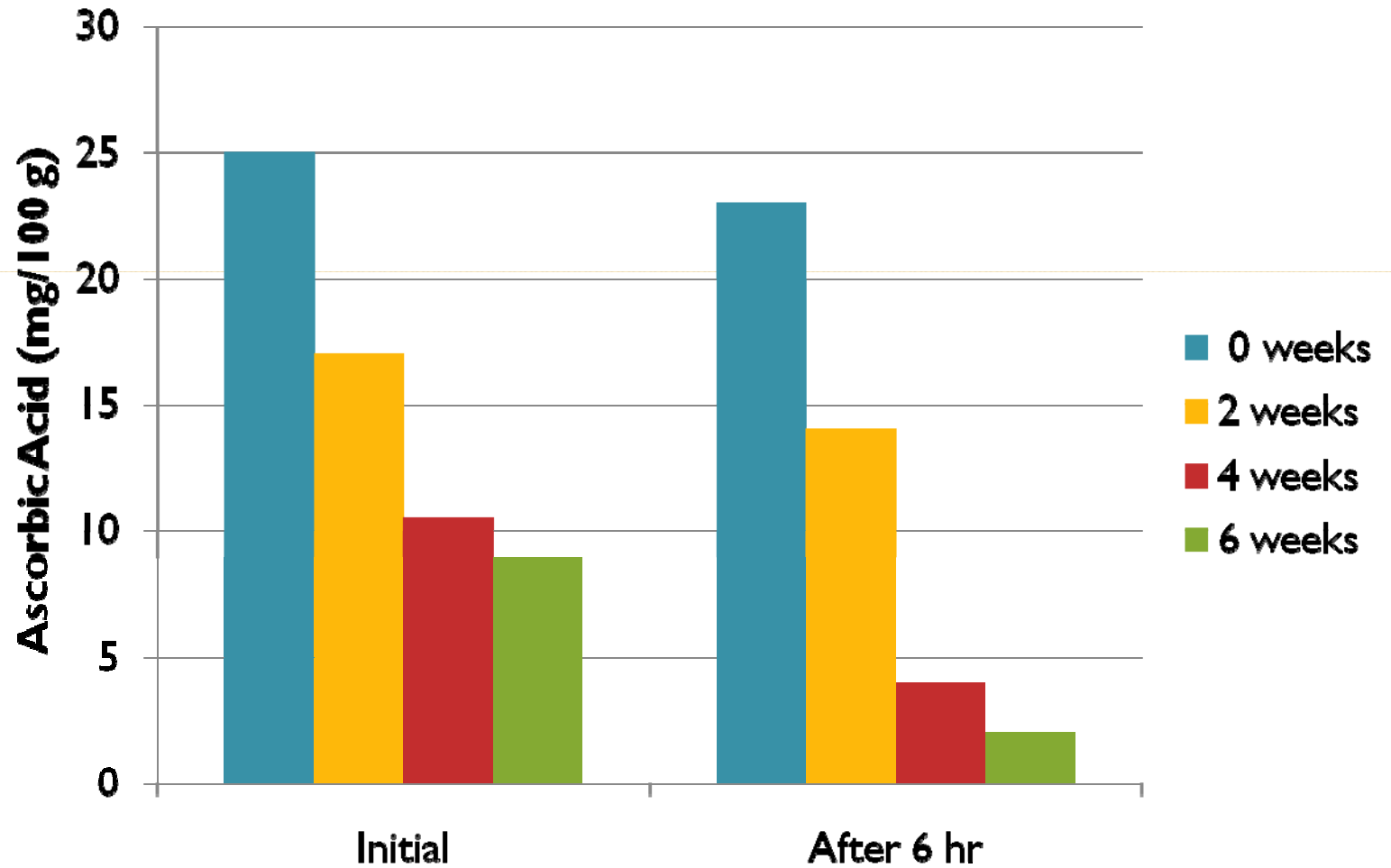
Browning in Cultivars/Lines



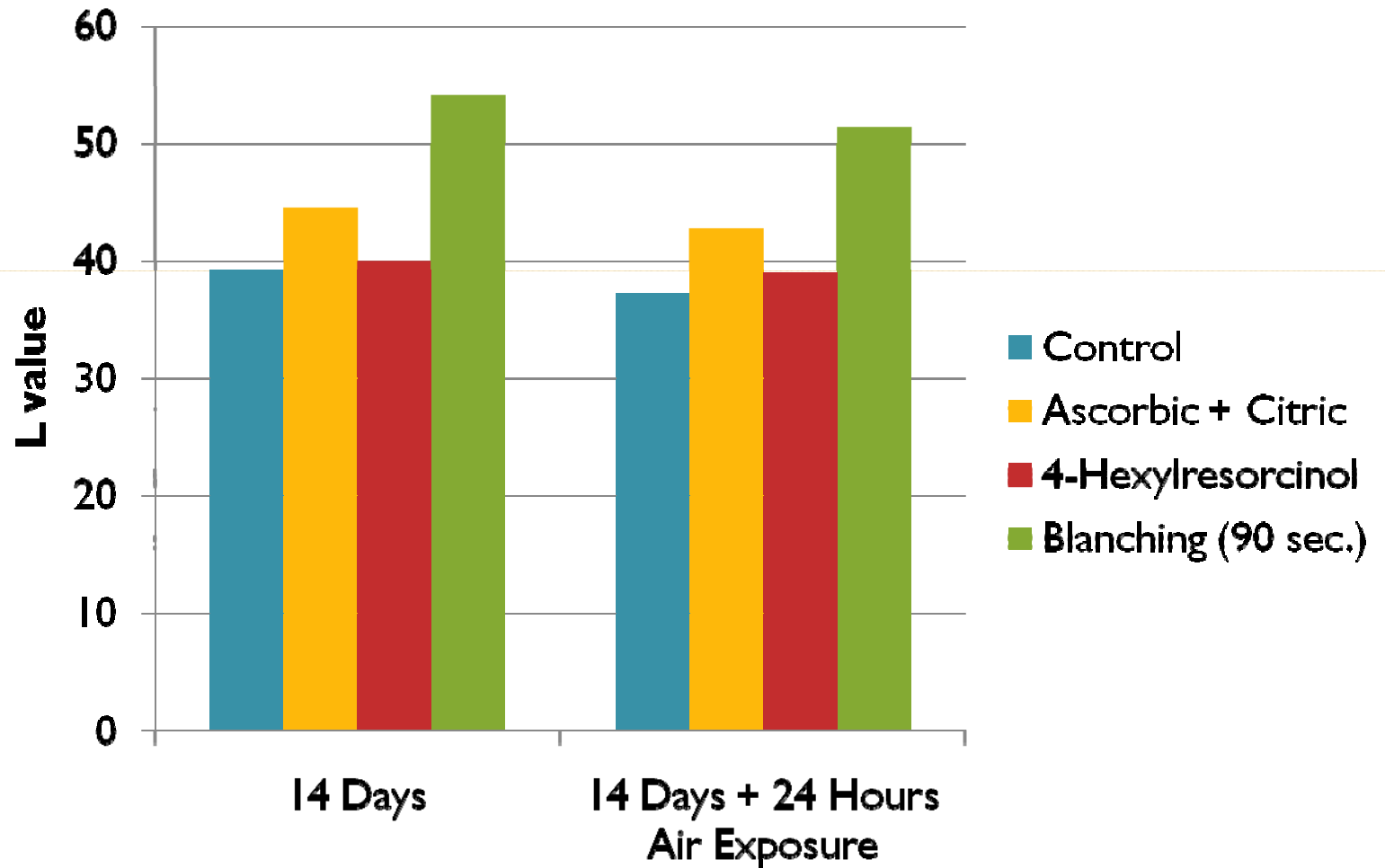
Browning of Arkin During Storage



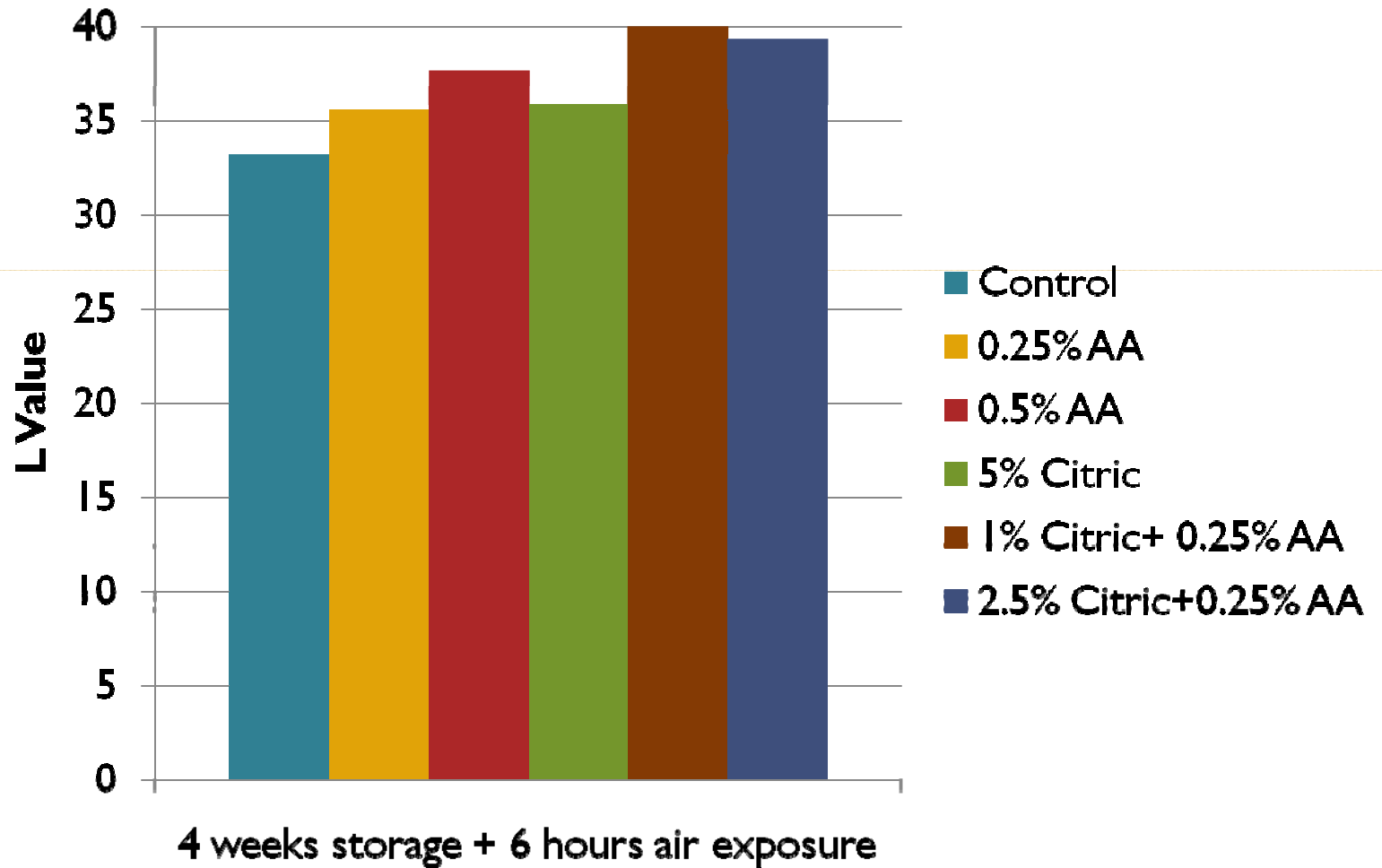
Changes in Ascorbic Acid of Arkin



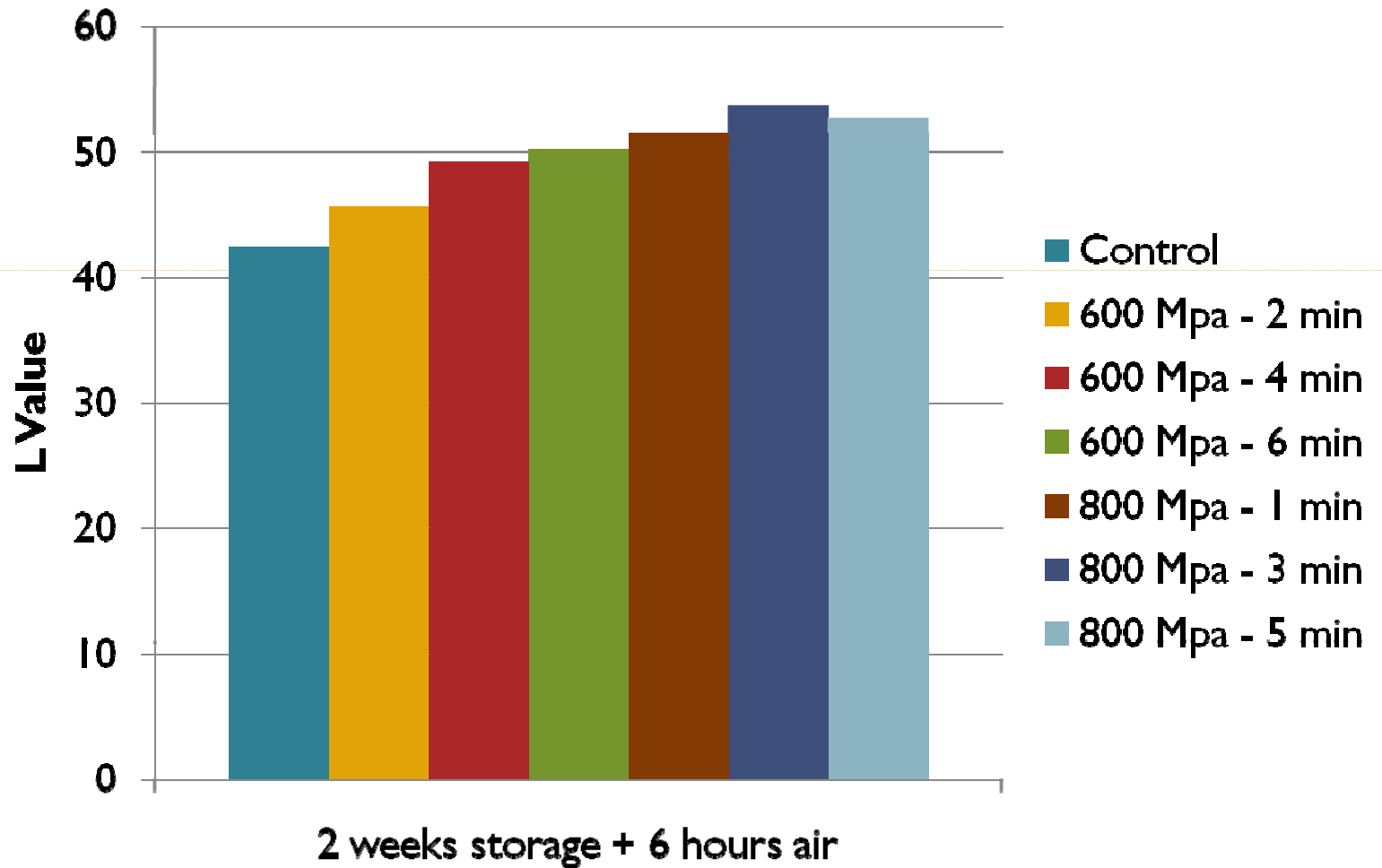
Anti-Browning Treatments of Arkin



Anti-Browning Treatments of Arkin



High Pressure Processing of Arkin





Fresh-Cut Mango

- Can lock in optimum quality, ripeness
- Outside appearance not an issue
- Very convenient for consumers
- Fairly good shelf-life



General Process for Pre-Cut Mango

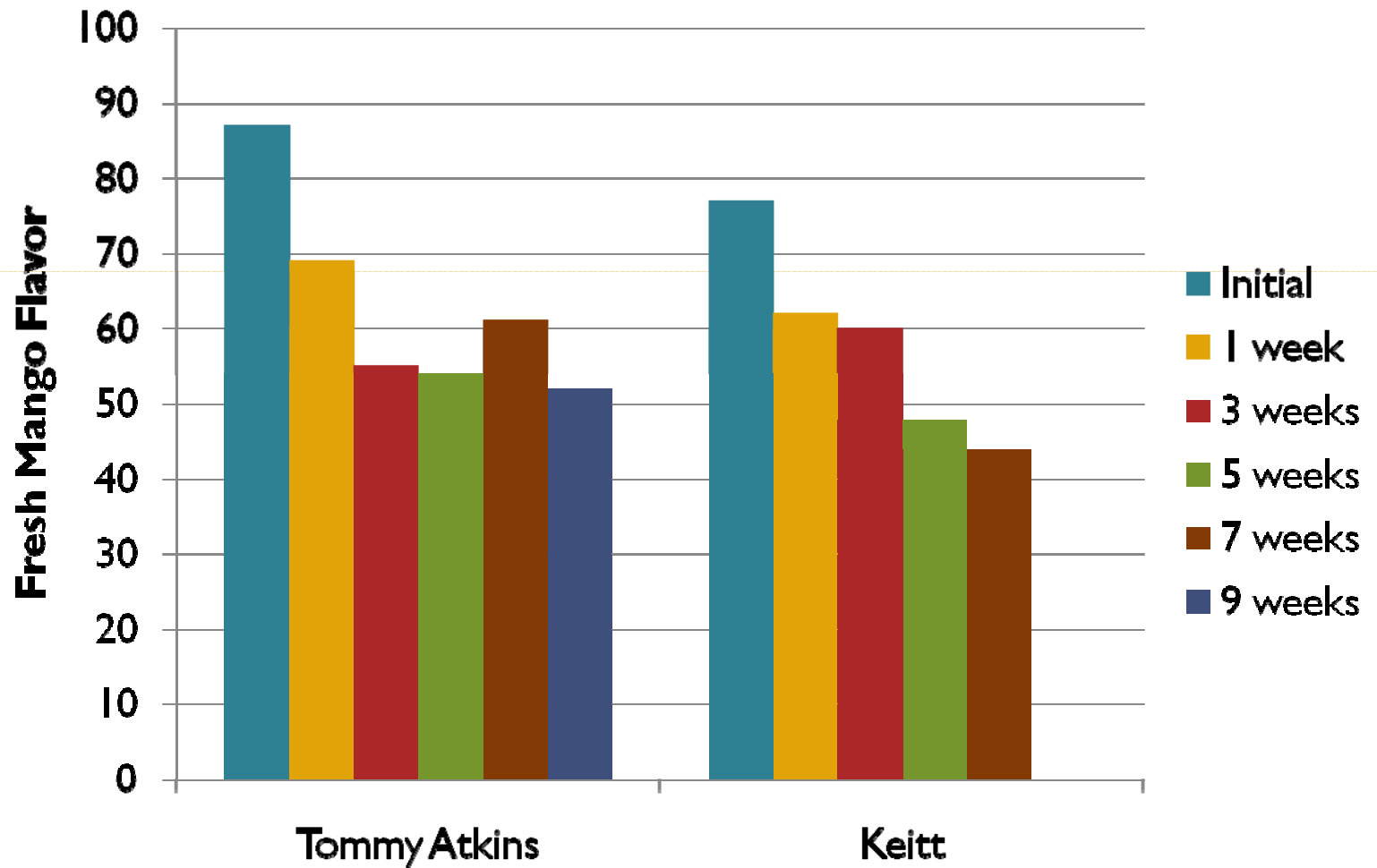
- Variety?
- Optimum ripeness
- Wash
- Peel (by hand?)
- Sliced from pit (by hand?)
- Package
- Keep refrigerated



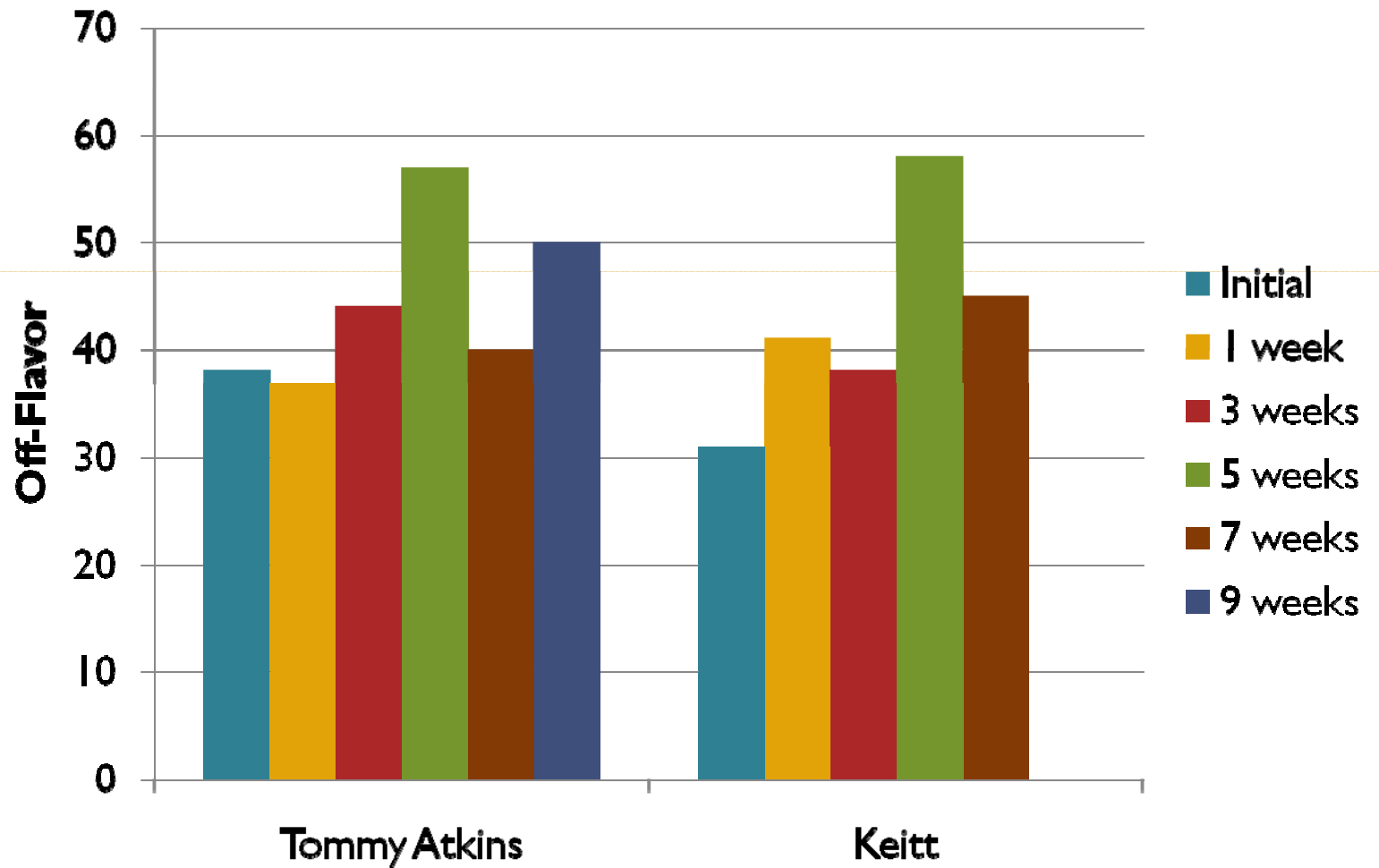
Research on Pre-Cut Mango

- Varieties
 - Tommy Atkins, Keitt
- Shelf-life
 - Up to 5 weeks (3C)
 - Microbial problems, fresh mango flavor, off-flavor
 - Color, texture changes not big problems
- High pressure processing
 - Limited microbial growth, but flavor changed

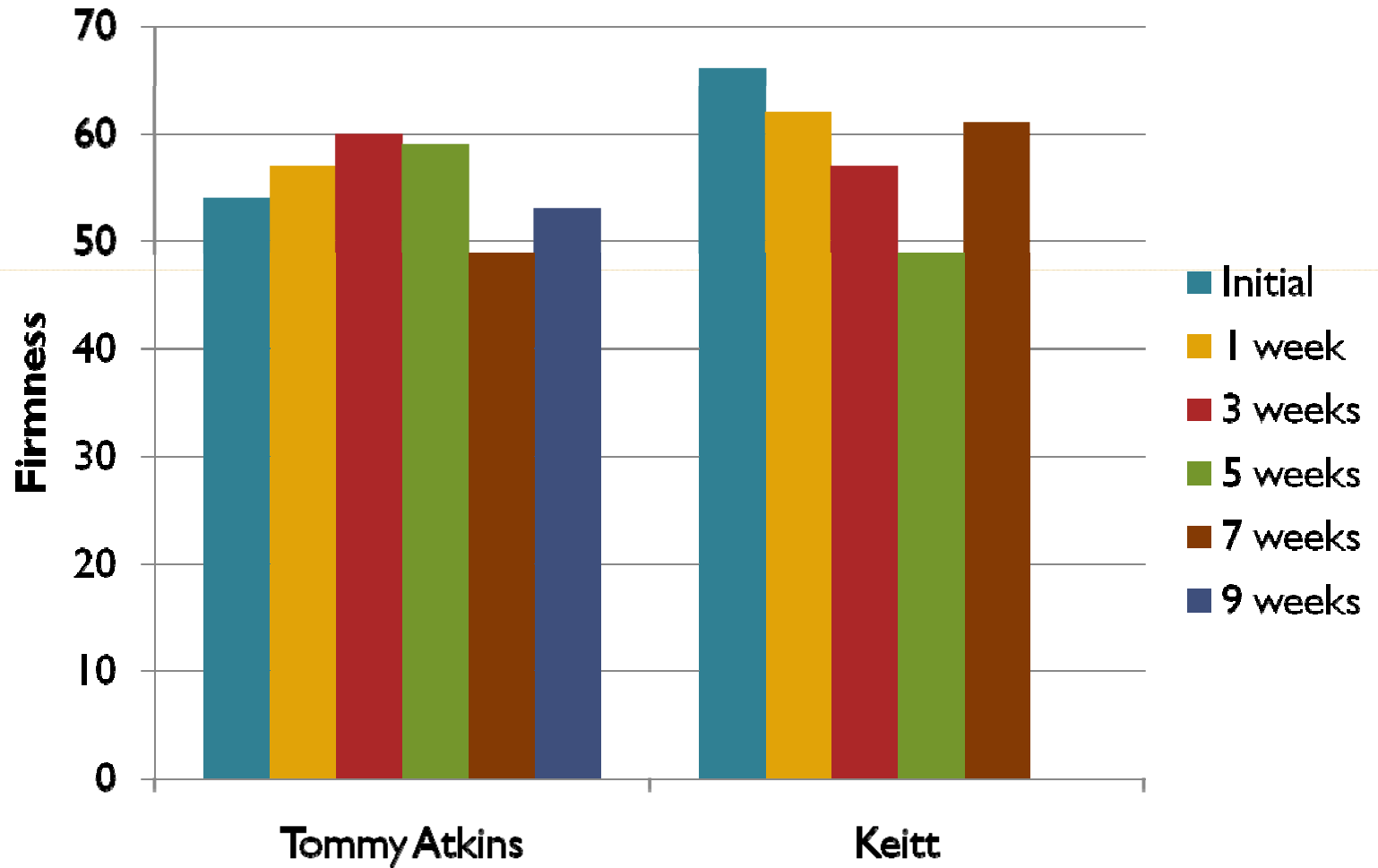
Fresh Mango Flavor Changes



Off-Flavor Changes



Changes in Firmness





Juices from Tropical Fruits

- Increasing availability of new, unique juices
 - Also purees, “smoothies”
- Health benefits?
- Can you maintain high quality during processing?
- Extraction and processing ranges from difficult to easy
- Juices typically heat pasteurized



Wines, Other Products

- At least 3 wineries in Florida that specialize in non-grape wines
 - Many people willing to try new and different wines
- Other possibilities
 - Dried fruit
 - Salsas, fruit pieces
 - Jellies, preserves
 - ??????