

Peach Harvesting and Postharvest Handling Considerations for Different Markets

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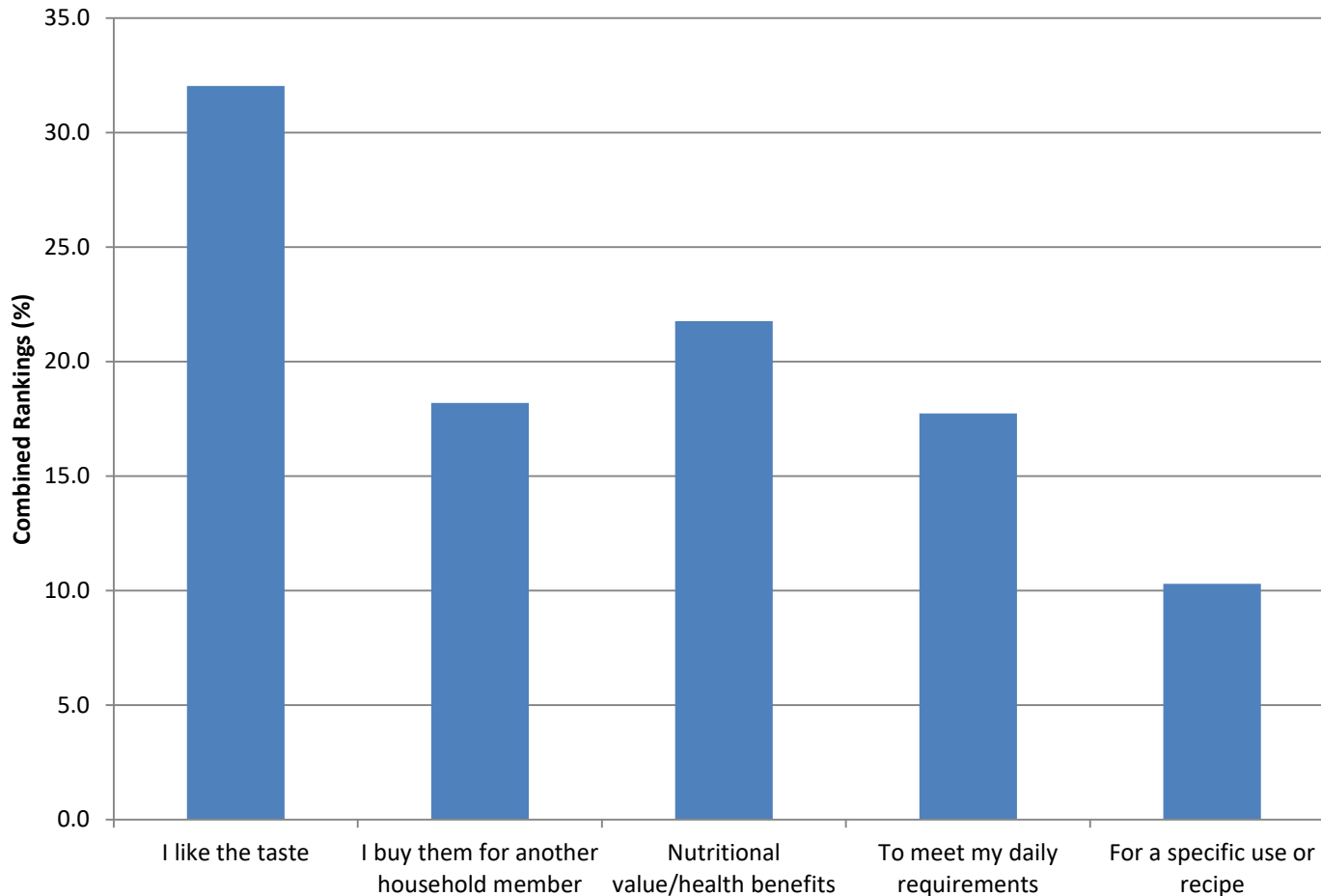
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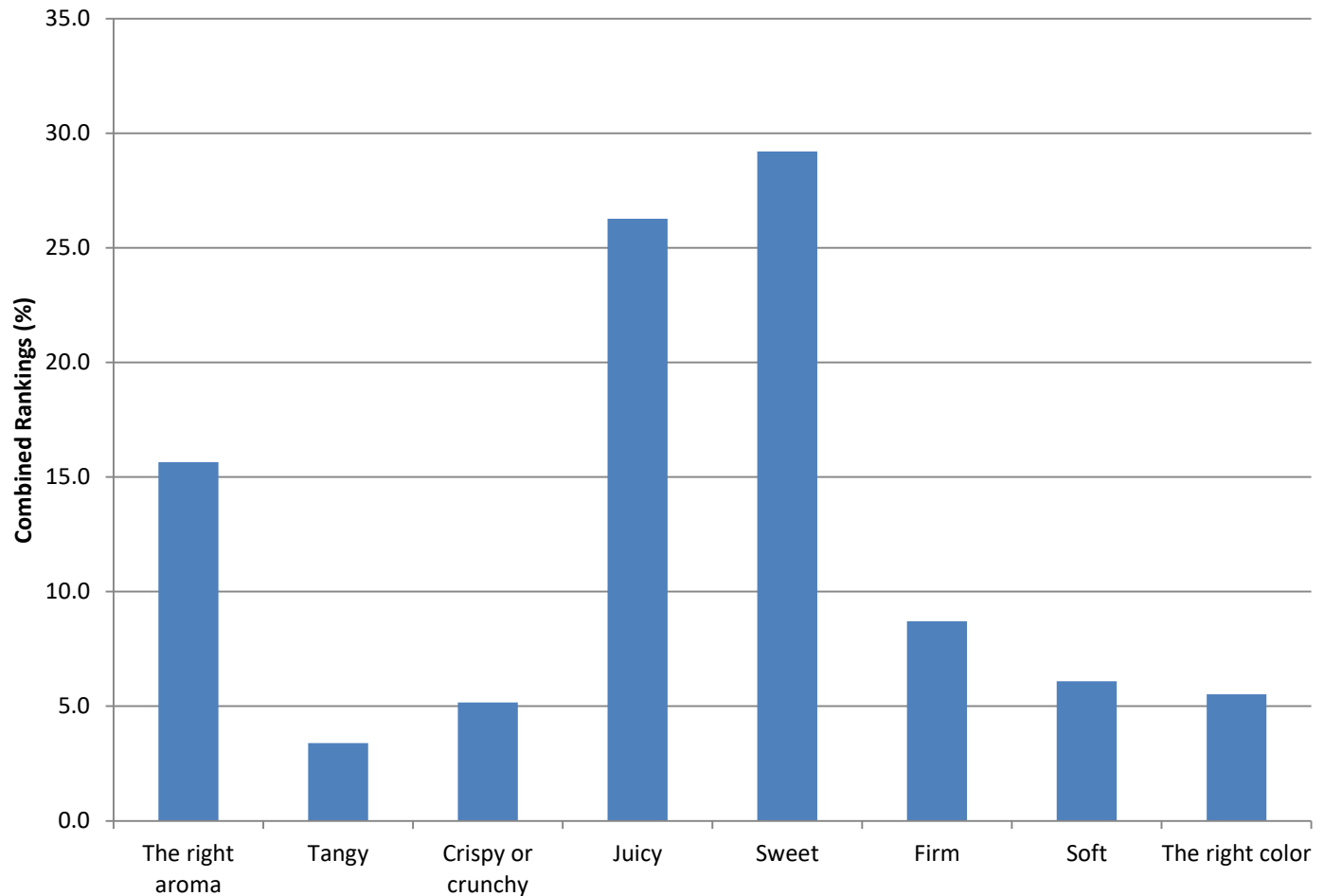
USDA Specialty Crops Research Project

Increasing Consumption of Specialty Crops by Enhancing Their Quality & Safety

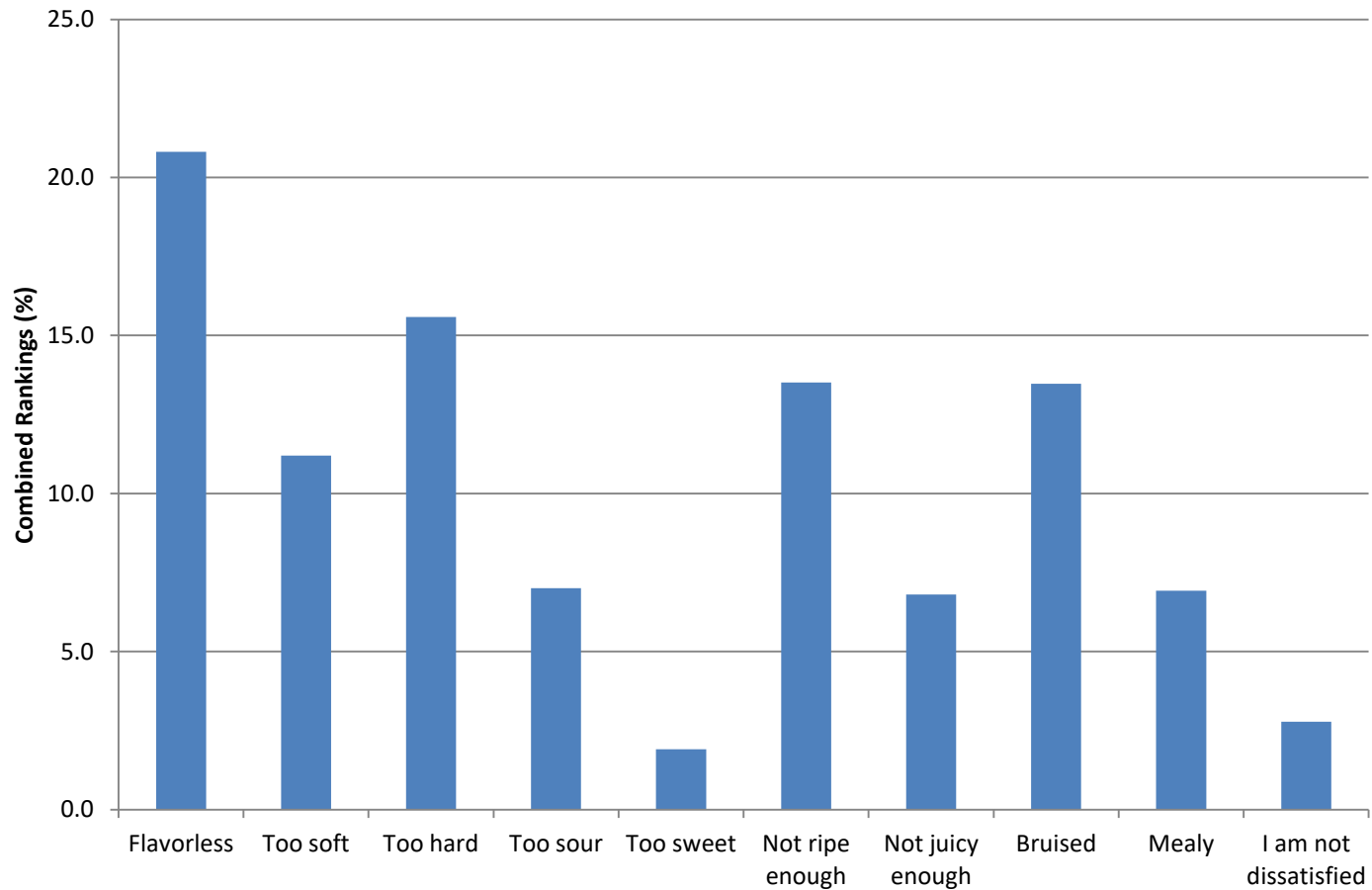
Percent of the combined rankings of the reasons why consumers purchase peaches.



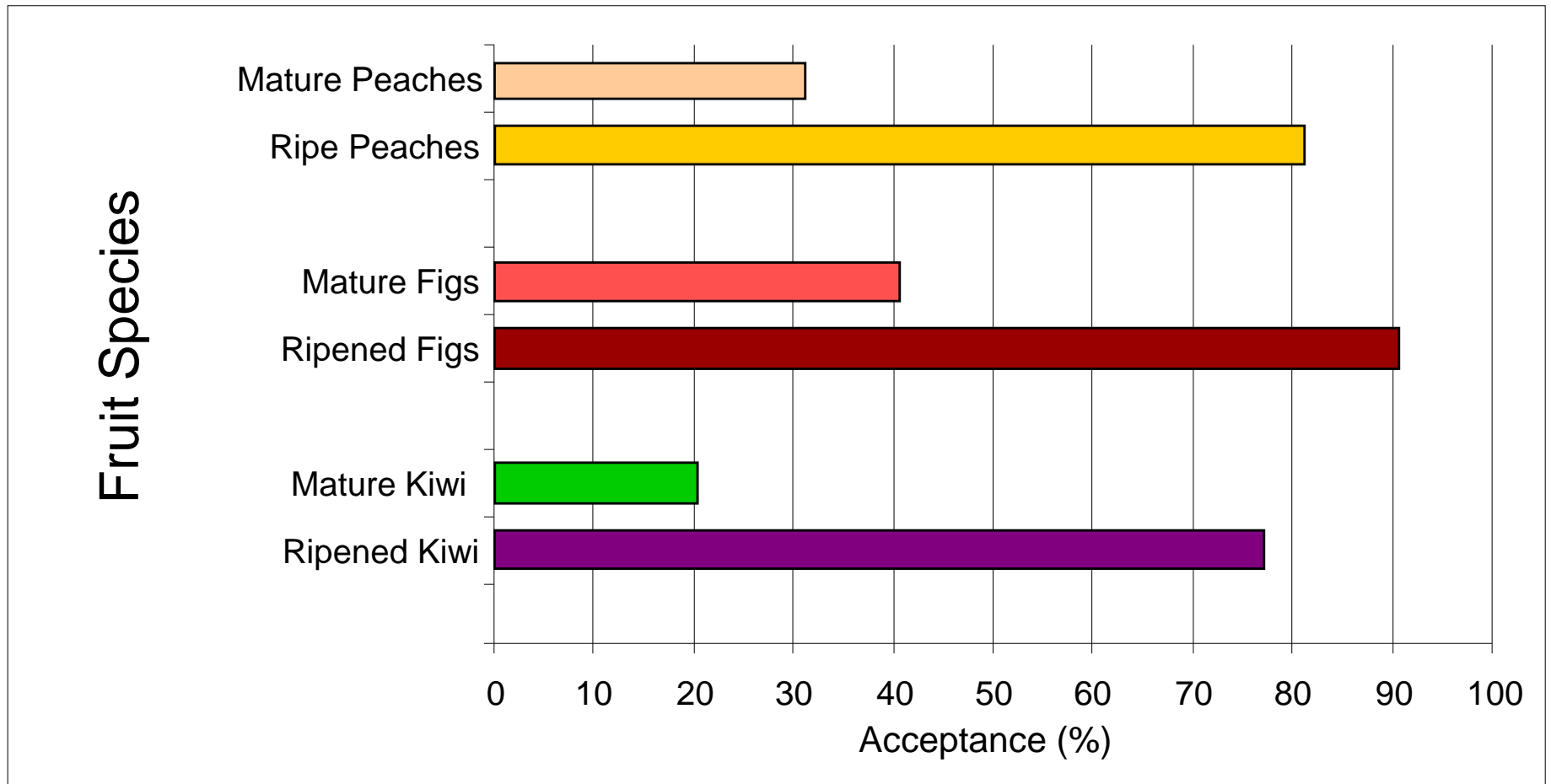
Percent of the combined rankings for consumers' three highest preferences for peach attributes.



Percent of the combined rankings for consumers' three most common reasons for dissatisfaction with peaches.



Ripening Improves Consumer Acceptance of Fresh Fruit Crops



Maturity

- Optimum harvest maturity corresponds to maximum taste and storage quality (adequate shelf life)



Maturity

- Harvest maturity determines a fruit's postharvest potential:
 - **Too early** = poor flavor potential, and greater susceptibility to physiological disorders, abrasion injury and water loss
 - ➔ The fruit's ability to ripen properly can be compromised
 - **Too late** = greater susceptibility to bruising and decay; possible off-flavor

Maturity Indices

- Size (minimum diameter)
 - Peaches may begin ripening before they reach full size
- **Ground color** development (green to yellow)
- **Softening** first occurs at the blossom end
- Location on tree: top and outside fruit normally mature first
- Also, internal color, soluble solids content (SSC), acidity and SSC/acidity ratio



Best Maturity Indices for Harvesting

- **Ground color** has been found to be the most reliable nondestructive maturity index and the most easily understood by pickers (Kao et al. 2012)
 - the best ground color at harvest varies by variety and intended market, so workers should be shown examples before harvest commences



Best Maturity Indices for Harvesting

- **Fruit firmness** is the next best maturity criteria, especially for varieties with 100% red color, (Brovelli et al., 1998)
 - Workers must be trained to subjectively recognize the max-min firmness range desired
 - Objectively measured by a penetrometer with a 5/16”



http://msue.anr.msu.edu/news/monitoring_peach_and_nectarine_ripening

The most significant harvest maturity indices for some Florida nonmelting flesh (NMF) and melting flesh (MF) peach varieties based on sensory evaluation of ripe fruit (Brovelli, et al., 1998).

Oro A (NMF)	FL 90-20 (MF)	FL 86-28C (NMF)	TropicBeauty (MF)
Cheek firmness (-0.85**)	Ground color hue (-0.88**)	Blossom end firmness (-0.91**)	
Blossom end firmness (-0.82**)	Ground color Lightness (-0.88**)	Cheek hue (-0.90**)	Cheek firmness (-0.83**)
Cheek chroma (-0.82**)	Cheek firmness (-0.81**)	Cheek firmness (-0.90**)	Blossom end firmness (-0.79**)
SSC:TA (0.80**)	Blossom end firmness (-0.75**)	Blossom end hue (-0.87**)	Ground color hue (-0.70**)
TA (-0.77*)		Ethylene production (0.80*)	pH (0.65**)

* and ** indicate significance at the 5% and 1% levels, respectively.

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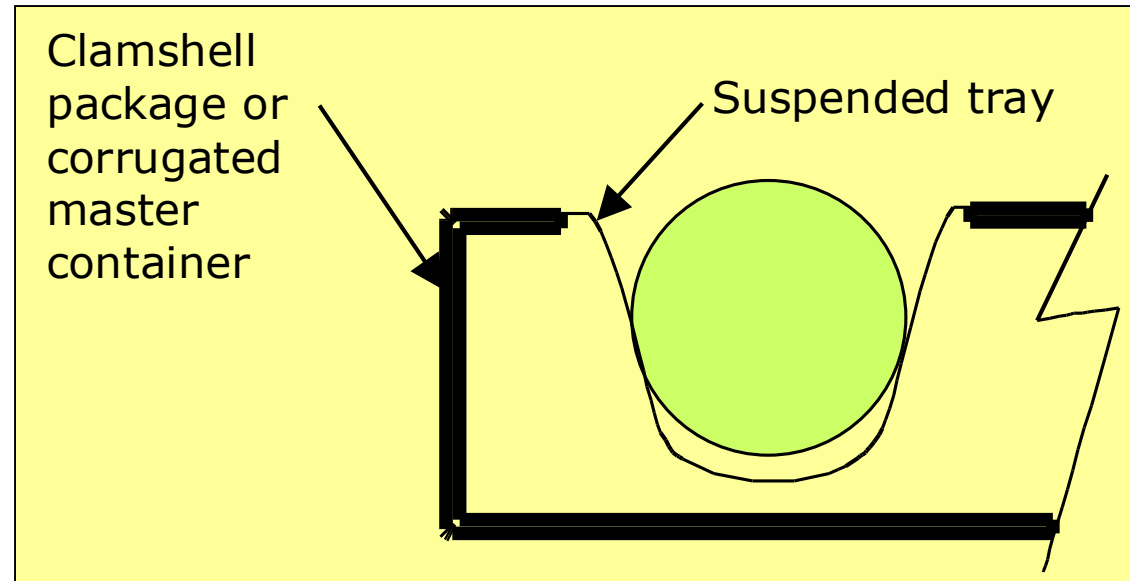


Bruising

- Avoiding bruising is extremely important to both consumers and receivers
- How to harvest & handle riper peaches without increasing bruising?
 1. Use special packaging for tree-ripe fruit
 2. Grow firmer varieties that resist bruising



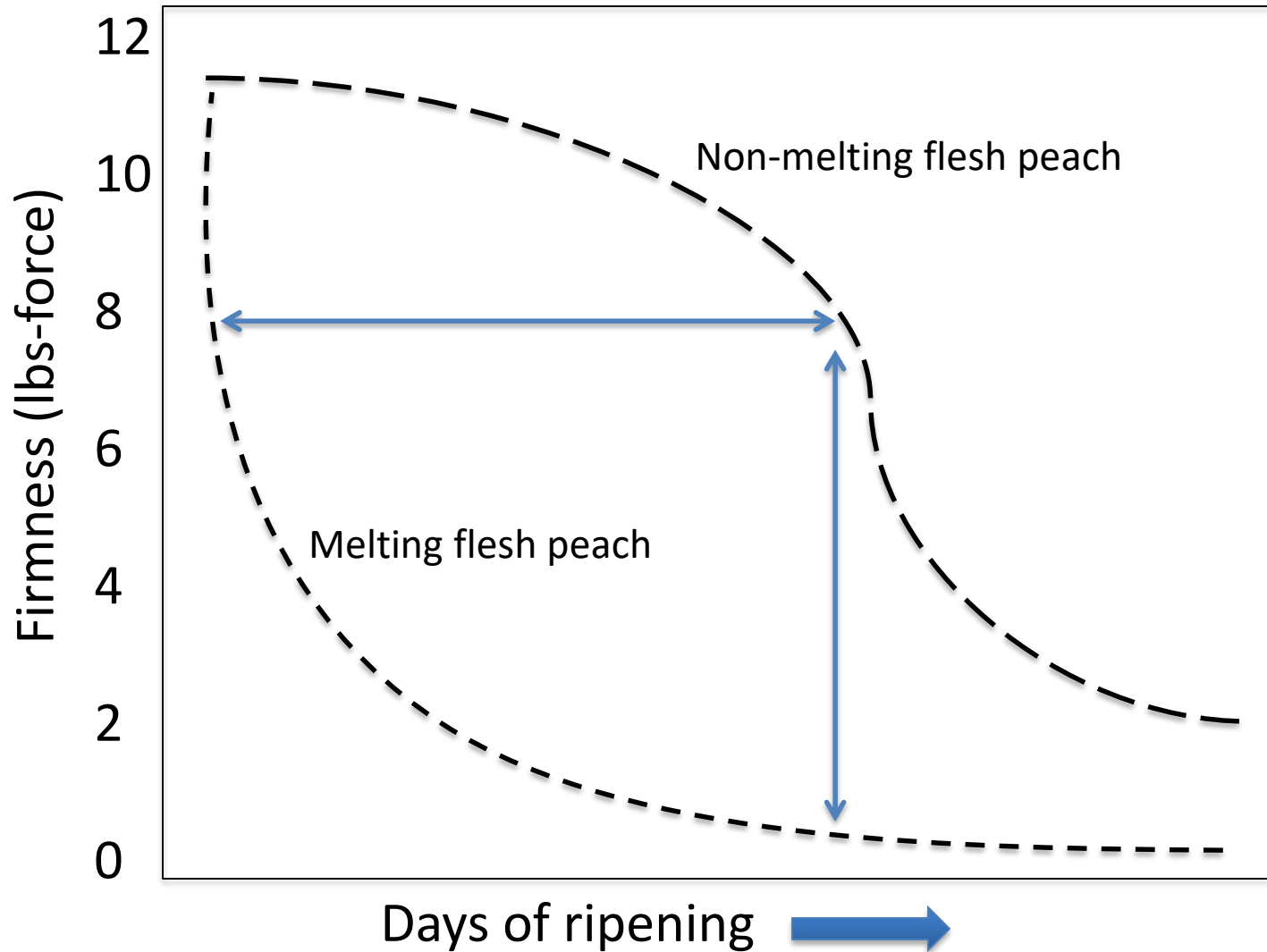
Hammock Pack Shipping System



Melting Flesh vs Nonmelting Flesh

- Melting flesh varieties need to be harvested before ripening gets substantially underway because excessive softening limits their shelf life
- Nonmelting flesh varieties can be harvested at a riper stage and still be firm enough to withstand handling
 - = higher SSC (Brix, sugar) and lower acidity
 - = better color and more peach flavor
 - = less susceptibility to internal breakdown (chilling injury)

Melting Flesh and Nonmelting Flesh Peaches Have Different Softening Patterns



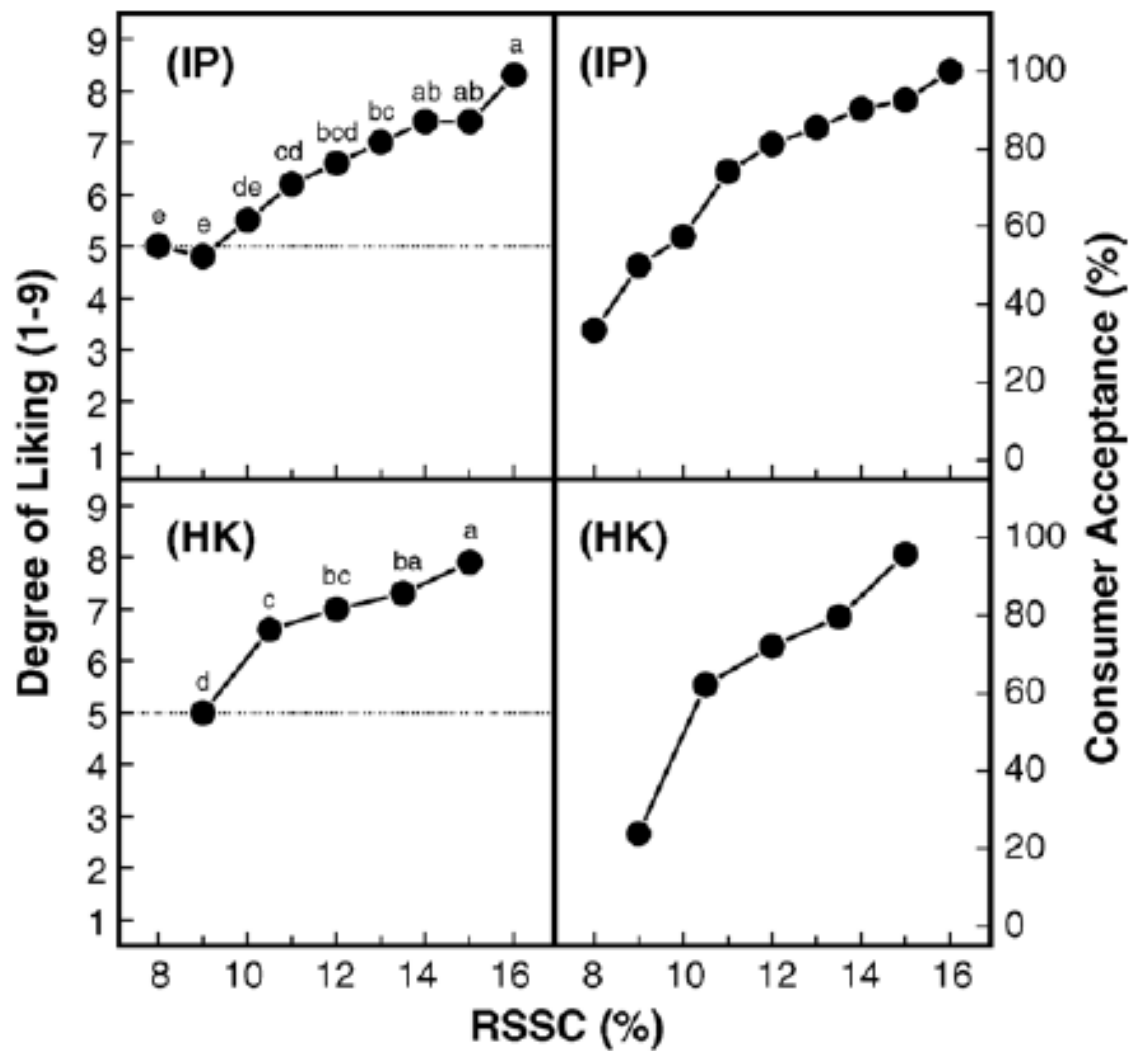
Melting Flesh vs Nonmelting Flesh

- Let's say that 8 lbs is the minimum firmness/maximum maturity that can be run over your packingline without incurring bruising
 - An 8-lb nonmelting flesh peach is a much riper fruit than an 8-lb melting flesh peach
- (Actual bruising thresholds actually vary substantially and therefore must be determined for each variety)

Quality Indices

- High SSC is the most important attribute for high consumer acceptance
- Fruit acidity, SSC/acidity ratio and phenolic content are also important for consumer acceptance
- Fruit below 6-8 pounds-force are more acceptable to consumers than firmer fruit

(from Crisosto, Mitcham & Kader, *"Nectarine & Peach: Recommendations for Maintaining Postharvest Quality"*
http://postharvest.ucdavis.edu/Commodity_Resources/Fact_Sheets/Datastores/Fruit_English/?uid=39&ds=798)





Thank you for your attention!

Questions?

Additional Resources

- “*Southeastern Peach Growers Handbook*”
(<http://www.ent.uga.edu/peach/peachhbk/toc.htm>)
– contains chapters on “*Harvesting and Handling Peaches*” and “*Postharvest Decay*.”
- “*How to Determine Peach Ripeness*” – video by Dr. Desmond Layne, Clemson University
(<http://www.youtube.com/watch?v=I5aU7QqBBgw&feature=related>)