

Taste Test Performances of New Florida Tangerine Cultivars

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USDA-ARS / UF-IFAS / FDOC partnership

Since 2006


- Breeders:
 - ✓ Fred Gmitter (UF)
 - ✓ Greg McCollum (ARS)


- Quality evaluation:
 - ✓ Elizabeth Baldwin (ARS)
 - ✓ Anne Plotto (ARS)
 - ✓ Jinhe Bai (ARS)
 - ✓ Filomena Valim (FDOC)


Objectives

- To identify quality attributes in new tangerine hybrids.
- To describe these attributes by sensory evaluation.
- To correlate tangerine sensory attributes with chemical data.
- *In the long term, to understand characteristics of "good" tangerine fruit and to find quality markers for use in Marker Assisted Breeding.*

Tangerine material

1. Identify flavor profile from a hybrid population
 

2. Maturity of advanced selections
 

3. Consumer studies
 

Which hybrid to evaluate?

- Samples chosen because of their parentage and a preliminary flavor screening:

2006-07

42 hybrids and 13 named commercial cultivars, multiple harvests

2007-08

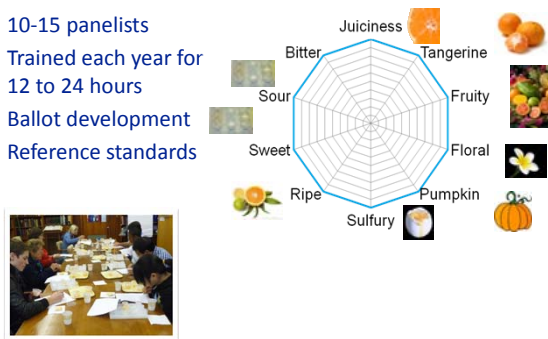
16 samples (4 Commercial) from the previous year
9 new samples

2008-09

21 samples (7 Commercial) from the previous years

Sensory descriptive analysis

- 10-15 panelists
- Trained each year for 12 to 24 hours
- Ballot development
- Reference standards



Conclusion 3 seasons 2006-2008

- Wide distribution in aroma and taste attributes of tangerine hybrids.
- Sensory descriptive analysis provides the breeder with specific qualifiers about the hybrids.
- However, juiced fruit is different from whole fruit.
- Harvesting at the optimum maturity is a challenge.
- These tests must be complemented with consumer panels before releasing cultivars.

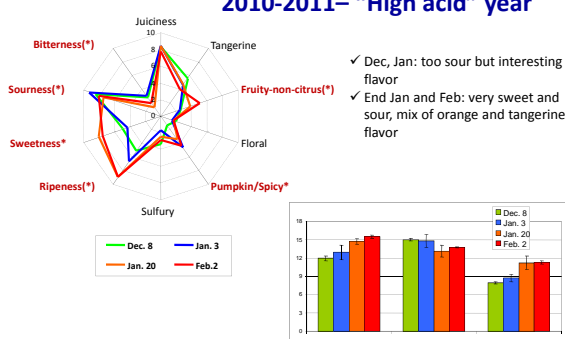
Maturity Study : 2010-2012

- To determine harvest maturity of commercial and new tangerine cultivars
- Sensory evaluation and instrumental analysis



UF-411 (8-9 x Murcott)

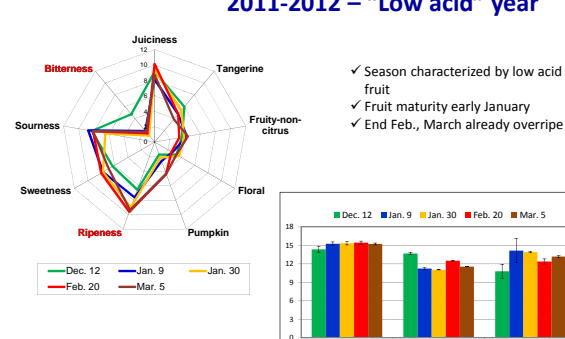
2010-2011– “High acid” year



- ✓ Dec, Jan: too sour but interesting flavor
- ✓ End Jan and Feb: very sweet and sour, mix of orange and tangerine flavor

UF-411 (8-9 x Murcott)



2011-2012 – “Low acid” year



- ✓ Season characterized by low acid fruit
- ✓ Fruit maturity early January
- ✓ End Feb., March already overripe

Conclusion Maturity Study

- Significant year effect: cold spring and late bloom in 2010 resulted in sour fruit in the 2010-2011 season; early season and low acid fruit in 2011-2012.
- Determined harvest windows for Sugar Belle™, UF 411, LS Murcott, and other UF and USDA hybrids.
- Volatile data being analyzed to correlate with sensory data.



Consumer Tangerine Taste Tests

- Mall intercept – 3 cities (Baltimore, Chicago, Tampa)
- 150 consumers interviewed and tasted tangerine samples
- Repeated: Jan. 2008, April 2008, Oct. 2008

Significant Findings




- ✓ Sweetness, Shape, Acidity, Overall Flavor and juiciness were most influential for tangerine quality
- ✓ Size, color and amount of seeds were influential, but to a smaller degree

• House, L.A., Gao, Z., Spreen, T.H., Gmitter, F.G., Jr., Valim, M.F., Plotto, A., Baldwin, E. A. 2011. Consumer preference for mandarins: Implications of a sensory analysis. *Agribusiness: An International Journal*. 27:450-464.
• Gao, Z.F., House, L.A., Gmitter, F.G., Jr., Valim, M.F., Plotto, A., Baldwin, E. A. 2011. Consumer preferences for fresh citrus: impacts of demographic and behavioral characteristics. *International Food and Agribusiness Management Review*. 14(1): 23-40.

Summary

- Sensory evaluation helped characterize new tangerine hybrids.
- Consumer panels determined which characteristics of the fruit are important and which hybrids are preferred .
- Optimum maturity remains a challenge because of year-to-year variation.

Questions?

