

**Title:** Fresh Market Tomato Variety Trial; Commercial and Consumer Tasting, New Variety Screen and Nutrition Proof of Concept

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Introduction:

Consumers today increasingly demand high quality, full flavored produce. In addition, the single most important trend in produce is the demand for locally produced fruits and vegetables. While consumers vary in their definition of "locally produced" there is no doubt that good flavor is one important characteristic that comes in their package of expectations. In 2007& 2008, the Pennsylvania Vegetable Growers Association provided funding support to expand a preexisting, largely consumer-oriented tomato variety program to a second site at the Penn State Southeast Research and Extension Center (SEAREC) and move the program to one that better serves commercial growers. The overall objective of this program is to identify tomato cultivars that have promise as successful fresh market varieties for Central Pennsylvania. One of the great challenges of this selection process is sorting through the many varieties of tomatoes available every year both on the market and making their way through the breeding process for inclusion in the trial. Another challenge is balancing the needs of larger commercial growers with the somewhat different demands of the direct market grower. Specifically, 1) We evaluate cultivars based on both their resistance and susceptibility to yellow shoulders and other uneven ripening disorders. 2) Identify cultivars that are considered superior in flavor and appearance. And, 3) Consider packable yield based on fresh market tomato standards. Our hope is that any producer of tomatoes can examine the annual report from this program and gain some assistance in selecting cultivars for their next seasons' production.

Methodology:

Plots of three tomato plants each were planted at the Franklin County Horticulture Center and at SEAREC in the new Haygrove Super Solo high tunnel. These plants were supported using 6' height cages made of concrete reinforcing wire to allow for the varying heights of the different cultivars. Pest management was based on the 2009 Penn State Vegetable Guide recommendations. Fertilizer was applied preplant based on soil test recommendations. Additional nutrients were applied during the season based on tissue nutrient analysis with samples taken every 2 weeks. All samples were submitted to Agri-Analysis. Nutrients were applied both through the drip and foliarly as necessary. Plants were harvested as necessary (2-3x/week) to avoid rotten fruit.

All fruit were counted, rated as to #1, #2, or cull and evaluated for yellow shoulder / uneven ripening. Only #1 and #2 fruit were sized and weighed. Average selections of fully ripe #1 fruit were used in the tasting program. The tasting program for 2008 consisted of the annual public tasting at the Franklin County Cooperative Extension office on August 26, 2009 and a new program with a small panel that met 4 Thursdays in late-July and August that provided more detailed notes on the varieties. The August 26th tasting brought out a mix of 215 commercial growers, home gardeners, foodies and the press. Since appearance is an important characteristic in considering consumer acceptance, tasters were also requested to evaluate whole fruit based on their very subjective personal standards. In this summary appearance is referred to as aesthetics. Fruit are judged by taste from 1 (poor flavor) to 5 (excellent flavor). Appearance is judged in a similar manner.

Results of the August 26, 2009 Public Tasting: These are the total scores from every taster in the order they were tasted.

Letter	Variety	Category	Category	Total
A	Grandma's Garden	Heritage	Taste	336.00
A	Grandma's Garden	Heritage	Aesthetics	335.50
B	Primo Red	Heritage Round Red	Taste	227.50
B	Primo Red	Heritage Round Red	Aesthetics	320.00
C	Hillbilly/Flame	Heirloom Beefsteak	Taste	272.50
C	Hillbilly/Flame	Heirloom Beefsteak	Aesthetics	312.00
D	Super Bush	Container Slicer	Taste	299.00
D	Super Bush	Container Slicer	Aesthetics	345.00
E	Patio Princess	Container Slicer	Taste	193.50
E	Patio Princess	Container Slicer	Aesthetics	262.00
F	Napa Grape	Grape	Taste	297.50
F	Napa Grape	Grape	Aesthetics	329.00
G	Fabulous	Round Red	Taste	290.00
G	Fabulous	Round Red	Aesthetics	341.50

H	Mountain Magic	Cherry	Taste	347.00
H	Mountain Magic	Cherry	Aesthetics	353.50
I	Cabernet Hybrid	Grape	Taste	301.00
I	Cabernet Hybrid	Grape	Aesthetics	339.00
J	Solid Gold	Grape (Yellow)	Taste	297.00
J	Solid Gold	Grape (Yellow)	Aesthetics	338.00
K	Tangerine Mama	Yellow Paste	Taste	195.00
K	Tangerine Mama	Yellow Paste	Aesthetics	268.00
L	BHN 876	Yellow	Taste	258.00
L	BHN 876	Yellow	Aesthetics	351.00
M	Black Velvet	Slicer	Taste	302.00
M	Black Velvet	Slicer	Aesthetics	312.00
N	Moreton	Early Round Red	Taste	249.00
N	Moreton	Early Round Red	Aesthetics	291.50
O	Sweet Tangerine	Yellow	Taste	251.50
O	Sweet Tangerine	Yellow	Aesthetics	314.00
P	Sweet Mojo	Grape	Taste	288.50
P	Sweet Mojo	Grape	Aesthetics	344.50
Q	BHN 641	Yellow	Taste	238.00
Q	BHN 641	Yellow	Aesthetics	317.00
R	Valencia	Round Red	Taste	243.00
R	Valencia	Round Red	Aesthetics	280.00
S	Black Truffle Hybrid	Pear	Taste	267.00
S	Black Truffle Hybrid	Pear	Aesthetics	275.00
T	Ramapo	Round Red	Taste	274.00
T	Ramapo	Round	Aesthetics	334.50

		Red		
U	True Black Brandywine	Heirloom Beefsteak	Taste	306.50
U	True Black Brandywine	Heirloom Beefsteak	Aesthetics	288.50
V	Fletcher	Round Red	Taste	265.00
V	Fletcher	Round Red	Aesthetics	353.50
W	Blosser Pink	Heirloom Beefsteak	Taste	343.00
W	Blosser Pink	Heirloom Beefsteak	Aesthetics	350.50
X	Mountain Glory	Round Red	Taste	243.00
X	Mountain Glory	Round Red	Aesthetics	290.50
Y	Brandy Boy	Heritage	Taste	371.50
Y	Brandy Boy	Heritage	Aesthetics	333.50
Z	Conestoga	Heritage	Taste	235.00
Z	Conestoga	Heritage	Aesthetics	278.50
ZA	Pineapple	Heritage	Taste	292.50
ZA	Pineapple	Heritage	Aesthetics	312.00
ZB	Scarlet Red	Round Red	Taste	228.50
ZB	Scarlet Red	Round Red	Aesthetics	305.50
ZC	Sweet Seedless	Round Red	Taste	319.50
ZC	Sweet Seedless	Round Red	Aesthetics	326.00
ZD	Tomande	Round Red	Taste	269.00
ZD	Tomande	Round Red	Aesthetics	254.00
ZE	Orange Blossom	Yellow	Taste	268.50
ZE	Orange Blossom	Yellow	Aesthetics	343.50
ZF	Legend	Early Round Red - Heirloom	Taste	251.00
ZF	Legend	Early Round	Aesthetics	331.50

Red -				
Heirloom				
ZG	Paul Robeson	Heirloom	Taste	336.00
ZG	Paul Robeson	Heirloom	Aesthetics	310.50
ZH	Sunsation	Round Red	Taste	204.00
ZH	Sunsation	Round Red	Aesthetics	277.00

Summary of comments from the Tasting Panel:

Orange Slicers

BHN 876: Nice orange color in a very pretty tomato with a mild taste that borders on bland. Mildly acid that provides some balance to the mild sweet flavor. Hard and firm enough to slice, so will probably pack well.

Orange Blossom: Beautiful yellow orange tomato with a mildly sweet flavor. The skin was judged somewhat tough by all of the tasters.

Sweet Tangerine: Great looking orange tomato that slices extremely well. As with most of the yellow-orange slicers, the flavor is mild with very low acid.

Orange Strawberry: Of all of the yellow-orange slicers, this one was unanimously agreed to be the best flavor. Very few seeds, meaty and juicy.

Moonglow: This heirloom has a thick skin that borders on tough with a very mild flavor. The texture was rated good, but had too many seeds.

BHN 641: Excellent orange color in a firm meaty balanced flavored tomato. Our panel found this one extremely meaty.

Round Red Slicers

Primo Red: This tomato was considered by the panel to be a good all-around tomato and very meaty. The taste was somewhat mild, but within expectations for a commercial slicer. Firm enough to pack well.

Goliath: A Traditional tomato with good flavor, but relatively tough skin. The panelists determined this to be a good traditional tomato with balanced flavor and a meaty interior.

Fabulous: This is probably the best all-around red slicer that's come through this program. The worst thing about Fabulous is it too soft for a #25 box, but will pack into #10 flats. The size is good for slicing, the texture is good, the flavor is good with that traditional balance between acid and sweet.

Ramapo: This Jersey tomato has good texture. It's sweet and juicy, slices well and a favorite of the panel.

Morton: Almost exactly same comments as Ramapo, but the panel found Morton to be a little more robust.

Bush Early Girl: This tomato came out of our container trials program. It had a full taste with a balance of sweet and juicy. Words like delicious, great taste, great flavor, etc. were on the comment sheets.

Polbig: Our hunt for a good tasting early tomato continues with another failure. While the texture is OK, the panel considered Polbig to be watery, bland, and having a 'funny' aftertaste.

Dad's Sunset: This heirloom had a hard center, is very prone to yellow shoulder, bland and having an easily forgettable flavor.

Razzle Dazzle: We brought this tomato back for a second year trial because the catalog descriptions were so good. In our trial, the panel considered it to have a poor texture, with a plastic flavor and tough skin.

Flamme: This heirloom was really enjoyed by the panel. It is sweet with a little tang, looks great, has excellent overall flavor and is considered a 'feast to the eyes'.

Legend: Nice looking, fleshy, large, tomato. Good balance between meat and seeds with better than average flavor.

Sweet Seedless: While not the best looking tomato, our panelists found this one sweet with excellent flavor and good texture. The skin is too thin for packing, but an excellent direct market variety.

Fletcher: Very attractive round red. Relatively firm, perhaps enough to pack. Great tasting.

BHN 826: Unusually even good marks from the entire tasting panel. Good looking, good flavor, very firm, yet juicy. Excellent balance between tart and sweet.

Bella Rossa: Very bold flavor in a large firm package. Nice to look at, firm and slices well.

Heritage Slicers

Grandma's Garden: Very flavorful with a tangy real tomato taste. Very attractive.

BrandyBoy: Dark pink and very uniform with a meaty flesh. Sweet, rich and spicy with a great balance in the flavor. Easily the top tasting tomato now several years in a row.

Sophia: Crunchy yet tasteless. Very good looking, but seedy.

Conestoga: Wide variations among fruit in this lot gave a wide array of marks from solid and meaty to watery. All of the tasters found this one a little blander than most heritage types.

Heirloom Pinks

Marianna's Peace: Acid and tangy with a wow factor that the panel just loves. The right balance between sweet and acid and a very bold flavor that was described as wow, powerful and super.

Giant Belgium: Fair flavor in a soft, deep pink fruit. Subtle, very mild flavor.

German Johnson: Flavorless with good texture, somewhat soft. Pale and bland.

Grape, Cherry, and other

Vittoria: Strange flavor with a sour, medicinal aftertaste. Very pretty with a tough skin.

Smarty: Good grape tomato with good flavor on the sweet side. Firm with nice texture and great looks.

Mountain Magic: Good, juicy, hard saladette. Sweet with little tomato flavor, so somewhat one dimensional.

Maglia Rossa: A truly amazing tomato that the panelists kept requesting more samples. Very juicy, very tasty and interesting flavor that the panel described as catsup. Probably the prettiest, best tasting tomato of the season.

Solid Gold: Yellow, firm and crunchy with a not too sweet flavor for a yellow. Very nice looking.

Wapsiconin Peach: This very odd tomato hit everyone differently. The flavor was sweet and mellow. The texture hit some as good and juicy and others as watery. The hairy skin is very non-tomatolike. Far too soft for any shipping.

Cabernet: Very sweet like SweetHearts. Very good flavor that is rich and balanced in an attractive package. The skin is somewhat tough.

Favorita: Balanced flavor with a tomatoey acidic finish. Very sweet, candy like flavor to some.

Patio Princess: This saladette came out of our container program and produces a good red tomato flavor in a juicy package with a sweet finish.

Sweet Mojo: Very strong taste that the panel labeled as strange to sweet to good to unpleasant. Uniform color and crunchy.

Sungold: Well balanced, sweet yellow-orange tomato with a great flavor. Wonderful and amazing were additional labels from the tasters.

Black Skinned

Black Velvet: Sweet, dark meat with an artistic inside coloration. Very solid flesh with a nice texture and balanced flavor.

As of this date (12/7/09), the yield data is still being summarized, so will be supplied in an addendum report.