

Title: Report, High Tunnel Fresh Market Slicer Tomato Variety Trial 2012

Personnel:

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Introduction:

High Tunnel acreage in PA and the Mid-Atlantic continues to grow due to improvements in tomato quality and substantially earlier harvests in crops grown in tunnels. For the past 12 years, we've been evaluating a wide variety of tomatoes under field conditions and since 2009, planted the trial in the Haygrove Super Solo high tunnel at the PSU Southeast Research and Extension Center (SEAREC) near Manheim, PA. Breeders continue to release new varieties of fresh market slicer tomatoes on the market so that variety trials' focused on tunnel production of slicing types remains important. The past program has identified BHN 589, Scarlet Red, Conestoga, Brandyboy, Primo Red and Rocky Top as leading varieties worthy of consideration by growers.

For 2012, this trial was set up to target only fresh market slicing types (past years have included some grape and cherry types) grown under High Tunnel conditions. Indicator varieties (also used as our comparison standards) were selected from the best of the tomato trials that were held at the Southeast Research and Extension Center (SEAREC) & Franklin Horticulture Center trials programs in recent years. Entries in this years' program were selected from the many new cultivars introduced by tomato seed companies. The replicated planted variety trial was held at the PSU SEAREC while the two tastings were held at the Franklin County Horticulture Center in Chambersburg as there was no vegetable growers field day held at the PSU SEAREC in 2012. Tomatoes were evaluated for yield, flavor, and susceptibility to yellow shoulder. A change in nutrient management apparently eliminated yellow shoulder culls for 2012.

The extreme heat of 2012 like that of 2010 & 2011 had a definitive negative impact on tunnel production as both overall production, fruit set, and packout slowed substantially in the heat. However, varieties such as BHN 589, BrandyBoy, BHN 1009, Clermon, and Red Bounty not only yielded well, but also packed well. The other major impact on production in 2012 was a early – mid season Late blight infection caused by bringing in infected transplants for another trial to the research farm. Nearly a month of heavy culling, pruning of infected plant tissue and Late blight specific fungicide applications saved the trial, but reduced overall yield. This is readily seen in some varieties heavy culling numbers in table #1.

Methodology:

Each of the twenty varieties were replicated 4 times in 4 plant plots in the 128' Haygrove Super Solo HighTunnel. The tunnel as rebuilt for 2011 now runs North to South. Every row contained all twenty varieties in a randomized planting pattern. variety All varieties were trellised using a modified Florida weave on custom order 2" x 2" x 8 new oak stakes to accommodate the taller indeterminate types.

All fruit were counted, rated as to #1, #2, or cull, and evaluated for yellow shoulder / uneven ripening. All fruit were sized and weighed except for culls that were so rotten as prevent a clean harvest. Average selections of fully ripe #1 fruit were used in the tasting program.

Summary of comments on the varieties:

Arbason: This variety yielded well over the entire season although the fruit are on the small size. The fruit are dark red, firm and taste good. We've now had this variety in the program for two years, in 2011 the yields were among the highest. Indeterminate.

BHN 589: This variety remains our trials program favorite and has become one of standards with which we compare others due to the combination of good yield, high packout, and good flavor. If you can only grow one variety of round red, this is the one. BHN 589 consistently ranks high with high percentages of #1's and few culls. Determinate.

BHN 961: BHN varieties are bred for Florida production. It is always interesting to see how they do under Mid-Atlantic production conditions. While the flavor and fruit quality were right in the mix with others from BHN and our standards, the high cull rate for this variety in 2012 may limit its' usefulness in the Mid-Atlantic. Determinate.

BHN 967: We looked at 967 several years ago as it was billed as the replacement for 589, but it fell short then on both yield and packout. Some growers have had good success with this variety, but it still will not replace 589 as both a standard and as highly recommended. Determinate.

BHN 1009: Very high yields with firm fruit that taste good for 2012. While we've only seen this variety this year, the high yields of #1 fruit make us want to continue trialing this variety. Excellent fruit size at just over 7 oz. Determinate.

BHN 1021: A good variety from BHN, but not near the top of the ratings. Good yields and good packout along with excellent flavor and appearance characterize this tomato. 1021 responded well in the high heat of 2011. Determinate.

BHN 1064: Like 1021, a good variety from BHN, moderate yields and flavor. Determinate.

Big Daddy: This consumer variety looked good in the catalog, but did not handle high tunnel production well. The yields were low, and the flavor was in the middle of the pack with commercial slicers. Fruit appearance was good. Indeterminate.

Big Dena: This variety had the lowest yield of the trial in 2011, but performed much better in 2012. Colleagues report that this variety was better in 2010 than 2011. Good fruit size, shape and flavor make it a reasonable choice for a long season variety. Indeterminate.

Brandy Boy: 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 many years in a row. Reasonable yields even in the extreme heat of the high tunnel during the 2010 growing season. Many small commercial growers have made this one their heritage tomato of choice. Indeterminate.

BSS 832: This was our weakest variety this season. Poor yields, poor flavor and not attractive fruit. Determinate

Charger: This is the second year that we've had Charger in this program. While the color was not great in 2011, it was better in 2012 and the flavor fell right in the middle of the pack for commercial, round, red, slicers. Good yields and fruit size. Determinate.

Clermon: Very high yields on strong plants, but very small fruit at less than 4 ounces. Good high tunnel cluster tomato type. Indeterminate.

Goliath: #2 in flavor for the season, but very poor yields and surprisingly small fruit. This variety may simply not be tunnel adapted as it works well for many in the field. Indeterminate

Panzer: Very high yields, very good packout percentage, but smallish fruit at 6 oz. and only mid-pack on flavor. Claims to be resistant to Fulva leaf mold. Indeterminate

Red Bounty: Excellent yields, good flavor and nice fruit appearance. This variety is an excellent high tunnel type and will be one of our standards. Determinate.

Rocky Top: In past years, this variety handled the hot season better than most and has produced a higher percentage of #1 fruit than most others in the trial. Good flavor in a very firm tomato. At the top of our list for good choices for high tunnel production. Determinate

Volante: This is primarily a western variety bred for hot production. We had good yields and large fruit, but the flavor was near the bottom of the pack. Determinate.

Cumulative yields and grades all 4 plots (20 plants total) of each variety

Variety	#1 Count	#1 Weight	#2 Count	#2 Weight	Cull Count	Cull Weight	Tasting Score*
Arbason	608	#192.62	266	#88.93	341	#74.31	2.73
Clermon	1109	#255.34	245	#55.73	389	#81.74	2.85
Big Dena	298	#131.33	153	#69.7	309	#119.66	2.88
Red Bounty	387	#188.41	138	#66.66	205	#79.45	2.97

Big Daddy	193	#80.04	110	#52.68	218	#79.67	2.85
Charger	355	#181.51	157	#80.33	315	#142.61	2.90
BSS 832	165	#89.93	78	#44.8	253	#121.86	2.46
BHN 1009	396	#189.34	167	#72.19	438	#127.86	2.92
BHN 961	271	#131.88	153	#75.52	391	#183.42	2.92
Brandy Boy	167	#91.53	102	#68.26	459	#276.7	3.79
Rocky Top	379	#162.26	181	#76.10	378	#140.53	2.93
BHN 589	377	#177.68	172	#79.14	291	#130.75	3.17
BHN 967	252	#115.52	133	#66.49	226	#103.35	2.92
Goliath	252	#103.79	98	#45.27	372	#164.08	3.08
Panzer	437	#171.91	106	#36.61	191	#62.79	2.60
BHN 1064	322	#140.18	123	#45.5	244	#85.52	2.71
BHN 1021	354	#147.34	116	#49.41	302	#117.98	2.74
Volante	336	#174.79	150	#77.18	208	#88.78	2.71

Notes: Totals per 4 plots with 4 plants each plot

*Tasting scores are a composite of 2 tastings and are based on a 1-5 scale with 5 as the best flavor. There were 169 total tasters / ballots submitted.

Conversions to yield per acre, yield per plant, and average fruit size.
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Variety	Pounds per acre #1 & 2's at 4,840 plants per acre (6' row centers). Plants at 18" apart in rows.	Tons per acre #1 & 2's at 5,808 plants per acre (5' row centers). Plants at 18" apart in rows.	Average yield per plant based on 5' centers (as grown in trial)	Average Fruit Size in Ounces
Arbason	#85,169	#102,203	#17.59	5.15 oz
Clermon	#94,099	#112,918	#19.44	3.68 oz.
Big Dena	#60,812	#72,974	#12.5	9.60 oz.
Red Bounty	#77,159	#92,590	#15.9	7.77 oz.
Big Daddy	#40,148	#48,177	#8.3	7.00 oz
Charger	#79,206	#95,047	#16.37	8.18 oz.
BSS 832	#40,756	#48,907	#8.42	8.87 oz.
BHN 1009	#79,112	#94,935	#16.35	7.4 oz.
BHN 961	#62,808	#75,370	#12.9	7.82 oz.
Brandy Boy	#48,336	#58,004	#9.99	9.5 oz.
Rocky Top	#72,103	#86,525	#14.9	6.8 oz.
BHN 589	#77,688	#93,226	#16.05	7.48 oz.
BHN 967	#55,058	#66,070	#11.38	7.56 oz.
Goliath	#45,090	#54,109	#9.32	6.81 oz.
Panzer	#63,077	#75,693	#13.03	6.14 oz.

BHN 1064	#69,932	#83,918	#14.5	8.3 oz.
BHN 1021	#59,517	#71,420	#12.3	6.7 oz.
Volante	#76,221	#91,465	#15.75	8.30 oz