

2012 Capital District Fresh Market Tomato Variety Trial

Capital District Vegetable and Small Fruit Program
 Chuck Bornt, Laura McDermott, Crystal Stewart and Abby Foster

Beefsteak tomatoes continue to be one of the most popular vegetable crops grown by fresh market growers in the Capital District and consumers continue to demand early, large, good tasting tomatoes at roadside stands and farmers markets. During the 2012 growing season, the CDVSFP evaluated 16 beefsteak tomato varieties at Altobelli Family Farms in Kinderhook, NY.

On April 13, 2012 seeds of the 16 varieties were placed in 288 seed flats and placed in the greenhouses at Altobelli Farms. After two weeks these plants were transplanted into 48 cell flats and placed back in the greenhouse. These plants were maintained by the grower and received the same care and treatments as other tomato transplants being grown for field planting. On May 29, 2012, raised beds mulched with black plastic and a single drip tape (0.45 gallons/100ft/minute at 12" emitter spacing) line were formed in a Knickerbocker fine sandy loam. These beds were on 6.5' centers with a finished bed width of approximately 28". Each plot consisted of 10 plants, replicated twice for a total of 20 plants per variety. All varieties were planted in a single row down the center of the bed 2' apart using a RainFlo Waterwheel transplanter with a transplant solution analysis of 20-20-20 at 2 pounds per 100 gallons of water. As the plants grew throughout the spring, they were pruned and trellised in the Florida Basket Weave system and fertigated to achieve approximately 120 pounds of Nitrogen, 60 pounds of Phosphorous and 140 pounds of Potassium. Plants were irrigated 2 –3 times a week to maintain optimum moisture levels in the beds. Weeds were controlled using a shielded sprayer, which applied the herbicides (Sencor and Dual Magnum) to the row middles only (to avoid contact with the plastic and newly planted transplants) soon after planting.

Variety Name	Seed Company	Variety Name	Seed Company
BHN 589	Seedway	Mt. Merit	Seedway
BHN 967	Siegers Seed Company	Primo Red	Harris Seed Company
BHN 1009	Siegers Seed Company	Red Deuce	Harris Seed Company
Biltmore	Seedway	Red Bounty	Harris Seed Company
Black Velvet	Seedway	RFT 6153	Seedway
BSS 832	Seedway	Rocky Top	Seedway
Charger	Seedway	Scarlet Red	Harris Seed Company
Mt. Fresh Plus	Seedway	Volante	Seedway

The first harvest was August 9, 2012; plants were harvested weekly until September 7 for a total of 5 harvests. Any fruit that was showing at least 30% color was harvested and graded into one of six categories based on the growers grading program. For the first two harvests, the Altobelli Farm crew was brought in to ensure we were grading the fruit according to their standards:

- 1) Extra Large #1 = tomato fruit larger than 12 ounces and blemish free
- 2) Large #1 = tomato fruit between 10—12 ounces and blemish free
- 3) Medium #1 = tomato fruit between 8 and 10 ounces and blemish free
- 4) Small #1 = tomato fruit between 6 and 8 ounces and blemish free
- 5) Culls = unmarketable tomato fruit due to size or defects such as rots, excessive cracking etc.
- 6) Seconds = tomato fruit that were flawed cosmetically but marketable

The number and weight of fruit for each category was recorded for the 5 harvests and summarized in Tables 1

thru 7. The yield values are expressed as the number of 25 pound boxes per acre for each size category. Table 1 is the summary table in which the total number of boxes can be found for the entire harvest for each variety. We decided that it is important to know the breakout for each individual harvest date so that one can evaluate yields and fruit quality over the entire season for a particular variety. Therefore, Tables 2 thru 7 show the number of 25 pound boxes per acre by size category for each harvest date. For example, Table 2 shows the boxes of "Extra Large" size tomatoes harvested for each harvest date for the 16 tomato varieties evaluated in this trial. Table 8 gives you a brief description of each variety (i.e. shape, color), what made up the seconds and cull fruit and also any other fruit characteristics we thought were important to note.

Everyone has different criteria they look for in a tomato. Looking at overall yield and the associated comments for each variety, will help determine the best. For early production Red Deuce did a fantastic job of producing large, attractive fruit with fewer pointed fruit compared to Primo Red. Primo Red also produces early, very large attractive tomatoes but has a tendency to produce a fair amount of fruit that have a strong pointed blossom end. This year's surprise was Volante which produced beautiful, early large tomatoes. For main season production try Red Bounty which gave good yields of attractive fruit followed by Mt. Merit, Mt. Fresh, Scarlet Red and BHN 589. Mt. Merit is also reported to have Late Blight resistance which is an added bonus. Scarlet Red produced some of the most attractive fruit in this trial which has been the case in past trials, but it is not recommended for shipping, only as a direct marketed variety. BHN 589 is, in our opinion, one of the best tasting tomatoes in this class of tomatoes and produces very nice, attractive fruit.

As part of the trial in 2012 we conducted a taste testing experiment at one of our twilight meetings in mid August. We took and cut pieces of each of the 16 varieties and placed them on individual plants around a table. Each grower attending the twilight meeting was given 5 tickets to vote on their favorite tasting variety. At each plate an empty cup was placed to collect tickets. The variety that received the most votes was RFT 6153 (27 votes) followed by BSS 832 (17 votes). Others that received votes were Primo Red (4), BHN 967 (3), Volante (2), Biltmore (3), BHN 1009 (2), Scarlet Red (2), Black Velvet (8) and BHN 589 (7). For main or later plantings consider planting RFT 6153, Mt. Merit and Rocky Top or even possibly a later planting of Red Deuce, Volante or Primo Red.

A sincere thank you to our hosts Altobelli Family Farm and to the seed companies that provided seeds for this trial including Seedway, Harris and Siegers Seed Company. If you would like to discuss any of the information found in this report further, please feel free to contact Chuck Bornt at cdb13@cornell.edu or 518-859-6213.

Table 1: The total number of 25 pound boxes and average fruit size of tomatoes per acre by size category at Altobelli Family Farms.

Variety	Days to Harvest	Xtra-LG Boxes/acre	Avg. X-LG Size (ozs)	LG Boxes/acre	Avg Lg Fruit Size	Med Boxes/acre	Avg Med. Fruit Size (ozs)	Small Boxes/acre	Avg Sm. Fruit Size (ozs)	Second Boxes/acre	Average Seconds Size (ozs)	Cull Boxes/acre	Average Cull Fruit Size (ozs)
BHN 589	74	182	16.6	241	11.5	205	9.2	180	7.3	360	9.6	370	7.0
BHN 967	77	71	15.4	103	11.2	170	8.8	248	6.4	184	7.0	135	5.1
BHN 1009	74	83	15.3	195	11.9	195	9.1	258	7.1	178	6.5	288	5.1
Biltmore	80	242	16.0	181	11.4	158	9.6	165	7.3	231	10.4	365	7.7
Black Velvet	72	0	0.0	0	0.0	0	0.0	72	3.6	622	3.0	330	3.1
BSS 832	75	175	16.1	235	11.6	117	9.6	92	7.3	309	10.5	381	8.7
Charger	76	155	15.4	262	11.2	198	9.2	162	6.9	84	7.7	271	5.4
Mt. Fresh Plus	77	154	14.6	187	11.1	298	9.3	282	7.1	299	7.7	266	5.5
Mt. Merit	75	166	13.6	151	11.6	211	9.1	268	7.3	261	8.3	359	6.3
Primo Red	70	302	14.7	328	11.0	340	9.1	207	7.0	134	10.3	336	5.7
Red Bounty	76	246	16.3	289	11.5	222	9.6	157	7.3	270	9.9	291	6.6
Red Deuce	71	397	16.6	332	11.6	208	9.3	206	7.2	281	11.3	412	8.7
RFT 6153	77	68	16.2	175	11.0	186	9.1	182	7.5	174	9.9	187	6.5
Rocky Top	76	195	16.0	311	11.6	201	9.2	197	6.9	257	8.5	238	5.7
Scarlet Red	75	162	14.9	172	10.8	245	9.1	208	6.8	150	8.5	215	5.1
Volante	74	250	16.1	363	11.5	178	9.2	210	6.9	177	10.1	272	6.0

Xtra-Large Fruit are those that are larger than 12 oz and blemish free

Large #1 Fruit are between 10 - 12 ounces and blemish free

Medium #1 Fruit are those that are between 8 and 10 ounces and blemish free

Small #1 Fruit are those that are between 6 and 8 ounces and blemish free

Culls: Fruit that are not marketable due to size, or defects

Seconds: Fruit that are flawed cosmetically, but still marketable

Seeded into 288 seed flats on April 13, 2012 at Altobelli Family Farm greenhouses.

Potted on into 48 cell flats April 26, 2012.

Planted May 29, 2012 into raised beds with black plastic mulch: 6.5' bed centers and 2' in-row spacing.

Plots consisted of 10 plants with 2 replications (20 plants total).

Plants were pruned, staked and trellised in the Florida Basket Weave system.

Fertility was adjusted by the grower to achieve 120 pounds of Nitrogen, 60 pounds of Phosphorous and 120 pounds of Potassium per acre.

Table 2: The number of 25 pound boxes of "Extra Large" grade tomatoes harvested by date from 16 different varieties.

Variety	Date of Harvest									
	August 9, 2012		August 16, 2012		August 23, 2012		August 30, 2012		September 7, 2012	
	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)
BHN 589	0	0.0	77	16.6	105	16.7	0	0.0	0	0.0
BHN 967	0	0.0	47	14.0	7	16.8	10	24.0	7	16.8
BHN 1009	0	0.0	26	15.2	58	15.3	0	0.0	0	0.0
Biltmore	0	0.0	93	15.9	121	16.0	20	16.0	8	18.4
Black Velvet	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
BSS 832	0	0.0	89	16.4	61	16.3	9	21.6	15	12.3
Charger	29	17.4	58	15.4	68	14.6	0	0.0	0	0.0
Mt. Fresh Plus	14	17.2	62	13.5	48	14.2	20	15.7	9	21.6
Mt. Merit	0	0.0	106	14.0	55	13.0	0	0.0	5	12.8
Primo Red	0	0.0	106	14.8	110	14.6	28	16.4	59	14.0
Red Bounty	26	20.8	68	14.8	91	16.7	36	17.3	24	14.2
Red Deuce	37	17.4	169	16.1	94	17.2	62	16.4	35	16.6
RFT 6153	0	0.0	17	20.4	38	14.9	7	16.0	6	15.2
Rocky Top	0	0.0	90	15.3	55	16.3	43	16.9	8	19.2
Scarlet Red	6	14.4	57	17.0	84	14.3	15	12.0	0	0.0
Volante	32	19.0	97	16.5	71	15.4	17	13.6	33	15.8

Extra-Large Fruit are those that are larger than 12 oz and blemish free

Table 3: The number of 25 pound boxes of "Large" grade tomatoes harvested by date from 16 different varieties.

Variety	Date of Harvest									
	August 9, 2012		August 16, 2012		August 23, 2012		August 30, 2012		September 7, 2012	
	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)
BHN 589	64	11.7	51	11.1	78	11.7	24	11.4	23	11.0
BHN 967	5	12.0	52	11.2	19	11.4	13	10.1	14	11.5
BHN 1009	0	0.0	44	11.7	60	12.0	75	11.9	15	12.0
Biltmore	55	12.0	46	11.0	47	11.2	33	11.1	0	0.0
Black Velvet	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
BSS 832	62	11.4	54	11.6	71	12.0	35	12.0	13	10.1
Charger	104	10.8	71	11.3	78	11.6	5	11.2	5	11.2
Mt. Fresh Plus	9	10.4	32	11.0	25	12.0	78	10.9	43	11.3
Mt. Merit	10	11.6	59	11.7	28	10.9	25	12.0	29	11.5
Primo Red	56	10.2	37	11.0	112	11.5	50	12.0	74	10.3
Red Bounty	43	11.3	44	11.6	88	11.6	86	11.4	29	11.5
Red Deuce	91	12.0	76	11.3	85	11.9	39	11.6	42	11.1
RFT 6153	72	10.7	27	10.8	25	12.0	33	11.2	18	10.8
Rocky Top	124	11.4	79	11.7	38	11.2	60	12.0	10	12.0
Scarlet Red	47	10.3	46	11.0	48	11.4	30	10.3	0	0.0
Volante	95	11.3	63	11.6	82	11.4	65	11.9	58	11.5

Large #1 Fruit are between 10 - 12 ounces and blemish free

Table 4: The number of 25 pound boxes of "Medium" grade tomatoes harvested by date from 16 different varieties.

		Date of Harvest									
		August 9, 2012		August 16, 2012		August 23, 2012		August 30, 2012		September 7, 2012	
Variety	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	
BHN 589	61	8.6	36	9.5	33	9.7	33	9.9	42	9.1	
BHN 967	80	8.7	37	8.7	28	9.6	0	0.0	25	8.5	
BHN 1009	31	8.2	24	9.5	53	9.0	56	9.5	32	9.5	
Biltmore	20	9.4	19	9.0	20	9.6	58	9.9	40	9.6	
Black Velvet	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
BSS 832	26	8.9	21	9.9	28	9.5	34	10.0	8	9.6	
Charger	74	8.8	25	10.0	61	9.7	19	9.0	19	9.0	
Mt. Fresh Plus	13	8.0	38	10.0	77	9.6	61	9.7	110	9.0	
Mt. Merit	36	8.5	65	9.1	50	9.2	48	9.6	11	9.1	
Primo Red	61	8.1	52	9.6	90	9.3	59	9.4	77	9.2	
Red Bounty	22	8.8	29	9.7	44	9.5	67	10.0	60	9.5	
Red Deuce	72	8.6	41	9.8	32	9.6	50	9.9	12	9.9	
RFT 6153	62	8.3	17	10.0	58	9.8	16	9.8	33	8.7	
Rocky Top	73	8.6	21	9.9	21	9.9	46	10.0	41	8.9	
Scarlet Red	52	8.3	62	8.8	56	9.6	57	9.7	17	10.0	
Volante	31	8.1	32	9.6	58	9.8	34	10.0	24	8.1	

Medium #1 Fruit are those that are between 8 and 10 ounces and blemish free

Table 5: The number of 25 pound boxes of "Small" grade tomatoes harvested by date from 16 different varieties.

		Date of Harvest									
		August 9, 2012		August 16, 2012		August 23, 2012		August 30, 2012		September 7, 2012	
Variety	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	
BHN 589	29	6.2	32	7.6	25	7.5	44	7.5	50	7.5	
BHN 967	125	6.0	56	7.0	37	6.8	9	7.5	19	6.6	
BHN 1009	24	6.2	40	7.3	48	7.2	79	7.5	67	6.7	
Biltmore	15	6.1	27	7.9	16	7.7	59	7.1	48	7.6	
Black Velvet	65	3.5	7	5.9	0	0.0	0	0.0	0	0.0	
BSS 832	5	6.4	15	7.0	19	7.5	20	7.9	33	7.2	
Charger	28	6.0	54	7.6	47	7.0	17	6.8	16	6.4	
Mt. Fresh Plus	0	0.0	26	7.6	71	7.3	80	6.8	105	7.0	
Mt. Merit	22	6.4	22	6.5	56	7.8	74	8.0	95	6.9	
Primo Red	20	6.1	38	6.9	54	7.2	46	7.8	48	6.7	
Red Bounty	22	6.4	11	6.4	45	7.7	40	7.9	39	7.2	
Red Deuce	10	6.0	40	7.4	48	7.2	70	7.3	37	7.3	
RFT 6153	38	7.6	17	6.8	31	7.3	36	7.2	60	8.0	
Rocky Top	48	6.1	48	7.6	28	7.5	42	7.6	31	6.1	
Scarlet Red	36	6.1	25	6.0	50	7.5	66	7.1	31	6.7	
Volante	45	6.0	32	7.5	61	7.3	41	7.0	31	7.3	

Small #1 Fruit are those that are between 6 and 8 ounces and blemish free

Table 6: The number of 25 pound boxes of "Seconds" grade tomatoes harvested by date from 16 different varieties.

		Date of Harvest									
		August 9, 2012		August 16, 2012		August 23, 2012		August 30, 2012		September 7, 2012	
Variety	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	
BHN 589	79	9.0	54	8.1	117	11.6	79	9.9	31	8.3	
BHN 967	51	11.1	77	4.6	53	12.6	4	4.8	0	0.0	
BHN 1009	24	6.3	67	4.8	47	9.3	33	7.8	7	16.0	
Biltmore	39	11.6	34	10.2	35	11.9	76	9.6	47	10.1	
Black Velvet	13	3.4	179	3.4	112	2.9	151	2.9	168	2.7	
BSS 832	67	9.4	64	10.1	54	11.7	99	11.2	26	10.1	
Charger	12	9.9	24	5.1	31	9.1	9	10.4	9	10.4	
Mt. Fresh Plus	76	8.2	56	5.4	49	9.8	61	8.1	56	9.0	
Mt. Merit	45	7.7	72	5.7	89	13.3	14	11.2	41	8.1	
Primo Red	12	7.0	4	10.4	64	10.8	39	10.3	15	12.0	
Red Bounty	76	10.0	44	7.4	51	11.1	61	11.1	39	10.2	
Red Deuce	42	11.1	40	9.6	79	12.5	85	12.7	35	9.2	
RFT 6153	41	8.8	42	9.9	38	10.1	43	12.7	11	6.4	
Rocky Top	54	8.5	54	6.8	49	9.7	73	9.1	28	9.4	
Scarlet Red	30	8.9	32	7.0	40	9.4	19	7.6	49	9.7	
Volante	57	9.1	25	11.7	42	8.4	20	15.7	34	11.4	

Seconds: Fruit that are flawed cosmetically, but still marketable

Table 7: The number of 25 pound boxes of "Cull" grade tomatoes harvested by date from 16 different varieties.

		Date of Harvest									
		August 9, 2012		August 16, 2012		August 23, 2012		August 30, 2012		September 7, 2012	
Variety	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	# of boxes	Average Size (ozs.)	
BHN 589	87	6.7	75	8.5	49	5.3	86	8.2	72	6.4	
BHN 967	39	4.0	19	15.2	25	4.2	28	6.6	24	4.4	
BHN 1009	39	4.3	28	16.8	61	4.0	83	6.0	76	4.7	
Biltmore	122	9.7	47	6.6	29	5.7	103	9.4	64	5.4	
Black Velvet	27	2.7	99	3.7	47	2.9	70	2.8	87	3.0	
BSS 832	60	8.5	56	8.3	85	8.8	108	10.7	73	7.2	
Charger	68	8.5	45	4.7	78	4.3	50	6.0	31	4.9	
Mt. Fresh Plus	33	8.6	28	6.6	51	4.1	82	5.4	73	5.6	
Mt. Merit	39	6.2	60	13.0	43	6.0	80	5.5	136	5.6	
Primo Red	34	5.4	38	5.0	112	6.1	92	5.5	60	6.2	
Red Bounty	78	7.7	44	9.6	47	5.3	59	6.4	63	5.6	
Red Deuce	103	11.2	50	13.3	83	7.3	133	8.5	42	5.6	
RFT 6153	73	6.9	24	9.5	13	7.6	33	5.3	45	5.6	
Rocky Top	55	6.9	49	8.4	53	4.3	57	5.0	24	5.2	
Scarlet Red	63	6.8	28	4.8	30	4.4	54	4.8	40	4.5	
Volante	47	7.1	61	7.3	46	4.2	54	5.9	63	6.0	

Culls: Fruit that are not marketable due to size, or defects

Note: We received 3.95" of rain from August 10 - 12. We had just picked the trial prior to the rain starting and picked again 4 days after the rainfall event.

Table 8: Comments on fruit characteristics of 16 tomato varieties grown at Altobelli Family Farms in Kinderhook, NY.

Variety	Days to Harvest	Comments
BHN 589	74	Tall round to slightly oblong shaped fruit with a medium stem scar with slight yellow halo and medium blossom scar. Fairly firm, medium red color. Attractive looking overall and still has the best flavor in this researchers opinion! Culls were deep radial and concentric cracking.
BHN 967	77	Mostly flat to slightly tall round fruit with a very slight lobe. Large pronounced stem scar, medium blossom scar. Nice red uniform color. Fair flavor. Fruit size tends to be smaller overall.
BHN 1009	74	Tall round with very little lobing. Large, dark colored stem scar with slight yellow halo and small to medium blossom scar. Firm, but blotchy streaky coloring. Overall unattractive. Fair flavor.
Biltmore	80	Large, round to slightly oblong shape - slightly lobed. Huge, rough looking, unattractive stem scar with a small to medium blossom scar. Firm, medium red color and uniform ripening. Culls were mostly radial and concentric cracking. Fair flavor.
Black Velvet	72	Specialty fruit: Small (large cherry type), round to slightly tall specialty fruit. Tiny blossom and stem scar. Green to golden orange color. Nothing special in flavor. Culls were mostly undersized, rain checking and concentric cracking.
BSS 832	75	Tall round to flat oblong fruit - a fair amount of variation. Medium to large stem scar, medium to large blossom scar. Also uneven ripening. Deep radial cracking, zipper scar and rain check.
Charger	76	Not the most attractive tomato in the trial - slightly oblong to round shape. Variable stem scars but mostly large and dark colored (not attractive looking), large blossom scars. Blotchy ripening - not impressed. Culls were radial cracking.
Mt. Fresh Plus	77	Round, slightly tall fruit with a medium to large stem scar and small blossom scar. Fairly firm but slightly uneven ripening. Fair flavor.
Mt. Merit	75	Attractive appearance in the box - fruit have a sheen to them - mostly tall round shape, small to medium stem scar, small blossom scar. Slightly uneven ripening on stem end. Fair flavor. Severe radial cracking, rain checking. Late Blight Resistant
Primo Red	70	Fairly tall, round, strongly pointed fruit. Small stem and blossom scar with slight yellow halo around stem scar. Fairly firm, decent red color and fairly uniform. Nice size, attractive and not bad tasting for an early variety. Culls were mostly radial cracking.
Red Bounty	76	Tall Round, slightly lobed with a small to medium stem scar and small to medium blossom scar. Firm, decent color and attractive looking overall. Fair to good flavor.
Red Deuce	71	Fairly attractive, round, slightly tall fruit - a few slightly pointed. Tiny stem and blossom scars. Firm, orange red color, uniform ripening. Fair flavor. Worth looking at for early production.
RFT 6153	77	Very round flat, slightly tall shaped fruit with slight lobe. Medium to large stem scar and small to medium blossom scar. Firm, decent red color and fairly uniform ripening. Good flavor (received the highest votes at twilight meeting tasting). Culls were mostly radial cracking.
Rocky Top	76	Fairly flat to tall round to oblong shape, with a slight lobe. Medium stem scar with slight yellow halo, variable blossom scar (mostly large). Firm, decent red color and fairly uniform ripening - pretty attractive. Culls were mostly radial cracking and Bacterial canker. Flavor was fair at best.
Scarlet Red	75	One of the most attractive looking tomatoes in the trial. Mostly round, smooth, flattened to slightly tall. Medium stem scar with slight yellow halo, medium blossom scar. Fairly firm, attractive red color and fair flavor. Culls and seconds were usually zipper scar and radial cracking.
Volante	74	Second most attractive tomato in the trial - nice appearance in the box. Round - oblong, flat fruit, slightly lobed - Small stem scar, but large to medium blossom scar. Firm, nice color and uniform ripening. Good to fair flavor - would recommend trying.