

FRESH MARKET TOMATO VARIETY TRIAL – YEAR 1

Timothy Elkner
Horticulture Educator
Penn State Extension – Lancaster County
1383 Arcadia Rd., Rm. 140, Lancaster, PA 17601

Introduction - Fresh market tomatoes are a very important crop in Pennsylvania. According to the USDA, in 2015 total harvested acreage was 2,200 with a crop value of over \$33.2 million. Since there had been no evaluation of newly released varieties in the state in a replicated trial in recent years, this study was initiated in 2016 and plans are to repeat it again in 2017.

Materials and Methods - Twenty three round red tomato varieties (named and advanced selections) were evaluated using plasticulture and drip irrigation. In addition, six advanced selections from the Penn State tomato breeding program were included for observation. Seeds were started on April 26 and transplants were set in the field on May 31. There were four 10-plant replications per variety with an in-row spacing of 1.5 ft. Fertilizer was applied preplant according to soil test results and standard fertility and pest management practices were used during the growing season as found in the Commercial Vegetable Production Guide. Harvest started on August 1 and stopped on September 9. Fruit were graded into #1, #2 and cull and each group was counted and weighed.

Results and Discussion – Mountain Fresh Plus was used as the standard variety in this trial. Yields of #1 fruit and total marketable fruit (#1 + #2) were 6.5 and 12.0 lbs per plant (Tables 1 & 2). Varieties with similar yields of #1 fruit (+/- 0.3 lbs) were Red Bounty, Red Deuce, Rocky Top and Tribute. Varieties with higher yields of #1 (more than 0.3 lbs) were Red Morning, Red Mountain, STM 8005 and Volante. Varieties that had similar total marketable yields (+/- 0.5 lbs) were Bella Rosa, FTM 1135, Red Deuce, Rock Top, Tribute and Volante. Varieties with a total marketable yield 0.5 lbs per plant (or more) greater than Mountain Fresh Plus were Red Morning, Red Mountain and STM 8005.

Mountain Fresh Plus had a value of 80% for total marketable percent of harvested fruit. Varieties with similar total marketable percent of all fruit (+/- 5%) were Rally, Red Bounty, Red Deuce, Red Mountain, STM 8005, Tribute and Volante. Average marketable fruit size for Mountain Fresh Plus was 0.64 lbs; only 5 varieties had lower average fruit size. All varieties had acceptable average fruit size of over 0.5 lbs. No consistent differences in flavor were noted with informal tastings on selected harvests.

In the advanced selections from the Penn State breeding program PSFH 15-11 had similar yields of #1 fruit as Mountain Fresh Plus while PSFH 15-5, 15-8 and 15-28 had higher yields. All four of these selections had higher total yields. PSFH 15-8 and 15-11 had similar marketable percent as Mountain Fresh Plus while PSFH 15-28 was higher.

I would like to thank the PA Vegetable Marketing & Research Board for funding this trial.

Table 1. Yields of #1 and #2 fruit for 23 named/numbered varieties of round red tomato and six advanced selections from the Penn State tomato breeding program. All numbers are averages from four replications except as noted and are reported on a per-plant basis.

Variety	Number #1	Weight #1(lbs)	Number #2	Weight #2(lbs)
Bella Rosa	6.9	5.1	9.3	6.6
BHN 589	6.2	4.5	7.8	5.5
FTM 1127	3.8	3.0	6.4	5.5
FTM 1135	8.4	6.1	8.4	5.7
Mountain Fresh Plus	9.9	6.5	8.9	5.6
Mountain Majesty	5.4	4.3	5.3	4.3
Mountain Merit	5.8	3.5	6.9	4.5
Primo Red	7.2	5.4	8.3	6.2
Rally	9.1	5.6	9.3	5.4
Red Bounty	9.0	6.3	8.1	5.4
Red Delight	7.4	4.9	7.5	4.7
Red Deuce	7.5	6.6	6.4	5.7
Red Morning	9.5	7.6	7.0	5.3
Red Mountain	13.8	8.3	9.4	5.2
Red Rave	9.1	5.3	7.2	4.5
Redline	6.4	4.2	7.2	4.6
Resolute	7.3	4.4	8.7	5.4
Rocky Top	9.3	6.2	7.7	5.3
Scarlet Red	7.3	5.6	6.8	5.1
STM 8005	11.4	7.5	8.4	5.4
Summerpick	5.8	4.0	7.7	5.4
Tribute	9.7	6.3	7.8	5.1
Volante	10.4	7.1	7.7	5.0
PSFH 15-1 ^a	7.8	4.9	9.2	5.4
PSFH 15-5 ^b	12.0	7.1	10.8	6.0
PSFH 15-8 ^b	14.1	9.1	7.9	5.0
PSFH 15-11 ^a	10.7	6.9	9.8	6.7
PSFH 15-25 ^a	7.1	5.2	5.5	4.1
PSFH 15-28 ^a	15.5	9.5	6.9	4.3

^a = one replicate

^b = two replicates

Table 2. Total # and weight of marketable fruit, average weight and # culls for 23 named/numbered varieties of round red tomato and six advanced selections from the Penn State tomato breeding program. All numbers are averages from four replications except as noted and are reported on a per-plant basis.

Variety	Total Number Marketable	Total Marketable Wt.(lbs)	Average Marketable Wt.(lbs)	Number Culls
Bella Rosa	16.2	11.7	0.72	8.7
BHN 589	14.0	10.0	0.70	8.0
FTM 1127	10.2	8.5	0.83	8.6
FTM 1135	16.8	11.9	0.71	7.9
Mountain Fresh Plus	18.8	12.0	0.64	5.5
Mountain Majesty	10.7	8.6	0.82	5.4
Mountain Merit	12.7	7.9	0.63	8.4
Primo Red	15.5	11.6	0.75	9.2
Rally	18.4	11.0	0.60	6.2
Red Bounty	17.0	11.6	0.68	6.5
Red Delight	14.9	9.5	0.64	7.5
Red Deuce	13.9	12.3	0.89	4.3
Red Morning	16.5	12.9	0.79	6.8
Red Mountain	23.3	13.6	0.59	8.2
Red Rave	16.3	9.8	0.61	6.7
Redline	13.6	8.8	0.65	7.1
Resolute	16.0	9.7	0.61	6.0
Rocky Top	17.0	11.5	0.68	7.8
Scarlet Red	14.1	10.7	0.76	7.4
STM 8005	19.8	12.9	0.65	5.0
Summerpick	13.5	9.3	0.69	8.4
Tribute	17.6	11.5	0.66	6.2
Volante	18.1	12.1	0.67	7.1
PSFH 15-1 ^a	17.0	10.3	0.60	7.3
PSFH 15-5 ^b	22.8	13.1	0.58	8.5
PSFH 15-8 ^b	22.0	14.0	0.64	4.7
PSFH 15-11 ^a	20.5	13.6	0.66	6.2
PSFH 15-25 ^a	12.6	9.3	0.74	8.7
PSFH 15-28 ^a	22.4	13.8	0.62	4.2

^a = one replicate

^b = two replicates

Table 3. Total # and weight of harvested fruit, percent marketable and seed source for 23 named/numbered varieties of round red tomato and six advanced selections from the Penn State tomato breeding program. All numbers are averages from four replications except as noted and are reported on a per-plant basis.

Variety	Total Number Harvested	Total Weight Harv.(lbs)	Percent Marketable	Seed Source
Bella Rosa	24.9	17.3	68	CS
BHN 589	22.0	14.9	67	SW
FTM 1127	18.7	15.2	56	ST
FTM 1135	24.7	16.9	70	ST
Mountain Fresh Plus	24.3	15.0	80	HM
Mountain Majesty	16.1	12.7	68	HM
Mountain Merit	21.1	12.9	61	SW
Primo Red	24.8	17.9	65	HM
Rally	24.5	13.9	79	CS
Red Bounty	23.6	15.5	75	HM
Red Delight	22.3	14.0	68	CS
Red Deuce	18.2	15.8	78	HM
Red Morning	23.3	17.9	72	HM
Red Mountain	31.5	17.9	76	HM
Red Rave	23.0	13.4	73	SW
Redline	20.7	13.2	67	CS
Resolute	22.0	13.2	73	SW
Rocky Top	24.8	16.3	71	SW
Scarlet Red	21.4	16.2	66	SW
STM 8005	24.7	15.8	82	CS
Summerpick	21.8	14.5	64	CS
Tribute	23.7	15.0	77	CS
Volante	25.1	16.1	75	CS
PSFH 15-1 ^a	24.3	14.1	73	PSU
PSFH 15-5 ^b	31.2	17.7	74	PSU
PSFH 15-8 ^b	26.7	16.6	84	PSU
PSFH 15-11 ^a	26.7	17.3	79	PSU
PSFH 15-25 ^a	21.3	15.0	62	PSU
PSFH 15-28 ^a	26.6	15.8	87	PSU

^a = one replicate, ^b = two replicates

CS = Clifton Seed, HM = Harris Moran, ST = Stokes, SW = SeedWay

PSU = Dr. Majid Foolad, Penn State