

# Statewide Fresh Market Tomato Variety Trials Field Evaluations for 2005

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## **Introduction**

UCCE conducts fresh market tomato variety trials in three areas in the San Joaquin Valley to evaluate the performance of new varieties and breeding lines from commercial plant breeders for the mature green market. These variety trials hopefully provide the opportunity to evaluate and compare fruit quality characteristics and yield in commercial production fields with different types of soil, management, and growing conditions.

The objective of this trial is to identify dependable, higher yielding and higher quality lines that can be grown in a wide geographic area and varying environmental conditions characteristic of central California. The main commercial market is for mature green tomatoes. Varieties are typically semi-determinant, bush-type grown without support and hand harvested. This market includes both round and “roma” type tomatoes.

The trials are broken into two components: replicated and observation. Seed companies are asked to submit lines that have been previously tested in grower fields in California for the replicated trial. The observation lines usually represent the plant breeder’s most promising lines for central California’s commercial growing conditions and markets.

## **Procedure**

The trials are conducted by each Farm Advisor in a similar fashion so that local results can be compared with other locations. Plot size is 1 bed by 40 to 50 feet long, planted using commercial transplanters on 5 foot raised beds. Trials are laid out as randomized complete block designs with 4 replications (observation lines are not replicated but are planted adjacent to the replicated plots). Plots are managed concurrently as the commercial field in which they are located. Harvest is done by hand at the same time as the rest of the field, picking from a 10 foot section from the center of the plot. At harvest, fruit are sorted by culls, color, and size. Small fruit (2 – 2.25”) are picked but are not included in the total market yield.

In 2005, three round and two roma variety trials were conducted, however, the roma trial at the UC Westside Research & Extension Center (WSREC) in Fresno County was not replicated. Trial locations, varieties, and field information are shown in Table 1. Both the Merced and San Joaquin trials were conducted in commercial production fields. The Fresno, Merced, and San Joaquin trials were planted one month apart, to reflect early, mid, and late season production fields.

Each farm Advisor prepares a report summarizing their individual trial, then sends this information to those in the industry. A field day was held at each location. Of the three field days, the field day held in Le Grand has the greatest participation and includes information booths from UCCE Specialists and area Farm Advisors.

Postharvest samples from all the replicated varieties were collected by Marita Cantwell from all trials at the time of harvest and taken to the Mann Laboratory at UC Davis for color, firmness,

and fruit composition analysis at the mature-green and table-ripe stage. A complete summary of the postharvest results follows this field report.

## **Results**

### **Replicated Lines**

Results for marketable yield and fruit size for Fresno, Merced, and San Joaquin Counties are shown in Tables 2, 3, and 4. The combined analysis is shown in Table 5. In Fresno, BHN 580 was the clear standout with regard to yield, with a mean yield over 2400 boxes/A. This was largely a result of an over-production of jumbo sized fruit. Merced also had a clear winner with AT-37, at over 2500 boxes per acre. There was no variety in San Joaquin County that was so markedly higher yielding than the rest. At-37, Q-21, Catalyst, and RFT 500-311 all yielded similar to each other.

Yields broken down by size category for each trial location are shown in Figure 1. Significant yield differences were found at each location, though because of the difference in the timing and location of each trial, no one variety did significantly better or poorer at every location. When the data were combined, no significant differences were found for yield or size category. Essentially, low yields at one location were offset by high yields at another (Fig. 2). If only AT-37 (highest yielding) and Shady Lady (lowest yielding) are compared, these means are significantly different.

Extra large fruit were a smaller percentage of the market yield in Merced as compared to the other locations (Fig. 3). In general, Shady Lady had consistently smaller fruit at each location, while RFT 500-305 and -311 produced more XL fruit. Other location comparisons are shown in Table 5. RFT 500-312 had the highest percentage of red fruit, suggesting this is a line that is even earlier than the standard Shady Lady.

The significant variety by location LSD found for yield, XL%, cull %, and red% indicates that varieties are performing differently at different locations. This makes sense, because some lines are better adapted for early or late season growing conditions. The implications are that it is better to use the individual location results for determining variety fit rather than the combined analysis.

Fruit and vine characteristics are shown in Tables 6 –8. RFT 500-305 were noted to have nice looking fruit at the Fresno and San Joaquin locations.

### **Observed Lines**

Fruit size and market yields for each county are shown in Tables 9, 10, and 11. The combined analysis is shown in Table 12. Because there is no replication in the observed lines, statistical analysis could be performed only on the combined data set. SRT 6784 did particularly well in Fresno, while BHN 525 and PX 2942 yielded well in Merced and San Joaquin locations. Combining locations, no significant differences among varieties were found for yield or size, mainly because of the large amount of variability in the data (Fig 4).

The only significant factor found was % red fruit. SXT 6764, BHN 703 and BHN 678 had significantly more red fruit than the other lines.

As with the replicated trial, the Merced location had less XL fruit than the other locations (Fig 5).

Fruit and vine characteristics for the observation lines are shown in Tables 13 – 15. Many of the lines suffered from pointed and misshapen fruit at all locations; fleck (gold speckling on the fruit) was bad on the fruit from most of the lines in Merced.

### **Roma Trials**

Roma trials were conducted in Fresno and San Joaquin, however, the Fresno location did not include replication. Results from the observation plots are shown in Table 16. Results from San Joaquin County are shown in Table 17. In general, yields were much lower than the round lines, and were dominated by small fruit. Market yield ranged from almost 1100 boxes for BHN C9008 to 700 boxes for Monica, but due to high variability these differences were not significant (Fig 6). The only significant differences found on any measured variable were with fruit size. RFT 8109 had the highest percentage of large fruit, whereas WS4062 had no red fruit. The fruit size breakdown for the San Joaquin trial is shown in Figure 7. Regardless of variety, most fruit were classed as small.

Fruit and vine characteristics for the roma lines are shown in Tables 18 and 19. Miroma was best in the trial, with fruit quality much better than all other lines.

### **Acknowledgements**

Many thanks to the following seed company representative for their participation: Joe Haga, American Takii; Ted Angel and Pablo Salgado, BHN Seed; Ray Violin, Western Seed; Todd Rehrman and Rod Jorgenson, Syngenta/Rogers Seed; Susan Peters, Nunhems; Doug Heath, Seminis, and Jeff Zischke, Sakata Seeds. Additional thanks to the cooperators who helped with these trials, and to the California Tomato Commission for financial support.

**Table 1. 2005 Fresh Market Tomato Regional Variety Trial**

Early Trial <i>Michelle LeStrange</i> 559-685-3309 <a href="mailto:mlestrange@ucdavis.edu">mlestrange@ucdavis.edu</a>	Mid Season Trial <i>Scott Stoddard</i> 209-385-7403 <a href="mailto:csstoddard@ucdavis.edu">csstoddard@ucdavis.edu</a>	Late Season Trial Jan Mickler 209-525-6800 <a href="mailto:cjmickler@ucdavis.edu">cjmickler@ucdavis.edu</a>	
<b>Replicated</b> 1 AT-37 2 BHN 580 3 BHN 654 4 Shady Lady 5 Quali T-21 6 Quali T-23 7 Bobcat 8 Catalyst 9 RFT 500-305 10 RFT 500-311 11 RFT 500-312 12 STM 0115 13 PX 2935	<b>Replicated</b> 1 AT-37 2 BHN 580 3 BHN 654 4 Shady Lady 5 Quali T-21 6 Quali T-23 7 Bobcat 8 Catalyst 9 RFT 500-305 10 RFT 500-311 11 RFT 500-312 12 STM 0115 13 PX 2935	<b>Replicated</b> 1 AT-37 2 BHN 580 3 BHN 654 4 Shady Lady 5 Quali T-21 6 Quali T-23 7 Bobcat 8 Catalyst 9 RFT 500-305 10 RFT 500-311 11 RFT 500-312 12 STM 0115	<b>Company</b> American Takii BHN Seed  Nunhems Syngenta  Syngenta  Sakata Seed Seminis
<b>Observation</b> 1 BHN 525 2 BHN 678 3 BHN 703 4 SXT 6763 5 SXT 6764 6 SRT 6783 7 SRT 6784 8 STM 2203 9 PX 2942	<b>Observation</b> 1 BHN 525 2 BHN 678 3 BHN 703 4 SXT 6763 5 SXT 6764 6 SRT 6783 7 SRT 6784 8 STM 2203 9 PX 2942	<b>Observation</b> 1 BHN 525 2 BHN 678 3 BHN 703 4 SXT 6763 5 SXT 6764 6 SRT 6783 7 SRT 6784 8 STM 2203 9 PX 2942	BHN Seed  Nunhems  Nunhems  Sakata Seminis
<b>ROMA</b> 1. BHN C9008 2. Monica 3. Muriel 4. SVR 3684 5. SVR 0739 6. WS 4061 7. WS 4062	Seminis Seminis	<b>ROMA</b> 1. BHN C9008 2. Monica 3. Muriel 4. WS 4061 5. WS 4062 6. MiRoma 7. RFT 8109	BHN Seed Sakata Sakata Western Seed Western Seed Syngenta Syngenta
Seeded March 3, 2005 Transplant: April 20 at UC WSREC near 5 Points Plot 66" x 45 ft 5 reps Furrow irrigated Field Day: July 12 Harvest: July 14	Seeded March 30, 2005 Transplant: May 20, Live Oak Farms, Le Grand, CA Plot 60" by 45 ft 4 reps Drip irrigated Field Day: Aug 9 Harvest: Aug 10, 11 (3 reps)	Seeded May 10, 2005 Transplant: June 17, Celli Bros Farms, Thorton, CA Plot 60" x 25 ft 4 reps Furrow irrigated Field Day: Sept 9 Harvest: Sept 12	

For the Roma trial with Michell LeStrange, all varieties but Monica requested observation trial. For the roma trial with Jan Mickler, all lines were replicated.

**Table 2. Fresh market tomato variety trial yield and grade results, UC WSREC FRESNO 2005. REPLICATED varieties.**

Code Variety	Market Yield		XL --- %	L Marketable	M Yield ---	S Tons/A	Total Tons/A	Total Yield	
	Tons/A	Boxes/A						Culls %	Red %
1 AT-37	20.4	1630	43.6	40.9	15.6	2.5	31.5	27.2	13.0
2 BHN 580	30.2	2415	52.0	35.8	12.2	3.2	41.4	19.5	21.1
3 BHN 654	23.2	1852	49.3	37.8	12.9	2.3	33.3	23.5	14.4
4 Shady Lady	22.9	1830	42.7	36.0	21.3	4.1	32.2	16.2	22.7
5 QualiT 21	19.7	1578	39.5	42.5	18.0	1.9	26.8	19.2	6.7
6 QualiT 23	21.8	1745	50.8	32.9	16.4	2.1	31.6	24.4	11.3
7 Bobcat	24.2	1931	45.5	40.9	13.6	2.1	30.9	15.2	9.1
8 Catalyst	22.2	1776	40.3	43.5	16.3	3.6	31.0	16.6	13.4
9 RFT 500-305	19.6	1569	37.8	38.9	23.3	3.9	28.5	17.6	15.8
10 RFT 500-311	20.0	1602	56.0	31.8	12.2	1.6	28.8	25.0	12.3
11 RFT 500-312	22.7	1814	49.5	36.8	13.8	2.6	32.3	21.8	26.8
12 STM 0115	19.4	1552	38.8	42.4	18.8	2.4	31.8	31.8	15.9
13 SVR 2935	22.2	1772	40.9	40.6	18.6	3.5	30.3	15.2	2.4
<b>Average</b>	<b>22.2</b>	<b>1774.3</b>	<b>45.1</b>	<b>38.5</b>	<b>16.4</b>	<b>2.7</b>	<b>31.6</b>	<b>21.0</b>	<b>14.2</b>
LSD 0.05	2.6	211	5.3	5.4	4.5	1.2	3.4	5.9	4.8
CV %	8.3	8.3	8.2	9.8	19.1	29.9	7.5	19.7	23.6

**Table 3. Fresh market tomato variety trial yield and grade results, MERCED COUNTY, 2005. REPLICATED varieties.**

Code Variety	Market Yield		XL --- %	L Marketable	M Yield ---	S Tons/A	Total Tons/A	Total Yield	
	Tons/A	Boxes/A						Culls %	Red %
1 AT-37	31.5	2523	27.8	51.5	20.6	5.5	47.4	22.0	12.2
2 BHN 580	21.1	1688	18.8	50.4	30.9	6.3	37.4	27.1	8.9
3 BHN 654	21.2	1699	20.6	49.8	29.6	6.9	35.4	20.5	9.4
4 Shady Lady	20.1	1607	12.5	55.1	32.4	7.8	39.0	28.9	14.9
5 QualiT 21	23.1	1845	24.1	53.7	22.3	3.8	35.9	25.8	4.1
6 QualiT 23	22.0	1762	21.0	54.6	24.5	4.6	38.6	31.0	9.1
7 Bobcat	25.2	2013	30.8	43.3	25.9	4.7	39.5	24.4	10.2
8 Catalyst	24.6	1968	24.5	45.3	30.2	6.2	38.6	20.3	6.5
9 RFT 500-305	24.0	1917	40.0	44.7	15.3	2.6	33.9	20.5	12.6
10 RFT 500-311	27.3	2187	34.3	50.8	14.9	3.6	37.6	18.1	10.1
11 RFT 500-312	27.7	2217	21.2	53.4	25.4	6.1	39.8	14.6	17.2
12 STM 0115	25.0	2000	18.1	47.2	34.7	6.7	39.2	19.1	22.2
13 SVR 2935	24.4	1951	18.5	50.1	31.4	5.6	41.6	23.6	9.7
<b>Average</b>	<b>24.4</b>	<b>1952</b>	<b>24.0</b>	<b>50.0</b>	<b>26.0</b>	<b>5.4</b>	<b>38.7</b>	<b>22.8</b>	<b>11.3</b>
LSD 0.05	5.3	424	9.8	NS	11.9	2.9	NS	7.6	NS
CV %	13.0	13	23.8	12.6	27.5	32.9	11.0	20.0	55.6

See notes next page.

**Table 4. Fresh market tomato variety trial yield and grade results, SAN JOAQUIN COUNTY, 2005. REPLICATED varieties.**

Code Variety	Market Yield		XL	L	M	S	Total	Total Yield	
	Tons/A	Boxes/A	--- %	Marketable	Yield ---	Tons/A	Tons/A	Culls %	Red %
1 AT-37	25.6	2044	45.8	40.6	13.7	5.6	37.4	16.6	5.3
2 BHN 580	18.3	1462	39.8	42.4	17.9	5.0	29.2	20.9	2.0
3 BHN 654	20.7	1652	47.3	37.8	15.0	4.7	33.9	26.0	3.8
4 Shady Lady	17.5	1396	34.9	46.9	18.2	6.4	28.5	15.5	2.6
5 QualiT 21	24.5	1962	47.0	39.6	13.5	6.4	37.7	17.8	2.5
6 QualiT 23	21.5	1718	35.1	40.7	24.2	5.6	32.2	15.4	2.4
7 Bobcat	21.2	1692	38.4	38.0	23.6	4.4	31.7	19.8	2.6
8 Catalyst	24.6	1968	44.0	42.6	13.4	5.4	36.8	18.6	3.0
9 RFT 500-305	21.6	1726	45.6	38.6	15.9	5.2	30.9	13.3	3.5
10 RFT 500-311	24.5	1960	45.6	41.3	13.2	4.8	35.3	17.0	3.4
11 RFT 500-312	23.0	1836	33.1	46.1	20.9	4.8	33.8	18.4	4.4
12 STM 0115	21.3	1706	36.7	39.0	24.3	4.4	32.4	21.5	3.1
13 SVR 2935		***	***	NOT	IN	TEST	***	***	
<b>Average</b>	<b>22.0</b>	<b>1760</b>	<b>41.1</b>	<b>41.1</b>	<b>17.8</b>	<b>5.2</b>	<b>33.3</b>	<b>18.4</b>	<b>3.2</b>
<b>LSD 0.05</b>	4.5	360	NS	NS	NS	NS	5.8	NS	NS
<b>CV %</b>	14.2	14	22.4	18.0	37.6	37.1	12.2	37.0	61.4

Market yield = XL + L + M size fruit, average of four replications. One box = 25 lbs.

XL, L, M% = weight of respective fruit sizes divided by marketable yield.

Red% = weight of all red fruit divided by total yield. Indicates relative maturity among tested varieties.

Culls, %: Any fruit so disfigured (due to rot, cat facing, insect damage, etc.) as to be unmarketable.

XL = 3 inches and larger in diameter

L = 2.5 to 3"

M = 2.25 to 2.5"

S = 2 to 2.25"

LSD 0.05 = least significant difference at the 95% probability level.

Means within the same column that differ by less than this amount are not significantly different.

NS = not significant at the 95% probability level.

CV = coefficient of variation, a measure of the variability in the experiment.

**Table 5. Fresh market tomato variety trial yield and grade results, COMBINED ANALYSIS, 2005. REPLICATED varieties.**

Code Variety	Market Yield		XL --- %	L Marketable	M Yield ---	S Tons/A	Total Tons/A	Total Yield	
	Tons/A	Boxes/A						Culls %	Red %
1 AT-37	25.3	2024.0	40.1	43.7	16.3	4.4	38.0	21.9	10.0
11 RFT 500-312	24.1	1928.0	35.8	44.7	19.5	4.3	34.9	18.6	16.0
10 RFT 500-311	24.0	1916.8	45.7	40.3	14.0	3.3	33.9	20.1	8.6
2 BHN 580	23.8	1904.0	40.5	41.0	18.5	4.7	35.9	20.9	10.8
8 Catalyst	23.7	1896.0	37.3	43.7	19.0	5.0	35.1	18.3	7.7
7 Bobcat	23.3	1864.0	38.9	40.5	20.6	3.6	33.5	19.4	7.0
13 SVR 2935	23.3	1862.0	30.1	46.2	23.7	4.4	34.5	19.4	6.0
5 QualiT 21	22.4	1790.4	38.0	44.5	17.5	4.1	33.2	20.4	4.4
6 QualiT 23	21.7	1739.6	37.0	41.6	21.4	4.0	33.7	22.9	7.5
3 BHN 654	21.7	1737.6	40.7	41.1	18.2	4.4	34.1	23.6	9.2
9 RFT 500-305	21.5	1720.0	41.2	40.3	18.4	4.0	30.8	16.8	10.4
12 STM 0115	21.0	1677.6	30.8	43.6	25.6	4.3	32.6	25.5	13.0
4 Shady Lady	20.1	1611.6	31.6	45.2	23.2	5.9	32.7	19.4	13.3
<b>Fresno</b>	22.2	1774.4	45.1	38.5	16.4	2.7	31.6	21.0	14.2
<b>Merced</b>	24.4	1952.0	24.4	49.9	26.0	5.4	38.7	22.8	11.3
<b>San Joaquin</b>	22.0	1760.0	41.1	41.1	17.8	5.2	33.3	18.4	3.2
<b>Average</b>	22.8	1829.0	37.7	42.7	19.6	4.3	34.1	20.6	9.6
<b>Var LSD 0.05</b>	NS	NS	NS	NS	NS	NS	NS	NS	NS
<b>Location LSD</b>	NS	NS	6.4	4.2	4.9	1.2	4.6	NS	4.5
<b>Var x Location LSD</b>	3.8	304.0	9.3	NS	8.0	NS	5.0	7.5	5.6
<b>CV %</b>	11.9	11.9	17.6	13.8	29.2	35.7	10.4	25.8	41.7

Market yield = XL + L + M size fruit, average of four replications. One box = 25 lbs.

XL, L, M% = weight of respective fruit sizes divided by marketable yield.

Red% = weight of all red fruit divided by total yield. Indicates relative maturity among tested varieties.

Culls, %: Any fruit so disfigured (due to rot, cat facing, insect damage, etc.) as to be unmarketable.

XL = 3 inches and larger in diameter

L = 2.5 to 3"

M = 2.25 to 2.5"

S = 2 to 2.25"

LSD 0.05 = least significant difference at the 95% probability level.

Means within the same column that differ by less than this amount are not significantly different.

Var x Location LSD = least significant difference between the same variety at different locations.

A significant var x location interaction indicates the varieties perform differently depending on location.

NS = not significant at the 95% probability level.

CV = coefficient of variation, a measure of the variability in the experiment.

**Table 6. Fresh market tomato fruit and vine characteristics. UC WSREC, 2005.**

**REPLICATED varieties**

Code	Variety	Vine size	Vine cover	Fruit shape	Roughness	Blossom end	Sunburn	Zip-pers	Over-all	Comments
1	AT-37	ML	SC	FG-DG	M	1-3	SL	S	F-G	larger fruit are flatter
2	BHN 580	ML	F	FG	M	2-4	S		F	too many huge fruit
3	BHN 654	ML	SC	G	S-M	1-2	S		G	smooth and uniform
4	Shady Lady	S-M	SC	FG	MR	2-4	S		F-G	rough shoulders, variable shape
5	Quali T 21	L	SC	G	M	1-3	SL		F-G	could be more uniform
6	Quali T 23	ML	SC	FG	MR	2-4	SL		F-G	variable shape & uniformity
7	Bobcat	ML	C	FG-G	M	2-3	SL-S		F-G	variable shape & uniformity
8	Catalyst	ML	C	FG-G	MR	2-3	SL-S		F	rough, smallish, not uniform
9	RFT 500-305	ML	F	G	S-M	1-3	SL	N	G	nice, uniform, smooth
10	RFT 500-311	ML	C	FG-G	M-S	2-4	SL		G	
11	RFT 500-312	ML	C	FG-G	M-S	2-3	SL		F-G	pretty uniform
12	STM 0115	ML	C	FG-DG	M-S	2-3	S		F	
13	SVR 2935	VL	F	G	M	2-3	SL		F-G	maturity is late

**Vine size** VL=very large, L=large, M=med, S=small  
**Vine cover** C=compact, SC=semi-compact, F=floppy  
**Fruit shape** DG=deep globe, G=globe, FG= flat globe  
**Roughness** VS=very smooth, S=smooth, M=med, R=rough  
**Blossom end** 1=very tight, 5=very open  
**Sunburn** N=none, SL=slight, S=Some, M=Much  
**Zippers** N=none, SL=slight, S=Some, M=Much  
**Overall** VG=very good, G=good, F=Fair, P=poor

**Table 7. Fresh market tomato fruit and vine characteristics. Merced County, 2005.**

**REPLICATED varieties.**

Var #	Variety	Vine Size	Leaf cover	Leaf roll	Fruit shape	Roughness	Blossom end	Sunburn	Cat-facing	Zip-pers	disease resistance	Comments
1	AT-37	L	G	S	G	S	SL	SL	S	SL		cat facing
2	BHN 580	VL	G	N	G	MR	T	SL	N	SL	VFFN	zippers, fleck
3	BHN 654	VL	G	N	G	MR	SL	SL	N	SL	VFF T	
4	Shady Lady	M	G	SL	G	M	SL	SL	N	S		
5	Quali T-21	VL	G	N	G	S	T	SL	N	N	VFFN TMV ST	some stripes, growth cracks
6	Quali T-23	L	G	N	G	S	SL	SL	N	N	VFF TMV ST	
7	Bobcat	M	G	S	G	S	SL	SL	N	N	VFFST	
8	Catalyst	M	G	S	G-FG	S	SL	SL	N	SL		gold fleck
9	RFT 500-305	L	G	SL	G	S	SL	SL	N	N		
10	RFT 500-311	L	G	SL	G	S	T	SL	SL	N		
11	RFT 500-312	M	G	S	DG	S	SL	SL	N	N		fleck
12	STM 0115	L	G	SL	DG	MR	T	SL	N	SL	VFFAS	deep shoulders
13	PX 2935	VL	G	N	G	R	SL	SL	N	N		gold fleck

Vine Size: M = medium ML = medium large L = large VL = very large  
 Leaf Cover: P = poor OK = adequate G = good  
 Leaf Roll: N = none SL = slight S = some  
 Fruit Shape: DG = deep globe G = globe FG = flat globe  
 Shoulder roughness: S = smooth M = medium MR = medium rough R = rough  
 Blossom End: T = tight SL = slight scar M = medium size scar  
 Cat Facing: N = none SL = slight S = some  
 Maturity: - = earlier than T-21 0 = same as T-21 + = later than T-21  
 Sunburn: N = none SL = slight S = some  
 Zippers: N = none SL = slight S = some  
 Disease: disease resistance provided by company  
 V = verticillium wilt  
 FF = Fusarium wilt race 1 and 2  
 N = nematodes  
 T = tobacco mosaic virus  
 Asc = Alternaria stem canker, St = Stemphyllian, Sw = Spotted Wilt, Ty = tomato yellow leaf curl virus

**Table 8. Fresh market tomato fruit and vine characteristics, San Joaquin County 2005.**

**REPLICATED varieties**

Var #	Variety	Maturity	Fruit Shape	Smoothness	Firmness	Fruit set	Stem-ability	Vine cover	Fruit size	Other notes
1	AT 37	M-ML	FG-G	3.5	3.5	G	2.5	F	L-XL	floppy vine, some sunburn, good yield
2	BHN 580	L	FG	3	3	G	2	F	L-XL	floppy vine, stems hard, some small fruit, fair yld
3	BHN 654	ML	FG	3	3.5	F-G	2	G	L-XL	good vine cover, stems hard, lg vine, some rough
4	Shady Lady	ML	FG-G	3.5	3	G	2	F-G	L-XL	stems hard, some small fruit, only fair yield
5	Quali T-21	ML	FG-G	3.5	3.5	G	3.5	F	L-XL	floppy vine, good yield, some small fruit
6	Quali T-23	ML	FG-G	4	4	G	2.5	F	M-XL	floppy vine, firm fruit, fairly smooth
7	Bobcat	ML	FG-G	3.5	3.5	G	2	F	M-XL	floppy vine, stem hard. Best overall
8	Catalyst	ML	FG-G	3.5	4	G	2.5	F-G	L-XL	Firm fruit, good yield, sunburn
9	RFT 500-305	ML	FG-G	4.5	4	G	3.5	G	L-XL	good vine cover, pretty smooth, firm fruit
10	RFT 500-311	ML	FG-G	4	3	G	3.5	F-G	L-XL	some rough fruit but otherwise quite smooth
11	RFT 500-312	ML	FG-G	4	3.5	G	2.5	F	M-XL	floppy vine, pretty smooth, some small fruit
12	STM 0115	ML	FG-G	4	4	G	3.5	G	M-XL	good vine cover, pretty smooth, firm fruit

M = midseason maturity, ML = mid late maturity, L = late maturity  
 fruit shape: FG = flat globe, G = globe  
 Fruit Smoothness: 1 = bad, 5 = excellent  
 Fruit Firmness: 1 = soft, 5 = very firm  
 Stemability: 1 = hard stemming (many stems attached to fruit), 5 = stems easily  
 Fruit Size: S = small; M = medium, L=large

**Table 9. Fresh market tomato variety trial yield and grade results, UC WSREC FRESNO, 2005.**

**OBSERVED Varieties**

Code	Variety	Market Yield		--- % Marketable Yield ---			Total		Culls Red	
		Tons/A	Boxes/A	XL	L	M	S Tons/A	Tons/A	---% Total Yield---	
21	BHN 525	19.8	1585.9	20.6	43.5	35.8	3.2	27.2	15.5	0.0
22	BHN 678	19.6	1567.5	28.3	43.7	28.0	4.3	27.8	13.8	2.7
23	BHN 703	25.6	2051.8	56.6	35.0	8.4	0.7	32.0	17.8	6.9
24	SXT 6763	18.4	1473.5	11.9	56.4	31.7	4.0	28.7	21.9	6.3
25	SXT 6764	34.0	2721.9	50.7	36.0	13.3	4.0	49.5	23.2	22.7
26	SRT 6783	29.3	2346.0	54.2	35.5	10.3	2.3	38.8	18.4	19.6
27	SRT 6784	37.9	3029.7	47.2	39.8	12.9	3.6	54.5	24.0	20.9
28	STM 2203	23.7	1899.7	43.7	41.9	14.4	2.5	38.0	30.8	15.7
29	PX 2942	27.9	2230.7	57.2	36.0	6.8	1.7	47.9	38.3	8.8
4	Shady Lady	25.3	2027.7	49.2	40.0	10.8	3.2	41.2	30.7	26.5
<b>AVERAGE</b>		<b>26.2</b>	<b>2093.5</b>	<b>42.0</b>	<b>40.8</b>	<b>17.3</b>	<b>2.9</b>	<b>38.6</b>	<b>23.4</b>	<b>13.0</b>

See notes next page.

**Table 10. Fresh market tomato variety trial yield and grade results, MERCED COUNTY, 2005.**

**OBSERVED Varieties**

Code	Variety	Market Yield		--- % Marketable Yield ---			Total		Culls Red	
		Tons/A	Boxes/A	XL	L	M	S Tons/A	Tons/A	---% Total Yield---	
21	BHN 525	28.2	2256	20.1	57.9	22.0	5.5	45.7	26.2	6.8
22	BHN 678	19.7	1577	20.6	43.1	36.3	5.7	43.7	41.9	2.6
23	BHN 703	25.0	2004	22.3	43.0	34.6	3.7	49.6	41.9	11.6
24	SXT 6763	13.6	1089	8.8	29.3	61.9	8.1	36.7	41.0	3.0
25	SXT 6764	22.4	1795	22.2	45.3	32.5	7.3	47.4	37.2	13.0
26	SRT 6783	20.3	1626	25.0	48.2	26.8	3.2	33.5	29.8	10.7
27	SRT 6784	13.7	1095	13.3	39.3	47.5	7.1	38.9	46.6	7.0
28	STM 2203	12.8	1022	15.9	49.7	34.4	4.3	34.5	50.5	2.1
29	PX 2942	28.6	2285	24.1	48.5	27.3	3.8	49.3	34.2	6.8
<b>AVERAGE</b>		<b>20.5</b>	<b>1638.8</b>	<b>19.1</b>	<b>44.9</b>	<b>35.9</b>	<b>5.4</b>	<b>42.1</b>	<b>38.8</b>	<b>7.1</b>

See notes next page.

Table 11. Fresh market tomato variety trial yield and grade results, SAN JOAQUIN COUNTY, 2005.

OBSERVED Varieties

Code	Variety	Market Yield		XL --- %	L Marketable	M Yield ---	S Tons/A	Total Tons/A	Culls ---% Total Yield---	Red
		Tons/A	Boxes/A							
21	BHN 525	29.3	2344	59.6	35.1	5.3	8.9	46.9	18.6	5.6
22	BHN 678	24.4	1952	76.3	18.4	5.3	5.7	37.9	20.6	3.4
23	BHN 703	16.6	1328	46.2	47.3	6.5	11.0	36.6	24.6	4.0
24	SXT 6763	16.4	1312	53.8	36.4	9.8	10.4	33.8	20.7	1.0
25	SXT 6764	11.3	904	40.6	39.6	19.8	10.0	27.9	23.7	3.0
26	SRT 6783	20.0	1600	34.7	47.2	18.1	6.1	33.5	22.1	15.1
27	SRT 6784	22.4	1792	29.5	53.2	17.3	8.4	36.9	16.5	12.3
28	STM 2203	15.5	1240	43.0	28.5	28.5	5.9	26.2	18.3	2.0
29	PX 2942	22.9	1832	72.7	10.7	16.6	8.0	36.0	14.2	3.5
<b>AVERAGE</b>		19.9	1589.3	50.7	35.2	14.1	8.3	35.1	19.9	5.5

See notes next page.

Table 12. Fresh market tomato variety trial yield and grade results, COMBINED RESULTS, 2005.

OBSERVED Varieties

Code	Variety	Market Yield		XL --- %	L Marketable	M Yield ---	S Tons/A	Total Tons/A	Culls ---% Total Yield---	Red
		Tons/A	Boxes/A							
29	PX 2942	26.5	2120.0	33.4	45.5	21.0	5.9	39.9	20.1	4.1
21	BHN 525	25.8	2064.0	41.7	35.1	23.2	5.2	36.5	25.4	2.9
27	SRT 6784	24.7	1976.0	41.7	41.8	16.5	5.1	39.4	28.1	7.5
26	SRT 6783	23.2	1856.0	24.8	40.7	34.5	7.5	33.1	27.9	3.4
25	SXT 6764	22.6	1808.0	37.8	40.3	21.9	7.1	41.6	28.0	12.9
23	BHN 703	22.4	1792.0	38.0	43.6	18.4	3.9	35.3	23.4	15.2
22	BHN 678	21.2	1696.0	30.0	44.1	25.9	6.4	43.4	29.0	13.4
28	STM 2203	17.3	1384.0	34.2	40.0	25.8	4.2	32.9	33.2	6.6
24	SXT 6763	16.1	1288.0	51.3	31.7	16.9	4.5	44.4	28.9	6.4
<b>AVERAGE</b>		22.2	1776.0	37.0	40.3	22.7	5.5	38.5	27.1	8.0
<b>LSD 0.05</b>		NS	NS	NS	NS	NS	NS	NS	NS	8.3
<b>CV, %</b>		27.7	27.7	38.1	27.5	47.6	25.1	20.7	24.8	59.7

Market yield = XL + L + M size fruit, average of four replications. One box = 25 lbs.

XL, L, M% = weight of respective fruit sizes divided by marketable yield.

Red% = weight of all red fruit divided by total yield. Indicates relative maturity among tested varieties.

Culls, %: Any fruit so disfigured (due to rot, cat facing, insect damage, etc.) as to be unmarketable.

XL = 3 inches and larger in diameter

L = 2.5 to 3"

M = 2.25 to 2.5"

S = 2 to 2.25"

LSD 0.05 = least significant difference at the 95% probability level.

Means within the same column that differ by less than this amount are not significantly different.

Since observation plots were not replicated, this could only be performed on the combined results.

NS = not significant at the 95% probability level.

CV = coefficient of variation, a measure of the variability in the experiment.

**Table 13. Fresh market tomato fruit and vine characteristics. UC WSREC, 2005.**

**OBSERVED Varieties**

Code	Variety	Vine size	Vine cover	Fruit shape	Roughness	Blossom end	Sunburn	Zippers	Overall	Comments
21	BHN 525	MT	SC	G	VS	2	SL		F-P	very nice small little fruits; to small
22	BHN 678	T	SC	FG-G	MR	1-2	SL		F-P	too rough; some pointed ends; variable
23	BHN 703	T	F	G	vs	1	SL		G-VG	nice apple green color, uniform fruit
24	SXT 6763	M	SC	FG-G	MR	1-3	SL	S	P	ugly, too small, many pointed ends
25	SXT 6764	M	SC	G	VS	1-2	S		G-VG	huge yield, good uniformity
26	SRT 6783	T	SC	FG,var	R	1-3	SL	S	P	ugly, too small, many pointed ends
27	SRT 6784	T	M	G	S	2	S		F-P	misshapen fruit
28	STM 2203	M	F	FG,var	R	2-4	S	S	P	ugly; misshapen
29	PX 2942	MT	F	FG-DG	MR	2-5	SL		F-P	ugly, not uniform, many culls
4	Shady Lady	MT	SC	FG	MR	2-4	S		F-G	shoulder a little rough; ends a little big

**Vine size** VL=very large, L=large, M=med, S=small  
**Vine cover** C=compact, SC=semi-compact, F=floppy  
**Fruit shape** DG=deep globe, G=globe, FG= flat globe  
**Roughness** VS=very smooth, S=smooth, M=med, R=rough  
**Blossom end** 1=very tight, 5=very open  
**Sunburn** N=none, SL=slight, S=Some, M=Much  
**Zippers** N=none, SL=slight, S=Some, M=Much  
**Overall** VG=very good, G=good, F=Fair, P=poor

**Table 14. Fresh market tomato fruit and vine characteristics. Merced County, 2005.**

**OBSERVATIONAL varieties.**

Var #	Variety	Vine Size	Leaf cover	Leaf roll	Fruit shape	Roughness	Blossom end	Sunburn	Cat-facing	Zippers	disease resistance	Comments
21	BHN 525	L	G	N	G-DG	S	SL	SL	N	S	VFF T	fleck, zippers
22	BHN 678	M	G	SL	DG	S	T	N	N	S	VFF	
23	BHN 703	VL	OK	N	G-FG	M	T	SL	SL	S	VFFN T	splits, zippers
24	SXT 6763	L	G	SL	G	M	T	S	SL	S		fleck, zippers
25	SXT 6764	L	G	N	G	S	SL	SL	SL	S		fleck, pointy fruit
26	SRT 6783	L	G	SL	G	S	T	SL	N	SL		fleck, bl. end rot
27	SRT 6784	L	G	S	G-FG	S	T	SL	N	SL		fleck, bl. end rot
28	STM 2203	M	OK	N	DG	S	T	SL	SL	SL	VFFAS SW	pointy, fleck, poor color
29	PX 2942	VL	OK	N	DG	M	M	SL	N	N		bl end rot

**Vine Size:** M = medium ML = medium large L = large VL = very large  
**Leaf Cover:** P = poor OK = adequate G = good  
**Leaf Roll:** N = none SL = slight S = some  
**Fruit Shape:** DG = deep globe G = globe FG = flat globe  
**Shoulder roughness:** S = smooth M = medium MR = medium rough R = rough  
**Blossom End:** T = tight SL = slight scar M = medium size scar  
**Cat Facing:** N = none SL = slight S = some  
**Maturity:** - = earlier than T-21 0 = same as T-21 + = later than T-21  
**Sunburn:** N = none SL = slight S = some  
**Zippers:** N = none SL = slight S = some  
**Disease:** disease resistance provided by company  
 V = verticillium wilt  
 FF = Fusarium wilt race 1 and 2  
 N = nematodes  
 T = tobacco mosaic virus  
 Asc = Alternaria stem canker, St = Stemphyllian, Sw = Spotted Wilt, Ty = tomato yellow leaf curl virus

**Table 15. Fresh market tomato fruit and vine characteristics, San Joaquin County 2005.**  
**OBSERVATION varieties**

Var #	Variety	Maturity	Fruit Shape	Smoothness	Firmness	Fruit set	Stem-ability	Vine cover	Fruit size	Other notes
21	BHN 525	M-ML	FG-G	3.5	3.5	VG	2	G	L-XL	very good yield, good fruit size, stems hard
22	BHN 678	ML	FG-G	4	3.5	G	3	F	L-XL	good yield, large fruit, smooth, floppy vine
23	BHN 703	ML	FG-G	3.5	3	F	3	F	L-XL	only fair yield, floppy vine, some small fruit, smooth
24	SXT 6763	L	FG-G	4	3.5	F	2	P	L-XL	fair yld, some small fruit, stems hard, floppy vine
25	SXT 6764	ML	G	4	3.5	P	3	F	M-XL	small fruit, floppy vine, pointed fruit, sunburn
26	SRT 6783	E-M	FG-G	3.5	3.5	G	2	F	L-XL	floppy vine, stems hard, fair yield, fruit size
27	SRT 6784	M	G	4	3.5	G	2	F	L-XL	floppy vine, smooth fruit, stems hard, sunburn
28	STM 2203	L	FG-G	4	3	F	2	F	M-XL	fair yield, floppy vine, smooth fruit, stems hard
29	PX 2942	ML	G	4	3.5	G	2	G	L-XL	smooth fruit, stems hard, very large fruit

M = midseason maturity, ML = mid late maturity, L = late maturity  
 fruit shape: FG = flat globe, G = globe  
 Fruit Smoothness: 1 = bad, 5 = excellent  
 Fruit Firmness: 1 = soft, 5 = very firm  
 Stemability: 1 = hard stemming (many stems attached to fruit), 5 = stems easily  
 Fruit Size: S = small; M = medium, L=large

**Table 16. Fresh market tomato variety trial yield and grade results, UC WSREC, 2005.**  
**ROMA Varieties**

Variety	--- Market Yield --- T/A	Boxes/A	%L ----- of Marketable Yield -----	%M	%S	Total Yield T/A	Culls %	Reds %
Monica	30.5	2440.5	38.6	41.9	19.5	34.2	10.7	33.7
BHN C9008	30.3	2425.0	31.4	49.1	19.5	34.6	12.4	20.1
Muriel	21.4	1714.1	36.9	49.1	14.0	27.3	21.4	8.6
SVR 3684	34.3	2747.7	70.2	15.4	14.4	36.6	6.1	32.5
SVR 0739	18.0	1440.2	42.5	47.6	9.9	24.7	27.2	48.9
WS 4061	17.6	1404.7	20.1	37.5	42.4	20.8	15.7	35.9
WS 4062	25.0	1999.6	30.2	47.1	22.8	28.9	13.5	58.8
Average	25.3	2024.5	38.6	41.1	20.3	29.6	15.3	34.1

Observation plots only in Fresno.

See notes for Table 17.

**Table 17. Fresh market tomato variety trial yield and grade results, San Joaquin County 2005**

**ROMA Varieties**

Variety	--- Market Yield ---		%L	%M	%S	Total Yield	Culls	Reds
	T/A	Boxes/A	----- of Marketable Yield -----			T/A	%	%
BHN C9008	13.4	1068.0	18.4	32.2	49.5	21.4	10.5	7.2
Miroma	12.7	1016.0	16.5	35.0	48.5	23.2	9.4	9.7
RFT 8109	11.7	938.0	24.6	34.4	41.1	21.1	7.5	14.0
Muriel	11.2	896.0	8.9	36.5	54.7	20.8	8.5	9.5
WS 4062	10.3	822.0	0.0	18.8	81.2	20.3	18.5	14.8
WS 4061	10.2	818.0	11.2	38.4	50.4	20.0	7.6	6.1
Monica	8.9	714.0	13.1	29.2	57.7	16.7	10.0	6.5
AVERAGE	11.2	896.0	13.2	32.1	54.7	20.5	10.3	9.7
LSD 0.05	NS	NS	7.7	NS	19.5	NS	NS	NS
CV %	20.4	20.4	39.1	35.4	24.0	13.4	58.0	59.0

Market yield = L + M +S size fruit, average of four replications. One box = 25 lbs.

L, M, S% = weight of respective fruit sizes divided by marketable yield.

Red% = weight of all red fruit divided by total yield. Indicates relative maturity among tested varieties.

Culls, %: Any fruit so disfigured (due to rot, cat facing, insect damage, etc.) as to be unmarketable.

LSD 0.05 = least significant difference at the 95% probability level.

Means within the same column that differ by less than this amount are not significantly different.

NS = not significant at the 95% probability level.

CV = coefficient of variation, a measure of the variability in the experiment.

**Table 18. Fresh market tomato fruit and vine characteristics. UC WSREC, 2005.**

**ROMA Varieties**

Code	Variety	Vine size	Vine cover	Fruit shape
31	Monica	M	SC	Pear - blocky
32	BHN C9008	S	F	Var, blocky with pointed ends; some almost round
33	Muriel	L	SC	
34	SVR 3684	M	F	Pear - blocky
35	SVR 0739	S	F	Blocky - long
36	WS 4061	M	SC	Blocky - square
37	WS 4062	S	SC	Pear - long

**Table 19. Fresh market tomato fruit and vine characteristics. San Joaquin County, 2005.**

**ROMA Varieties**

Code	Variety	Maturity	Shape	Smoothness	Firmness	Fruit Set	stem ability	Vine Cover	Fruit Size	Other
31	Monica	M-ML	LP	4	3.5	poor to f	3	good	S	good vine cover, smooth, poor yield and fruit size, stemmy
32	BHN C9008	M-ML	P	4	3	fair to go	2.5	fair	S-M	flip-flop vine, lots of sunburn, pointed fruit, stems, small
33	Muriel	M	LP	4	3.5	good	4	fair+	S-M	nice smothth fruit, faily good vine cover, some small fruit
36	WS 4061	M-ML	SQ	3	2.5	fair	4	fair	S-M	fruit a bit soft, lots of small fruit, fair vine cover
37	WS 4062	E-M	LP	4	3.5	fair	4	fair	S	flip flop vine, good fruit smoothness, lots small fruit
38	Miroma	M	LP	4	4	fair to go	4.5	good	S-L	good vine cover, best in trial, stems easily, smooth and firm
39	RFT 8109	E-M	LP	4	3.5	fair to go	4	fair+	M	pretty good quality line, fairly good vine cover, smooth fruit

P = pear, LP = long pear, SQ = square/blocky

E = early maturity, EM = early to midseason, M = midseason, ML = mid-late

Fruit Smoothness: 1 = bad, 5 = excellent

Fruit Firmness: 1 = soft, 5 = very firm

Stemability: 1 = hard stemming (many stems attached to fruit), 5 = stems easily

Fruit Size: S = small; M = medium, L=large

Fresh Market Tomato Variety Trial 2005

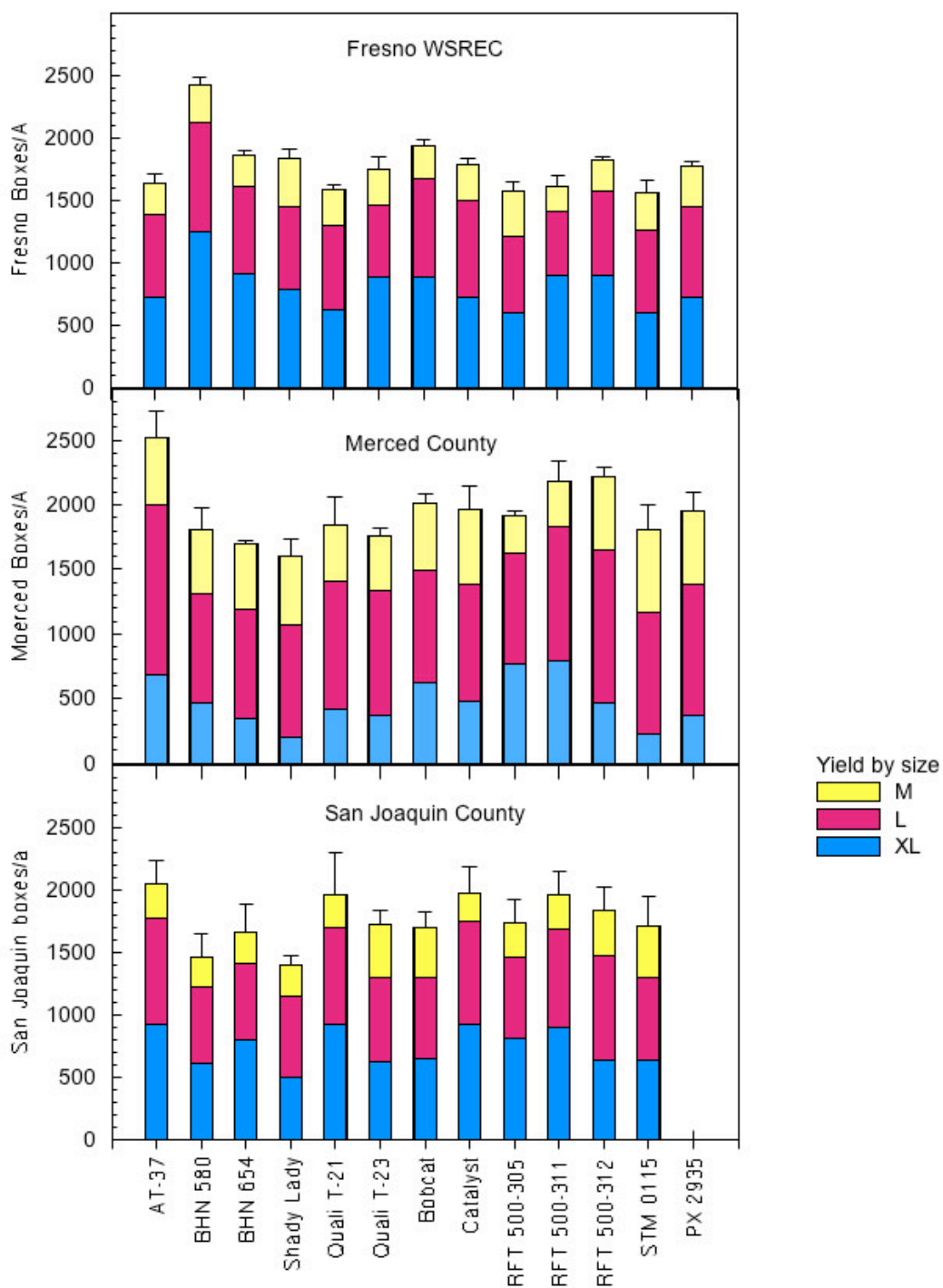


Figure 1. Yield by size class for all three locations in the fresh market tomato variety trial, 2005. Error bars are the standard error of the mean for each variety. The total height of the bar is the total market yield.

UCCE Fresh Market Tomato Variety Trial 2005

Combined Replicated Yield

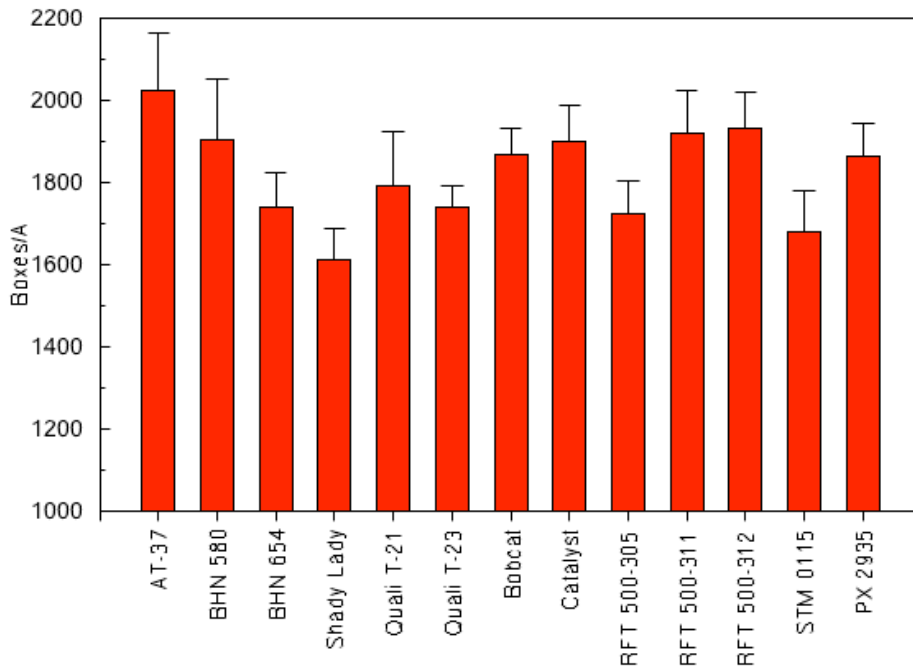


Figure 2. Total market yield with combined data from all three locations. Error bars represent one standard error of the mean. Varieties yields are not significantly different.

XL Fruit Size by County  
Replicated Trial

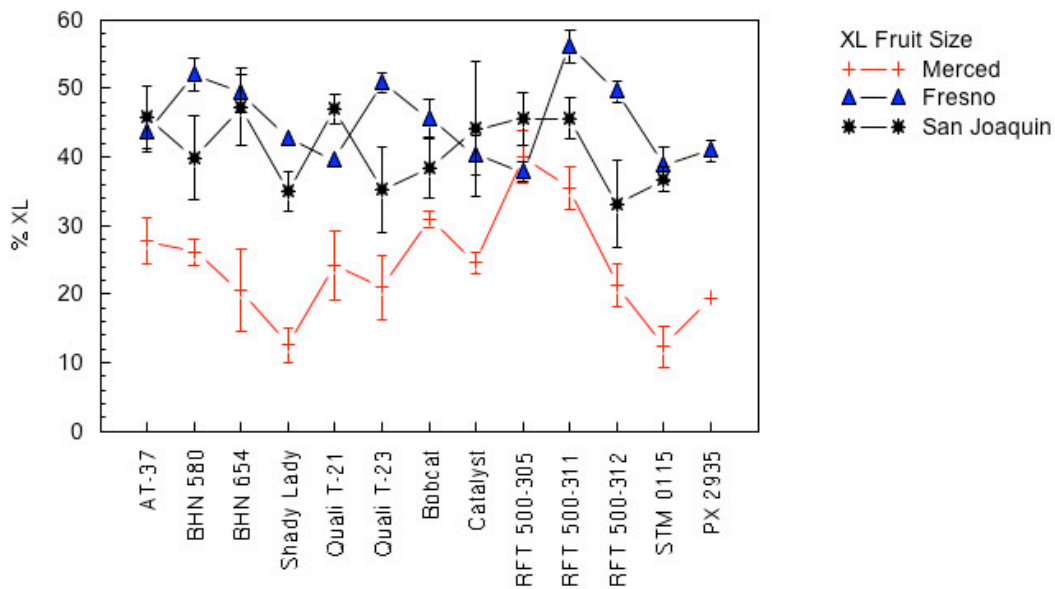


Figure 3. XL fruit size by county from the replicated trials. Merced had significantly less XL fruit than the other locations.

UCCE Fresh Market Tomato Variety Trial 2005  
 Combined Observation Yield

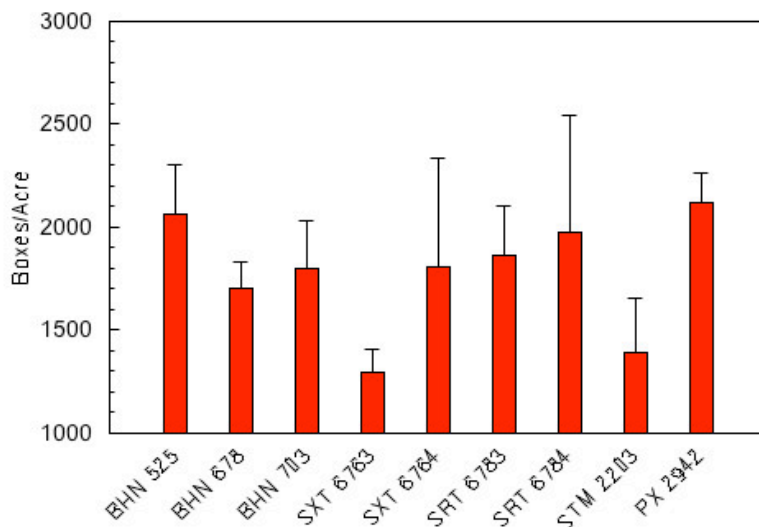


Figure 4. Total market yield results for the observation varieties, combined across location. Error bars represent one standard error of the mean. Variety yields are not significantly different.

XL Fruit Size by County  
 Observation Trial

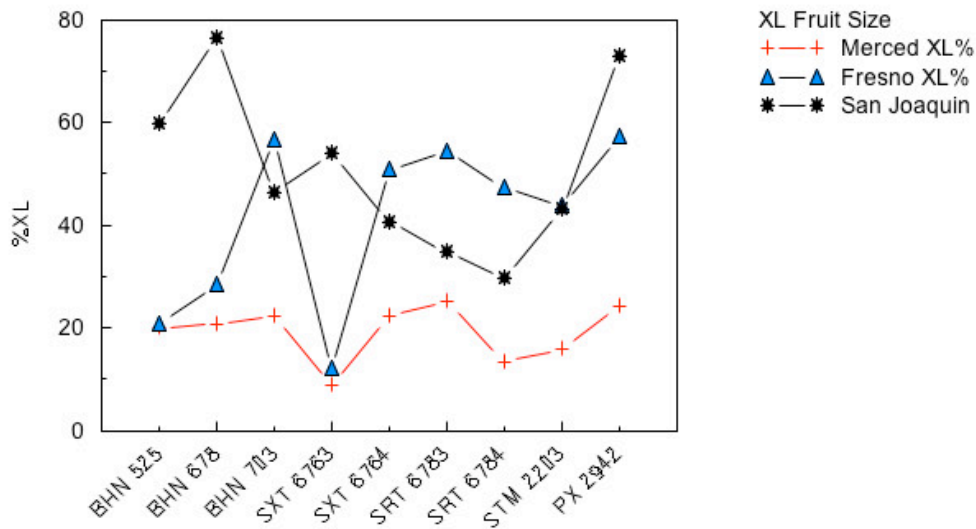


Figure 5. XL fruit size by county from the observation trials. Merced had significantly less XL fruit than the other locations (average 19 vs 45%).

Roma Variety Trial, San Joaquin Co. 2005

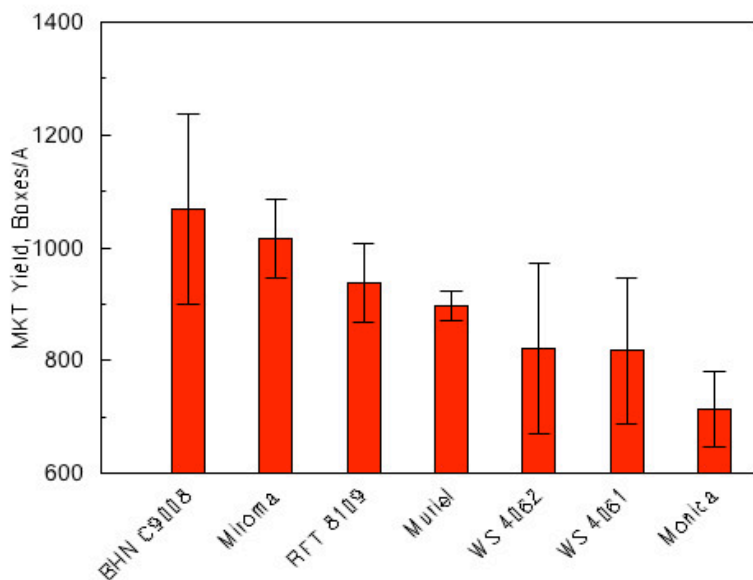


Figure 6. Market yield for the roma variety trial in San Joaquin County. Error bars are one standard error. Due to the large amount of variability, these are not significantly different.

Roma Size Breakdown

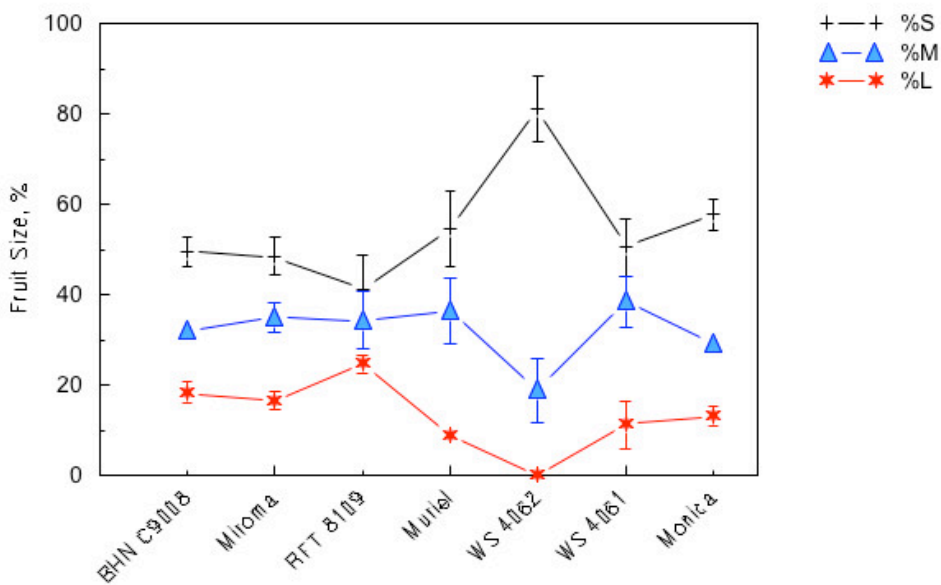


Figure 7. Fruit sizes by variety for the roma variety trial in San Joaquin County. Error bars are one standard error.