

# FRESH MARKET TOMATO



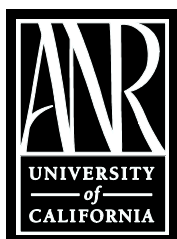
**2005**

## **Variety Trials In San Joaquin and Stanislaus Counties**

*Including Results From*

**THE STATEWIDE FRESH MARKET TOMATO  
COMBINED VARIETY TRIALS**

**University of California  
Cooperative Extension  
420 S. Wilson Way  
Stockton, CA 95205**



**2005**  
**SAN JOAQUIN AND STANISLAUS COUNTIES**  
**FRESH MARKET TOMATO VARIETY TRIALS**

Conducted by:

Bob Mullen, UCCE Farm Advisor Emeritus, San Joaquin County  
Dr. Jan Mickler, UCCE Farm Advisor, Stanislaus County  
and  
Benny Fouché, UCCE Farm Advisor, San Joaquin County

Contributing Authors:

Dr. Brenna Aegerter, UCCE Farm Advisor, San Joaquin County  
Marita Cantwell, Extension Postharvest Specialist, UC Davis  
Scott Whiteley, Extension Field and Laboratory Technician, UCCE San Joaquin County  
Don Colbert, Extension Field Research Assistant, UCCE San Joaquin County  
Randall Wittie, Extension Field Research Assistant, UCCE San Joaquin County  
Debra Boelk, Staff Research Associate II, UCCE San Joaquin County  
Juan Aguilar, GBM USA, LLC

The need to find fresh market tomato varieties with disease and nematode resistance, as well as improved horticultural characteristics (fruit size, firmness, color, smoothness, easy stemming or jointless stems, small blossom and stem scars, less fruit cracking and better flavor), along with yield potential, continues to be of great importance to fresh market tomato growers and shippers in both San Joaquin and Stanislaus Counties.

Contributing to this increased need is the fact that all of the suitable ground for tomatoes has been cropped to either fresh market or processing tomatoes at one time or another over the years and particularly over the past few seasons. Resistance of varieties to both Races 1 and 2 Fusarium wilt is very common. Virtually all lines have resistance to Race 1 of Verticillium wilt, but there is no known resistance to Verticillium wilt Race 2. Presence of the disease in local fresh market tomato fields is increasing. Potential loss of soil fumigation materials has caused seed breeders to develop nematode resistance in most of their newer lines. Many of the newer lines also possess tobacco mosaic, *Alternaria* and *Stemphylium* resistance, and a few have bacterial speck resistance. Additional concerns by growers and shippers relate to effective management of powdery mildew and Phytophthora late blight, particularly with anticipated and actual losses of fungicides due to recent and proposed legislation and voluntary withdrawal of some fungicides by chemical manufacturers, as well as current pathogen resistance to some existing fungicides. Possible loss of certain insecticides increased the need for varietal resistance efforts in this area. Insect resistance to insecticides is a continuing concern as well.

Another source of concern to growers is the nagging uncertainty of an adequate labor force to harvest the crop. Acreage in the San Joaquin-Stanislaus district has stabilized, after increasing dramatically over the past few years. Interest is high in developing varieties that will retain good horticultural and yield characteristics and yet lend themselves to hand picking and/or mechanical harvest. With this in mind, a number of varieties from private seed company breeding programs have been evaluated for both jointless or “arthritic” stem characteristics in recent years.

The bottom line in varietal development and acceptance revolves around having cultivars that yield and ship well enough to offset increased production costs, while providing the quality and flavor characteristics buyers and consumers demand.

## 2005 Variety Trials

During 2005, two fresh market tomato variety trials (one evaluating standard and promising new Round cultivars and the other looking at commercial “Roma-type” varieties) were cooperatively conducted in the northern San Joaquin Valley with Celli Bros. Farms (Robert and David Celli Jr.) and Triple “E” Produce (Tom Guido and Nate and Joe Esformes) near Thornton, California. Additional monetary support for running the trials was provided by the California Tomato Commission and its President, Ed Beckman, Chairman, Jeff Dolan and Research Coordinator, John Le Boeuf, as well as participating seed companies. Input from the field managers and shed owners of a number of fresh market tomato shippers in the San Joaquin Valley on selection of varieties for evaluation in the trials was most appreciated.

The trial of Round varieties contained twelve replicated lines with an additional nine cultivars in single replication observation plots. The “Roma-type” trial was comprised of seven replicated lines. Transplants for both trials were produced by Craven Transplants (Todd and Grant Craven) near Crows Landing, California. The field variety around both trials was Bobcat.

Both trials were transplanted on June 17, 2005, under mild, almost ideal, climatic conditions. The field was furrow irrigated and an application of water to the trial area of the field occurred about five days after transplanting. The soil type at the trial field was a Sacramento loam. Stand survival and plant growth in the two trials was excellent until early fruit set. Prolonged hot weather in July caused some blossom abortion, particularly in the “Roma” trial. Some crown set was also lost in the Round trial. The high temperatures of the summer (July and August) adversely affected eventual yield in both trials but especially so in the “Roma” trial. The “Roma” trial was hand harvested on September 9, 2005, with the Round trial handpicked two days later. Considering the hot growing conditions during the summer, yields in the Round trial were good but quite reduced in the “Roma” trial. The “Roma” trial had a lot of small immature green fruit due to a secondary set that occurred after the hot spells. Pest problems in the field were minimal with a little fruit worm damage, some Verticillium wilt in the back half of the trial area and a spotty infection of powdery mildew. Fruit samples were taken from every plot in both trials to get an accurate picture of both crop maturity and fruit size.

Complete data on yield and fruit size for the Replicated Round varieties are presented in **Table 1**. The best yield of marketable red and green fruit was achieved by AT37 at 25.55 tons/acre, followed by Catalyst (24.60 tons/acre), QualiT 21 (24.52 tons/acre), RFT 500-311 (24.50 tons/acre), RFT 500-312 (22.95 tons/acre) and RFT 500-305 (21.55 tons/acre). Fruit size was predominantly extra large and large for all of the 12 replicated varieties. Figures are also provided on non-market yield (small size fruit and culls), as well as percent red fruit at harvest.

In the single replication Observation Round variety block, the highest yield of marketable red and green fruit was produced by BHN 525 at 29.3 tons/acre, followed by BHN 678 (24.4 tons/acre), PX2942 (22.9 tons/acre), SRT 6784 (22.4 tons/acre) and SRT 6783 (20.0 tons/acre). As with the replicated trial, all observation varieties had predominantly extra large and large size fruit. **Table 2** provides complete yield and fruit sizing data, as well as non-market yield and percent red fruit at harvest, for Round lines in the observation block.

Fruit quality characteristics such as varietal maturity, fruit shape and size, fruit smoothness and firmness, fruit set, stemability of fruit, along with observations of vine cover and other field notes are provided in **Table 3A** for Replicated Round varieties and **Table 3B** for the Observation Round lines.

In the “Roma-type” fresh market tomato variety trial, consisting of seven replicated varieties, the best yield of marketable red and green fruit occurred with BHN C9008 at 13.35 tons/acre, followed by Miroma (12.70 tons/acre), RFT 8109 (11.73 tons/acre), and Muriel (11.18 tons/acre). Yields were low in this trial due to the very hot summer weather causing problems with fruit set (blossom abortion) and then a late split set producing a lot of small immature fruit. Yield, crop maturity and fruit sizing data are contained in **Table 4**. Fruit size was generally medium and small with RFT 8109 giving overall the best fruit size among the lines evaluated.

Observations on crop maturity, fruit shape and size, fruit smoothness and firmness, fruit set, stemability of fruit, along with notes on vine cover and other variety field comments are shown in **Table 5** for the replicated “Roma-type” cultivars in the trial.

From the standpoint of overall fruit quality, the leading Round replicated lines were RFT 500-305, STM 0115, RFT 500-311, RFT 500-312, Catalyst and QualiT 21, while the best observational Round varieties were BHN 678, PX 2942, SRT 6784 and BHN 525. Best overall fruit quality in the “Roma-type” replicated trial was shown by Miroma, RFT 8109, Muriel and WS 4062.

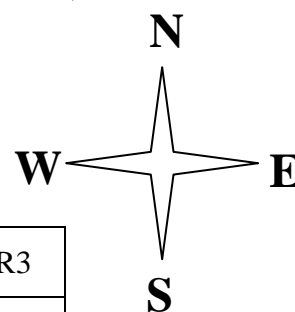
Following this report of the local fresh market tomato variety trials is the combined Statewide Fresh Market Tomato Variety Trial Report prepared by Scott Stoddard, Farm Advisor, Merced and Madera Counties. There is also a comprehensive report by Marita Cantwell, Extension Postharvest specialist at UC Davis, on postharvest evaluation of fruit from replicated lines and selected observation cultivars in the four variety trials (three round and one Roma) that were conducted this year by farm advisors in Tulare/Kings, Merced and San Joaquin/Stanislaus Counties. Factors such as fruit color, firmness, soluble solids (°Brix), titrateable acidity and fruit composition at the mature green and vine-ripe stage of maturity were evaluated.

### **MANY THANKS**

Many thanks to Robert and David Celli, Jr. (Celli Bros. Farms) and Tom Guido, Nate and Joe Esformes and Mike Guido (Triple “E” Produce Co.) for their participation and cooperation in the two variety trials conducted in 2005. Thanks also to Ed Beckman and John Le Boeuf and the other members of the California Tomato Commission Research Committees for their continued support of variety evaluation and pest management research. Thanks also to Marita Cantwell (UC Cooperative Extension Postharvest Specialist at UC Davis) and her crew for their continued and tireless help in postharvest evaluation of the fruit from many of the cultivars tested in the variety trials. Also, a special thanks to Scott Stoddard (Merced and Madera County UC Farm Advisor) for the outstanding Statewide Combined Variety Trial report he prepares. It takes a great deal of time to combine the data from the three Round variety trials conducted in 2005 in the San Joaquin Valley and to statistically analyze the results. Finally, thanks also to the participating seed companies for providing the basic materials for the trials as well as their continued financial support to the UC Farm Advisor Statewide Fresh Market Tomato Variety Evaluation project.

University of California Cooperative Extension  
 San Joaquin County & Stanislaus Counties Cooperating

Grower Cooperators: Celli Bros. Farms (Robert and David Celli)  
 Triple E Produce (Tom Guido)



**2005 Fresh Market Tomato Variety Trials**

Plot Plan:

	4	9	5	8	2	10						
	6	12	7	1	3	11	R7	R2	R1	R3		
	3	10	8	6	11	1	R6	R4	R5	R7		
	5	7	4	2	9	12	R5	R1	R3	R2	I	FV
	11	8	1	7	10	3	R4	R7	R2	R5	H	G
	2	5	6	12	4	9	R3	R6	R7	R4	E	F
	12	11	10	9	8	7	R2	R3	R6	R1	D	C
25 ft	1	2	3	4	5	6	R1	R5	R4	R6	A	B

↑ 61<sup>st</sup> bed from east edge of block

Replicated Round Varieties

1. AT 37
2. BHN 580
3. BHN 654
4. Shady Lady
5. QualiT 21
6. QualiT 23
7. Bobcat
8. Catalyst
9. RFT 500-305
10. RFT 500-311
11. RFT 500-312
12. STM 0115

Seed Co.

- American Takii
- BHN Seed
- BHN Seed
- Nunhems Seed
- Syngenta/Rogers
- Syngenta/Rogers
- Syngenta/Rogers
- Syngenta/Rogers
- Syngenta/Rogers
- Syngenta/Rogers
- Syngenta/Rogers
- Sakata Seed

“Roma” Replicated Lines

- R1. BHN-C9008
- R2. Monica
- R3. Muriel
- R4. WS 4061
- R5. WS 4062
- R6. Miroma
- R7. RPT 8109

Seed Co.

- BHN Seed
- Sakata Seed
- Sakata Seed
- Western Seed
- Western Seed
- Syngenta/Rogers
- Syngenta/Rogers

Observation Round Varieties

- A. BHN 525
- B. BHN 678
- C. BHN 703
- D. SXT 6763
- E. SXT 6764
- F. SRT 6783
- G. SRT 6784
- H. STM 2203
- I. PX 2942

Seed Co.

- BHN Seed
- BHN Seed
- BHN Seed
- Nunhems Seed
- Nunhems Seed
- Nunhems Seed
- Nunhems Seed
- Sakata Seed
- Seminis Seed

<u>Field Variety (FV):</u>	Bobcat
<u>Trial Transplanted:</u>	6/17/05
<u>Irrigation Method:</u>	Furrow
<u>Location:</u>	North of New Hope Road, and northeast of Thornton, California

**2005 Fresh Market Tomato Varieties  
Round Lines**

<b>Replicated</b>	<b>Observation</b>	<b>Seed Company</b>
BHN 580 BHN 654	BHN 525                      BHN 703 BHN 678	BHN Seed Company
STM 0115	STM 2203	Sakata Seed
Shady Lady	SXT 6763                      SXT 6764 SRT 6783                      SRT 6784	Sunseeds
	PX 2942	Seminis Seed Company
Bobcat                      QualiT 21 Catalyst                      QualiT 23 RFT 500 305      RFT 500 312 RFT 500 311		Syngenta Seed (Rogers Brand)
AT37		American Takii

**Table 1.**

2005 Fresh Market Tomato Variety Trial  
 Celli Bros Farms/Triple "E" Produce - Thornton, California  
 Replicated Round Varieties

Variety	Market Yield/Acre		% Market Yield <sup>1</sup>			Non Market Yield <sup>1</sup>		Total Yield <sup>1</sup>	% Red <sup>1</sup>
	Tons	Boxes	X-Large	Large	Medium	Small T/A	Culls T/A	T/A	
AT37	25.55	2,044	45.8	40.5	13.7	5.6	6.2	37.35	5.3
Catalyst	24.60	1,968	44.0	42.6	13.4	5.4	6.8	36.80	3.0
QualiT 21	24.52	1,962	47.0	39.5	13.5	6.4	6.8	37.72	2.5
RFT 500-311	24.50	1,960	45.6	41.3	13.1	4.8	6.0	35.30	3.4
RFT 500-312	22.95	1,836	33.1	46.0	20.9	4.8	6.0	33.75	4.4
RFT 500-305	21.55	1,724	45.6	38.5	15.9	5.2	4.1	31.85	3.5
QualiT 23	21.48	1,718	35.1	40.6	24.3	5.6	5.1	32.18	2.4
STM 0115	21.33	1,706	36.7	39.0	24.3	4.4	6.6	32.33	3.1
Bobcat	21.15	1,692	38.4	38.0	23.6	4.3	6.2	31.65	2.6
BHN 654	20.65	1,652	47.2	37.8	15.0	4.7	8.5	33.85	3.8
BHN 580	18.25	1,460	39.8	42.4	17.8	5.0	5.9	29.15	1.9
Shady Lady	17.45	1,396	34.9	46.9	18.2	6.4	4.6	28.45	2.6
Average:	22.00	1,760							
LSD @ 0.05:	4.52	362							
C.V. :	14.2%	14.2%							

<sup>1</sup> Average of four replications

**Table 2.**

2005 Fresh Market Tomato Variety Trial  
 Celli Bros. Farms/Triple "E" Produce - Thornton, California  
 Observation Round Varieties

Variety	Market Yield/Acre <sup>1</sup>		% Market Yield <sup>1</sup>			Non Market Yield <sup>1</sup>		Total Yield <sup>1</sup>	% Red <sup>1</sup>
	Tons	Boxes	X-Large	Large	Medium	Small T/A	Culls T/A	T/A	
BHN 525	29.3		59.6	35.1	5.3	8.9	8.7	46.9	5.6
BHN 678	24.4		76.3	18.4	5.3	5.7	7.8	37.9	3.4
PX 2942	22.9		72.7	10.7	16.6	8.0	5.1	36.0	3.5
SRT 6784	22.4		29.5	53.2	17.3	8.4	6.1	36.9	12.3
SRT 6783	20.0		34.7	47.2	18.1	6.1	7.4	33.5	15.1
BHN 703	16.6		46.2	47.3	6.5	11.0	9.0	36.6	4.0
SXT 6763	16.4		53.8	36.4	9.8	10.4	7.0	33.8	1.0
STM 2203	15.5		43.0	28.5	28.5	5.9	4.8	26.2	2.0
SXT 6764	11.3		40.6	39.6	19.8	10.0	6.6	27.9	3.0

<sup>1</sup> Average of only one replication

**Table 3A.**

2005 Fresh Market Tomato Variety Trials  
 Celli Bros. Farms/Triple "E" Produce - Thornton, California  
 Replicated Trial – Round Lines

Variety	Maturity <sup>1</sup>	Fruit <sup>2</sup> Shape	Fruit <sup>3</sup> Smoothness	Fruit <sup>4</sup> Firmness	Fruit Set	Stem- <sup>5</sup> ability	Vine Cover	Fruit <sup>6</sup> Size	Other Notes
AT37	M-ML	FR-G	3.5	3.5	Good	2.5	Fair	L-XL	Floppy vine, some sunburn, good yield
Catalyst	ML	FR-G	3.5	4.0	Good	2.5	Fair to Good	L-XL	Firm fruit, good yield
QualiT 21	ML	FR-G	3.5	3.5	Good	3.5	Fair	L-XL	Floppy vine, good yield, some smaller fruit
RFT 500-311	ML	FR-G	4.0	3.0	Good	3.5	Fair to Good	L-XL	Some rough fruit but otherwise quite smooth
RFT 500-312	ML	FR-G	4.0	3.5	Good	2.5	Fair	M-XL	Floppy vine, pretty smooth fruit, some smaller fruit
RFT 500-305	ML	FR-G	4.5	4.0	Good	3.5	Good	L-XL	Good vine cover, pretty smooth fruit, firm fruit
QualiT 23	ML	FR-G	4.0	4.0	Good	2.5	Fair	M-XL	Floppy vine, firm fruit, fairly smooth fruit
STM 0115	ML	FR-G	4.0	4.0	Good	3.5	Good	M-XL	Good vine cover, firm fruit, smooth fruit
Bobcat	ML	FR-G	3.5	3.5	Good	2.0	Fair	M-XL	Floppy vine, stem hard
BHN 654	ML	FR	3.0	3.5	Fair to Good	2.0	Good	L-XL	Good vine cover, stems hard, large vine, some rough fruit
BHN 580	L	FR	3.0	3.0	Fair	2.0	Fair	L-XL	Floppy vine, stems hard, some small fruit, fair yield
Shady Lady	ML	FR-G	3.5	3.0	Fair	2.0	Fair to Good	L-XL	Stems hard, some small fruit, only fair yield

<sup>1</sup> M = Midseason Maturity; E = Early Maturity; L = Late Maturity; EM = Early to Midseason Maturity; ML = Mid Late Maturity

<sup>2</sup> Fruit Shape: FR = Flat Round; G = Globe

<sup>3</sup> Fruit Smoothness: 1 = bad; 5 = excellent

<sup>4</sup> Fruit Firmness: 1 = soft; 5 = very firm

<sup>5</sup> Stemability: 1 = hard stemming (many stems attached to fruit); 5 = stems easily

<sup>6</sup> Fruit Size: M = Medium; ML = Medium Large; L = Large; XL = Extra Large

**Table 3B.**

2005 Fresh Market Tomato Variety Trials  
 Celli Bros. Farms/Triple "E" Produce - Thornton, California  
 Observation Trial – Round Lines

Variety	Maturity <sup>1</sup>	Fruit <sup>2</sup> Shape	Fruit <sup>3</sup> Smoothness	Fruit <sup>4</sup> Firmness	Fruit Set	Stem- <sup>5</sup> ability	Vine Cover	Fruit <sup>6</sup> Size	Other Notes
BHN 525	M-ML	FR-G	3.5	3.5	Very Good	2.0	Good	L-XL	Very good yield, very good fruit size, stems hard
BHN 678	ML	FR-G	4.0	3.5	Good	3.0	Fair	L-XL	Good yield and large fruit size, smooth fruit, floppy vine
PX 2942	ML	G	4.0	3.5	Good	2.0	Good	L-XL	Smooth fruit, stems hard, very large fruit
SRT 6784	M	G	4.0	3.5	Good	2.0	Fair	L-XL	Floppy vine, smooth fruit, stems hard
SRT 6783	E-M	FR-G	3.5	3.5	Good	2.0	Fair	L-XL	Floppy vine, stems hard, fairly good yield, some small fruit
BHN 703	ML	FR-G	3.5	3.0	Fair	3.0	Fair	L-XL	Only fair yield, floppy vine, some small fruit, smooth fruit
SXT 6763	L	FR-G	4.0	3.5	Fair	2.0	Poor	L-XL	Only fair yield, some small fruit, stems hard, floppy vine
STM 2203	L	FR-G	4.0	3.0	Fair	2.0	Fair	M-XL	Only fair yield, floppy vine, smooth fruit, stems hard
SXT 6764	ML	G	4.0	3.5	Poor	3.0	Fair	M-XL	Low yield, some small fruit, floppy vine, smooth fruit, deep globe shape fruit (some pointed ends), sunburn

<sup>1</sup> M = Midseason Maturity; E = Early Maturity; L = Late Maturity; EM = Early to Midseason Maturity; ML = Mid Late Maturity

<sup>2</sup> Fruit Shape: FR = Flat Round; G = Globe

<sup>3</sup> Fruit Smoothness: 1 = bad; 5 = excellent

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<sup>6</sup> Fruit Size: M = Medium; ML = Medium Large; L = Large; XL = Extra Large

**2005 Fresh Market Tomato Varieties  
“Roma” Lines**

<b>Replicated</b>	<b>Seed Company</b>
Monica Muriel	Sakata Seed
Miroma RFT 8109	Syngenta Seed (Rogers Brand)
BHN C9008	BHN Seed
WS 4061 WS 4062	Western Seed

**Table 4.**

2005 Fresh Market Tomato “Roma” Variety Trial  
 Celli Bros. Farms/Triple “E” Produce - Thornton, California  
 Replicated “Roma” Varieties

Variety	Market Yield/Acre <sup>1</sup>		% Market Yield <sup>1</sup>				Non Market Yield <sup>1</sup>		Total Yield <sup>1</sup>	% Red <sup>1</sup>
	Tons	Boxes	X-Large	Large	Medium	Small	Immature T/A	Culls T/A	T/A	
BHN C9008	13.35	1,068	4.2	14.2	32.1	49.5	5.8	2.3	21.45	7.2
Miroma	12.70	1,016	5.3	11.2	35.0	48.5	8.3	2.2	23.20	9.7
RFT 8109	11.73	938	3.3	21.3	34.3	41.1	7.9	1.5	21.13	14.0
Muriel	11.18	894	0.0	8.9	36.5	54.6	7.9	1.7	20.78	9.5
WS 4062	10.28	822	0.0	0.0	18.8	81.2	6.2	3.8	20.28	14.8
WS 4061	10.23	818	1.8	9.4	38.4	50.4	8.3	1.5	20.03	6.1
Monica	8.93	714	1.3	11.8	29.2	57.7	6.1	1.7	16.73	6.5
Average:	11.20	896	“Roma” Sizing Criteria:							
LSD @ 0.05:	3.40	272	Extra Large > 165 grams; Large 130 to 165 grams;							
C.V.:	20.4%	20.4%	Medium 90 to 130 grams; Small 50 to 90 grams							

<sup>1</sup> Average of four replications

2005 Fresh Market Tomato Variety Trials  
 Celli Bros. Farms/Triple "E" Produce; Thornton, California

**Table 5.** Replicated "Roma" Lines

Variety	Maturity <sup>1</sup>	Fruit Shape	Fruit <sup>2</sup> Smoothness	Fruit <sup>3</sup> Firmness	Fruit Set	Stem- <sup>4</sup> ability	Vine Cover	Fruit <sup>5</sup> Size	Other Notes
BHN C9008	M-ML	Square pear	4.0	3.0	Fair to Good	2.5	Fair	S-M	Flip flop vine, lot of sunburn, some pointed fruit, some stemmy fruit, some small fruit
Miroma	M	Semi-long pear	4.0	4.0	Fair to Good	4.5	Good	S-L	Good vine cover, best quality line in trial, stems easily, smooth and firm fruit, some small fruit
RFT 8109	E-M	Egg to cylindrical pear	4.0	3.5	Fair to Good	4.0	Fair to Good	M	Pretty good quality line, fairly good vine cover, smooth fruit
Muriel	M	Semi-long pear	4.0	3.5	Good	4.0	Fair to Good	S-M	Nice smooth fruit, fairly good vine cover, some small fruit
WS 4062	E-M	Semi-long pear	4.0	3.5	Fair	4.0	Fair	S	Flip flop vine, good fruit smoothness, lot of small fruit
WS 4061	M-ML	Blocky square-round	3.0	2.5	Fair	4.0	Fair	S-M	Fruit a bit soft, lot of small fruit, fair vine cover
Monica	M-ML	Semi-long pear	4.0	3.5	Poor to Fair	3.0	Very good	S	Very good vine cover, smooth fruit, poor yield and fruit size for this line, large vine, some stemmy fruit

<sup>1</sup> M = Midseason Maturity; E = Early Maturity; L = Late Maturity; EM = Early to Midseason Maturity; ML = Mid Late Maturity

<sup>2</sup> Fruit Smoothness: 1 = bad; 5 = excellent

<sup>3</sup> Fruit Firmness: 1 = soft; 5 = very firm

<sup>4</sup> Stemability: 1 = hard stemming (many stems attached to fruit); 5 = stems easily

<sup>5</sup> Fruit Size: S = Small; M = Medium; L = Large; XL = Extra Large

**2005 Statewide Fresh Market Tomato  
Combined Variety Trials Results**

# Statewide Fresh Market Tomato Variety Trials Field Evaluations for 2005

*Scott Stoddard, Michelle Le Strange, Bob Mullen (Emeritus) and Jan Mickler  
Farm Advisors, Merced & Madera, Tulare & Kings, San Joaquin, and Stanislaus Counties*  
**University of California Cooperative Extension**

## **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, fruits are sorted by culls, color, and size. Small fruits (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.

## **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 representatives 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 Le Strange</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>
<p><b>Replicated</b></p> <ol style="list-style-type: none"> <li>1 AT-37</li> <li>2 BHN 580</li> <li>3 BHN 654</li> <li>4 Shady Lady</li> <li>5 Quali T-21</li> <li>6 Quali T-23</li> <li>7 Bobcat</li> <li>8 Catalyst</li> <li>9 RFT 500-305</li> <li>10 RFT 500-311</li> <li>11 RFT 500-312</li> <li>12 STM 0115</li> <li>13 PX 2935</li> </ol>	<p><b>Replicated</b></p> <ol style="list-style-type: none"> <li>1 AT-37</li> <li>2 BHN 580</li> <li>3 BHN 654</li> <li>4 Shady Lady</li> <li>5 Quali T-21</li> <li>6 Quali T-23</li> <li>7 Bobcat</li> <li>8 Catalyst</li> <li>9 RFT 500-305</li> <li>10 RFT 500-311</li> <li>11 RFT 500-312</li> <li>12 STM 0115</li> <li>13 PX 2935</li> </ol>	<p><b>Replicated</b></p> <ol style="list-style-type: none"> <li>1 AT-37</li> <li>2 BHN 580</li> <li>3 BHN 654</li> <li>4 Shady Lady</li> <li>5 Quali T-21</li> <li>6 Quali T-23</li> <li>7 Bobcat</li> <li>8 Catalyst</li> <li>9 RFT 500-305</li> <li>10 RFT 500-311</li> <li>11 RFT 500-312</li> <li>12 STM 0115</li> </ol> <p><b>Company</b></p> <p>American Takii BHN Seed</p> <p>Nunhems Syngenta</p> <p>Syngenta</p> <p>Sakata Seed Seminis</p>
<p><b>Observation</b></p> <ol style="list-style-type: none"> <li>1 BHN 525</li> <li>2 BHN 678</li> <li>3 BHN 703</li> <li>4 SXT 6763</li> <li>5 SXT 6764</li> <li>6 SRT 6783</li> <li>7 SRT 6784</li> <li>8 STM 2203</li> <li>9 PX 2942</li> </ol>	<p><b>Observation</b></p> <ol style="list-style-type: none"> <li>1 BHN 525</li> <li>2 BHN 678</li> <li>3 BHN 703</li> <li>4 SXT 6763</li> <li>5 SXT 6764</li> <li>6 SRT 6783</li> <li>7 SRT 6784</li> <li>8 STM 2203</li> <li>9 PX 2942</li> </ol>	<p><b>Observation</b></p> <ol style="list-style-type: none"> <li>1 BHN 525</li> <li>2 BHN 678</li> <li>3 BHN 703</li> <li>4 SXT 6763</li> <li>5 SXT 6764</li> <li>6 SRT 6783</li> <li>7 SRT 6784</li> <li>8 STM 2203</li> <li>9 PX 2942</li> </ol> <p>BHN Seed</p> <p>Nunhems</p> <p>Nunhems</p> <p>Sakata Seminis</p>
<p><b>ROMA</b></p> <ol style="list-style-type: none"> <li>1. BHN C9008</li> <li>2. Monica</li> <li>3. Muriel</li> <li>4. SVR 3684</li> <li>5. SVR 0739</li> <li>6. WS 4061</li> <li>7. WS 4062</li> </ol>	<p>Seminis</p> <p>Seminis</p>	<p><b>ROMA</b></p> <ol style="list-style-type: none"> <li>1. BHN C9008</li> <li>2. Monica</li> <li>3. Muriel</li> <li>4. WS 4061</li> <li>5. WS 4062</li> <li>6. MiRoma</li> <li>7. RFT 8109</li> </ol> <p>BHN Seed</p> <p>Sakata</p> <p>Sakata</p> <p>Western Seed</p> <p>Western Seed</p> <p>Syngenta</p> <p>Syngenta</p>
<p>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</p>	<p>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)</p>	<p>Seeded May 10, 2005 Transplant: June 17, Celli Bros Farms, Thornton, CA Plot 60" x 25 ft 4 reps Furrow irrigated Field Day: Sept 9 Harvest: Sept 12</p>

For the Roma trial with Michelle Le Strange, all varieties but Monica were single replication observation plots. For the roma trial with Bob Mullen and 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	M	S	Total	Total Yield	
	Tons/A	Boxes/A						% Marketable Yield	Tons/A
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>
<b>LSD 0.05</b>	2.6	211	5.3	5.4	4.5	1.2	3.4	5.9	4.8
<b>CV %</b>	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	M	S	Total	Total Yield	
	Tons/A	Boxes/A						% Marketable Yield	Tons/A
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>
<b>LSD 0.05</b>	5.3	424	9.8	NS	11.9	2.9	NS	7.6	NS
<b>CV %</b>	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 Marketable	M Yield ---	S Tons/A	Total Tons/A	Total Yield	
	Tons/A	Boxes/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 --- % Marketable Yield ---	L	M	S	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	QualiT 21	L	SC	G	M	1-3	SL		F-G	could be more uniform
6	QualiT 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		XL	L	M	S	Total	Culls	Red
		Tons/A	Boxes/A	--- % Marketable	Yield	---	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		XL	L	M	S	Total	Culls	Red
		Tons/A	Boxes/A	--- % Marketable Yield ---			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>		20.5	1638.8	19.1	44.9	35.9	5.4	42.1	38.8	7.1

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	M	S	Total	Culls	Red
		Tons/A	Boxes/A	--- % Marketable Yield ---			Tons/A	Tons/A	---% Total Yield---	
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

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

Code	Variety	Market Yield		XL	L	M	S	Total	Culls	Red
		Tons/A	Boxes/A	--- % Marketable Yield ---			Tons/A	Tons/A	---% Total Yield---	
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 ---		%L of Marketable Yield	%M	%S	Total Yield	Culls %	Reds %
	T/A	Boxes/A				T/A		
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
<b>Average</b>	<b>25.3</b>	<b>2024.5</b>	<b>38.6</b>	<b>41.1</b>	<b>20.3</b>	<b>29.6</b>	<b>15.3</b>	<b>34.1</b>

Observation plots only in Fresno.

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

**ROMA Varieties**

Variety	--- Market Yield ---		%L ----- of Marketable Yield -----	%M	%S	Total Yield T/A	Culls %	Reds %
	T/A	Boxes/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

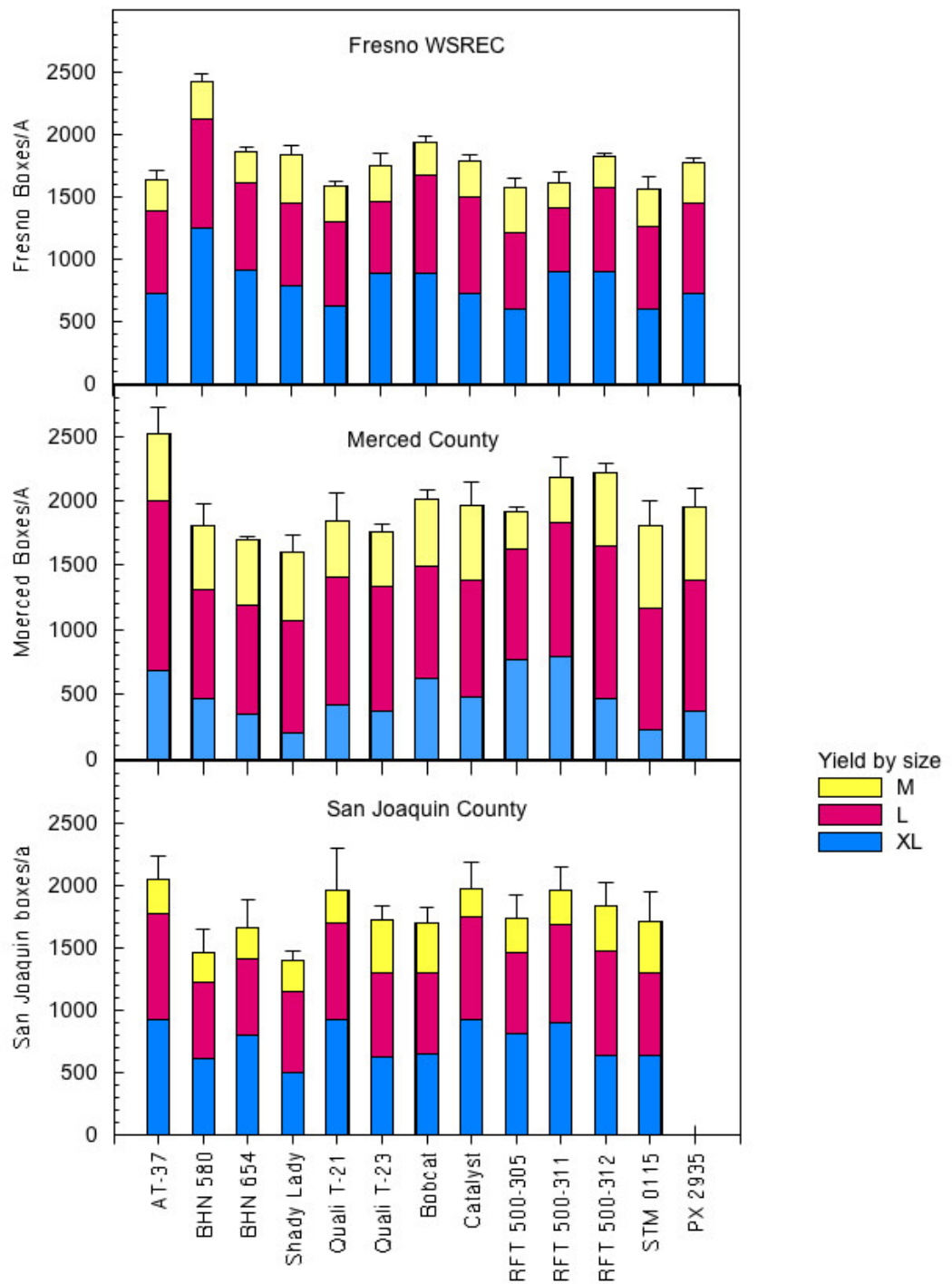
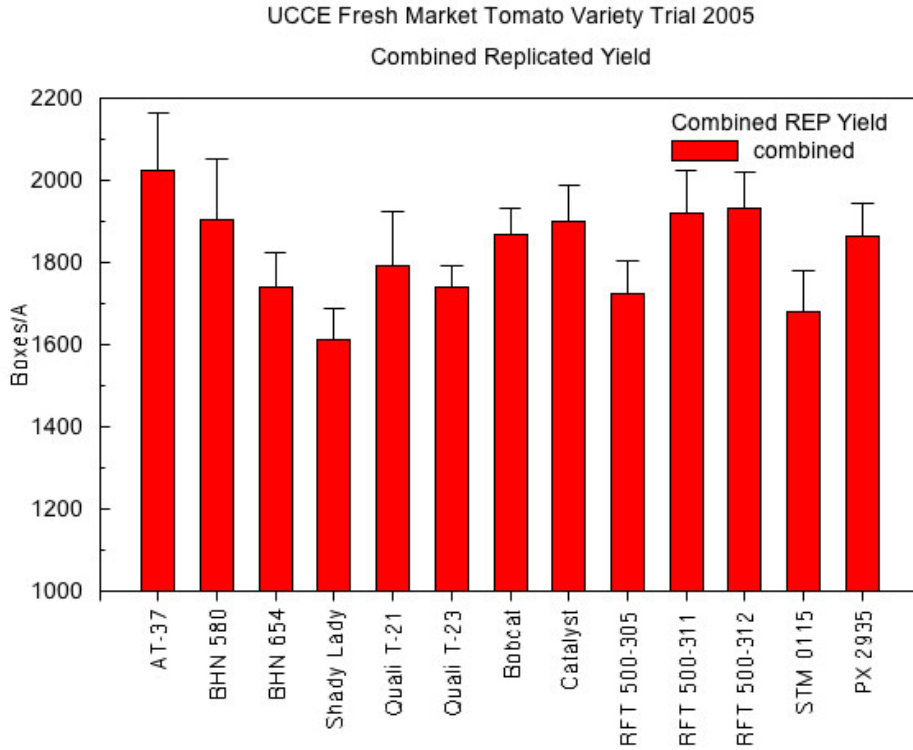
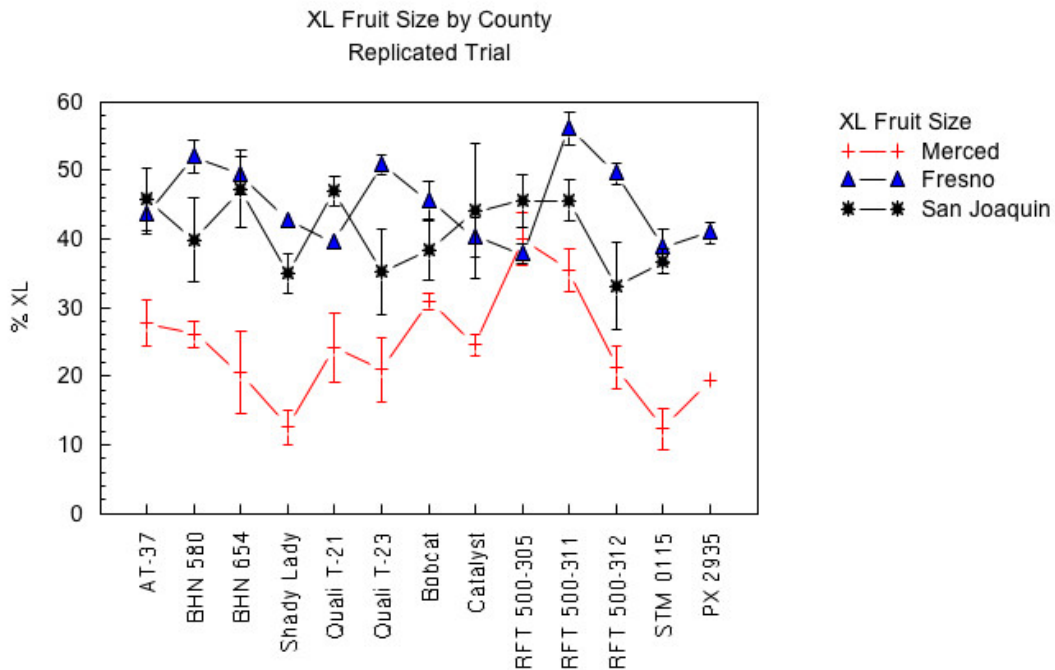


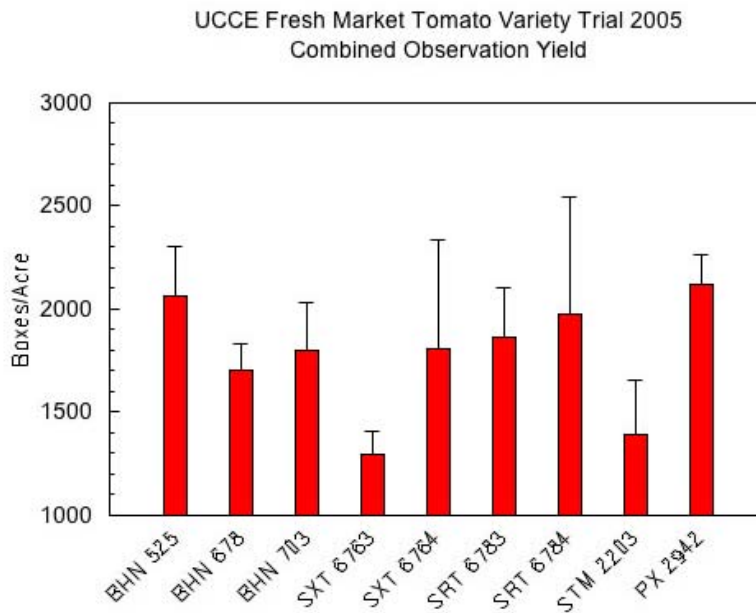
Figure 1. Yield by size class for all three locations in the fresh market tomato variety trial, 2005. Error bars are the standard error of the mean for each variety. The total height of the bar is the total market yield.



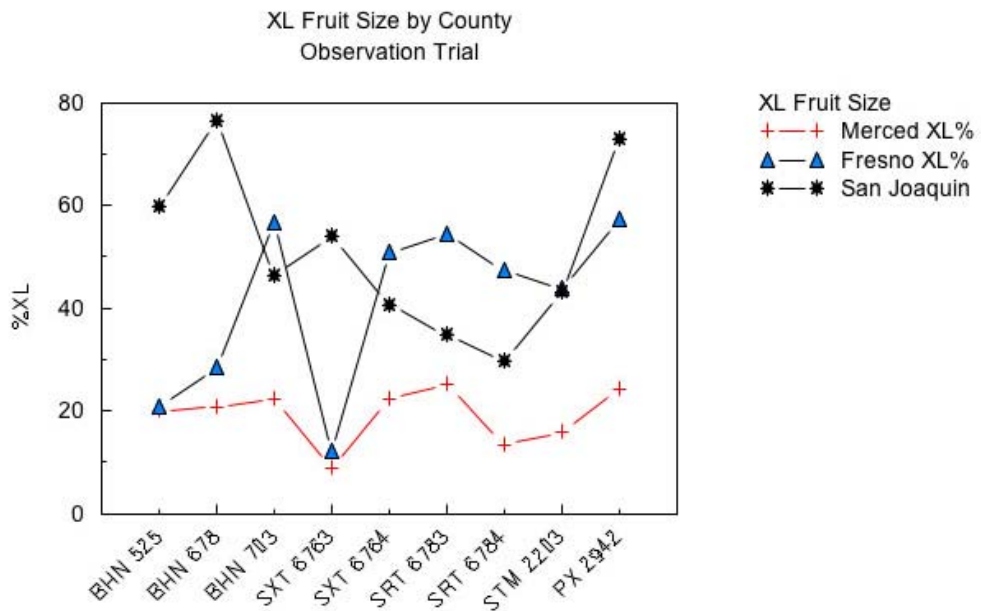
**Figure 2. Total market yield with combined data from all three locations. Error bars represent one standard error of the mean. Variety yields are not significantly different.**



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



**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.**



**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

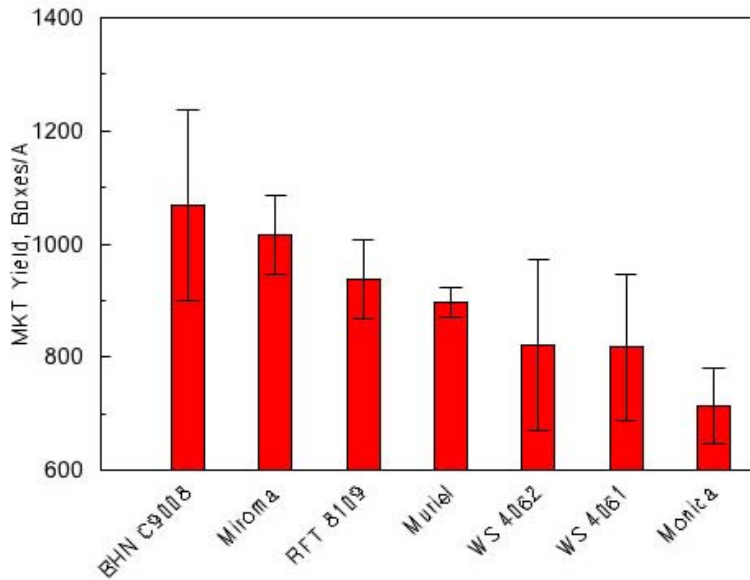


Figure 6. Market yield for the roma variety trial in San Joaquin County. Error bars are one standard error. Due to the large amount of variability, these are not significantly different.

Roma Size Breakdown

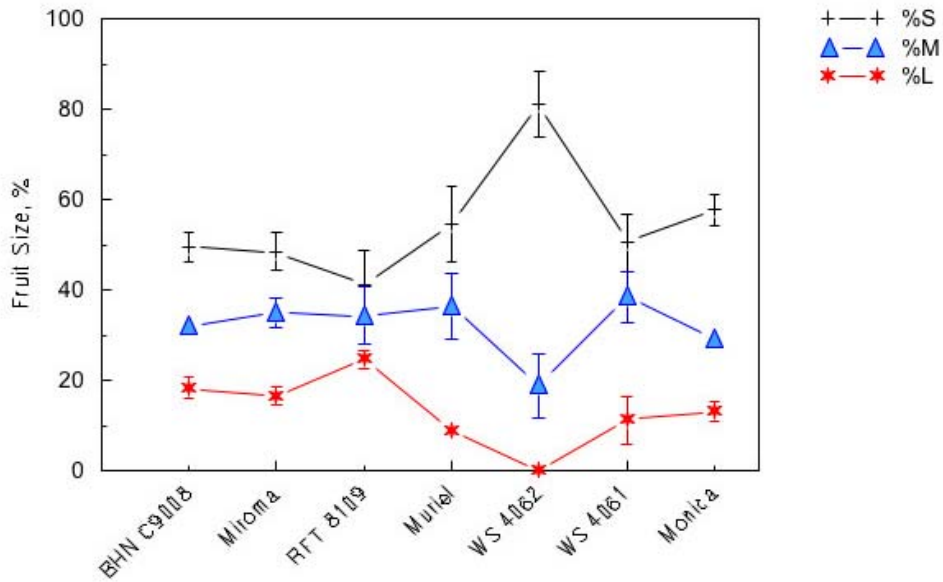


Figure 7. Fruit sizes by variety for the roma variety trial in San Joaquin County. Error bars are one standard error.

University of California Cooperative Extension of San Joaquin County  
420 South Wilson Way, Stockton, California 95205-6243 Telephone (209) 468-2085

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Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 1111 Franklin, 6<sup>th</sup> Floor, Oakland, CA 94607-5200, (510) 987-0096.

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