



Research Project Final Report

University of
California
Cooperative Extension

San Joaquin Valley Fresh Market Tomato Variety Trials: Field Evaluations 2007



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San Joaquin Valley Fresh Market Tomato Variety Trials Field Evaluations for 2007

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University of California Cooperative Extension

Summary

Fresh market tomato variety trials were conducted in Fresno, Merced, and San Joaquin Counties in 2007 to evaluate field performance. At each location, “round” and “roma” lines typical for the area markets (semi-determinant, “bush” types) were grown in replicated plots. New varieties were compared to the standards Shady Lady, Quali T-21, and Monica, and evaluated on marketable yield, size category, color, and cull percentage. Varieties performed differently depending on location/time of planting. The early and mid season trials in Fresno and Merced had excellent yields, while the late-planted trial in San Joaquin County had significantly reduced yield and quality of the harvested fruit. Averaged across locations, significant differences were found for marketable yield, fruit size, culls and red fruit in both the round and roma trials. Round lines with overall best marketable yield were PS2935, PS2942, and Valley Cat. All three Roma varieties yielded well, with best overall yields by PX4291. All three trials were shown at field days prior to harvest. In previous years these field trials were supported as a long-term project with the California Tomato Commission (CTC). Since there was no support by CTC in 2007, no post-harvest evaluations were made.

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 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.

Procedure

The trials were conducted by each farm advisor in a similar fashion so that the results could be compared with other locations. Plot size was one bed by 40 to 50 feet long, planted using commercial transplanters on 60 or 66” raised beds. Trials were laid out as randomized complete block designs with 4 replications. Plots were managed concurrently as the commercial field in which they were located. Harvest was done by hand near the same time as the rest of the field, picking from a 10 – 13 foot section from the center of the plot. At harvest, fruit are sorted by culls, color, and size. Statistical analysis is performed using analysis of variance procedures with means separation using Fisher’s protected LSD at the 95% confidence level.

In 2007, the trial included only replicated varieties in each location. Seed companies were asked to submit lines that have been previously tested in grower fields in California for this trial. Trial locations, varieties, and field information are shown in Table 1. The Fresno and San Joaquin trials were furrow irrigated; the Merced trial was drip irrigated. The Fresno, Merced, and San Joaquin trials were

transplanted April 30, May 21, and July 11 to reflect early, mid, and late season production fields, respectively.

Previously, postharvest samples from all the replicated varieties were collected by UC Davis Postharvest Specialist 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. This was not performed in 2007.

Results

Replicated Lines (round)

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. Significant yield differences were found at each location, with PS 2942 yielding the most in Fresno and San Joaquin, and PS 2942 and Valley Cat in Merced County. When the data for all three locations were combined, significant differences occurred for yield, size, culls, and amount of red fruit. However, because San Joaquin County yields were so much lower than the other locations, the variance for the combined data was very high for all varieties except PS2935, which was not at the San Joaquin County location (Figure 1). Thus, PS2935 had the highest overall yield in the combined analysis, but would not have achieved this ranking had it been in all three locations.

Extra large (XL) fruit were significantly higher percentage of the market yield in Fresno as compared to the other locations (Fig. 2). No variety had consistently smaller fruit at each location, but Shady Lady had the highest percentage of red fruit. Other location comparisons are shown in Table 5.

A significant variety by location LSD 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.

Roma Trials

Roma trials were conducted in all three locations in 2007. Individual county results are shown in Tables 9 – 11, and the combined analysis in Table 12. In general, yields were very good for all lines, though PX 4291 had significantly more marketable yield averaged across locations. Neither the Merced nor San Joaquin location had much XL fruit.

Fruit and vine characteristics for the roma lines are shown in Tables 13 – 15.

Acknowledgements

Many thanks to the following seed company representatives for their participation: Rod Jorgenson and Scott Kreighbaum, Syngenta/Rogers Seed; Carl Hill and Susan Peters, Nunhems; Doug Heath, Seminis; Mark Beoshanz, Harris Moran; and Jeff Zischke, Sakata Seeds. Additional thanks goes out to the cooperators (Live Oak Farms, Lagorio Farms, and West Side Research and Education Center support staff) who helped with these trials.

Table 1. 2007 UCCE Fresh Market Tomato Regional Variety Trials – San Joaquin Valley

Early Trial <i>Michelle LeStrange</i> 559-685-3309 x220 mlestrange@ucdavis.edu	Mid Season Trial <i>Scott Stoddard</i> 209-385-7403 csstoddard@ucdavis.edu	Late Season Trial Brenna Aegerter 209-468-9489 bjaegeter@ucdavis.edu
Replicated 1. PS 2935 Seminis 2. PS 2942 Seminis 3. BOBCAT Syngenta 4. Q-21 (STD) Syngenta 5. Q-23 Syngenta 6. SCOUT Syngenta 7. WOLVERINE Syngenta 8. HMX 5790 Harris Moran 9. Shady Lady STD Nunhems 10. First Blush Nunhems 11. ---- ---- 12. Valley Cat Syngenta 13. ---- ----	Replicated 1. PS 2935 Seminis 2. PS 2942 Seminis 3. BOBCAT Syngenta 4. Q-21 (STD) Syngenta 5. Q-23 Syngenta 6. SCOUT Syngenta 7. WOLVERINE Syngenta 8. HMX 5790 Harris Moran 9. Shady Lady STD Nunhems 10. First Blush Nunhems 11. NUN 7027 Nunhems 12. Valley Cat Syngenta 13. SRT 6784 Nunhems	Replicated 1. ---- ---- 2. PS 2942 Seminis 3. BOBCAT Syngenta 4. Q-21 (STD) Syngenta 5. Q-23 Syngenta 6. SCOUT Syngenta 7. WOLVERINE Syngenta 8. HMX 5790 Harris Moran 9. Shady Lady STD Nunhems 10. First Blush Nunhems 11. NUN 7027 Nunhems 12. Valley Cat Syngenta 13. SRT 6784 Nunhems
Observation 1. None in 2007	Observation None in 2007.	Observation None in 2007.
ROMA (Replicated) 1. Monica (Sakata) STD 2. HMX6858 (Harris Moran) 3. PX4291 (Seminiis) Seeded: 3/1/2007 Transplant: April 30, 2007 Plot: 66" x 50 ft rep 4 times Furrow irrigated Field Day: July 26, 2007 Harvest: Aug 2, 2007 Notes: WSREC, no #11 or #13 STD = Standard	ROMA (Replicated) 1. Monica (Sakata) STD 2. HMX6858 (Harris Moran) 3. PX4291 (Seminiis) Seeded: 3/14/2007 Transplant: May 21, 2007 Plot: 60" x 50 ft rep 4 times Drip irrigated Field Day: Aug 7, 2007 Harvest: Aug 8 – 9 Notes: Live Oak Farms	ROMA (Replicated) 1. Monica (Sakata) STD 2. HMX6858 (Harris Moran) 3. PX4291 (Seminiis) Seeded: 5/19/2007 Transplant: 7/11/2007 Plot: 60" x 50 ft rep 4 times Furrow irrigated Field Day: week prior to harvest Harvest: Oct 8, 2007 Notes: Lagorio Farms

SPECIAL THANKS TO:	Cooperating growers and greenhouses, and participating seed companies
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Table 2. Fresh market tomato (round) variety trial yield and grade results, Fresno County (WSREC) 2007. REPLICATED varieties.

Code	Variety	Market Yield		M --- %	L Marketable	XL Yield ---	S Tons/A	Total Tons/A	Total Yield		culls Tons/A
		Tons/A	Boxes/A						Culls %	Red %	
1	PS 2935	23.0	1842	16.1	41.7	42.1	3.1	40.0	35.3	21.5	13.9
2	PS 2942	27.4	2191	16.8	45.3	37.9	2.1	42.6	31.0	30.2	13.1
3	BOBCAT	21.0	1677	14.8	39.7	45.5	2.2	37.7	39.2	26.7	14.6
4	Q-21 (STD)	19.8	1583	16.6	37.3	46.0	2.6	38.3	41.7	11.3	16.0
5	Q-23	20.3	1625	16.9	45.7	37.5	3.1	39.3	40.7	37.5	15.9
6	SCOUT	25.3	2020	16.9	43.4	39.6	0.9	40.3	35.1	51.2	14.1
7	WOLVERINE	18.7	1495	16.7	40.9	42.4	2.0	37.7	45.0	24.0	17.0
8	HMX 5790	19.8	1586	23.7	41.0	35.3	4.2	34.8	31.1	29.2	10.7
9	Shady Lady STD	21.0	1678	16.0	41.7	42.3	2.7	41.8	43.3	52.6	18.1
10	First Blush	21.8	1746	24.5	42.4	33.1	2.2	39.0	38.1	31.4	15.0
11	NUN 7027 (missing at this location)										
12	Valley Cat	20.2	1620	12.0	39.2	48.8	0.8	43.3	51.5	11.8	22.2
13	SRT 6784 (missing at this location)										
	Average	21.7	1732.9	17.4	41.7	41.0	2.4	39.5	39.3	29.8	15.5
	LSD 0.05		280	5.1	NS	8.4	1.3	4.6	6.2	6.9	2.7
	CV %		11.2	20.4	10.5	14.1	38.3	8.0	10.9	16.1	12.0

Table 3. Fresh market tomato (round) variety trial yield and grade results, MERCED COUNTY (LeGrand), 2007. REPLICATED varieties.

Code	Variety	Market Yield		M --- %	L Marketable	XL Yield ---	S Tons/A	Total Tons/A	Total Yield		culls Tons/A
		Tons/A	Boxes/A						Culls %	Red %	
1	PS 2935	22.7	1816.1	29.6	43.1	27.3	6.8	53.5	38.9	1.6	21.3
2	PS 2942	29.6	2371.7	20.9	42.6	36.5	5.8	58.4	32.2	1.6	19.6
3	BOBCAT	17.4	1389.9	25.8	42.0	32.2	3.4	43.1	45.5	2.4	19.9
4	Q-21 (STD)	26.1	2087.5	21.7	38.5	39.9	5.3	46.4	27.3	0.4	12.6
5	Q-23	22.2	1772.6	19.5	50.8	29.7	4.7	43.3	30.9	2.5	13.5
6	SCOUT	21.7	1735.0	25.7	50.7	23.6	5.3	47.3	36.2	2.6	17.3
7	WOLVERINE	18.9	1512.9	21.7	48.0	30.3	2.6	41.0	41.8	2.8	16.8
8	HMX 5790	23.6	1890.5	28.7	54.8	16.6	7.2	44.5	25.7	0.3	11.6
9	Shady Lady STD	19.8	1586.9	38.2	47.1	14.8	6.4	51.1	40.7	3.9	21.6
10	First Blush	18.5	1476.7	48.6	34.7	16.6	6.6	45.1	37.8	2.6	17.3
11	NUN 7027	27.2	2178.0	27.4	45.3	27.3	5.5	54.1	33.0	2.3	17.8
12	Valley Cat	34.6	2764.4	17.4	54.9	27.7	3.5	55.8	25.4	1.1	14.2
13	SRT 6784	21.1	1689.5	35.2	49.7	15.1	6.6	45.3	28.0	4.8	15.1
	Average	23.3	1867	27.7	46.3	26.0	5.4	48.4	34.1	2.2	16.8
	LSD 0.05		5.0	7.3	5.7	6.3	2.2	9.5	8.4	NS	5.8
	CV %		14.8	18.3	8.5	17.1	29.2	13.7	17.2	92.4	24.1

See notes next page.

Table 4. Fresh market tomato variety trial yield and grade results, SAN JOAQUIN COUNTY (Tracy), 2007. REPLICATED varieties.

Code	Variety	Market Yield		M	L	XL	S	Total	Total Yield		culls
		Tons/A	Boxes/A						Culls %	Red %	
1	PS 2935 (missing at this location)										
2	PS 2942	9.6	771	33.2	42.8	24.0	4.5	17.1	17.7	1.2	3.0
3	BOBCAT	7.5	599	44.8	44.0	11.2	3.2	12.9	17.5	2.2	2.2
4	Q-21 (STD)	8.1	652	34.7	49.8	15.5	3.3	14.6	22.0	0.6	3.2
5	Q-23	8.1	652	26.5	62.1	11.4	2.7	14.6	26.3	10.8	3.8
6	SCOUT	7.8	627	42.2	45.9	11.9	4.3	15.0	18.4	1.9	2.9
7	WOLVERINE	8.1	651	39.7	37.1	23.2	4.7	15.2	15.7	1.6	2.4
8	HMX 5790	4.6	371	35.2	39.0	25.8	3.2	9.7	19.1	0.0	1.9
9	Shady Lady STD	7.2	579	46.9	39.9	13.2	5.4	15.3	17.8	9.0	2.8
10	First Blush	5.4	436	56.3	39.2	4.5	4.6	15.8	36.7	9.9	5.8
11	NUN 7027	6.7	537	46.9	46.6	6.5	3.5	15.7	32.5	4.4	5.5
12	Valley Cat	7.8	625	50.5	36.9	12.6	5.7	16.2	15.4	1.8	2.6
13	SRT 6784	6.2	496	61.0	33.5	5.5	3.4	16.3	36.1	14.2	6.6
	Average	7.3	583	43.2	43.1	13.8	4.0	14.9	22.9	4.8	3.6
	LSD 0.05	NS	NS	9.1	11.3	9.2	NS	NS	12.2	4.9	2.5
	CV %		26	14.6	18.3	46.3	34.1	22.3	36.9	71.2	48.5

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 (round) variety trial yield and grade results, COMBINED ANALYSIS, 2007. REPLICATED varieties.

VARIETY/ LOCATION	MKT t/a	MKT box	M	L	XL	S	TTL	Culls	Red	Cull
			%	%	%	t/a	t/a	%	%	t/a
PS 2935	22.9 a	1829.0 (1)	22.9 (12)	42.4 (8)	34.7 (1)	4.9 (2)	46.8 (1)	37.0 (2)	11.6 (5)	17.6 (1)
PS 2942	22.2 a	1778.1 (2)	23.7 (11)	43.6 (6)	32.8 (3)	4.1 (7)	39.4 (2)	27.0 (12)	11.0 (6)	11.9 (7)
Valley Cat	20.9 a	1669.7 (3)	26.7 (8)	43.7 (5)	29.7 (5)	3.4 (11)	38.4 (3)	30.7 (9)	4.9 (11)	13.0 (3)
SCOUT	18.3 b	1461.0 (4)	28.3 (7)	46.7 (2)	25.0 (9)	3.5 (9)	34.2 (6)	29.9 (11)	18.6 (2)	11.4 (9)
Q-21 (STD)	18.0 b	1440.5 (5)	24.3 (10)	41.9 (11)	33.8 (2)	3.8 (8)	33.1 (8)	30.3 (10)	4.1 (12)	10.6 (12)
NUN 7027	17.0 b c	1357.4 (6)	37.2 (3)	45.9 (3)	16.9 (12)	4.5 (5)	34.9 (5)	32.8 (6)	3.3 (13)	11.6 (8)
Q-23	16.9 b c	1349.7 (7)	21.0 (13)	52.9 (1)	26.2 (7)	3.5 (10)	32.4 (9)	32.6 (7)	16.9 (3)	11.1 (10)
HMX 5790	16.0 b c d	1282.5 (8)	29.2 (5)	44.9 (4)	25.9 (8)	4.9 (3)	29.7 (13)	25.3 (13)	9.9 (8)	8.1 (13)
Shady Lady STD	16.0 b c d	1281.3 (9)	33.7 (4)	42.9 (7)	23.4 (10)	4.8 (4)	36.1 (4)	33.9 (5)	21.8 (1)	14.2 (2)
BOBCAT	15.3 c d	1221.6 (10)	28.4 (6)	41.9 (10)	29.7 (6)	2.9 (13)	31.2 (11)	34.1 (4)	10.4 (7)	12.3 (5)
First Blush	15.2 c d	1219.5 (11)	43.2 (2)	38.8 (13)	18.1 (11)	4.5 (6)	33.3 (7)	37.6 (1)	14.7 (4)	12.7 (4)
WOLVERINE	15.2 c d	1219.4 (12)	26.0 (9)	42.0 (9)	31.9 (4)	3.1 (12)	31.3 (10)	34.2 (3)	9.5 (10)	12.1 (6)
SRT 6784	13.7 d	1092.8 (13)	48.1 (1)	41.6 (12)	10.3 (13)	5.0 (1)	30.8 (12)	32.0 (8)	9.5 (9)	10.9 (11)
FRESNO	21.7 B	1732.0	17.4	41.7	41.0	2.4	39.5	39.3	29.8	15.5
MERCED	23.3 A	1867.0	27.7	46.3	26.0	5.4	48.4	34.1	4.8	16.8
SAN JOAQUIN	7.3 C	583.0	43.2	43.1	14.0	4.0	14.9	22.9	2.2	3.6
Average	17.5	1400.2	30.2	43.8	26.0	4.1	34.7	32.1	11.2	12.1
VAR LSD @ 0.05 =		247.0	5.7	5.6	5.9	1.4	5.3	6.5	3.5	3.3
LOCATION LSD		105.0	2.4	2.4	2.5	0.6	2.3	2.8	1.5	1.4
C.V.=		17.8	19.2	12.9	22.5	34.3	15.4	20.6	30.8	27.5
VARIETY X LOCATION										
LSD @ 0.05 =	4.4	349.1	8.0	7.9	8.4	1.9	NS	9.2	5.0	4.6

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. WSREC, 2007.

Code Variety	Vine size	Vine cover	Fruit shape	Roughness	Blossom end	Stem scar	Zip-pers	Overall	Comments
1 PS 2935	L	G	FG-G	S	1-3	M-L	F	F-G	fruit is smooth & uniform, but shape is a little rough
2 PS 2942	VL	F-VG	FG-DG variable	S	1-2	S-M	F	G	variable shape; fairly smooth & uniform; nice blossom end
3 BOBCAT	ML	F-G	G-FG variable	M	1-3	M	S	G	not too bad, could be more uniform
4 Q-21 (Std)	L	F	G-FG rough	M	1-3	M-L	S	F-G	some pointed ends; could be smoother & more uniform
5 Q-23	L	F-G	G	M	2	M	S	F-G	a lot of big fruit; not uniform; good green color
6 SCOUT	ML	F-G	G	S	2-3	M	F	G	more uniform than the others
7 WOLVERINE	L	F-G	G poor	R	1-3	M-S	F	F-P	rough shape; not uniform; green color is too white
8 HMX 5790	VL	VG	G-DG	S-M	1-2-3	S-M	N	F	definitely later maturing than others; nice small-med green fruit; good color; uniform
9 Shady Lady (Std)	ML	F-G	FG-G	S	var	M	F	F	some sunburn; late harvest for this variety
10 First Blush	ML	F-VG	FG-G	S	1-3	M	N	F	green color not great; a lot of scarring on fruit; early variety; a lot of gold speckle
11 NUN 7027									---- Not at this location ----
12 Valley Cat	VL	G	G	S	var	M	N	G	big, globe shape fruit, smooth and uniform
13 SRT 6784									---- Not at this location ----

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
Stem scar S=small, M=medium, L=large
Zippers N=none, F=few, 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, 2007.
ROUND varieties.

Var #	Variety	Vine Size	Leaf cover	Fruit shape	Roughness	Blossom end	Sunburn	Cat-facing	Zip-pers	disease resistance	Comments
1	PS 2935	VL	G	G-FG	S	SL	SL	N	SL	VFFN Asc St TSWV Ty	some worm damage; nice fruit
2	PS 2942	VL	G	G	M	SL	SL	SL	N	VFF Asc St TSWV Ty	not as good as 1, vine too large, earlier
3	BOBCAT	ML	G	G	S	T	N	N	N	VFFSt	some leaf curl; nice fruit
4	Q-21 (STD)	VL	G	G-FG	M	T	N	SL	SL	VFFN TMV St	1 plant with virus, Vert.
5	Q-23	L	OK	G-DG	S	T	SL	SL	SL	VFF TMV St	slight fruit cracking
6	SCOUT	ML	G	G-FG	M	T	SL	SL	N	VFFSt	lots of fruit for vine size; some leaf curl
7	WOLVERINE	L	G	FG	M	MS	SL	S	SL	VFFSt	lg blossom end scar; some phytophthora
8	HMX 5790	VL	G	G	M	SL	N	SL	SL	VFFN TSWV	vine too big, fruit small, variable shape
9	Shady Lady STL	L	OK	FG	M	SL	S	S	SL	VFASt	many red, but fruit rough
10	First Blush	L	G	G	S	SL	SL	SL	SL	VFFNASTm	nice looking fruit; narrow leaves with curl
11	NUN 7027	L	OK	G-FG	M	T	SL	S	S	VFFNAST	variable fruit shape and quality
12	Valley Cat	VL	G	G-DG	M	T	SL	SL	N	VFFN St	nipples and shoulders
13	SRT 6784	L	OK	G	S	SL	S	N	SL	----	leaf curl, but nice set

See notes next page.

Table 8. Fresh market tomato fruit and vine characteristics. San Joaquin County, 2007.
ROUND varieties.

Var #	Variety	Vine size	Leaf cover	Fruit shape	Roughness	Blossom end	Sun-burn	Cat-facing	Zip-pers	comments
1	PS 2935									---- Not at this location ----
2	PS 2942	ML	OK	FG-G	S	T	N	SL	SL	attractive fruit, good cover
3	Bobcat	M	OK	FG-G	S-M	SL	N	SL	SL	some fruitworm; misshapen fruit
4	QualiT 21	L	G	FG-G	S	T	N	SL	SL	fruitworm, cracking, speckling
5	QualiT 23	M	OK	G	S	T	SL	N	N	small fruit; early; speckle
6	Scout	M	OK	G	S	T	SL	N	N	speckle, fruitworm
7	Wolverine	ML	OK	G	S-M	T	N	SL	N	striping, speckle, some rough-shouldered fruit, some stems stuck on fruit
8	HMX 5790	L	G	FG-G	S	T	N	N	N	fruit worm; no reds
9	Shady Lady	M	P to OK	FG-G	M	SL	N	N	N	sm vine, early, stripes, growth cracks
10	First Blush	M	P to OK	G	S	T	SL	N	N	sm vine, early, growth cracks
11	NUN 7027	ML	OK to G	DG-G	S	T	N	N	N	some fruit cracking and speckle
12	Valley Cat	L	G	FG-G	S	T	N	SL	SL	lg sprawling vine, fruitworm damage, some stems stuck to fruit
13	SRT 6784	M	P to OK	G	M	T	N	SL	SL	early, fruitworm damage, some cracking

Vine Size: M = medium
 L = large
 VL = very large

Leaf Cover: P = poor
 G = good

Leaf Roll: N = none
 S = some

Fruit Shape: DG = deep globe
 FG = flat globe

Shoulder roughness: S = smooth
 M = medium
 MR = medium rough
 R = rough

Blossom End: T = tight
 M = medium size scar

Sunburn: N = none
 S = some

Cat Facing: N = none
 S = some

Zippers: N = none
 S = some

Disease: disease resistance provided by company

V = verticillium wilt

FF = Fusarium wilt race 1 and 2

N = nematodes

T, Tm, TMV = tobacco mosaic virus

Asc = Alternaria stem canker, St = Stemphyllian, TSWV = Spotted Wilt, Ty = tomato yellow leaf curl virus

Table 9. Fresh market tomato ROMA variety trial yield and grade results, FRESNO COUNTY (WSREC), 2007. REPLICATED varieties

Code	Variety	Market Yield		S ---	M %	L %	XL %	S Tons/A	Total Tons/A	Total Yield		culls Tons/A
		Tons/A	Boxes/A							Culls %	Red %	
R1	Monica	38.5	3079.5	18.0	45.7	24.1	12.1	6.9	47.9	19.3	33.6	9.4
R2	HMX6858	36.8	2947.5	12.2	50.7	24.7	12.3	4.5	46.0	19.6	52.1	11.2
R3	PX4291	49.5	3962.3	10.5	35.9	35.6	17.9	5.2	65.5	24.1	35.5	16.0
	Average	41.6	3329.8	13.6	44.1	28.1	14.1	5.6	53.1	21.0	40.4	12.2
	LSD 0.05		600.0	2.2	8.4	6.1	3.0	0.8	6.8	NS	7.1	3.1
	CV %		10.4	9.4	11.0	12.5	12.3	7.9	7.4	20.1	10.2	15.8

Table 10. Fresh market tomato ROMA trial yield and grade results, MERCED COUNTY (LeGrand) , 2007. REPLICATED varieties

Code	Variety	Market Yield		S ---	M %	L %	XL %	S Tons/A	Total Tons/A	Total Yield		culls Tons/A
		Tons/A	Boxes/A							Culls %	Red %	
R1	Monica	31.5	2517.8	15.9	50.5	28.7	4.9	5.0	41.2	21.2	2.2	9.5
R2	HMX6858	27.2	2174.6	17.0	53.1	28.3	1.6	4.5	43.3	34.2	3.0	17.3
R3	PX4291	33.2	2655.1	14.4	46.6	33.6	5.4	4.7	46.8	26.8	1.6	13.9
	Average	30.6	2449.2	15.7	50.1	30.2	4.0	4.7	43.8	27.4	2.3	13.6
	LSD 0.05		324.0	NS	NS	4.1	NS	NS	NS	6.5	NS	4.7
	CV %		7.6	27.6	10.5	7.8	67.8	24.1	10.1	13.6	37.9	20.9

Table 11. Fresh market tomato ROMA trial yield and grade results, SAN JOAQUIN COUNTY (Tracy), 2007. REPLICATED varieties

Code	Variety	Market Yield		S ---	M %	L %	XL %	S Tons/A	Total Tons/A	Total Yield		culls Tons/A
		Tons/A	Boxes/A							Culls %	Red %	
R1	Monica	7.3	586.4	63.6	26.9	6.2	3.3	4.6	9.0	18.4	11.3	1.7
R2	HMX6858	7.7	619.2	71.8	26.5	1.7	0.0	5.5	9.6	19.7	12.8	1.9
R3	PX4291	9.8	781.6	54.9	35.8	6.2	3.2	5.4	11.6	15.9	5.0	1.8
	Average	8.3	662.4	63.4	29.7	4.7	2.2	5.2	10.1	18.0	9.7	1.8
	LSD 0.05		123.6	NS	NS	3.9	---	NS	1.9	NS	NS	NS
	CV %		10.7	11.9	20.9	47.5		12.7	11.1	29	72	31.8

Market yield = XL + L + M + S 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 = > 165 g

L = 130 - 165 g

M = 90 - 130 g

S = 50 - 90 g

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 12. Fresh market tomato ROMA variety trial yield and grade results, COMBINED ANALYSIS, 2007. REPLICATED varieties.

VARIETY/ LOCATION	MKT t/a	MKT box	S %	M %	L %	XL %	S t/a	TTL t/a	Culls %	Red %	Cull t/a
PX4291	30.8 a	2466	26.6	39.5	25.2	8.8	5.1	41.3	22.3	14.1	10.5
Monica	25.8 b	2061	32.5	41.0	19.7	6.8	5.5	32.7	19.6	15.7	6.8
HMX6858	23.9 b	1914	33.7	43.4	18.2	4.7	4.9	33.0	24.5	22.7	8.9
FRESNO	41.63	3330	13.6	44.1	28.1	14.1	5.6	53.1	21.0	40.4	11.5
MERCED	30.61	2449	15.8	50.1	30.2	4.0	4.7	43.4	27.4	2.3	12.9
SAN JOAQUIN	8.288	663	63.4	29.7	4.7	2.2	5.2	10.1	18.0	9.7	1.8
Average	26.84	2147	30.9	41.3	21.0	6.7	5.1	35.6	22.1	17.5	8.7
VAR LSD @ 0.05 =		202	4.4	NS	3.2	1.5	NS	4.2	NS	3.9	2.6
LOCATION LSD		202	4.4	4.4	3.2	1.5	NS	4.2	4.4	3.9	2.6
C.V.=		11.1	17.0	12.7	18.1	27.2	22.0	14.1	23.7	26.7	35.2
VARIETY X LOCATION LSD @ 0.05 =		350	7.7	7.7	NS	2.7	NS	7.4	NS	6.8	4.5

Market yield = XL + L + M + S 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 = > 165 g

L = 130 - 165 g

M = 90 - 130 g

S = 50 - 90 g

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.

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

Table 13. Fresh market tomato fruit and vine characteristics. WSREC, 2007

ROMA Varieties

Code	Variety	Vine size	Vine cover	Fruit shape	Fruit size	Roughness	Blossom End	Sun-burn	Zippers	Overall	Comments
21	Monica (STD)	L	F	blocky-round	large	M	1	SL	SL	G	vine is a little rank and open; some irregular fruit shape
22	HMX 6858	M	G	blocky-round	larger	VS	1	N	SL	G-VG	nice looking fruit; uniform & smooth
23	PX 4291	ML	VG	blocky-round	largest	S	1	N	SL	G-VG	vine looks great; big vine, but sits well on bed; some pointed ends; huge red fruit.

Vine size VL=very large, L=large, M=med, S=small
Vine cover VG=very good, G=good, F=fair, P=poor
Fruit shape Blocky-round; Blocky-square; Pear
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, 2007.

ROMA varieties.

Var #	Variety	Vine Size	Leaf cover	Fruit shape	Roughness	Blossom end	Sun-burn	Cat-facing	Zip-pers	disease resistance	Comments
R1	Monica (STD)	VL	G	blocky	S	T	N	N	S		lg blocking fruit
R2	HMX6858	L	OK	Long	S	T	S	N	S	VFFFP TSWV Tn	lots of zippers, sunburn
R3	PX4291	VL	G	blky pear	S	T	N	N	SL	VFF Asc TSWV Ty	blocky_pear shape

See notes next page.

Table 15. Fresh market tomato fruit and vine characteristics. San Joaquin County, 2007. ROMA varieties.

Var #	Variety	Vine Size	Leaf cover	Fruit shape	Roughness	Blossom end	Sunburn	Cat-facing	Zip-pers	disease	Comments
R1	Monica (STD)	ML	G	blocky	S	T	N	N	SL	powdery mildew	mostly small, mostly green.
R2	HMX6858	M	G	pointy pear	S	T	N	N	SL	powdery mildew	mostly small fruit
R3	PX4291	M	G	blkly pear	S	T	N	N	SL	powdery mildew	rough fruit, variable size, fruitworm

Vine Size: M = medium
 Leaf Cover: P = poor
 Leaf Roll: N = none
 Fruit Shape: DG = deep globe
 Shoulder roughness: S = smooth
 Blossom End: T = tight
 Sunburn: N = none
 Cat Facing: N = none
 Zippers: N = none

Disease: disease resistance provided by company

V = verticillium wilt
 FF = Fusarium wilt race 1 and 2
 N = nematodes
 T, Tm = tobacco mosaic virus
 Asc = Alternaria stem canker, St = Stemphyllian, TSWV = Spotted Wilt, Ty = tomato yellow leaf curl virus

ML = medium large
 OK = adequate
 SL = slight
 G = globe
 M = medium
 SL = slight scar
 SL = slight
 SL = slight
 SL = slight

L = large
 G = good
 S = some
 FG = flat globe
 MR = medium rough
 M = medium size scar
 S = some
 S = some
 S = some

VL = very large

R = rough

San Joaquin Valley Fresh Market Tomato Variety Trials
 County by variety yield 2007

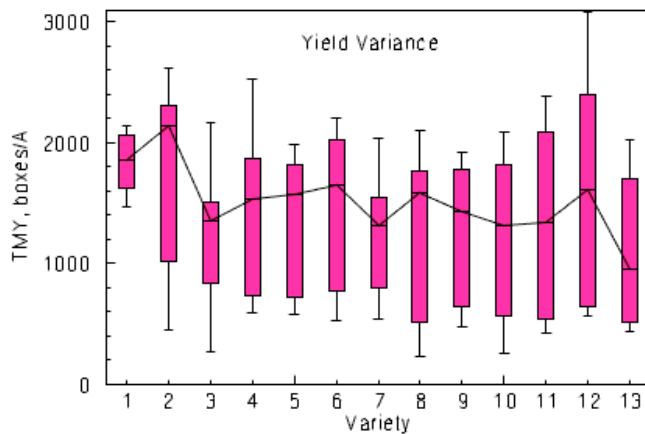
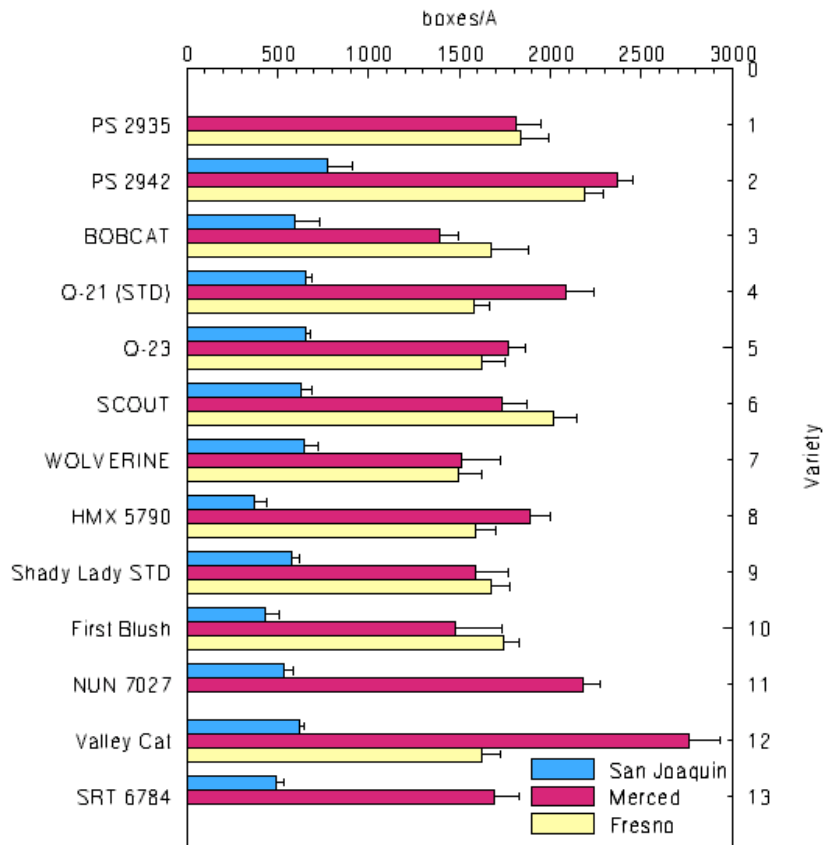


Figure 1. County by variety total marketable yield (TMY) and the box-and-whisker graph showing the variance of the average yield for all the round varieties in the 2007 trial.

Fresh Market Tomato Variety Trial 2007

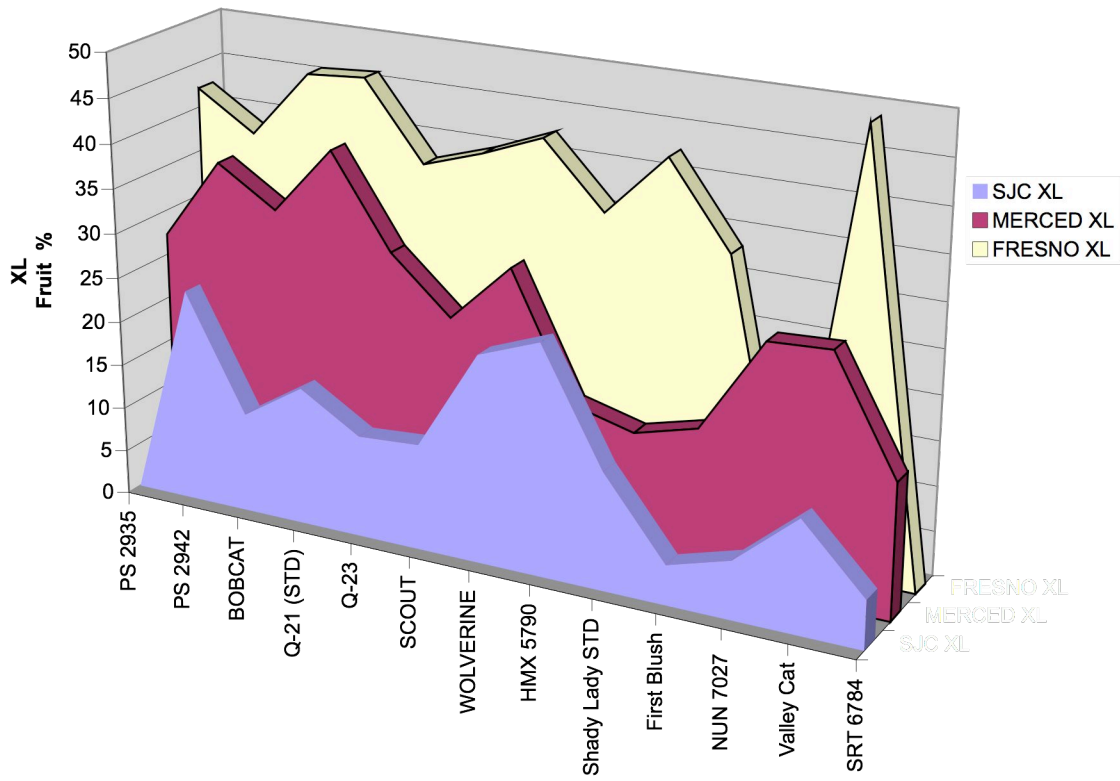


Figure 2. Extra large (XL) fruit size, as a percentage of marketable yield, for each variety and location for the round varieties in the fresh market tomato variety trial in 2007. Significant differences were observed between counties.