

2000
SAN JOAQUIN AND STANISLAUS COUNTIES
FRESH MARKET TOMATO VARIETY AND DISEASE CONTROL TRIALS

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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 has been limited but 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 *Stemphyllim* 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, 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 increased 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.

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.

2000 Variety Trials

In 2000, two fresh market tomato variety trials, one with standard Round lines and the other with “Roma-type” cultivars were cooperatively conducted in the northern San Joaquin Valley with Lagorio Farms (Dean and Kathy Janssen, George Biagi), and Ace Tomato Company (Dean Janssen, Jeff Rurup) near French Camp, California. Additional support for conducting the trials was provided by the California Tomato Commission and its President, Ed Beckman. Input from the field managers of a number of fresh market shippers in the San Joaquin Valley on selection of varieties evaluated in the trials was most appreciated.

The trial of Round varieties contained 10 replicated lines with an additional 21 cultivars in single replication observation plots. The “Roma-type” trial contained six replicated varieties with another fourteen lines in observation. Transplants for both trials were produced by Craven Transplants (Brad Bonnett) near Crows Landing, California. The field variety at the trial site was Shady Lady in three quarters of the field while the remaining portion of the field had Monica, a “Roma Type” line.

The trials were transplanted on June 2, 2000, under warm climatic conditions. Stand survival was excellent with a furrow irrigation applied within a few days of transplanting. The soil type at the trial site was a Stockton Adobe clay. Vine growth in the trial and fruit set were very good producing a very good crop with excellent fruit size. Disease pressure, with the exception of a light amount of powdery mildew, was quite low throughout the season.

The trials, both Round and “Roma-type” varieties, were hand harvested on September 6 and 7, 2000. Yields were very good with excellent fruit size in both the Round and “Roma-type” variety trials. Complete data on yield and fruit size for the Replicated Round Varieties are shown in Table 1. The best yield of marketable red and green fruit was achieved by Qualit 21 at 35.9 tons/acre, followed by Sunbrite (35.0 tons/acre), Qualit 23 (32.6 tons/acre), Shady Lady (32.2 tons/acre), Sonnet (32.0 tons/acre) Fair Lady (31.8 tons/acre), PS 150440 (30.9 tons/acre).

In the single replication Observation Round Variety block, the highest yield of marketable red and green fruit occurred with XPH 12254 at 34.3 tons/acre, followed by XPH 12298 (31.8 tons/acre), BHN 102 (31.6 tons/acre), UGX 895 (30.9 tons/acre), SXT 6615 (28.8 tons/acre) and RFT 7041 (28.3 tons/acre) and BHN 524 (27.4 tons/acre). Table 2 provides complete yield and fruit sizing data for varieties trialed in the observation trial.

Fruit quality characteristics such as fruit shape, fruit smoothness, presence of green shoulder on the fruit, fruit firmness, stemability of fruit, along with observations on vine size, vine cover and other comments are provided in Table 3A for the Replicated Round Lines and Table 3B for the Observation Round Varieties.

In the “Roma” type fresh market tomato Replicated Trial block, the greatest yield of marketable red and green fruit was produced by Yaqui at 35.20 tons/acre, followed by Supra (29.5 tons/acre), HA-3302 (28.4 tons/acre) and PS 150046 (26.2 tons/acre). Four randomized plots were harvested out of the field variety – Monica. This variety produced a yield of 43.7 tons/acre of marketable red and green fruit, giving very large, smooth fruit of high quality. It will definitely be included in next year’s “Roma” trial. Yield, crop maturity and fruit sizing data are provided in Table 4.

In the Observation trial area of the “Roma” type fresh market tomato variety trial, the best yield of marketable red and green fruit was attained by RT-36 at 40.5 tons/acre, followed by Rio Oro 31 (39.0 tons/acre), BHN-523 (38.8 tons/acre), XP 671 (38.5 tons/acre), H106 (33.8 tons/acre), RT-42 (33.1 tons/acre) and Big Rio (32.8 tons/acre). Table 5 provides data on yield, crop maturity and fruit size for all of the lines evaluated in the observation block of the “Roma” type varieties.

Observations on fruit shape, fruit smoothness, fruit firmness, stemability of fruit, along with notes on vine cover and other comments for both the replicated and observation “Roma” type lines are presented in Table 6A and Table 6B.

From the standpoint of overall fruit quality, the leading round replicated lines were Qualit 21, Qualit 23, Sonnet, Sunbrite, SRT 6624 and PS 150440. Best round observational lines included RFT 7041, BHN 302, AT48, RFT 8054, HA 3639 and AT10. Of the replicated “Roma” type lines, Supra, Clemente, HA 3302, and Yaqui (except for some irregular-shaped fruit) gave the best combination of yield and fruit quality. In the “Roma” type observation block, HA 3307, RT42, H106 and BHN 523 probably gave a good combination of yield and quality, but almost all of the lines either were variable in fruit shape or had a non-traditional “Roma” shape. Had Monica been in the regular trial block it would have been the superior “Roma” line both in terms of yield and quality. One element is still missing from variety evaluation trials and that is the flavor (sensory) component. It is hoped future research funding will be available for this critical consumer factor.

**2000 Fresh Market Tomato Varieties
Round Lines**

Seed Company	Replicated		Observation	
Asgrow Seed	SunBrite	Sonnet	XPH 12298	XPH 12254
American Takii			AT10 AT48 AT71	AT76 AT89
BHN Seed			BHN 102 BHN 301	BHN 377 BHN 524
D. Palmer Seed Co.	Vered	Hadas		
Hazzera Seed			HA-3638	HA-3644
Novartis Seeds	Qualit 21	Qualit 23	RFT-7041	RFT 8054
Petoseed	PS 150440			
Sunseeds	Shady Lady	SRT 6624	SRT 6615 SRT 6677	SRT 66700
United Genetics	Fair Lady		UGX 14 UGX 895	Simone

Table 1.

**2000 FRESH MARKET TOMATO VARIETY TRIAL
LAGORIO FARMS/ACE TOMATO CO. - FRENCH CAMP, CA
REPLICATED YIELD TRIAL - ROUND LINES**

Variety	Marketable Yield ¹ (Red + Green)		Fruit Sizing Data (%)				Crop Maturity @ Harvest (%) ¹			Culls ¹
	Tons/Acre	Boxes/Acre	Extra Large	Large	Medium	Small	Red	Green	Culls	Tons/Acre
Qualit 21	35.88	2,870	70.9	23.6	5.5	0.0	15.7	71.4	12.9	5.6
Sunbrite	35.05	2,804	70.6	23.9	5.5	0.0	29.8	60.3	9.9	3.9
Qualit 23	32.60	2,608	62.0	34.0	4.0	0.0	23.3	65.6	11.1	3.8
Shady Lady	32.18	2,574	60.7	33.2	6.1	0.0	32.7	58.1	9.2	3.2
Sonnet	31.96	2,557	46.0	32.0	18.0	4.0	22.4	67.6	10.0	3.5
Fair Lady	31.85	2,548	58.2	34.5	7.3	0.0	21.6	63.0	15.4	5.8
PS 150440	30.93	2,474	66.0	26.4	7.6	0.0	22.4	64.1	13.5	4.8
SRT 6624	27.63	2,210	61.5	36.4	2.1	0.0	12.0	70.3	17.7	5.8
Vered	27.17	2,174	51.5	46.4	2.1	0.0	12.8	80.3	6.9	2.0
Hadas	26.63	2,130	55.1	44.9	0.0	0.0	30.9	54.6	14.5	4.5
LSD @ 5%:	5.70	456					6.8	8.8	7.5	
Mean:	31.19	2,495					22.4	65.5	12.1	
C.V.	12.6%						20.9%	9.3%	42.7%	

¹ Average of four replications - tons per acre of extra large, large, medium and small sized fruit

Table 2.

**2000 FRESH MARKET TOMATO VARIETY TRIAL
LAGORIO FARMS/ACE TOMATO CO. - FRENCH CAMP, CA
OBSERVATION TRIAL - ROUND LINES**

Variety	Marketable Yield ¹ (Red + Green)		Fruit Sizing Data (%) ¹				Crop Maturity @ Harvest (%) ¹			Culls
	Tons/Acre	Boxes/Acre	Extra Large	Large	Medium	Small	Red	Green	Culls	Tons/Acre
XPH 12254	34.32	2,746	53.2	36.2	8.5	2.1	17.9	67.5	14.6	5.9
XPH 12298	31.80	2,544	58.1	38.7	3.2	0.0	31.4	53.5	15.1	5.7
BHN 102	31.58	2,526	65.4	27.3	7.3	0.0	29.2	55.6	15.2	5.7
UGX 895	30.93	2,474	76.0	24.0	0.0	0.0	5.1	85.4	9.5	3.2
SXT 6615	28.84	2,307	40.3	40.3	19.4	0.0	29.3	54.3	16.4	5.7
RFT 7041	28.31	2,265	65.8	34.2	0.0	0.0	5.3	81.3	13.4	4.4
BHN 524	27.44	2,195	58.7	37.2	4.1	0.0	25.5	54.8	19.7	6.7
Simone	27.01	2,161	37.1	40.0	20.0	2.9	21.6	70.9	7.5	2.2
BHN 301	26.22	2,098	62.5	28.3	9.2	0.0	27.1	54.5	18.4	5.9
SRT 6677	26.14	2,091	36.4	38.6	25.0	0.0	12.4	80.6	7.0	2.0
HA 3644	26.14	2,091	35.2	42.6	22.2	0.0	18.5	60.9	20.6	6.8
RFT 8054	24.83	1,986	58.2	21.6	18.1	2.1	6.5	68.0	25.5	8.5
AT 71	23.52	1,882	43.3	44.9	11.8	0.0	22.2	70.1	7.7	2.0
AT 48	23.09	1,847	42.7	36.2	21.1	0.0	15.5	66.7	17.8	5.0
HA 3638	22.87	1,830	56.5	34.8	8.7	0.0	17.5	59.1	23.4	7.0
UGX 14	22.87	1,830	20.2	49.6	22.1	8.1	21.1	71.0	7.9	2.0
SRT 6700	22.22	1,778	33.3	35.2	29.6	1.9	23.5	62.2	14.3	3.7
BHN 377	21.34	1,707	36.2	35.1	28.7	0.0	20.7	63.8	15.5	3.9
AT 89	21.13	1,690	42.4	52.8	4.8	0.0	16.8	64.7	18.5	4.8
AT 76	20.04	1,603	35.2	57.3	7.5	0.0	9.5	78.1	12.4	2.8
AT 10	19.38	1,550	41.3	42.5	16.2	0.0	16.7	70.6	12.7	2.8

¹ Average of only one replication - tons per acre of extra large, large, medium and small sized fruit

Table 3A.

**2000 FRESH MARKET TOMATO VARIETY TRIALS
LAGORIO FARMS/ACE TOMATO – FRENCH CAMP, CALIFORNIA
REPLICATED TRIAL – “ROUND LINES”**

Variety	Maturity ¹	Fruit ² Shape	Fruit ³ Smoothness	Green Shoulder	Fruit ⁴ Firmness	Stemming ⁵	Vine Cover	Other Notes
Qualit 21	M	G	3.0	No	3.5	2.0	Good	Some high shouldered fruit
Qualit 23	M	G	4.0	No	4.0	2.0	Fair-Good	Fruit size not as good as Qualit 21
Sunbrite	M	FR	3.0	No	3.5	3.5	Good	High shouldered fruit
Sonnet	M	FR-G	3.5	No	3.0	2.5	Fair-Good	Smaller fruit and some nipped fruit
Shady Lady	M	FR	3.0	No	3.0	2.0	Good	
PS150440	ML	G	3.5	No	4.0	3.5	Good	Some pointy fruit
Fair Lady	M	FR	2.5	No	3.0	3.0	Semi-Open	Floppy vine
Hadas	EM	G	4.0	No	2.5	3.5	Semi-Open	Smallish fruit
Vered	ML	G	2.5	Yes	3.0	3.5	Semi-Open	Floppy vine and green shouldered fruit
SRT 6624	ML	FR-G	2.5	No	3.0	3.5	Good	Some high shouldered fruit

¹ M = Midseason Maturity E = Early Maturity L = Late Maturity VL = Very Late Maturity ML = Mid Late Maturity EM = Early to Midseason Maturity

² Fruit Shape: FR = Flat Round; G = Globe

³ Fruit Smoothness : 1 = Bad; 5 = Excellent

⁴ Fruit Firmness: 1 = Soft; 5 = Very firm

⁵ Stemability: 1 = Hard Stemming (Many stems attached to fruit); 5 = Stems Easily

Table 3B.

**2000 FRESH MARKET TOMATO VARIETY TRIALS
LAGORIO FARMS/ACE TOMATO – FRENCH CAMP, CALIFORNIA
OBSERVATION TRIAL – “ROUND LINES”**

Variety	Maturity ¹	Fruit ² Shape	Fruit ³ Smoothness	Green Shoulder	Fruit ⁴ Firmness	Stemming ⁵	Vine Cover	Other Notes
XPH 12254	ML	FR-G	3.5	No	3.0	2.5	Fair	Smaller fruit
XPH 12298	EM	FR	3.0	No	3.0	3.5	Fair-Good	Smallish fruit
BHN 102	M	FR-G	3.0	No	2.5	2.5	Semi-Open	
BHN 301	ML	G	4.0	No	3.0	3.5	Semi-Open	Pointy smallish fruit, floppy vine
BHN 377	ML	G	4.0	No	3.0	3.5	Semi-Open	Pointy small fruit
BHN 524	M	G	4.0	No	3.0	2.0	Semi-Open	Some pointy fruit, small yellow vine
AT 10	L	G	2.5	No	2.5	2.0	Fair-Good	Floppy vine, some nipping and green rays on fruit
AT 48	ML	FR-G	3.0	No	3.0	3.0	Fair-Good	Some pointy fruit
AT 71	L	FR-G	3.0	No	2.5	2.5	Semi-Open	Smallish fruit
AT 76	ML	FR	2.5	No	4.0	3.5	Semi-Open	Rough fruit shoulders, floppy vine, worm damage
AT 89	M	FR	3.5	No	4.5	3.0	Fair-Good	Some high shouldered fruit, some pointed fruit
RFT 7041	M	FR-G	3.5	No	4.0	3.0	Fair-Good	Some pointed fruit and green rays on fruit, floppy vine
RFT 8054	M	G	3.5	No	4.0	3.0	Fair	Floppy vine and worm damage
SXT 6615	ML	FR-G	3.0	No	3.0	3.0	Fair-Good	Some high shouldered fruit and floppy vine
SRT 6677	L	FR-G	3.0	No	4.0	3.5	Fair-Good	Smallish fruit
SRT 6700	ML	FR-G	2.5	No	2.5	3.5	Open + Small	Floppy vine, sunburn, fruit size variability
HA 3638	ML	G	3.0	No	3.0	3.0	Semi-Open	Some high shouldered fruit, floppy vine
HA 3644	EM	G	3.5	Yes	3.0	3.5	Semi-Open	Floppy vine, some high shouldered fruit and green rays on fruit
UGX 14	ML	FR-G	3.0	No	4.0	3.5	Fair-Good	Smallish fruit
UGX 895	ML	FR	2.5	No	4.0	3.5	Semi-Open	Smallish fruit and green rays on fruit
Simone	L	FR	3.0	No	4.0	3.5	Semi-Open	Floppy vine and variable size fruit

¹ M = Midseason Maturity E = Early Maturity L = Late Maturity VL = Very Late Maturity ML = Mid Late Maturity EM = Early to Midseason Maturity

² Fruit Shape: FR = Flat Round; G = Globe

³ Fruit Smoothness : 1 = Bad; 5 = Excellent

⁴ Fruit Firmness: 1 = Soft; 5 = Very firm

⁵ Stemability: 1 = Hard Stemming (Many stems attached to fruit); 5 = Stems Easily

**2000 Fresh Market Tomato Varieties
“Roma” Lines**

Seed Company	Replicated	Observation
Asgrow Seed	Clemente	XP 671
American Takii		RT 36 RT 42
BHN Seed		BHN 523
D. Palmer Seed		Matador Vaquero
Hazzera Seed	HA-3302	HA-3307
H.J. Heinz Seed		H-106 H-113 H-107 H-117
Novartis Seeds	Supra	
Petoseed	Yaqui Hybrid 882 Firense	
Sakata Seed America	Monica	
Sunseeds	SXT 6343	
United Genetics		Big Rio Rio Oro 31 Rio Milagro

Table 4.

**2000 FRESH MARKET TOMATO VARIETY TRIAL
LAGORIO FARMS/ACE TOMATO CO. - FRENCH CAMP, CA
REPLICATED YIELD TRIAL - "ROMA" LINES**

Variety	Marketable Yield ¹ (Red + Green)		Fruit Sizing Data (%) ²				Crop Maturity @ Harvest (%) ¹			Culls ¹
	Tons/Acre	Boxes/Acre	Extra Large	Large	Medium	Small	Red	Green	Culls	Tons/Acre
Yaqui	35.18	2,814	1.3	12.9	47.2	38.6	31.9	56.6	11.5	4.6
Supra	29.47	2,358	0.0	0.0	42.5	57.5	24.7	70.8	4.5	1.4
HA 3302	28.36	2,269	7.6	6.6	50.5	35.3	17.5	72.6	9.9	3.0
PS 150046	26.20	2,096	0.0	0.0	36.1	63.9	28.0	62.1	9.9	2.9
Clemente	25.68	2,054	0.0	1.6	36.3	62.1	18.5	71.5	10.0	2.8
Hybrid 882	24.16	1,933	1.6	1.1	21.6	75.7	37.7	55.8	6.5	1.7
LSD @ 5%:	3.48	278								
Mean:	28.17	2,254								
C.V.	8.2%									
Monica*	43.67	3,494	5.5	53.5	14.8	26.2	17.1	72.0	10.9	5.6

¹ Average of four replications - tons per acre of extra large, large, medium and small sized fruit

² Fruit sizing criteria: Extra Large > 165g; Large 130 to 165g; Medium 90 to 130g; Small 50 to 90g.

* In the same field as the variety trial was a block of Monica and four random plots were selected for yield, crop maturity, and fruit sizing for comparison to those lines in the replicated trial.

Table 5.

**2000 FRESH MARKET TOMATO VARIETY TRIAL
LAGORIO FARMS/ACE TOMATO CO. - FRENCH CAMP, CA
OBSERVATION TRIAL - "ROMA" LINES**

Variety	Marketable Yield ¹ (Red + Green)		Fruit Sizing Data (%) ²				Crop Maturity @ Harvest (%) ¹			Culls ¹
	Tons/Acre	Boxes/Acre	Extra Large	Large	Medium	Small	Red	Green	Culls	Tons/Acre
RT-36	40.51	3,241	10.3	20.5	38.5	30.7	29.1	64.1	6.8	3.0
Rio Oro 31	39.03	3,122	0.0	13.2	48.2	38.6	43.3	50.8	5.9	2.4
BHN-523	38.77	3,102	8.4	21.0	39.9	30.7	35.2	54.3	10.5	4.5
XP 671	38.51	3,081	0.0	8.7	52.2	39.1	21.6	63.7	14.7	6.6
H-106	33.80	2,704	0.0	4.0	45.4	50.6	22.4	65.4	12.2	4.7
RT-42	33.10	2,648	3.8	4.8	57.7	33.7	39.1	47.3	13.6	5.2
Big Rio	32.76	2,621	11.7	28.3	40.4	19.6	35.0	57.6	7.4	2.6
Rio Milagro	27.70	2,216	0.0	9.1	61.4	29.5	26.0	71.3	2.7	0.8
H-113	25.35	2,028	0.0	4.2	43.9	51.9	40.5	46.1	13.4	3.9
H-107	24.74	1,979	0.0	1.9	39.5	58.6	37.6	57.7	4.7	1.2
HA 3307	23.00	1,840	0.0	2.7	39.9	57.4	38.0	54.9	7.1	1.8
H-117	21.26	1,701	0.0	2.6	44.7	52.7	45.1	43.0	11.9	2.9
Matador	19.17	1,534	0.0	0.0	39.0	61.0	41.5	45.5	13.0	2.9
Vaquero	17.86	1,429	0.0	1.5	32.1	66.4	30.4	58.7	10.9	2.2

¹ Average of only one replication - tons per acre of extra large, large, medium and small sized fruit

² Fruit sizing criteria: Extra Large > 165g; Large 130 to 165g; Medium 90 to 130g; Small 50 to 90g.

Table 6A.

**2000 FRESH MARKET TOMATO VARIETY TRIALS
LAGORIO FARMS/ACE TOMATO – FRENCH CAMP, CALIFORNIA
REPLICATED TRIAL – “ROMA” LINES**

Variety	Maturity ¹	Fruit Shape	Fruit ³ Smoothness	Fruit ³ Firmness	Stemming ⁴	Vine Cover	Other Notes
Hybrid 882	M	Long pear	4.0	4.0	4.0	Fair-Good	Slightly floppy vine, fruit look good
Yaqui	M	Blocky pear	4.0	4.0	4.0	Good	Large fruit, but non traditional shape
Clemente	ML	Long pear	4.0	3.5	4.0	Fair-Good	Some nipping in fruit and some worm damage
HA 3302	ML	Blocky pear	3.0	4.0	4.0	Semi-Open	Some nipping in fruit and floppy vine
PS 150046	M	Long pear	4.0	3.5	4.0	Semi-Open	Floppy vine
Supra	M	Long pear	3.5	4.0	4.0	Good	Slightly pointed, medium size fruit
Monica	ML	Long blocky pear	4.5	4.0	4.0	Good	Very large and very smooth fruit, very good yield

¹ M = Midseason Maturity E = Early Maturity EM = Early to Midseason Maturity ML = Mid Late Maturity L = Late Maturity VL = Very Late Maturity

² Fruit Smoothness: 1 = Bad; 5 = Excellent

³ Fruit Firmness: 1 = Soft; 5 = Very firm

⁴ Stemability: 1 = Hard Stemming (Many stems attached to fruit); 5 = Stems Easily

Table 6B.

**2000 FRESH MARKET TOMATO VARIETY TRIALS
LAGORIO FARMS/ACE TOMATO – FRENCH CAMP, CALIFORNIA
OBSERVATION TRIAL – “ROMA” LINES**

Variety	Maturity ¹	Fruit Shape	Fruit ³ Smoothness	Fruit ³ Firmness	Stemming ⁴	Vine Cover	Other Notes
H-106	M	Long pear	3.0	4.0	4.0	Good	Dark green vine, fruit shape variable, good yield
H-107	EM	Blocky pear	2.5	3.5	4.0	Fair-Good	Rough fruit
H-113	EM	Blocky pear	2.5	4.0	4.0	Semi-Open	Some pointy fruit, not traditional fruit shape
H-117	EM	Square round	3.0	4.0	4.0	Good	Not traditional fruit shape
XP-671	ML	Long pear	3.5	3.5	4.0	Good	Smallish fruit, but good yield
BHN 523	EM	Blocky pear	3.5	4.0	4.0	Good	Not traditional fruit shape
HA 3307	M	Square round	3.5	4.0	4.0	Good	Floppy vine, slightly pointed fruit, not traditional fruit shape
Matador	M	Square round	3.0	4.0	4.0	Semi-Open	Smallish fruit, poor yield
Vaquero	EM	Blocky pear	3.5	4.0	4.0	Good	Smallish fruit, poor yield
RT 36	EM	Blocky pear	3.0	4.0	4.0	Open	Good yield, fruit quality variable
RT 42	EM	Blocky pear	3.0	3.5	4.0	Open	Variable fruit shape, floppy vine
Rio Oro 31	M	Square round/Blocky pear	3.0	3.5	4.0	Semi-Open	Floppy vine
Big Rio	ML	Square round	2.5	3.5	4.0	Good	Variable fruit shape
Rio Milagro	M	Blocky pear	3.5	3.5	4.0	Fair-Good	Some nipped fruit and not traditional fruit shape

¹ M = Midseason Maturity E = Early Maturity EM = Early to Midseason Maturity ML = Mid Late Maturity L = Late Maturity VL = Very Late Maturity

² Fruit Smoothness : 1 = Bad; 5 = Excellent

³ Fruit Firmness: 1 = Soft; 5 = Very firm

⁴ Stemability: 1 = Hard Stemming (Many stems attached to fruit); 5 = Stems Easily

2000 STATEWIDE FRESH MARKET TOMATO VARIETY TRIALS

During the 2000 growing season, three fresh market tomato variety trials, evaluating selected round lines, were conducted. The early season trial was established by Michelle Le Strange, UC Cooperative Extension Farm Advisor in Tulare and Kings Counties, at Jones Farms (Richard Newton) near Kettleman City, California. The trial contained 10 replicated varieties and another 20 lines in an observation (single replication) block. The trial was transplanted on April 24, 2000, with the field variety being Sonnet. The trial field was irrigated throughout the season using subsurface drip and the trial was hand harvested on July 14, 2000. The second trial (midseason) was conducted by Bill Weir and Scott Stoddard, UC Cooperative Extension Farm Advisor and Research Associate in Merced County, respectively. The trial was located at Live Oak Farms (Bob Giampaoli) near Le Grand, California. The trial contained 9 replicated varieties with another 20 lines in an observation block. The trial was transplanted on May 17, 2000 and the trial site field was watered throughout the season using subsurface drip irrigation. The trial was hand harvested on August 8, 2000. The third trial (late season) was established, in cooperation with Lagorio Farms (Dean and Kathy Janssen, George Biagi) and Ace Tomato Company (Dean Janssen, Jeff Rurup) near French Camp, California, by Bob Mullen and Jesus Valencia, UC Cooperative Extension Farm Advisors in San Joaquin and Stanislaus Counties, respectively. The trial contained 10 replicated varieties and 21 additional cultivars in single replication observation plots. The trial was transplanted on June 2, 2000 and the field varieties were Shady Lady (three-quarters of the field) and the remaining field area was Monica, a "Roma" type line. The trial field site was furrow irrigated throughout the season and the plot was harvested by hand on September 6 and 7, 2000.

Not all replicated varieties were common to all trial locations but 8 lines were. Table A provides market yield performance of those eight varieties for the 3 trial locations combined, as well as for each individual trial. In the combined trial data, the best yielding variety in all locations was PS 150440 at 31.7 tons/acre (2,540 boxes) of marketable yield, followed by Qualit 21 (31.5 tons/acre or 2,492 boxes), Sonnet (29.0 tons/acre or 2,318 boxes) and Sunbrite (28.5 tons/acre or 2,276 boxes).

The observation varieties, common to all three trial locations, numbered 15 out of the 20 or 21 lines evaluated. Table B shows the market yield for these fifteen lines for the 3 trial locations combined, as well as for each individual trial. Highest yield of the common combined observational lines was provided by UGX 895 at 30.3 tons/acre (2,428 boxes) of marketable yield, followed by BHN 102 (29.5 tons/acre or 2,358 boxes), XPH 12298 (29.3 tons/acre or 2,341 boxes) and XPH 12254 (27.8 tons/acre or 2,221 boxes).

Individual trial reports from each of the participating Farm Advisors should be obtained and consulted with regard to variety performance in market yield, fruit sizing data and fruit quality observations for that particular trial location.

Table A.

2000 FRESH MARKET TOMATO VARIETY TRIALS
COMBINED AND INDIVIDUAL TRIAL YIELD DATA
REPLICATED VARIETIES
THREE LOCATIONS: KINGS, MERCED AND SAN JOAQUIN/STANISLAUS

Variety	Seed Co.	Combined Market Yield/Acre		Kings (early season)		Merced (mid season)		San Joaquin (late season)	
		Tons	Boxes	Tons	Boxes	Tons	Boxes	Tons	Boxes
PS 150440	Petoseed	31.7	2540	31.3	2504	33.0	2642	30.9	2474
QualiT 21	Novartis	31.5	2492	31.4	2432	27.2	2174	35.9	2870
SRT 6624	Sunseeds	29.3	2305	31.0	2400			27.6	2210
Sonnet	Asgrow	29.0	2318	28.7	2296	26.3	2100	32.0	2557
Sunbrite	Asgrow	28.5	2276	26.3	2104	24.0	1919	35.1	2804
Fair Lady	United Genetics	28.4	2271			24.9	1993	31.9	2548
QualiT 23	Novartis	27.7	2218	22.6	1808	28.0	2238	32.6	2608
Shady Lady	Sunseeds	27.0	2157	23.0	1840	25.7	2058	32.2	2574
RFT 7041	Novartis	24.4	1952	24.4	1952				
Hadas	D. Palmer	21.7	1739	18.0	1440	20.6	1647	26.6	2130
Vered	D. Palmer	20.3	1622	14.0	1120	19.6	1571	27.2	2174

Table B.

**2000 FRESH MARKET TOMATO VARIETY TRIALS
COMBINED AND INDIVIDUAL TRIAL YIELD DATA
OBSERVATION VARIETIES**

THREE LOCATIONS: KINGS, MERCED AND SAN JOAQUIN/STANISLAUS

Variety	Seed Co.	Combined Market Yield/Acre		Kings (Early Season)		Merced (Mid Season)		San Joaquin/Stanislaus (Late Season)	
		Tons	Boxes	Tons	Boxes	Tons	Boxes	Tons	Boxes
UGX 895	United Genetics	30.3	2,428	30.6	2,448	29.5	2,362	30.9	2,474
BHN 102	BHN Seed	29.5	2,358	30.5	2,448	29.5	2,362	31.6	2,526
XPH 12298	Asgrow	29.3	2,341	28.8	2,304	27.2	2,174	31.8	2,544
XPH 12254	Asgrow	27.8	2,221	30.6	2,448	18.4	1,470	34.3	2,746
Simone	United Genetics	26.9	2,156	27.4	2,192	26.4	2,115	27.0	2,161
SRT 6677	Sunseeds	25.7	2,056	23.2	1,856	27.8	2,221	26.1	2,091
SRT 6700	Sunseeds	25.5	2,037	32.0	2,560	22.2	1,774	22.2	1,778
SRT 6615	Sunseeds	25.3	2,027	23.5	1,880	23.7	1,893	28.8	2,307
RFT 8054	Novartis	25.2	2,013	26.3	2,104	24.4	1,950	24.8	1,986
AT89	American Takii	24.3	1,948	25.5	2,040	26.4	2,114	21.1	1,690
AT76	American Takii	24.3	1,945	27.8	2,224	25.1	2,008	20.0	1,603
AT71	American Takii	22.9	1,830	28.5	2,280	16.6	1,330	23.5	1,882
AT48	American Takii	22.2	1,776	19.3	1,544	24.2	1,938	23.1	1,847
AT10	American Takii	20.4	1,632	17.6	1,408	24.2	1,937	19.4	1,550
UGX 14	United Genetics	17.0	1,358	11.1	888	17.0	1,356	22.9	1,830

Fungicide Efficacy and Late Blight Control in Fresh Market Tomatoes.

Robert J. Mullen, Scott Whiteley and Chuck Cancilla

Late Blight (*Phytophthora infestans*) is a recurring problem in fresh market tomato growing areas of the northern San Joaquin Valley which produces for the mid summer to mid fall market. In 1998 the effects of El Niño were felt over a large area of the Central Valley, with widespread outbreaks of Late Blight in both processing and fresh market tomatoes from spring until late fall. The 2000 season was just the reverse. With warm dry weather the norm for most of the season, Late Blight only occurred sporadically in the upper Sacramento Valley and in a few late summer/fall market tomato fields near Stockton, California. The need for continued evaluation of new chemical and/or biological fungicides that could provide protective and/or systemic control of Late Blight remains a high priority because conditions for disease development could return quickly in the future. This year one trial, evaluating 11 chemical fungicides and/or alternating/combination treatments, was established at Marchetti Farms (Ron Marchetti), with the cooperation of West Coast Tomato of California, northwest of Stockton, California, in a market tomato field planted to the variety Sunbrite. Treatments were begun on September 5, 2000, when the crop was at mid fruit development (2.0 to 3.0 inch diameter crown fruit). A disease forecasting weather station was placed in the field south of the trial by Western Farm Service (Joe Schenone). Applications were made on a seven-day spray schedule with treatments broadcast over and into the tomato crop utilizing a handheld CO₂ backpack sprayer with 8004 nozzles at 30 psi in a spray volume of 50 gallons/acre water. The soil type at the trial site was an Egbert muck, and the field was furrow irrigated on a 7 to 10 day schedule throughout the growing and fruit sizing season. After the initial treatment date, additional applications were made on September 12, 21 and 28, 2000. A minor outbreak of the disease occurred between the applications made on September 12 and 21, 2000. A spotty pattern of leaf and stem lesions was found, and the first disease severity rating was made on September 20 and again October 5, 2000. All treatments provided control of the limited disease pressure compared to the untreated check. Tanos (KP481) alone provided the highest level of disease management, followed very closely by the combination treatment of Previcur (propamocarb) plus Bravo Ultrex (chlorothalonil), Gavel (RH 141457) alone at both rates, the spray combination of Reason (fenamidone) plus Scala (pyrimethanil), Bravo Ultrex alone, the combination treatment of Previcur plus Scala, Reason alone plus X-77 at the high rate and the low rate of KQ667 (famoxadone + mancozeb) alone. Of the fungicides evaluated, Manzate (mancozeb) alone gave the least control of Late Blight. It should be stressed that the level of disease infection was not high and subsided with a following period of 3 weeks of dry, very warm weather. The trial was hand harvested on October 7, 2000. All treatments provided higher yields than the untreated control, led by the combination treatment of Previcur plus Bravo Ultrex, the alternating spray treatment of Bravo Ultrex plus Quadris (azoxystrobin), and the high rate of Gavel alone. Fruit in all treatments were evaluated in the field for Late Blight infection and all treatments had no infected fruit or a very low level relative to the untreated control. Work on this disease, with candidate fungicides, will continue during the 2001 tomato season.

**2000 Fresh Market Tomato Late Blight Control
Marchetti Farms/West Coast Tomato - Stockton, California**

Treatment	Rate lb./Acre a.i.	7 Day Spray Interval	Disease Severity ¹		% Infected Fruit ² @ Harvest	Marketable Yield ² (Red + Green) Tons/Acre
			9/20	10/5		
Previcur (6L) + Bravo Ultrex (82.5WDG)	1.00 + 1.50	ABCD*	0.8	0.5	0.5	15.2
Previcur + Quadris (2.08SC)	1.00 + 0.10	AB D C	1.3	1.0	0.0	13.9
Previcur + Scala (40SC)	1.00 + 0.27	ABCD	0.8	0.6	0.0	13.2
Walabi (4.4SC)	0.94	ABCD	0.8	0.9	0.0	12.4
Reason (4.17E) + X-77	0.18 + ¼% v.v.	ABCD	1.1	0.8	0.3	13.2
Reason + X-77	0.27 + ¼% v.v.	ABCD	0.9	0.6	0.0	12.2
Reason + Scala	0.18 + 0.13	ABCD C	0.6	0.5	0.2	14.2
BAS 500 (20.7WDG)	0.15	ABCD	1.1	0.9	0.3	14.5
Gavel (75DF)	1.50	ABCD	0.6	0.5	0.0	14.8
Gavel	2.25	ABCD	0.5	0.5	0.0	14.9
Bravo Ultrex + Quadris	1.50 + 0.10	A C B D	1.3	0.9	0.6	15.1
Tanos (50WG)	0.31	ABCD	0.6	0.4	0.0	14.7
Tanos + Manzate (75DF)	0.31 + 1.50	A C B D	1.3	0.8	0.0	12.6
KQ667 (68.8WG)	0.52	ABCD	1.0	0.6	0.0	14.5
KQ667	1.03	ABCD	0.8	0.8	0.0	14.4
Bravo Ultrex	1.50	ABCD	1.0	0.5	0.6	11.4
Manzate	1.50	ABCD	1.9	1.3	1.2	14.6
Untreated Control	---	----	3.1	2.6	6.6	11.0

LSD @ 5%: 4.1

* A = week 1, B = week 2, C = week 3, D = week 4, ABCD = every week for 4 weeks

C.V. = 21.1%

¹ Average of four replications and the following disease severity rating scale:

Disease severity rating - Barratt/Horsfall System									
Rating Scale	Grade	% Plant Infected	% Plant Healthy	Grade	% Plant Infected	% Plant Healthy	Grade	% Plant Infected	% Plant Healthy
	0	0	100	4	12 to 25	75 to 88	8	88 to 94	6 to 12
	1	0 to 3	97 to 100	5	25 to 50	50 to 75	9	94 to 97	3 to 6
	2	3 to 6	94 to 97	6	50 to 75	25 to 50	10	97 to 100	0 to 3
	3	6 to 12	88 to 94	7	75 to 88	12 to 25	11	100	0

² Average of four replications

CAUTION

The report presents results of tomato disease studies conducted in San Joaquin County. It should not, in any way, be interpreted as a recommendation of the University of California. Chemical or common names of fungicides are used in this report instead of the more common trade names of fungicides. No endorsement of products mentioned or criticism of similar products is intended. The rates of fungicides in this report are always expressed as active ingredient (A.I.) of the material per treated acre, unless otherwise indicated.

<u>Trade Name</u>	<u>Common or Chemical Name</u>	<u>Manufacturer</u>
Quadris (2.08 SC)	azoxystrobin	Zeneca Ag Products
Gavel (75 DF)	RH 141457	Rohm and Haas Co.
Bravo Ultrex (82.5 WDG)	chlorothalonil	Zeneca Ag Products
Previcur (6L)	propamacarb	Aventis
KQ667 (68.8WG)	famoxate + mancozeb	DuPont Ag Products
Tanos (20 SC)	famoxate + cymoxanil	DuPont Ag Products
BASF 500 (20.7 WDG)	BASF 500	BASF Corporation
Reason (4.17EC)	fenamidone	Aventis
Scala (40SC)	pyrimethanil	Aventis
Walabi (4.4SC)	pyrimethanil + chlorothalonil	Aventis
Manzate (75DF)	mancozeb	DuPont Ag Products

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