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## **REPORT to the California Tomato Commission Tomato Variety Trials: Postharvest Evaluations for 2006**

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### **A. Objectives of Research:**

To evaluate the color, firmness and compositional quality of table-ripe fresh market tomatoes (Round and Roma types) from established varieties and new experimental lines.

### **B. Executive Summary**

In 2006 we evaluated the quality of **8 Round** fresh market tomato varieties harvested at mature-green and vine-ripe stages from the 3 statewide replicated variety trials (Fresno Early Season, Merced Mid Season and San Joaquin Late Season Trial). Ten additional varieties from the observational plots at the Fresno and Merced trials were also evaluated. We evaluated fruit for color, firmness and composition (% soluble solids, pH and % titratable acidity) at the table-ripe stage. Fruit were harvested at mature-green (MG) and vine-ripe (VR, 30-40% color) stages in Fresno and Merced Trials and only as MG in the San Joaquin Trial. ‘Q-21’ and ‘Shady Lady’ were considered the standard round varieties. Six **Roma** tomato varieties were harvested at MG and VR stages from Fresno and Merced trials, and as MG from the San Joaquin Trial; ‘Monica’ was considered the reference or standard Roma variety. Short descriptions of the color, firmness and composition quality measurements carried out on fruit at the table-ripe stage are described in **Tables 1-3**.

Results for **round** tomato variety trials are presented in **Tables 4 – 6** for the individual trials and all MG results are summarized in **Table 7** and all results for VR-harvested fruit are in **Table 8**. An overall rating system and results for the 18 round varieties evaluated in 2006 are presented in **Table 9**. All varieties tested in 2006 were evaluated after they had developed good red color, whether harvested as MG or VR. VR-ripe harvested fruit were slightly less firm on average than MG harvested fruit. Most varieties had firm fruit (including ‘Q-21’) under the conditions used

for ripening, a few varieties could be ranked as very firm and ‘Shady Lady’ had consistently low firmness values. Composition was generally similar among the 8 replicated varieties for a given trial. The % soluble solids ranged from about 4.0-4.5% and this was slightly lower than average values for 2005 trials. Acidity and pH values were also similar among varieties and trials and similar to 2005 results. Among the MG-harvested fruit, those from the San Joaquin Trial had the best color, were the firmest and had typical composition. Overall ranking of MG and VR-harvested fruit (**Table 9**) resulted in an average overall score of 5.6 out of a possible 9. The reference varieties Q-21 and Shady Lady scored 5.4 and 5.1. Four varieties scored overall at 6.0 or above (HMX 6812, 5151, HMX 5790 and 6260-D), and four varieties scored overall at 5.0 (PS 2942, 10442, 11091 and SXT 6784). The varieties that had the highest overall scores of 6.5 and 6.8 were varieties 5151 and HMX 6812. These varieties achieved the highest overall scores because of their high color and firmness ratings. Fruit from all fruit varieties could be considered on the low side for the ‘flavor’ score, except for varieties 10442 and 11091 (Seeds of Change) in which flavor scores are notably above those of the other varieties. Nevertheless those same two varieties ranked low overall because of red color and firmness scores.

Results for the six Roma cultivars evaluated in 3 replicated trials (MG only from San Joaquin trial) are presented in **Tables 10-12** for the individual trials and all MG Roma results are summarized in **Table 13** and VR Roma fruit results for 2 trials are summarized in **Table 14**. The overall rating of the 6 Roma varieties is presented in **Table 15**. All fruit evaluated had good red color, although fruit were slightly redder in the San Joaquin fruit at evaluation. Nevertheless the San Joaquin fruit were the firmest with fruit from Fresno and Merced being similar in firmness values. Fruit had similar % soluble solids except ‘BSS526’ which had consistently higher soluble solids contents. The same variety had consistently higher % titratable acidity than the other 5 varieties. In the summary ranking (**Table 15**), average overall score was 6.3. The reference or standard variety Monica scored the highest at 7.3 as did ‘BSS526’. ‘MiRoma’ and ‘MiRey’ scored the lowest overall mainly due to the lower flavor and red color scores.

### **C. Experimental Procedures**

**Fruit Sampling.** We harvested mature-green (MG) fruit 13 replicated varieties. For 2 trials, vine-ripe (VR) fruit were harvested with 30-40% color. Typically 80 MG fruit or more were harvested in buckets, placed in plastic trays for transport to the lab, and well-formed large (5x5 or 5x6) fruit were selected for ripening and evaluation. A minimum of 45 fruit (3 reps of 15 each) were ripened under standard conditions: 3-4 days 100 ppm ethylene at 20°C (68°F) and high relative humidity followed by placement on plastic-wrapped trays to complete ripening at 20°C. Fruit that did not show color change within 3-4 days of ethylene treatment were discarded. Fruit were evaluated when they reached the **table-ripe stage** (color stage 6 on USDA scale  $\pm$  1-2 days) based on visual assessment.

**Quality Measurements.** Quality evaluation of different tomato varieties should include data on firmness, color and composition at the table-ripe stage (**Table 1**). Flavor can be estimated measuring soluble solids (sugars) and acid contents. Table 1 describes the measurements useful to assess the postharvest potential of different fresh market tomato varieties. Typical values for color and firmness measurements are described in **Table 2** and **Table 3**.

**Table 1.** Ripe tomato quality measurements for 2006 variety trials.

Attribute	Measurement	Additional Information
<b>1. Color</b>	1a. Objective color values using a Minolta Color meter	Data reported as Hue; this is the most useful single value to compare tomato color; see <b>Table 2</b> for typical values. Hue values from 35-40 usually indicate good red color.
<b>2. Texture</b>	Compression test: the force to compress the fruit a distance of 5 mm	Computerized texture analyzer equipped with a 25 mm flat cylinder moving at 0.5 mm/sec. Typical range 15-25 N ( <b>Table 3</b> ). 1 N =9.81 kg-force or 4.45 lb.-force.
<b>3. Composition</b>	3a. Soluble solids (SS) are measured on a refractometer	Fruit are quartered, blended. The juice is filtered and used. 5 min per fruit for sample preparation and measurements of SS and TA. Values can range from 3.5-7.0%.
	3b. Titratable acidity (TA); 10 mL juice are titrated with NaOH	pH of the juice is taken as a part of these measurements. Generally there is an inverse relationship between pH and T.A. Values can range from 0.2-0.6%.

**Table 2.** Example of color changes during the ripening of fresh market tomato fruits.

Stage of Development/Color	USDA Color Chart Stage	L*	a*	b*	chroma	hue
Mature-Green	1	62.7	-16.0	34.4	37.9	115.0
Breaker	2	55.8	-3.5	33.0	33.2	83.9
Pink-Orange	4	49.6	16.6	30.9	35.0	61.8
Orange-Red	5	46.2	24.3	27.0	36.3	48.0
Bright Red; Table-ripe	6	41.8	26.4	23.1	35.1	41.3
Dark Red	6+	39.6	27.5	20.7	34.4	37.0

L\* indicates lightness (high value) to darkness (low value); a\* changes from green (negative value) to red, b\* changes from blue to yellow (high value). Chroma and hue are calculated  $[(a^{*2} + b^{*2})^{1/2}]$  and  $\tan^{-1}(b^*/a^*)$  and indicate intensity and color, respectively. The lower the hue value, the redder the tomato. Hue is the single most useful color value.

**Table 3.** Textural characteristics of tomatoes based on subjective and objective tests.

One pound-force = 4.45 Newton force; One kilogram-force = 9.81 Newton force.

Firmness Class	Description based on hand and finger pressure	Newton (force)
Very Firm	Fruit yields only slight to considerable pressure	>25
Firm	Fruit yields slightly to moderate pressure	18-25
Moderately Firm	Fruit yields moderately to moderate pressure	15-18
Moderately Soft	--	12-15
Soft	Fruit yields readily to slight pressure	8-12
Very Soft	Fruits yields very readily to slight pressure	<8

Measured by compressing the fruit at the equator with a 25 mm flat cylindrical probe to a distance of 5 mm on a computerized texture analyzer. One pound-force = 4.45 Newton force; one kilogram-force = 9.81 Newton force.

## D. Results

### 1. Round Fresh Market Tomato Variety Results

#### Fresno County Replicated Round Tomato Trial.

Ten cultivars from the replicated trial were evaluated from both MG and VR harvested fruit (**Table 4**) and another four cultivars were evaluated from the observation plot. Final red color was very good in all fruit ripened from MG with all values below 40 hue color units (see Table 2). The color values for the VR harvested fruit were slightly higher indicating they were evaluated at a slightly less ripe stage than the MG fruit. Firmness values were generally similar between the MG and VR harvested fruit. Fruits of varieties PS 2935, HMX 5790 and HMX 6812 were the firmest whereas ‘Shady Lady’ fruits were the softest (Table 4). Fruit in this trial

were moderately firm (4 varieties), firm (9 varieties) to very firm (1 variety) at the table-ripe stage. The average % soluble solids of the MG harvested fruit was 4.1% and for VR harvested fruit was 4.3% with little variation among the varieties. The pH values were similar between the MG and VR harvested fruits, but % titratable acidity was on average higher in the VR harvested fruits.

#### **Merced County Replicated Round Tomato Trial.**

In the Merced County Trial, 14 cultivars were harvested at the MG and VR stages (**Table 5**). Red color values were good, hovering around the critical 40 hue value for both the MG and VR harvested fruit. In this trial, the VR harvested fruit averaged significantly less firmness than the MG harvested fruit. Average fruit firmness ranged from moderately soft (3 varieties including Shady lady), moderately firm (4 varieties), to firm (7 varieties). Average % soluble solids were slightly higher than in the Fresno trial. The % soluble solids range from a low of 3.8 (Bobcat and Scout) to a high of 5.3-5.4% (10442 and 11091 lines from Seeds of Change). The % titratable acidity varied 0.27 to 0.35% for MG harvested fruit and from 0.24 to 0.41% for VR harvested fruit.

#### **San Joaquin County Replicated Round Tomato Trial.**

In the San Joaquin trial eight varieties were harvested at MG stage only (**Table 6**). Final red color was very good, and average values were the most red among the 3 trials. Average fruit firmness was higher in this trial than for fruits from other 2 trials. Fruit were generally firm (4 varieties) to very firm (4 varieties), with Shady Lady being the least firm. The average % soluble solids were the highest of the 3 trials and differed little among the 8 varieties, ranging from 4.2 to 4.5%. The % titratable acidity varied from 0.26 to 0.33% for the 8 varieties.

#### **Overall Assessment of ROUND Tomato Quality from the 3 Trials**

**Tables 7 and 8** summarize average values for color, firmness and composition for the 14 varieties studied from the 3 trials. MG-harvested fruit from the 3 trials are compared in **Table 7**, while VR-harvested fruit are compared in **Table 8**. For the 3 trial locations, overall average values for the MG harvested fruit (**Table 8**) indicate that the fruit from the San Joaquin County trial were redder, firmer and had higher % soluble solids than fruit from other 2 trials. The MG fruit from the Fresno and Merced trials were, on average, of similar firmness, red color and % soluble solids. The average results for the VR harvested fruit (**Table 8**) show that the fruit from both the Fresno and Merced trials were of similar red color, % soluble solids and % acidity, but less firm in the Merced trial.

**Table 9** attempts to provide an overall summary that takes into account the color, firmness and compositional quality of the MG and VR fruit ripened to the table-ripe stage. The criteria for the categories (1, 2 or 3) were the same as used in 2005, except that red color values were scored slightly differently in 2006. The category assignments, although subjective, help to establish an overall quality assessment. Obviously the ratings could be different if the categories were defined differently. Based on the criteria used, the varieties that had the highest overall scores of 6.5 and 6.8 were varieties 5151 and HMX 6812. These varieties achieved the highest overall scores because of their high color and firmness ratings. Fruit from all fruit varieties could be considered on the low side for the 'flavor' score, except for varieties 10442 and 11091 from Seeds of Change in which flavor scores are notably above those of the other varieties. Nevertheless those same 2 varieties ranked overall with the lowest scores because of red color and firmness scores. Other varieties that ranked low overall were PS 2942 and SXT 6784.

## 2. Roma Fresh Market Tomato Variety Results

### **Fresno County Replicated Roma Tomato Trial.**

Six Roma tomato varieties were evaluated from MG and VR harvested fruit (**Table 10**). Red color, firmness and composition results were similar for the MG and VR harvested fruit. Fruits of BSS526 had the highest % soluble solids (4.5% vs average value of 4.2%) and also averaged the highest % titratable acidity (0.38% vs average 0.33% for other 5 varieties).

### **Merced County Replicated Roma Tomato Trial.**

For the six varieties harvested as both MG and VR, average final red color was good and did not differ between the 2 harvest stages (**Table 11**). Average % titratable acidity was also similar between MG and VR harvested fruit, but pH values were notably higher in VR harvested fruit, especially for variety Monica. VR harvested fruit were significantly less firm on average than the MG harvested fruit, but they had significantly higher average soluble solids content (4.5 vs 4.2%). BSS526 variety again had the highest % soluble solids (4.7%) and % titratable acidity (0.42%).

### **San Joaquin County Replicated Roma Tomato Trial.**

The six varieties were evaluated as MG harvested fruit only (**Table 12**). Red color development was very good and fruit from all varieties were very firm. The % soluble solids and % titratable acidity values were similar to those of the other two Roma trials, ranging from 4.1 to 4.6% soluble solids and from 0.29 to 0.39% titratable acidity. Again BSS526 variety had the highest content of both.

### **Overall Assessment of ROMA Tomato Quality from the 3 Trials**

**Tables 13 and 14** summarize average values for color, firmness and composition for the 6 Roma varieties studied from the 3 trials. MG-harvested fruit from the 3 trials are compared in **Table 13**, while VR-harvested fruit are compared in **Table 14**. For the 3 trial locations, overall average values for the MG harvested fruit (**Table 13**) indicate that the fruit from the San Joaquin County trial were redder, firmer and had slightly higher % soluble solids than fruit from other 2 trials. The MG fruit from the Fresno trial were, on average, slightly but significantly less red than fruit from the Merced trial. Firmness values of fruit from Fresno and Merced trials were the same as were composition values. The average results for the VR harvested fruit (**Table 14**) show that the fruit from both the Fresno and Merced trials were of similar red color and % acidity, but less firm with slightly higher % soluble solids in the Merced trial.

**Table 15** provides an overall summary of ROMA fruit quality that takes into account the color, firmness and compositional quality of the MG and VR harvested fruit ripened to the table-ripe stage. The criteria for the categories (1, 2 or 3) were the same as used for the round tomatoes in 2006, although subjective, help to establish an overall quality assessment. Obviously the ratings could be different if the categories were defined differently. Based on the criteria used, the varieties that had the highest overall scores of 7.3 were Monica (standard variety) and BSS526. These varieties achieved the highest overall scores because of their high color and firmness ratings and because their flavor scores were slightly higher than those of other varieties. The varieties MiRoma and MiRey were rated the lowest overall.

## 1. Round Fresh Market Tomato Variety Results

**Table 4.** Quality characteristics of fresh market **ROUND** tomatoes harvested **Mature-Green** and **Vine-Ripe** from the 2006 **Fresno County** replicated trial and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements. Varieties are in the same order as listed for the field trial. An ‘R’ after the variety name indicates that fruits were obtained from replicated field plots.

Number and cultivar	Seed Company	Harvest Stage	Red Color, Hue	Firmness, Newtons	Soluble solids, %	pH	Titrateable acidity, %
1. PS 2942 (R)	Seminis	MG	40.5	19.6	4.0	4.45	0.31
2. PS 2935 (R)	“	MG	39.9	23.9	4.0	4.48	0.30
3. Bobcat (R)	Syngenta	MG	39.4	20.2	4.1	4.40	0.29
4. Q-21 (R)	“	MG	40.8	19.4	4.2	4.40	0.30
5. Q-23 (R)	“	MG	39.5	20.5	4.1	4.35	0.32
6. Scout (R)	“	MG	39.2	19.4	4.1	4.43	0.30
7. Wolverine (R)	“	MG	38.2	20.3	4.1	4.48	0.29
8. Shady Lady (R)	Nunhems	MG	37.9	15.3	4.2	4.42	0.31
9. HMX 5790 (R)	Harris Moran	MG	39.4	24.3	4.1	4.46	0.32
10. HMX 6812 (R)	“	MG	39.7	29.3	4.1	4.44	0.30
11. SXT 6764	Nunhems	MG	40.0	17.0	4.1	4.33	0.30
12. SXT 6782	“	MG	38.7	16.8	4.1	4.44	0.30
13. SXT 6783	“	MG	40.0	19.3	3.9	4.38	0.33
14. SXT 6784	“	MG	38.7	16.6	3.8	4.38	0.28
	<b>LSD.05</b>		<b>1.2</b>	<b>2.4</b>	<b>0.2</b>	<b>.07</b>	<b>0.05</b>
1. PS 2942 (R)	Seminis	VR	42.5	19.5	4.4	4.44	0.34
2. PS 2935 (R)	“	VR	42.9	21.7	4.2	4.44	0.32
3. Bobcat (R)	Syngenta	VR	42.0	18.7	4.3	4.37	0.36
4. Q-21 (R)	“	VR	41.6	17.8	4.3	4.35	0.32
5. Q-23 (R)	“	VR	40.7	19.7	4.3	4.38	0.34
6. Scout (R)	“	VR	41.7	20.8	4.3	4.41	0.36
7. Wolverine (R)	“	VR	41.2	22.2	4.4	4.39	0.36
8. Shady Lady (R)	Nunhems	VR	40.9	15.5	4.4	4.38	0.37
9. HMX 5790 (R)	Harris Moran	VR	40.4	21.1	4.4	4.44	0.35
	<b>LSD.05</b>		<b>1.7</b>	<b>2.4</b>	<b>0.1</b>	<b>ns</b>	<b>0.03</b>
	<b>Average</b>	<b>MG</b>	<b>39.4</b>	<b>20.1</b>	<b>4.1</b>	<b>4.42</b>	<b>0.30</b>
	<b>Average</b>	<b>VR</b>	<b>41.5</b>	<b>19.7</b>	<b>4.3</b>	<b>4.40</b>	<b>0.35</b>

Color and firmness data are from 3 replicates of 15 fruits for MG and VR harvested tomatoes; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 5.** Quality characteristics of fresh market **ROUND** tomatoes harvested **Mature-Green** and **Vine-Ripe** from the 2006 **Merced County** replicated trial and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements. Varieties are in the same order as listed for the field trial. An ‘R’ after the variety name indicates that fruits were obtained from replicated field plots.

Number and cultivar	Seed Company	Harvest Stage	Red Color, Hue	Firmness, Newtons	Soluble solids, %	pH	Titratable acidity, %
1. PS 2942 (R)	Seminis	MG	41.3	21.5	4.3	4.57	0.27
2. PS 2935 (R)	“	MG	38.6	23.9	4.1	4.56	0.26
3. Bobcat (R)	Syngenta	MG	38.8	22.1	3.8	4.45	0.32
4. Q-21 (R)	“	MG	39.1	19.2	4.4	4.49	0.32
5. Q-23 (R)	“	MG	39.1	19.5	4.3	4.40	0.33
6. Scout (R)	“	MG	39.0	21.2	3.8	4.43	0.30
7. Wolverine (R)	“	MG	40.7	23.4	4.1	4.46	0.31
8. Shady Lady (R)	Nunhems	MG	37.9	14.6	4.0	4.45	0.32
9. HMX 5790 (R)	Harris Moran	MG	38.5	23.8	4.3	4.56	0.27
10. HMX 6812	“	MG	37.3	21.5	4.4	4.52	0.28
15. 10442	Seeds of Change	MG	41.6	18.4	5.3	4.52	0.33
16. 11091	“	MG	41.4	17.3	5.4	4.51	0.35
17. 5151	“	MG	37.9	17.5	4.0	4.38	0.35
18. 6260-D	“	MG	44.2	25.5	4.1	4.43	0.31
	<b>LSD.05</b>		<b>1.5</b>	<b>2.6</b>	<b>0.3</b>	<b>0.07</b>	<b>0.03</b>
1. PS 2942 (R)	Seminis	VR	39.9	16.1	4.1	4.63	0.26
2. PS 2935 (R)	“	VR	39.1	18.4	4.0	4.63	0.24
3. Bobcat (R)	Syngenta	VR	40.2	19.4	4.3	4.49	0.34
4. Q-21 (R)	“	VR	37.6	16.2	4.5	4.51	0.35
5. Q-23 (R)	“	VR	39.8	17.9	4.5	4.35	0.40
6. Scout (R)	“	VR	40.4	18.4	4.0	4.42	0.36
7. Wolverine (R)	“	VR	40.2	18.9	4.3	4.48	0.35
8. Shady Lady (R)	Nunhems	VR	39.8	14.4	4.4	4.42	0.41
9. HMX 5790 (R)	Harris Moran	VR	38.4	16.1	4.3	4.55	0.30
10. HMX 6812	“	VR	38.0	20.9	4.5	4.82	0.35
15. 10442	Seeds of Change	VR	40.5	14.4	5.3	4.48	0.33
16. 11091	“	VR	41.9	14.0	5.4	4.62	0.36
17. 5151	“	VR	37.2	16.2	4.0	4.55	0.39
18. 6260-D	“	VR	38.0	18.5	3.9	4.38	0.31
	<b>LSD.05</b>		<b>1.4</b>	<b>2.1</b>	<b>0.3</b>	<b>ns</b>	<b>0.04</b>
	<b>Average</b>	<b>MG</b>	<b>39.7</b>	<b>20.7</b>	<b>4.3</b>	<b>4.48</b>	<b>0.31</b>
	<b>Average</b>	<b>VR</b>	<b>39.3</b>	<b>17.1</b>	<b>4.4</b>	<b>4.53</b>	<b>0.34</b>

Color and firmness data are from 3 replicates of 15 fruits for MG and 12 fruits for VR harvested tomatoes; data on composition are from 3 replicates of composite samples of 12-15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 6.** Quality characteristics of fresh market **ROUND** tomatoes harvested **Mature-Green** from the 2006 **San Joaquin County** replicated trial and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements. Varieties are in the same order as listed for the field trial. An ‘R’ after the variety name indicates that fruits were obtained from replicated field plots.

Number and cultivar	Seed Company	Harvest Stage	Red Color, Hue	Firmness, Newtons	Soluble solids, %	pH	Titratable acidity, %
1. PS 2942 (R)	Seminis	MG	37.2	27.7	4.4	4.51	0.27
2. PS 2935 (R)	“	MG	38.0	29.3	4.3	4.49	0.26
3. Bobcat (R)	Syngenta	MG	37.7	26.7	4.4	4.48	0.32
4. Q-21 (R)	“	MG	38.6	25.2	4.4	4.42	0.32
5. Q-23 (R)	“	MG	38.3	22.3	4.5	4.38	0.33
6. Scout (R)	“	MG	38.4	24.4	4.2	4.44	0.30
7. Wolverine (R)	“	MG	36.9	24.5	4.5	4.47	0.31
8. Shady Lady (R)	Nunhems	MG	38.4	18.9	4.5	4.39	0.32
	<b>LSD.05</b>		<b>1.1</b>	<b>2.4</b>	<b>0.2</b>	<b>0.05</b>	<b>0.03</b>
	<b>Average</b>		<b>37.9</b>	<b>24.9</b>	<b>4.4</b>	<b>4.45</b>	<b>0.30</b>

Color and firmness data are from 3 replicates of 15 fruits; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.



**Table 7.** Quality characteristics of fresh market **ROUND** tomatoes harvested **Mature-Green** from the three 2006 replicated trials and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements.

Number and cultivar	Seed Company	Trial	Red Color Hue	Firmness Newtons	Soluble solids %	pH	Titrateable acidity, %
<b>1. PS 2942</b>	Seminis	Fresno	40.5	19.6	4.0	4.45	0.31
		Merced	41.3	21.5	4.3	4.57	0.27
		San Joaquin	37.3	27.7	4.4	4.51	0.27
		<b>AVERAGE</b>	<b>39.7</b>	<b>22.9</b>	<b>4.2</b>	<b>4.51</b>	<b>0.29</b>
<b>2. PS 2935</b>	Seminis	Fresno	39.9	23.9	4.0	4.48	0.30
		Merced	38.6	23.9	4.1	4.56	0.26
		San Joaquin	38.0	29.3	4.3	4.49	0.26
		<b>AVERAGE</b>	<b>38.9</b>	<b>25.7</b>	<b>4.2</b>	<b>4.51</b>	<b>0.27</b>
<b>3. Bobcat</b>	Syngenta	Fresno	39.4	20.2	4.1	4.40	0.29
		Merced	38.8	22.1	3.8	4.45	0.32
		San Joaquin	37.7	26.7	4.4	4.48	0.32
		<b>AVERAGE</b>	<b>38.6</b>	<b>23.0</b>	<b>4.1</b>	<b>4.44</b>	<b>0.31</b>
<b>4. Q-21</b>	Syngenta	Fresno	40.8	19.4	4.2	4.40	0.30
		Merced	39.1	19.2	4.4	4.49	0.32
		San Joaquin	38.6	25.2	4.4	4.42	0.32
		<b>AVERAGE</b>	<b>39.5</b>	<b>21.3</b>	<b>4.3</b>	<b>4.43</b>	<b>0.32</b>
<b>5. Q-23</b>	Syngenta	Fresno	39.5	20.5	4.1	4.35	0.32
		Merced	39.1	19.5	4.3	4.40	0.33
		San Joaquin	38.3	22.3	4.5	4.38	0.33
		<b>AVERAGE</b>	<b>39.0</b>	<b>20.8</b>	<b>4.3</b>	<b>4.38</b>	<b>0.32</b>
<b>6. Scout</b>	Syngenta	Fresno	39.2	19.4	4.1	4.43	0.30
		Merced	39.0	21.2	3.8	4.43	0.30
		San Joaquin	38.4	24.4	4.2	4.44	0.30
		<b>AVERAGE</b>	<b>38.8</b>	<b>21.7</b>	<b>4.0</b>	<b>4.44</b>	<b>0.30</b>
<b>7. Wolverine</b>	Syngenta	Fresno	38.2	20.3	4.1	4.48	0.29
		Merced	40.7	23.4	4.1	4.46	0.31
		San Joaquin	36.9	24.2	4.5	4.47	0.31
		<b>AVERAGE</b>	<b>38.6</b>	<b>22.7</b>	<b>4.2</b>	<b>4.47</b>	<b>0.30</b>
<b>8. Shady Lady</b>	Nunhems	Fresno	37.9	15.3	4.2	4.42	0.31
		Merced	37.9	14.6	4.0	4.45	0.32
		San Joaquin	38.4	18.9	4.5	4.39	0.32
		<b>AVERAGE</b>	<b>38.1</b>	<b>16.2</b>	<b>4.2</b>	<b>4.42</b>	<b>0.32</b>
	<b>Average</b>	Fresno	<b>39.4</b>	<b>19.8</b>	<b>4.1</b>	<b>4.43</b>	<b>0.30</b>
	<b>Average</b>	Merced	<b>39.3</b>	<b>20.7</b>	<b>4.1</b>	<b>4.48</b>	<b>0.31</b>
	<b>Average</b>	San Joaquin	<b>37.9</b>	<b>24.9</b>	<b>4.4</b>	<b>4.45</b>	<b>0.31</b>
		<b>LSD.05</b>	<b>0.8</b>	<b>1.5</b>	<b>0.2</b>	<b>0.05</b>	<b>0.02</b>
	<b>OVERALL</b>	<b>AVERAGE</b>	<b>38.9</b>	<b>21.8</b>	<b>4.2</b>	<b>4.45</b>	<b>0.31</b>

Color and firmness data are from 3 replicates of 15 fruits; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 8.** Quality characteristics of fresh market **ROUND** tomatoes harvested **Vine-Ripe** from two 2006 replicated trials and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements.

Number and cultivar	Seed Company	Trial	Red Color Hue	Firmness Newtons	Soluble solids %	pH	Titrateable acidity, %
<b>1. PS 2942</b>	Seminis	Fresno	42.3	19.4	4.4	4.44	0.34
		Merced	39.9	16.1	4.1	4.63	0.26
		<b>AVERAGE</b>	<b>41.1</b>	<b>17.8</b>	<b>4.2</b>	<b>4.53</b>	<b>0.30</b>
<b>2. PS 2935</b>	Seminis	Fresno	43.1	22.1	4.2	4.44	0.32
		Merced	39.1	18.4	4.0	4.63	0.24
		<b>AVERAGE</b>	<b>41.1</b>	<b>20.3</b>	<b>4.1</b>	<b>4.54</b>	<b>0.28</b>
<b>3. Bobcat</b>	Syngenta	Fresno	41.7	18.7	4.3	4.37	0.36
		Merced	40.2	19.4	4.3	4.49	0.34
		<b>AVERAGE</b>	<b>41.0</b>	<b>19.0</b>	<b>4.3</b>	<b>4.43</b>	<b>0.35</b>
<b>4. Q-21</b>	Syngenta	Fresno	41.6	17.5	4.3	4.35	0.32
		Merced	37.6	16.2	4.5	4.51	0.35
		<b>AVERAGE</b>	<b>39.6</b>	<b>16.9</b>	<b>4.4</b>	<b>4.43</b>	<b>0.34</b>
<b>5. Q-23</b>	Syngenta	Fresno	40.6	19.3	4.3	4.38	0.34
		Merced	39.8	17.9	4.5	4.35	0.40
		<b>AVERAGE</b>	<b>40.2</b>	<b>18.6</b>	<b>4.4</b>	<b>4.37</b>	<b>0.37</b>
<b>6. Scout</b>	Syngenta	Fresno	41.6	20.4	4.3	4.41	0.36
		Merced	40.4	18.4	4.0	4.42	0.36
		<b>AVERAGE</b>	<b>41.1</b>	<b>19.4</b>	<b>4.2</b>	<b>4.41</b>	<b>0.36</b>
<b>7. Wolverine</b>	Syngenta	Fresno	41.2	22.1	4.4	4.39	0.36
		Merced	40.2	18.9	4.3	4.48	0.35
		<b>AVERAGE</b>	<b>40.7</b>	<b>20.5</b>	<b>4.4</b>	<b>4.43</b>	<b>0.36</b>
<b>8. Shady Lady</b>	Nunhems	Fresno	40.9	15.4	4.4	4.38	0.37
		Merced	39.8	14.4	4.4	4.42	0.41
		<b>AVERAGE</b>	<b>40.3</b>	<b>14.9</b>	<b>4.4</b>	<b>4.40</b>	<b>0.39</b>
	<b>Average</b>	Fresno	<b>41.6</b>	<b>19.4</b>	<b>4.3</b>	<b>4.39</b>	<b>0.35</b>
	<b>Average</b>	Merced	<b>39.6</b>	<b>17.5</b>	<b>4.3</b>	<b>4.49</b>	<b>0.34</b>
		<b>LSD.05</b>	<b>1.1</b>	<b>1.6</b>	<b>0.2</b>	<b>0.03</b>	<b>0.02</b>
	<b>OVERALL</b>	<b>AVERAGE</b>	<b>40.6</b>	<b>18.4</b>	<b>4.3</b>	<b>4.44</b>	<b>0.34</b>

Color and firmness data are from 3 replicates of 12 fruits; composition data are from 3 replicates of composite samples of 12 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 9. Summary Table of Ranking** of overall scores of ripe **ROUND tomato varieties** (includes MG from all 3 trials and VR from 2 trials) evaluated in 2005. Varieties are scored for each characteristic on a 3 point scale, where 1=low, 2=intermediate, 3=high. For red color, score 1= poor, with hue >40, 2= hue 38-40, and score 3 = high with hue <38. For firmness, score 1 = <15 Newton force, score 2 = 15-20, and score 3 = >20 Newton. For soluble solids, score 1 = < 4.5 %SS, score 2 = 4.5-5.0 %SS, and score 3 = >5.0 %SS. For Acidity, score 1 = < 0.30 %T.A., score 2 = 0.30-0.40 %T.A., and score 3= >0.40 %T.A. Flavor Score is the average of the soluble solids and titratable acidity scores. The categories are the same as used in 2005 except for color scores. **Total score is based on the sum of the flavor, red color and firmness scores, and the higher the total score, the better the overall quality. Varieties are ordered based on total quality score (right column).**

Variety	Number Evaluations (trials)	%SS Score	% TA Score	Flavor Score (Max = 3)	Red Color Score (Max = 3)	Firmness Score (Max = 3)	Total Quality Score (Maximum =9)
HMX 6812	3	1.3	1.7	1.5	2.3	3.0	6.8
5151	2	1.0	2.0	1.5	3.0	2.0	6.5
HMX 5790	4	1.0	1.8	1.4	1.8	2.8	6.0
6260-D	2	1.0	2.0	1.5	2.0	2.5	6.0
Q-23	5	1.4	2.0	1.7	1.8	2.4	5.9
PS 2935	5	1.0	1.4	1.2	1.8	2.8	5.8
Bobcat	5	1.0	1.8	1.4	1.8	2.6	5.8
Scout	5	1.0	2.0	1.5	1.6	2.6	5.7
Wolverine	5	1.2	1.8	1.5	1.4	2.8	5.7
SXT 6764	1	1.0	2.0	1.5	2.0	2.0	5.5
SXT 6782	1	1.0	2.0	1.5	2.0	2.0	5.5
SXT 6783	1	1.0	2.0	1.5	2.0	2.0	5.5
Q-21	5	1.2	2.0	1.6	1.6	2.2	5.4
Shady Lady	5	1.2	2.2	1.7	2.2	1.2	5.1
PS 2942	5	1.0	1.4	1.2	1.4	2.4	5.0
10442	2	3.0	2.0	2.5	1.0	1.5	5.0
11091	2	3.0	2.0	2.5	1.0	1.5	5.0
SXT 6784	1	1.0	1.0	1.0	2.0	2.0	5.0
<b>AVERAGE</b>	3.3	1.3	1.8	1.6	1.8	2.2	5.6

## 2. Roma Fresh Market Tomato Variety Results

**Table 10.** Quality characteristics of fresh market **ROMA** tomatoes harvested **Mature-Green** and **Vine-Ripe** from the 2006 **Fresno County** replicated trial and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements. Varieties are in the same order as listed for the field trial. An ‘R’ after the variety name indicates that fruits were obtained from replicated field plots.

Number and cultivar	Seed Company	Harvest Stage	Red Color, Hue	Firmness, Newtons	Soluble solids, %	pH	Titrateable acidity, %
1. Monica (R)	Sakata	MG	40.0	21.5	4.2	4.35	0.36
2. BSS526 (R)	Bejo Seeds	MG	41.1	22.0	4.5	4.33	0.40
3. SD257 (R)	LSL	MG	39.8	22.3	4.2	4.41	0.31
4. MiRey (R)	Syngenta	MG	40.3	20.3	4.1	4.35	0.35
5. MiRoma (R)	Syngenta	MG	42.3	20.2	4.2	4.36	0.32
6. PX 739 (R)	Seminis	MG	40.1	21.8	4.2	4.37	0.33
	<b>LSD.05</b>		<b>1.1</b>	<b>2.2</b>	<b>0.1</b>	<b>ns</b>	<b>0.03</b>
1. Monica (R)	Sakata	VR	--	--	--	--	--
2. BSS526 (R)	Bejo Seeds	VR	39.6	17.8	4.6	4.40	0.34
3. SD257 (R)	LSL	VR	38.7	21.2	4.3	4.41	0.35
4. MiRey (R)	Syngenta	VR	41.8	20.9	4.2	4.37	0.32
5. MiRoma (R)	Syngenta	VR	41.3	19.1	4.2	4.36	0.34
6. PX 739 (R)	Seminis	VR	40.1	19.1	4.2	4.37	0.33
	<b>LSD.05</b>		<b>1.3</b>	<b>1.9</b>	<b>0.2</b>	<b>ns</b>	<b>ns</b>
	<b>Average</b>	<b>MG</b>	<b>40.6</b>	<b>21.4</b>	<b>4.2</b>	<b>4.36</b>	<b>0.34</b>
	<b>Average</b>	<b>VR</b>	<b>40.3</b>	<b>19.6</b>	<b>4.3</b>	<b>4.38</b>	<b>0.34</b>

Color and firmness data are from 3 replicates of 15 fruits for MG and VR harvested tomatoes; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 11.** Quality characteristics of fresh market **ROMA** tomatoes harvested **Mature-Green** and **Vine-Ripe** from the 2006 **Merced County** replicated trial and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements. Varieties are in the same order as listed for the field trial. An ‘R’ after the variety name indicates that fruits were obtained from replicated field plots.

Number and cultivar	Seed Company	Harvest Stage	Red Color, Hue	Firmness, Newtons	Soluble solids, %	pH	Titrateable acidity, %
1. Monica (R)	Sakata	MG	36.3	24.2	4.4	4.47	0.31
2. BSS526 (R)	Bejo Seeds	MG	38.0	22.7	4.6	4.35	0.39
3. SD257 (R)	LSL	MG	39.0	25.4	4.2	4.45	0.31
4. MiRey (R)	Syngenta	MG	40.0	20.4	4.1	4.50	0.30
5. MiRoma (R)	Syngenta	MG	40.4	21.4	4.0	4.46	0.29
6. PX 739 (R)	Seminis	MG	39.6	21.6	4.0	4.44	0.31
	<b>LSD.05</b>		<b>1.1</b>	<b>2.6</b>	<b>0.1</b>	<b>0.08</b>	<b>0.03</b>
1. Monica (R)	Sakata	VR	37.6	18.6	4.5	5.20	0.30
2. BSS526 (R)	Bejo Seeds	VR	38.0	16.5	4.8	4.41	0.44
3. SD257 (R)	LSL	VR	39.6	22.4	4.3	4.49	0.35
4. MiRey (R)	Syngenta	VR	40.0	16.6	4.5	4.88	0.29
5. MiRoma (R)	Syngenta	VR	40.2	16.0	4.5	4.71	0.28
6. PX 739 (R)	Seminis	VR	40.8	17.1	4.5	4.74	0.28
	<b>LSD.05</b>		<b>1.1</b>	<b>1.6</b>	<b>0.2</b>	<b>0.3</b>	<b>0.02</b>
	<b>Average</b>	<b>MG</b>	<b>38.8</b>	<b>22.6</b>	<b>4.2</b>	<b>4.44</b>	<b>0.32</b>
	<b>Average</b>	<b>VR</b>	<b>39.4</b>	<b>17.9</b>	<b>4.5</b>	<b>4.74</b>	<b>0.32</b>

Color and firmness data are from 3 replicates of 15 fruits for MG and VR harvested tomatoes; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 12.** Quality characteristics of fresh market **ROMA** tomatoes harvested **Mature-Green** from the 2006 **San Joaquin County** replicated trial and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements. Varieties are in the same order as listed for the field trial. An ‘R’ after the variety name indicates that fruits were obtained from replicated field plots.

Number and cultivar	Seed Company	Harvest Stage	Red Color, Hue	Firmness, Newtons	Soluble solids, %	pH	Titrateable acidity, %
1. Monica (R)	Sakata	MG	37.8	26.9	4.4	4.40	0.31
2. BSS526 (R)	Bejo Seeds	MG	37.4	27.0	4.6	4.38	0.39
3. SD257 (R)	LSL	MG	36.5	28.5	4.4	4.45	0.31
4. MiRey (R)	Syngenta	MG	39.0	27.5	4.1	4.37	0.30
5. MiRoma (R)	Syngenta	MG	39.3	27.2	4.2	4.39	0.29
6. PX 739 (R)	Seminis	MG	38.6	28.0	4.3	4.41	0.31
	<b>LSD.05</b>		<b>1.0</b>	<b>2.3</b>	<b>0.2</b>	<b>0.02</b>	<b>0.03</b>
	<b>Average</b>	<b>MG</b>	<b>38.1</b>	<b>27.6</b>	<b>4.3</b>	<b>4.40</b>	<b>0.32</b>

Color and firmness data are from 3 replicates of 15 fruits for MG harvested tomatoes; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 13.** Quality characteristics of fresh market **ROMA** tomatoes harvested **Mature-Green** from the three 2006 replicated trials and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements.

Number and cultivar	Seed Company	Trial	Red Color Hue	Firmness Newtons	Soluble solids %	pH	Titrateable acidity, %
<b>1. Monica</b>	Sakata	Fresno	40.0	21.5	4.4	4.47	0.36
		Merced	36.3	24.2	4.4	4.40	0.31
		San Joaquin	37.8	26.9	4.5	4.33	0.31
		<b>AVERAGE</b>	<b>38.0</b>	<b>24.2</b>	<b>4.4</b>	<b>4.41</b>	<b>0.33</b>
<b>2. BSS526</b>	Bejo Seeds	Fresno	41.1	22.0	4.6	4.35	0.40
		Merced	37.9	22.7	4.6	4.38	0.39
		San Joaquin	37.4	27.0	4.2	4.41	0.39
		<b>AVERAGE</b>	<b>38.8</b>	<b>23.9</b>	<b>4.5</b>	<b>4.35</b>	<b>0.39</b>
<b>3. SD257</b>	LSL	Fresno	39.8	22.3	4.2	4.41	0.31
		Merced	39.0	25.4	4.2	4.45	0.31
		San Joaquin	36.5	28.5	4.4	4.45	0.31
		<b>AVERAGE</b>	<b>38.4</b>	<b>25.4</b>	<b>4.2</b>	<b>4.44</b>	<b>0.31</b>
<b>4. MiRey</b>	Syngenta	Fresno	40.3	20.2	4.1	4.35	0.35
		Merced	39.8	20.4	4.1	4.50	0.30
		San Joaquin	39.0	27.5	4.1	4.37	0.30
		<b>AVERAGE</b>	<b>39.7</b>	<b>22.7</b>	<b>4.1</b>	<b>4.41</b>	<b>0.32</b>
<b>5. MiRoma</b>	Syngenta	Fresno	42.3	20.2	4.2	4.36	0.32
		Merced	40.4	21.4	4.0	4.46	0.29
		San Joaquin	39.3	27.2	4.2	4.39	0.29
		<b>AVERAGE</b>	<b>40.7</b>	<b>22.9</b>	<b>4.1</b>	<b>4.40</b>	<b>0.30</b>
<b>6. PX 739</b>	Seminis	Fresno	40.1	21.8	4.2	4.37	0.33
		Merced	39.6	21.6	4.0	4.44	0.31
		San Joaquin	38.6	28.0	4.3	4.41	0.31
		<b>AVERAGE</b>	<b>39.4</b>	<b>23.8</b>	<b>4.2</b>	<b>4.41</b>	<b>0.32</b>
	<b>Average</b>	<b>Fresno</b>	<b>40.6</b>	<b>21.4</b>	<b>4.2</b>	<b>4.36</b>	<b>0.34</b>
	<b>Average</b>	<b>Merced</b>	<b>38.8</b>	<b>22.6</b>	<b>4.2</b>	<b>4.44</b>	<b>0.32</b>
	<b>Average</b>	<b>San Joaquin</b>	<b>38.1</b>	<b>27.5</b>	<b>4.3</b>	<b>4.40</b>	<b>0.32</b>
		<b>LSD.05</b>	<b>0.9</b>	<b>1.5</b>	<b>0.1</b>	<b>0.04</b>	<b>0.02</b>
	<b>OVERALL</b>	<b>AVERAGE</b>	<b>39.2</b>	<b>23.8</b>	<b>4.2</b>	<b>4.40</b>	<b>0.33</b>

Color and firmness data are from 3 replicates of 15 fruits; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 14.** Quality characteristics of fresh market **ROMA** tomatoes harvested **Vine-Ripe** from the three 2006 replicated trials and ripened at 20°C (68°F). Fruit were evaluated at the table-ripe stage as determined visually. See Tables 1-3 for explanation of measurements.

Number and cultivar	Seed Company	Trial	Red Color Hue	Firmness Newtons	Soluble solids %	pH	Titrateable acidity, %
<b>1. Monica</b>	Sakata	Fresno	--	--	--	--	--
		Merced	37.64	18.6	4.5	5.20	0.30
		<b>AVERAGE</b>	<b>37.6</b>	<b>18.6</b>	<b>4.5</b>	<b>5.20</b>	<b>0.30</b>
<b>2. BSS526</b>	Bejo Seeds	Fresno	39.6	17.8	4.6	4.40	0.34
		Merced	38.0	16.5	4.8	4.41	0.44
		<b>AVERAGE</b>	<b>38.8</b>	<b>17.1</b>	<b>4.7</b>	<b>4.40</b>	<b>0.39</b>
<b>3. SD257</b>	LSL	Fresno	38.7	21.2	4.3	4.41	0.35
		Merced	39.6	22.3	4.3	4.49	0.35
		<b>AVERAGE</b>	<b>39.2</b>	<b>21.8</b>	<b>4.3</b>	<b>4.45</b>	<b>0.35</b>
<b>4. MiRey</b>	Syngenta	Fresno	41.8	20.9	4.2	4.37	0.32
		Merced	39.9	16.6	4.5	4.88	0.29
		<b>AVERAGE</b>	<b>40.9</b>	<b>18.7</b>	<b>4.4</b>	<b>4.62</b>	<b>0.31</b>
<b>5. MiRoma</b>	Syngenta	Fresno	41.3	19.1	4.2	4.36	0.34
		Merced	40.2	16.0	4.5	4.71	0.28
		<b>AVERAGE</b>	<b>40.8</b>	<b>17.6</b>	<b>4.3</b>	<b>4.54</b>	<b>0.31</b>
<b>6. PX 739</b>	Seminis	Fresno	40.1	19.1	4.2	4.37	0.33
		Merced	40.8	17.1	4.5	4.74	0.28
		<b>AVERAGE</b>	<b>40.4</b>	<b>18.1</b>	<b>4.4</b>	<b>4.56</b>	<b>0.31</b>
	<b>Average</b>	<b>Fresno</b>	<b>40.3</b>	<b>19.9</b>	<b>4.3</b>	<b>4.38</b>	<b>0.34</b>
	<b>Average</b>	<b>Merced</b>	<b>39.4</b>	<b>17.9</b>	<b>4.5</b>	<b>4.74</b>	<b>0.32</b>
		<b>LSD.05</b>	<b>0.8</b>	<b>1.1</b>	<b>0.1</b>	<b>0.17</b>	<b>0.04</b>
	<b>OVERALL</b>	<b>AVERAGE</b>	<b>39.8</b>	<b>18.9</b>	<b>4.4</b>	<b>4.56</b>	<b>0.33</b>

Color and firmness data are from 3 replicates of 15 fruits; composition data are from 3 replicates of composite samples of 15 fruit per rep. Data were analyzed by ANOVA. Lower hue color values indicate redder fruits; lower firmness values indicate softer fruits.

**Table 15. Summary Table of Ranking** of overall scores of ripe **ROMA tomato varieties** (includes MG from all 3 trials and VR from 2 trials) evaluated in 2005. Varieties are scored for each characteristic on a 3 point scale, where 1=low, 2=intermediate, 3=high. For red color, score 1= poor, with hue >40, 2= hue 38-40, and score 3 = high with hue <38. For firmness, score 1 = <15 Newton force, score 2 = 15-20, and score 3 = >20 Newton force. For soluble solids, score 1 = < 4.5 %SS, score 2 = 4.5-5.0 %SS, and score 3 = >5.0 %SS. For Acidity, score 1 = < 0.30 %T.A., score 2 = 0.30-0.40 %T.A., and score 3= >0.40 %T.A. Flavor Score is the average of the soluble solids and titratable acidity scores. The categories are the same as used in 2005 except for color scores. **Total score is based on the sum of the flavor, red color and firmness scores, and the higher the total score, the better the overall quality. Varieties are ordered based on total quality score (right column).**

Variety	Number Evaluations (trials)	%SS Score	% TA Score	Flavor Score (Max = 3)	Red Color Score (Max = 3)	Firmness Score (Max = 3)	Total Quality Score (Maximum =9)
<b>Monica</b>	4	1.4	2.0	<b>1.7</b>	<b>2.8</b>	<b>2.8</b>	<b>7.3</b>
<b>BSS526</b>	5	2.0	2.4	<b>2.2</b>	<b>2.5</b>	<b>2.6</b>	<b>7.3</b>
<b>SD257</b>	5	1.0	2.0	<b>1.5</b>	<b>2.2</b>	<b>3.0</b>	<b>6.7</b>
<b>PX 739</b>	5	1.2	1.8	<b>1.5</b>	<b>2.0</b>	<b>2.6</b>	<b>6.1</b>
<b>MiRoma</b>	5	1.2	1.5	<b>1.4</b>	<b>1.5</b>	<b>2.5</b>	<b>5.4</b>
<b>MiRey</b>	5	1.2	1.7	<b>1.4</b>	<b>1.4</b>	<b>2.4</b>	<b>5.2</b>
<b>AVERAGE</b>	<b>4.8</b>	<b>1.3</b>	<b>1.9</b>	<b>1.6</b>	<b>2.1</b>	<b>2.7</b>	<b>6.3</b>