

## FRESH MARKET PLUM TOMATO CULTIVAR TRIAL SUMMARY<sup>1</sup> - 2004

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### Introduction

This is the third year evaluating commercial plum tomato varieties and advanced breeding lines for the fresh plum market in New Jersey. The project started with 31 materials in 2002 reduced the number to 17 in 2003 and this year to eight. The objective was to select a group of varieties which growers could grow for the vine ripe and red market. The 2004 trial was conducted at Ed Wuillerman and Sons, Hammonton, New Jersey.<sup>5</sup>

### Methods

#### Culture

Seeds were sown on April 6 in 72-cell trays (1½" X 1½") containing peat-vermiculite media formulated for tomato transplant production at Rutgers Agricultural Research and Extension Center. Seedlings were thinned to 1 plant per cell on April 27. Plants were grown in a greenhouse until one week before transplanting when they were placed in an outside protected area to harden off. *Imidacloprid* (Admire) was applied as a drench on May 7 to the seedling flats before transplanting at a rate of three milliliters (ml) per flat (72 plants) in sufficient water to saturate the growing media without draining off.

The grower laid black plastic mulch on top of one drip tube per row. Transplants were set 18 inches apart on raised beds with 6-ft centers on May 10. Each plant received 250 ml of 20-20-20 in the transplant hole prior to setting. After transplanting, the two lower suckers were removed from each plant and 5-foot stakes set. All other cultural practices, insect and disease control were those used for commercial production of plum tomatoes. Rainfall was 3.19, 3.22, 5.44, and 2.98 inches in May, June, July, and August respectively.

#### Experimental, Harvesting and Evaluation

Field plots were replicated four times in a randomized block design. Tomatoes were hand harvested from each plot on July 15 when early fruits were ripening and on 7/22, 7/30, 8/6, 8/13 and 8/20. All fruits with pink to red maturity were harvested. Fruits were separated into usable and culls, counted and weighed. Culls were further divided by the type of defect (blossom end rot, insect damage, cracks, green shoulder, gold flecking, rots, undersize, cat facing, misshapen, sunburn and miscellaneous) and counted. All yields are reported in 25 lb boxes per acre. At the July 30 harvest, 10 fruit were randomly selected from marketable fruit for each replication to evaluate internal, external and jelly color, firmness, white tissue, core size, fruit length and width, shoulder appearance, stem scar, recess blossom scar and the number of fruit with hollow locules. At the third harvest, plant height (5 plants/replication) was measured along with rating vine vigor, fruit cover and stem attachment. Table 1 lists the rating scales used for the different plant characteristics and external fruit characteristics while Table 2 lists rating scales for internal fruit characteristics. Data were statistically analyzed using ANOVA and compared with Least Significant Difference (LSD) Test at the 5% level.

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**Table 1. Rating scales for plant characteristics and external fruit evaluations.**

Vine Vigor and Fruit Cover	External Color and Shoulder Appearance	Stem Scar and Recess Blossom Scar	Fruit Firmness
5 = Excellent	5 = Excellent	5 = Small	5 = Very Firm
4 = Very Good	4 = Very Good	4 = Medium Small	4 = Firm
3 = Good	3 = Good	3 = Medium	3 = Medium
2 = Fair	2 = Fair	2 = Medium Large	2 = Medium Soft
1 = Poor	1 = Poor	1 = Large	1 = Soft

**Table 2. Rating scales for internal fruit evaluations.**

Jelly Color	White Tissue	Interior Color	Core Size
5 = Red	5 = None	5 = Excellent	5 = Small
4 = Yellow Red	4 = Slight	4 = Very Good	4 = Medium Small
3 = Yellow	3 = moderate	3 = Good	3 = Medium
2 = Yellow Green	2 = Moderately Heavy	2 = Fair	2 = Medium Large
1 = Green	1 = Severe	1 = Poor	1 = Large

## Results and Discussion

The 2004 growing season produced good tomato yields. Rainfall was distributed evenly throughout the production season. The yield, percent marketable fruit and average marketable fruit size for harvest 1 and 2 are shown in Table 3.

Total (marketable and culls) yields ranged from 73 (Health Kick) to 231 (H 107) boxes/A. H 107 had the highest yield and statistically differed from all others except HMX 0830. Health Kick had the lowest total yield along with BHN 685, Capaya and H 132.

Marketable yields ranged from 17 to 152 boxes/A. Plum Crimson had the highest yield and was statistically different from all other varieties. Capaya had the lowest yield, but did not differ statistically from BHN 685 or Health Kick. All other cultivars did not differ statistically from one another.

Percent marketable fruit varied from 17% (Capaya) to 87% (Plum Crimson). Plum Crimson had a statistically higher percent marketable fruit than all other cultivars. Capaya did not differ statistically from BHN 685, H 107 or HMX 0830. H 132 had the second highest percent (59.5%) marketable fruit, but it did not differ statistically from Daiquiri or Health Kick.

Large fruit are preferred for the fresh market trade. A 3.0-ounce fruit is considered the minimum for acceptance and 3.5 ounces is preferred. Fruit size ranged from 3.6 to 4.2 ounces and there were no statistical differences among the cultivars.

H 107 and HMX 0830 had statistically more cull fruit than all other cultivars. Plum Crimson had the least cull fruit (20 boxes/A), but it did not statically differ from Health Kick, H 132, or BHN 685. With the early harvests, certain problems can be more of a concern such as blossom end rot (BER), cracks, zippers, cat facing, and blotchy ripening. When the cull fruit was separated by type (data not shown) there were differences for some defects. H 107 had statistically more blossom end rot fruit (60 out of 95) than any other cultivar which was also true in 2003. HMX 0830 had the second highest number of fruit with BER and statistically differed from all other cultivars except Daiquiri. Plum Crimson had the least number of BER, but was not statistically different from BHN 685 or H 132. All other cultivars were not statistically different from one another. Few other culls were observed at the first harvest.

**Table 3. Plum tomato yield and fruit size for first and second harvest (early) – Wuillerman Farms, Hammonton, New Jersey – 2004.**

Variety	Source	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Mkt Fruit Wt. (Oz.)
BHN 685	BHN	76.0	27.8 cd	47.8	37.8	3.6
Capaya	Seminis	78.0	17.0 d	60.8	17.3	4.1
Daiquiri	Vilmorin	143.0	64.8 bc	78.5	44.3	4.1
H 107	Heinz	231.0	75.5 b	155.3	33.3	4.2
H 132	Heinz	109.0	64.8 bc	44.5	59.5	3.9
Health Kick	Seminis	73.0	30.3 cd	43.0	39.5	3.7
HMX 0830	Harris Moran	205.5	72.3 b	132.8	35.3	3.7
Plum Crimson	Harris Moran	172.0	152.5 a	19.8	87.0	4.2
<b>LSD 0.05</b>	-----	<b>47.2</b>	<b>39.7</b>	<b>34.8</b>	<b>20.9</b>	<b>NS</b>

Table 4 summarizes the yield and fruit size data for harvests three and four (mid season). Daiquiri had the highest total yield (1631 boxes/A) for mid season harvest, but statistically only differed from BHN 685 and Capaya which had the lowest yields 1351 and 650 boxes/A, respectively. Plum Crimson had the highest marketable yield (1351 boxes/A), but did not statistically differ from H 132. There were no significant differences among H 312, Health Kick or Daiquiri. Capaya had the lowest marketable yield (277 boxes/A) and differ statistically from all other cultivars. Six cultivars had over 50% marketable fruit for the third and fourth harvests. Plum Crimson had the highest percent marketable fruit with 84% and was statistically equal to H 132 at 79%. BHN 685, Capaya, and H 107 had the lowest percent marketable fruit at 45%, 44% and 54%, respectively.

Plum Crimson had the least cull fruit by weight (244 boxes/A), but the cultivar did not differ statistically from Capaya (372 boxes/A) or H 132 (322 boxes/A). BHN 685 (750 boxes/A) and H 107 (639 boxes/A) had the most cull fruit, but H 107 did not differ statistically from most other cultivars.

Fruit size (ounces/fruit) ranged from 3.2 to 4.7 ounces for the mid season harvest. Capaya statistically had the largest average fruit (4.7 ounces). BHN 685 (3.9 ounces) and Plum Crimson (3.9 ounces) differed statistically from all other cultivars. The remaining cultivars had average fruit size less than 3.5 ounces and were not significantly different from each other except for HMX 0830 (3.6 ounces).

The data for individual defects is not shown in table form. As with the early harvest, H 107 had statistically more blossom end rot (74 out of 427 fruit) than any other cultivar. Plum Crimson had the least BER, but did not statistically differ from other cultivars except H 107, Capaya and Daiquiri. The number of zippered fruit followed the same pattern as the early harvest. BHN 685 had the most (77 out of 357) zippered fruit and was statistically different from all cultivars. Daiquiri had the second highest number of zippered fruit and was statistically different from all others. Capaya had the least zippered fruit, but did not statistically differ from H 107 or H 132.

All cultivars had some blotchy ripening. H 107 had the most, but was not significantly different from HMX 0830, Health Kick, BHN 685 or Daiquiri. Capaya had the least blotchy ripening, but did not differ statistically from Daiquiri, H 132, or Plum Crimson.

There were statistical differences among the cultivars as to small fruit. Daiquiri (30 out of 536 fruit) had the highest number of small fruit, but it did not differ statistically from

HMX 0830, Health Kick, H 132 or H 107. Capaya had the fewest small fruit, but was statistically equal to BHN 685, H 107, and Plum Crimson.

**Table 4. Plum tomato yield and fruit size for third and fourth harvests (mid season) – Wuillerman Farms, Hammonton, New Jersey – 2004.**

Variety	Source	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Mkt Fruit Wt. (Oz.)
BHN 685	BHN	1350.8	600.8 d	750.0	45.0	3.9
Capaya	Seminis	649.5	277.3 e	372.0	43.5	4.7
Daiquiri	Vilmorin	1631.3	1087.3 b	544.0	66.5	3.2
H 107	Heinz	1371.5	732.3 cd	639.0	53.5	3.4
H 132	Heinz	1515.0	1193.8 ab	321.5	78.5	3.3
Health Kick	Seminis	1580.8	1086.0 b	494.8	69.0	3.3
HMX 0830	Harris Moran	1585.0	892.8 c	692.0	56.3	3.6
Plum Crimson	Harris Moran	1594.8	1350.8 a	243.8	84.8	3.9
<b>LSD 0.05</b>	-----	<b>225.8</b>	<b>183.5</b>	<b>188.6</b>	<b>10.6</b>	<b>0.3</b>

Yield (total, marketable and culls), percent marketable yield, and fruit size for late season harvest (5 and 6) are shown in Table 5. Capaya had significantly more total boxes of tomatoes per acre than all cultivars except Plum Crimson and H 107. HMX 0830 had the fewest boxes/A (790) and was significantly different than all other cultivars. The remaining cultivars were not statistically different from one another or H 107.

Marketable yields ranged from 345 to 1228 boxes/A with Plum Crimson having significantly higher marketable yield than all other cultivars. HMX 0830 had the lowest marketable yield and differed significantly from all other cultivars except BHN 685 (538 boxes/A). All other cultivars were not different from BHN 685 except H 132.

Percent marketable yield ranged from 37 to 72%. H 132 (72%) and Plum Crimson (69%) had significantly higher percent marketable yield, however Daiquiri (64%) did not differ from Plum Crimson. Capaya had the lowest percent marketable yield, but did not statistically differ from BHN 685 (37%), H 107 (44%), or HMX 0830 (42%). Health Kick (56%) differed statistically from all other cultivars and had the fourth highest percent marketable yield.

Average marketable fruit size decreased with each harvest season (early 3.94, mid 3.66 and late 3.21 ounces). Capaya had significantly larger fruit (4.3 ounces) than all other cultivars. Health Kick had the smallest fruit (2.7 ounces), but it did not statistically differ from Daiquiri, H 132, HMX 0830 or Plum Crimson.

Daiquiri had the fewest cull fruit, but was not significantly different from Health Kick, HMX 0830 or Plum Crimson. Capaya had more cull fruit than any other cultivar. There were few BER fruit for the late season harvest. BHN 685 had statistically more zippered fruit than all cultivars except Capaya and Daiquiri while the last two cultivars did not differ statistically from all others. Rain checking became more prevalent. H 107 had the most rain-checked fruit, but it did not differ statistically from Capaya. H 132 had the least rain-checked fruit which did not differ from Health Kick. Yellow eye (yellow ring around the stem scar) became more obvious at the late harvest. Plum Crimson (31 out of 598 fruit) had statistically more yellow-eyed fruit except Daiquiri. The other cultivars were not

significantly different from each other. Green shouldered fruit was evident at the late harvest. H 107 (126 out of 592 fruit) had the most fruit with green shoulders, but did not statically differ from Health Kick. HMX 0830 had the fewest green-shouldered fruit along with Plum Crimson, H 132, and Daiquiri. H 107 had significantly more small size fruit, but did not differ statistically from Daiquiri, H 132, or Health Kick. BHN 685 had the fewest small fruit, but did not differ from Capaya, HMX 0830 or Plum Crimson.

**Table 5. Plum tomato yield and fruit size for the fifth and sixth harvests (late season) – Wuillerman Farms, Hammonton, New Jersey – 2004.**

Variety	Source	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Mkt Fruit Wt. (Oz.)
BHN 685	BHN	1440.5	537.5 de	903.0	37.3	3.5
Capaya	Seminis	1839.3	679.3 cd	1159.8	37.0	4.3
Daiquiri	Vilmorin	1390.8	889.5 bc	501.3	64.0	3.0
H 107	Heinz	1550.8	683.3 cd	867.8	43.8	3.2
H 132	Heinz	1308.8	940.8 b	368.3	71.5	2.8
Health Kick	Seminis	1293.5	724.5 bcd	569.3	56.0	2.7
HMX 0830	Harris Moran	789.5	344.8 e	444.5	42.3	3.1
Plum Crimson	Harris Moran	1777.8	1228.0 a	549.8	68.5	3.1
<b>LSD 0.05</b>	-----	<b>301.1</b>	<b>239.7</b>	<b>125.8</b>	<b>7.3</b>	<b>0.5</b>

Table 6 contains the yield (total, marketable and cull), percent marketable yield and marketable fruit size data for all red fruit harvests. Plum Crimson had the highest overall yield (3544 boxes/A) for the production season, but did not significantly differ from Daiquiri and H 107. HMX 0830 had the lowest yield and was statistically equal to Capaya, BHN 685, H 132, and Health Kick. H 107 and H 132 did not differ statistically from all other cultivars except HMX0830 or Capaya.

Plum Crimson produced more marketable fruit than all other cultivars for the total season. H 132, Daiquiri and Health Kick did not statistically differ from each other, but yielded more than the group with the lowest yield. Capaya had the lowest yield and was statistically different from other cultivars except BHN 685 and HMX 0830. Most other cultivars were not significantly different from one another. Plum Crimson and H 132 had the statistically highest percentage of marketable yield while BHN 685 and Capaya the lowest.

The average marketable fruit weight ranged from 3.0 to 4.4 ounces/fruit. Capaya had significantly larger fruit than the other cultivars. Health Kick had the small fruit, but it did not differ statistically from H 132, or Daiquiri. Plum Crimson had fruits of 3.5 ounces/fruit which did not statistically differ from the remaining cultivars.

H 107, Capaya, and BHN 685 had the most culls and they were statistically different from the other cultivars. Plum Crimson and H 132 had the fewest culls and were significantly different from the other cultivars. All other cultivars were not statistically different from one another. H 107 had significantly more BER than all other cultivars for the production season. HMX 0830 had the second most BER fruit and did not significantly differ from Daiquiri or Capaya. These did not differ from other cultivars except Plum Crimson or BHN 685. Plum Crimson had the least BER and was statistically equal to BHN 685 and H 132.

BHN 685 had the most zippered fruit which was significantly different from all other cultivars. Daiquiri had statistically less zippered fruit than BHN 685 and more than all other cultivars. The remaining cultivars are statistically different from one another. H 107 and Capaya had more rain-checked fruit than the other cultivars and were

significantly different from the others except HMX 0830. H 132 had the least rain-checked fruit which was statistically equal to Health Kick and Daiquiri.

H 107 had statistically more green shoulder than any other cultivar. Health Kick and BHN 685 had the second highest number of green-shouldered fruit. The other cultivars were not statistically different from one another. BHN 685, Capaya, Plum Crimson, and HMX 0830 had the least number of small fruit. The other cultivars had significantly more small fruit than the previous four. Only Plum Crimson and Daiquiri had more yellow-eyed fruit than the other cultivars.

**Table 6. Plum tomato yield and fruit size for total red fruit harvests (6) – Wuillerman Farms, Hammonton, New Jersey – 2004.**

Variety	Source	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Mkt Fruit Wt. (Oz.)
BHN 685	BHN	2867.3	1166.0 de	1701.3	40.8	3.9
Capaya	Seminis	2566.8	973.8 e	1593.0	38.0	4.4
Daiquiri	Vilmorin	3165.5	2041.8 b	1123.8	64.8	3.1
H 107	Heinz	3153.3	1491.5 cd	1662.3	47.3	3.3
H 132	Heinz	2933.0	2199.3 b	734.0	75.0	3.1
Health Kick	Seminis	2947.5	1840.8 bc	1106.8	62.3	3.0
HMX 0830	Harris Moran	2579.8	1310.3 de	1269.0	50.8	3.4
Plum Crimson	Harris Moran	3544.3	2731.3 a	813.3	76.8	3.5
<b>LSD 0.05</b>	-----	<b>402.0</b>	<b>372.5</b>	<b>231.2</b>	<b>7.3</b>	<b>0.2</b>

At the last harvest, all green fruit of marketable size were harvested to determine total yield and which cultivars had the highest yield potential. Most of these green fruit would not have ripened in the field since the plants were starting to senesce. The green fruit data is summarized in table 7. BHN 685 had a significantly higher yield (598 boxes/A) than all other cultivars. H 132 had the second highest yield which was statistically different from all other cultivars except Capaya. Plum Crimson had the lowest (128 boxes/A) total green fruit yield, but was not significantly different from Daiquiri, H 107 or HMX 0830.

BHN 685 had statistically a higher marketable yield than all cultivars except H 132. H 107 had the lowest marketable yield, but only differed statistically from BHN 685, H 132 and Health Kick. H 132 had a significantly higher percentage marketable yield, but did not differ from Health Kick, HMX 0830 and Daiquiri. Capaya and H 107 had the lowest percent marketable yield and differed statistically from all other cultivars. The green fruit size was smaller since the fruit was not ripe. All fruits were less than 3.0 ounces except Capaya which averaged 3.0 ounces.

BHN 685 had significantly more cull fruit than the other cultivars. The other cultivars did not differ statistically from one another except Capaya which had the second highest cull rate. Rain checked fruit was the main cull for the green fruit. BHN 685 had statistically more rain-checked fruit than all other cultivars except Capaya which was not different from H 107. HMX 0830 had the fewest rain-checked fruit and differed statistically from all other except BHN 685, Capaya and H 107.

**Table 7. Plum tomato yield and fruit size for green fruit – Wuillerman Farms, Hammonton, New Jersey – 2004.**

Variety	Source	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Mkt Fruit Wt. (Oz.)
BHN 685	BHN	597.5	331.0 a	266.8	55.5	2.6
Capaya	Seminis	317.3	102.3 bc	214.8	31.8	3.0
Daiquiri	Vilmorin	162.5	104.3 bc	58.5	65.0	2.2

Variety	Source	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Mkt Fruit Wt. (Oz.)
H 107	Heinz	177.0	65.3 c	111.8	36.3	2.3
H 132	Heinz	375.5	297.5 a	78.3	79.0	2.5
Health Kick	Seminis	227.5	152.5 b	75.3	65.5	2.5
HMX 0830	Harris Moran	149.3	99.0 bc	50.3	65.0	2.6
Plum Crimson	Harris Moran	127.8	72.3 bc	54.8	53.8	2.2
<b>LSD 0.05</b>	-----	<b>99.2</b>	<b>84.4</b>	<b>49.8</b>	<b>14.6</b>	<b>0.2</b>

Plant characteristics are summarized in table 8. BHN 685, Capaya, and H 132 had very good vine vigor. Most cultivars had fair to good vine vigor. There were no statistical differences among the cultivars for fruit cover. This rating was taken after the third harvest which should be a good indication that these cultivars have sufficient foliage to protect the fruit. Plant height ranged from 2.95 to 3.99 feet. They all grow well on the standard tomato stake. Stem attachments are listed in table 8. Three cultivars Capaya, H 107 and H 132 had a jointless attachment. Jointlessness is a good characteristic since the stem may puncture the fruit when picking.

**Table 8. Plant characteristics at the third harvest – Wuillerman Farms, Hammonton, New Jersey – 2004**

Variety	Vine Vigor <sup>1</sup>	Fruit Cover <sup>1</sup>	Plant Height <sup>2</sup>	Stem Attachment <sup>3</sup>
BHN 685	4.50 a	3.00	3.99 a	2
Capaya	4.50 a	2.75	3.72 b	1
Daiquiri	2.75 cd	2.75	3.05 cd	2
H 107	3.50 bc	3.50	2.95 d	1
H 132	4.00 ab	3.75	3.21 c	1
Health Kick	3.25 bcd	4.00	3.25 c	2
HMX 0830	2.50 d	3.00	3.11 cd	2
Plum Crimson	2.75 cd	2.50	3.20 d	2
<b>LSD 0.05</b>	<b>0.87</b>	<b>NS</b>	<b>0.25</b>	-----

<sup>1</sup>1=poor, 2=fair, 3=good, 4=very good, 5=excellent; <sup>2</sup>mean of 5 plants/replication measured in feet; <sup>3</sup>1=jointless and 2=jointed

Table 9 summarizes the external fruit characteristics data. The fruit length ranged between 6.85 and 8.74 cm with the shortest being Health Kick which was not statistically different from HMX 0830 and H 132. The longest BHN 685 was significantly different from all other cultivars. Capaya, H 107, and Plum Crimson statistically differed from the shortest and longest fruit and Daiquiri differed from all others.

The fruit width was the same for most cultivars with a range of 5.15 to 5.75 cm. H 107 had the narrowest fruit and Capaya the widest. Most cultivars did not differ statistically from one another. Only Capaya differed from the others. BHN 685 had a significantly larger length/width ratio than all other cultivars which indicates it is an elongated fruit. Those cultivars which were more square and not statistically different from one another were HMX 0830, Health Kick, and H 132.

Firm fruit are important when picking red tomatoes for the fresh market. All cultivars were evaluated at the full red stage. HMX 0830 had the firmest fruit in the trial, but was not statistically different from Daiquiri, Plum Crimson or Capaya. BHN 685 produced the softest fruit in the trial, but did not differ statistically from H 132 or Health Kick.

Uniform red color is important for the fresh market since fruit are sold by color. All the cultivars had at least good color (3 rating) except Capaya and BHN 685 that had fair to good color. The three cultivars with the best color were Plum Crimson, H 132 and

Health Kick. These cultivars were statistically different from all other cultivars except H 107. A smooth shoulder makes the fruit more attractive to the consumer. Plum Crimson and H 132 had the best shoulder appearance and were statistically different from the other cultivars. BHN 685 and Capaya had the poorest appearance and were significantly different from the other cultivars except H 107. A larger stem scar may make the cultivar less acceptable to consumers. All the cultivars had a medium to medium-small stem scar except Capaya which was medium large. H 107 had the largest recess blossom scar and was statistically larger than all other cultivars. All the other cultivars had small to medium small scar.

**Table 9. External fruit characteristics at the third harvest – Wuillerman Farms, Hammonton, New Jersey – 2004**

Variety	Length <sup>1</sup> (cm)	Width <sup>1</sup> (cm)	L/W <sup>1</sup> Ratio	Firmness <sup>2</sup>	External Color <sup>3</sup>	Shoulder Appearance <sup>3</sup>	Stem Scar <sup>4</sup>	Recess Blossom Scar <sup>4</sup>
BHN 685	8.75a	5.30bc	1.65a	3.50d	2.50 d	1.50 e	3.00 c	3.75 c
Capaya	8.18 b	5.75 a	1.42c	4.75 ab	2.25 d	1.75 de	2.00 e	5.00 a
Daiquiri	7.53 c	5.30bc	1.43c	4.75ab	3.00 cd	3.75 b	4.50 a	4.00 bc
H 107	7.88 b	5.15 c	1.53b	4.25 bc	3.50 bc	2.25 cd	4.00 b	2.00 d
H 132	7.05 d	5.43 b	1.30d	4.00 cd	4.25 ab	4.50 a	3.00 c	4.50 ab
Health Kick	6.85 d	5.25bc	1.31d	3.75 cd	4.25 ab	2.50 c	2.75c d	4.25 bc
HMX 0830	6.93 d	5.48 b	1.26d	5.00 a	4.00 ab	2.50 c	2.50 d	4.50 ab
Plum Crimson	7.90 b	5.45 b	1.46c	4.75 ab	4.75 a	5.00 a	3.00 c	5.00 a
LSD 0.05	<b>0.32</b>	<b>0.24</b>	<b>0.05</b>	<b>0.67</b>	<b>0.81</b>	<b>0.73</b>	<b>0.50</b>	<b>0.72</b>

<sup>1</sup>mean of ten fruit/replication; <sup>2</sup> 1=soft, 2=medium soft, 3=medium, 4= firm, 5=very firm; <sup>3</sup> 1=poor, 2=fair, 3=good, 4=very good, 5=excellent; <sup>4</sup> 1=large, 2=medium large, 3=medium, 4=medium small, 5=small

Internal fruit characteristics are summarized in table 10. Daiquiri and Capaya had a poor to fair internal color rating while all other cultivars were rated good to very good. H 107 and Plum Crimson had the best internal color and were statistically better than other cultivars. Plum Crimson and H 107 had a medium to medium-small core. BHN 685 had a medium large core, but did not differ statistically from Capaya, Daiquiri, H 132 and Health Kick. All cultivars had red jelly color except Daiquiri, Capaya and Health Kick which had a yellow-red color.

Internal white tissue can leave hard areas within the fruit and cause fruit to be rejected. H 107 had no white tissue. Daiquiri had severe to moderately severe white tissue. The cultivars BHN 685, Capaya, and H 132 had moderately severe white tissue.

Hollow locules can lead to fruit compression when placed in boxes. HMX 0830 had nine hollow locules in 10 fruit. This was statistically different from all other cultivars except H 132 and Daiquiri. BHN 685, Capaya, H 107, Health Kick and Plum Crimson had the least hollow locules and were not significantly difference from one another.

**Table 10. Internal fruit characteristics at the third harvest – Wuillerman Farms, Hammonton, New Jersey – 2004**

Variety	Internal Color <sup>1</sup>	Core Size <sup>2</sup>	Jelly Color <sup>3</sup>	White Tissue <sup>4</sup>	Hollow Locules <sup>5</sup>
BHN 685	3.00 b	1.50 d	5.00 a	2.75 c	1.00 d
Capaya	2.00 c	2.25 bcd	4.00 c	2.75 c	1.00 d
Daiquiri	1.75 c	1.75 d	4.00 c	1.50 d	7.50 ab
H 107	4.25 a	3.75 a	5.00 a	5.00 a	4.00 bcd
H 132	3.00 b	2.00 cd	5.00 a	2.75 c	5.50 abc



Variety	Internal Color <sup>1</sup>	Core Size <sup>2</sup>	Jelly Color <sup>3</sup>	White Tissue <sup>4</sup>	Hollow Locules <sup>5</sup>
Health Kick	3.00 b	2.25 bcd	4.25 bc	3.00 bc	2.25 cd
HMX 0830	3.00 b	2.75 bc	4.50 b	3.00 bc	9.00 a
Plum Crimson	4.25 a	3.00 ab	5.00 a	3.50 b	4.25 bcd
LSD 0.05	<b>0.65</b>	<b>0.84</b>	<b>0.38</b>	<b>0.73</b>	<b>3.95</b>

<sup>1</sup>1=poor, 2=fair, 3=good, 4=very good, 5=excellent; <sup>2</sup>1=large, 2=medium large, 3=medium, 4=medium small, 5=small; <sup>3</sup> 1=green, 2=yellow-green, 3=yellow, 4=yellow-red, 5=red; <sup>4</sup>1=severe, 2=moderately heavy, 3=moderate, 4=slight, 5=none; <sup>5</sup>mean of ten fruit/replication

### Summary

Considering yield, fruit size and fruit characteristics the following cultivars performed best for early harvest Plum Crimson, H 132, Daiquiri, HMX 0830, and H 107. Plum Crimson, H 132 and Daiquiri were the best cultivars in this trial for the full season. Plum Crimson was the best cultivar for growers harvesting fruit at the breaker stage or slight pink. For growers who ship red fruit, H 132, H 107 and Daiquiri would be better options.

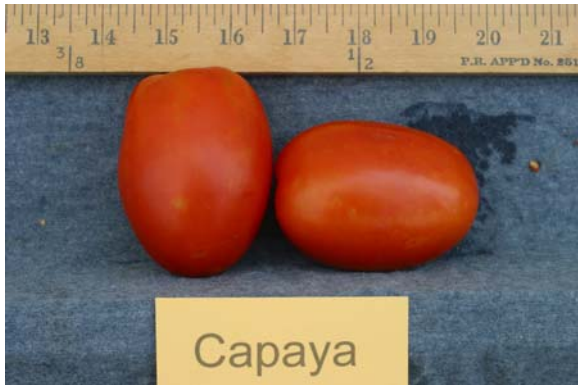
2004 PLUM TOMATO CULTIVARS



BHN 685



BHN 685



Capaya



Capaya



Daiquiri



Daiquiri



H 132



H 132



## NOTES