APPENDIX A.6

2002 NEW JERSEY MEDIUM ROUND HEIRLOOM TOMATO OBSERVATION TRIAL RESULTS[1]

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INTRODUCTION

Heirloom tomatoes are an expanding niche in the produce industry. Growers are trying to determine which heirlooms consumers prefer, but there are several hundred possibilities. Yields, plant and fruit characteristics vary widely among the different varieties and heirlooms need special post harvest handling. The tomato program enhancement grant is evaluating heirloom tomatoes to help growers make determinations as to which varieties have acceptable horticultural characteristics for New Jersey conditions. This report is one of five from 2002.

MATERIALS AND METHODS

Culture

Seeds were sown on April 15 in 200 cell trays and transplanted into 48 cell trays. The media contained peat-vermiculite media formulated for tomato transplant production at Snyder Research and Extension Farm on May 10. Plants were transferred to the Rutgers Agricultural Research and Extension Center (RAREC) and maintained in the greenhouse until one week before transplanting when they were placed in an outside protected area to harden off. Beds on 5-ft centers were formed and black plastic mulch with drip irrigation tube was laid. Plants were set in the field on May 26 by hand in single rows with 24 inches between plants. Plants were staked with 8 ft. tomato stakes with one stake between every two plants. Tomato string was used to hold the plants on the stakes. The first string was placed at 6 inches off the ground and the rest of the strings (5 – 7) where placed at 8 – 12 inch intervals.

Before bed making, a pre-plant fertilizer was applied at 60-lbs/A nitrogen as calcium nitrate. All additional fertilizer was applied through the drip system four times during the growing season with Peters 20-20-20 at a rate of 62 lbs/A of nitrogen (N), phosphorus (P_2O_5), and potassium (K_2O) for three applications and 1 application at the rate of 30 lbs/A for total nutrients of 216 lbs/A of N, P_2O_5 and K_2O per mulched acre. A total of three-pounds boron was applied with the other nutrients through the drip system.

The herbicide *Napropamide* (Devrinol 50DF - 3 lbs/A) was applied broadcast prior to bedding. This was followed with *metolachlor* (Dual Magnum II - 1.9 oz/A) and *paraquat* (Gramoxone Extra - 0.25 pts/A) between the beds after the plastic was laid. Insects and diseases were controlled using Rutgers commercial recommendations for tomatoes. *Imidacloprid* (Admire - 3ml/flat) was applied as a drench to the seedling flats before transplanting in enough water to

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saturate the growing media without draining off. The following materials were applied to the foliage with an air blast sprayer: A*vermectin-B* (Agri-mek 0,15EC – 8 oz/A), *azoxystrobin* (Quadris - 6 oz/A) and *lambdacyhalothrin* (Warrior – 4 oz/A) – August 23 and *cyfluthrin* (Baythriod 2 – 2.8 oz/A) and *chlorothalonil* (Bravo Weather Stik – 3.0 pt/A) – August 27.

Overall, the temperature throughout the growing season was warm and dry. With the monthly high average temperatures of 67, 76, 82, 87, 96, 80 and 64 degrees fahrenheit for months April, May, June, July, August, September and October, respectively. With the monthly low average temperatures of 45, 51, 62, 66, 66, 58 and 48 degrees fahrenheit for months April, May, June, July, August, September and October, respectively. The monthly rainfall (in inches) for April, May, June, July, August, September and October was 3.32, 3.86, 6.10, 2.08, 2.96, 2.53 and 5.78, respectively for a season total of 26.63 inches. Tensiometers were placed in each replication at the 12-inch depth to schedule supplemental irrigation.

Experimental Design, Harvesting and Evaluation

The cultivars were arranged in a randomized complete block design with four plants per plot and two replications. Tomatoes were hand harvested on July 26, August 1, 9, 15, 24, 30, September 6, 12, 19, 25 and October 7. Fruits were graded into marketable and culls; both were counted and weighed. Culls were further divided by the type of defect (blossom end rot, insect damage, green shoulder, cat facing, zipper, rot, small, misshapen; radial, concentric, and transversal cracks, sunburn, rain checking, and miscellaneous) and counted.

At the seventh harvest, five fruit was randomly selected from marketable fruit for each replication to evaluate internal and external fruit characteristics. Data was collected on vine vigor, fruit cover and plant height on October 25. Data were statistically analyzed using ANOVA and compared with Least Significant Difference (LSD) Test at the 5% level. All yield data is recorded in 25 lb boxes.

The cultivars and seed sources are listed in table 1 followed by the key for fruit characteristics in table 2 and plant characteristics in table 3.

Table 1- Seed Source *(Table continues on next page)*

Cultivar	Source
Arkansas Traveler	Seeds of Change
Baccone	Marianna's Heirlooms
Black	Tomato Grower's Seed Co.
Black Ethiopian	Marianna's Heirlooms
Carmello	Scheepers Kitchen Garden Seeds
Costoluto Genovese	Tomato Grower's Seed Co.
Eva Purple Ball	Tomato Grower's Seed Co.
Green Zebra	Scheepers Kitchen Garden Seeds
Healthkick	Seminis
Jutland	Georgia Bartok
Moskvich	Johnny's Selected Seeds
Odoriko	Tomato Grower's Seed Co.

Cultivar	Source
Pantano Romanesco	Marianna's Heirlooms
Purple Calabash	Tomato Grower's Seed Co.
Rose of Berne	Cook's Garden
Royal Hillbilly	Marianna's Heirlooms
Thessaloniki	Seeds of Change

(Table continued from previous page)

Table 2 Fruit Characteristics Key

Shape:
1- Beef Steak
2- Flattened Globe
3- Round
4- Blocky
5- Long Blocky
6- Very Deep-Round Oval
7- Pear
8- Plum
9- Oxheart
10- Bell
11- Flat
12- Elongated Oxheart

Stem Scar:
1- Small
2- Small / Medium
3- Medium
4- Medium / Large
5- Large

Jelly Color:
1- Red
2- Yellow / Red
3- Yellow
4- Yellow / Green
5- Green

External Color:
1- White
2- Green
3- Light Yellow
4- Yellow
5- Dark Yellow
6- Orange Yellow
7- Orange
8- Red Orange
9- Red
10- Light Pink
11- Pink
12- Dark Pink
13- Purple
14- Black
15- Mahogany
16- Red Mahogany
17- Orange Mahogany

Core Size:
1- Small
2- Small / Medium
3- Medium
4- Medium / Large
5- Large

Overall Internal:
1- Excellent
2- Very Good
3- Good / Average
4- Fair
5- Poor

Firmness:
1- Firm
2- Medium / Firm
3- Medium
4- Medium / Soft
5- Soft

Blossom Scar:
1- Small
2- Small / Medium
3- Medium
4- Medium / Large
5- Large

Internal Flesh Color:
1- Red
2- Yellow / Red
3- Yellow
4- Yellow / Green
5- Green

Overall External:
1- Excellent
2- Very Good
3- Good / Average
4- Fair
5- Poor

Table 3. Field Observations Key

Plant Color:	**Plant Vigor:**	**Fruit Cover:**
1- Dark Green	1- Excellent	1- Excellent
2- Green	2- Very Good	2- Very Good
3- Light Green	3- Good / Average	3- Good / Average
	4- Fair	4- Fair
	5- Poor	5- Poor

(Key continued from previous page)

Stem Attachment:	**Leaf Type:**	**Vine Size:**
1- Jointed	1- Regular	1- Small
2- Jointless	2- Regular / Narrow	2- Small / Medium
	3- Regular / Curled	3- Medium
	4- Regular / Fuzzy	4- Medium / Large
	5- Potato	5- Large

RESULTS AND DISCUSSION

Table 4 summarizes the yield components and market fruit size for the early (1, 2 and 3) harvest period. All cultivars were ready to harvest 61 days from transplanting except 'Eva Purple Ball' (67), 'Green Zebra' (67) and 'Black' (75). The cultivar 'Costoluto Genovese' produced significantly more tomatoes than the other cultivars. This was followed by a group of cultivars 'Purple Calabash', 'Pantano Romanesco', 'Healthkick' and 'Carmello' which statistically had higher yields than the remaining cultivars. 'Green Zebra' had the lowest total yield, but was not significantly lower than six other cultivars. 'Carmello' and 'Costoluto Genovese' had the highest marketable yield followed by 'Pantano Romanesco'. All the other cultivars were statistically not different from one another. 'Green Zebra' had no marketable fruit.

The cultivar 'Purple Calabash' had the most cull fruit, but it was not statistically different than 'Costoluto Genovese' or 'Healthkick'. All the other cultivars did not differ statistically from one another. 'Eva Purple Ball' had no cull fruit for the early harvest period. When the culls were separated by type (data not shown), 'Healthkick had more blossom end rot than all other cultivars. The others were not statistically different from one another. Catfacing can be a varietal or an environmental effect. The cultivar 'Purple Calabash' had significantly more catfacing than the other cultivars. Only four other cultivars had any catfacing which means 'Purple Calabash' is more susceptible to the defect.

The percent marketable fruit varied between 9 and 100%. 'Eva Purple Ball' had 100% marketable fruit for the early harvest, but was not statistically different from 12 other cultivars. 'Green Zebra' had 0% marketable fruit, but it was not significantly different than six other cultivars. Marketable fruit size ranged from 2.8 to 7.6 ounces with 'Royal Hillbilly' having the largest fruit and 'Black Ethiopian' the smallest.

Table 4. Medium Round Heirloom yield and fruit size for first, second, and third harvest (early) – RAREC Bridgeton, New Jersey - 2002

Cultivar	Days to Harvest	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Marketable Fruit Wt. Oz.
Arkansas Traveler	61	109	59	51	52	4.2
Baccone	61	76	49	28	43	3.8
Black	75	197	122	75	62	4.2
Black Ethiopian	61	119	83	36	58	2.8
Carmello	61	366	322	44	87	6.0
Costoluto Genovese	61	540	316	224	59	5.0
Eva Purple Ball	67	68	68	0	100	5.4
Green Zebra	67	10	0	10	0	-
Healthkick	61	383	169	215	46	3.4
Jutland	61	200	103	97	51	5.0
Moskvich	61	246	132	114	55	6.1
Odoriko	61	153	118	35	78	7.3
Pantano Romanesco	61	384	280	104	72	5.8
Purple Calabash	61	391	92	300	24	4.4
Rose of Berne	61	210	134	76	64	7.5
Royal Hillbilly	61	94	51	44	49	7.6
Thessaloniki	61	202	138	65	57	6.6
LSD 0.05	--------	**146**	**136**	**108**	**52**	**3.5**

Table 5 summarizes the combined yield and fruit size data for the mid season harvests (4, 5, 6 and 7). The cultivar ‘Healthkick’ had the highest total yield for the mid season harvests, but it was not statistically different from ‘Carmello’, ‘Thessaloniki’ ‘Baccone’ or ‘Royal Hillbilly’. These last four also were not significantly different from some other cultivars. Most other cultivars were not statistically different from one another. ‘Healthkick’ had statistically more marketable fruit except for ‘Carmello’ and ‘Thessaloniki’. As with the total yield ‘Green Zebra’ and ‘Moskvich’ had the lowest marketable yields. Percent market fruit varied from 36 to 94%. ‘Eva Purple Ball’ had the highest percentage marketable fruit, but it was not statistically different from ‘Arkansas Traveler’, ‘Healthkick’, ‘Thessaloniki’ or ‘Carmello’. The cultivar ‘Moskvich’ had the lowest percentage marketable fruit, but it was not statistically different from ‘Black’ or ‘Black Ethiopian’. Average marketable fruit size varied from 2.3 to 12.3 ounces per fruit. ‘Royal Hillbilly’ had the largest fruit and was statistically different from all other cultivars. The cultivar ‘Black Ethiopian’ had the smallest fruit, but was not significantly different from six other cultivars.

The cultivar ‘Black’ had the most cull fruit among the cultivars, but was not statistically different from any other cultivar except ‘Arkansas Traveler’ and ‘Eva Purple Ball’ which had the fewest cull fruit. When the culls were separated by type (data not shown) ‘Green Zebra’ and ‘Healthkick’ had significantly more Blossom end rot. All other cultivars were not statistically different. Green shouldered fruit can be a detriment since the area under the green area may be hard making it unmarketable. The cultivar ‘Baccone’ had statistically more green shoulder than all other cultivars. All other cultivars had few if any green shoulders. Cat facing in

tomatoes can be the affect of environment, cultivar or a combination. 'Purple Calabash' had statistically more cat facing than all other cultivars. Since the other cultivars had few cat faced fruit this is a cultivar affect. Zippering on fruit is generally related to cool temperatures at the time of fruit formation. 'Healthkick', had more zippered fruit, but was not significantly different from seven other cultivars. Over all, zippered fruit numbers were low with six cultivars having no zippered fruit. Fruit cracking is a serious problem in some heirloom tomatoes. In this trial 'Black Ethiopian' and 'Black' had statistically more concentrically cracked fruit. 'Black' was not significantly different from 'Carmello'. All other cultivars were not statistically different from one another.

Table 5. Medium round heirloom tomato yield and fruit size for mid season harvests – RAREC, Bridgeton, New Jersey – 2002

Cultivar	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Marketable Fruit Wt. Oz.
Arkansas Traveler	1500	1296	204	88	4.8
Baccone	1691	1246	445	74	4.6
Black	1233	556	690	45	2.8
Black Ethiopian	1370	698	673	51	2.3
Carmello	2190	1671	520	76	4.6
Costoluto Genovese	1056	777	279	73	3.8
Eva Purple Ball	1135	1073	63	95	5.8
Green Zebra	990	552	438	59	3.1
Healthkick	2319	1971	348	84	2.7
Jutland	1278	745	493	61	4.2
Moskvich	694	279	415	36	3.3
Odoriko	1451	1048	403	73	4.6
Pantano Romanesco	1278	776	502	62	7.0
Purple Calabash	1298	742	556	58	3.9
Rose of Berne	1196	749	448	62	4.4
Royal Hillbilly	1643	1001	642	62	12.3
Thessaloniki	1863	1548	316	84	5.0
LSD 0.05	**810**	**579**	**423**	**20**	**1.9**

Table 6 summarizes the combined yield and fruit size data for the late season harvests (8, 9, 10 and 11). Statistically there were no differences among the cultivars for total yield. There were significant differences for marketable fruit. 'Thessaloniki' had the highest yield, but was not statistically different from nine other cultivars. 'Purple Calabash' had the lowest yield, but again was not statistically different from seven other cultivars. The percentage marketable fruit ranged from 24 to 91% 'Arkansas Traveler' had the highest percentage marketable fruit, but it was not statistically different from six other cultivars ranging from 71 to 88% marketable. 'Purple Calabash' and 'Black' had the lowest percentage and were statistically lower than all cultivars except three others. The cultivar 'Royal Hillbilly' had statistically larger fruit than all other entries in the trial 'Black Ethiopian' had the smallest fruit, but was not statistically different from 'Green Zebra' and 'Healthkick'.

'Purple Calabash' also had more cull fruit than other cultivars, but six other cultivars were not statistically different from it. When cull fruit was classified as to type 'Green Zebra' had

statistically more blossom end rot than all cultivars except 'Healthkick'. 'Healthkick' was not significantly different than 'Moskvich', 'Rose of Berne' or 'Baccone'. 'Purple Calabash' statistically had more misshapen fruit than 'Royal Hillbilly', but 'Royal Hillbilly' was not significantly different from 'Costoluto Genovese', 'Green Zebra' or 'Pantano Romanesco'. Cracks on fruit may be radial, concentric or transversal 'Purple Calabash' had more radial cracks than all other cultivars except 'Baccone'. 'Baccone' did not statistically differ from 'Moskvich', 'Jutland' or 'Black Ethiopian'. One cultivar, 'Healthkick' had no cracks (radial, concentric or transversal). 'Black Ethiopian' had the most concentric cracks, but was not statistically different from the cultivar 'Black'. 'Black' did not statistically differ from 'Pantano Romanesco' or 'Carmello'. Rain checking was not a serious problem for most of the year since it rained very little. For the late harvest, 'Carmello' did have more rain checking, but it was not statistically different from four other cultivars. The remaining cultivars did not statistically differ from one another.

Table 6. Medium round heirloom tomato yield and fruit size for late season harvests – RAREC, Bridgeton, New Jersey – 2002

Cultivar	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Marketable Fruit Wt. Oz.
Arkansas Traveler	1365	1244	121	91	3.5
Baccone	1829	1126	704	62	3.6
Black	1118	469	649	39	2.2
Black Ethiopian	1213	669	544	55	1.6
Carmello	2093	1297	797	62	3.3
Costoluto Genovese	1381	1097	287	80	2.8
Eva Purple Ball	1213	1018	196	85	3.5
Green Zebra	1199	754	444	61	2.1
Healthkick	1003	710	293	71	2.1
Jutland	1540	1206	335	79	2.5
Moskvich	911	500	411	55	2.6
Odoriko	1424	1105	319	77	3.1
Pantano Romanesco	1959	1210	750	61	3.5
Purple Calabash	1195	288	908	24	2.7
Rose of Berne	1213	767	446	63	2.6
Royal Hillbilly	1552	680	872	46	7.4
Thessaloniki	1593	1401	192	86	3.6
LSD 0.05	**NS**	**575**	**374**	**18**	**0.6**

Table 7 summarizes the combined yield and fruit size data for all harvests. All cultivars were harvested up to frost. Three cultivars, 'Black', 'Eva Purple Ball' and 'Green Zebra' had a shorter harvest season because they matured later at the beginning of the season. 'Carmello' had the highest total yield for the season, but did not statistically differ from 'Healthkick', 'Thessaloniki', 'Pantano Romanesco' or 'Baccone'. The last four mentioned cultivars did not differ statistically from most other entries. As with total yield 'Carmello' had the highest marketable yield, but did not statistically differ from 'Thessaloniki', 'Healthkick', 'Arkansas Traveler' or 'Baccone'. These last cultivars did not significantly differ from five others. 'Moskvich' had the lowest marketable yield, but did not statistically differ from six others. 'Moskvich' had consistently lower yields for

most harvests. 'Eva Purple Ball' had the highest percentage marketable fruit, but statistically was equal to 'Arkansas Traveler', 'Thessaloniki', 'Healthkick' and 'Odorkio'. This group ranged from 75 to 90% marketable fruit. As with the other harvests, the cultivar 'Royal Hillbilly' had statistically the largest average marketable fruit. 'Black Ethiopian' had the smallest fruit, but it did not statistically differ from three other cultivars ('Green Zebra', 'Healthkick' and 'Black').

'Purple Calabash' had the most cull fruit for the total season, but there were no statistical differences with 'Royal Hillbilly', 'Black', 'Carmello' 'Pantano Romanesco' or 'Black Ethiopian'. The cultivars with the least culls for the production season were: 'Eva Purple Ball', 'Arkansas Traveler', Thessaloniki' 'Odoriko' and Costoluto Genovese'. When the culls are separated by type, 'Healthkick' and 'Green Zebra' had statistically more blossom end rot; 'Baccone' had more green shouldered fruit; 'Purple Calabash' more cat facing and misshapen fruit than all other cultivars. The cultivar 'Black' had the most zippered fruit, but did not significantly differ from 'Odoriko', Pantano Romanesco' or 'Healthkick'. The last three cultivars did not statistically differ from six other cultivars. Fruit cracking was the major defect for this trial. 'Black Ethiopian' and 'Black' had the most concentrically cracked fruit. The cultivar 'Black' did not statistically differ from 'Pantano Romanesco' or 'Carmello'. 'Healthkick' had no concentrically cracked fruit. 'Black Ethiopian' again had the most radial cracked fruit, but did not statistically differ from six other cultivars. 'Healthkick' had the least.

Table 7. Medium round heirloom tomato yield and fruit size for total seasonal harvests – RAREC, Bridgeton, New Jersey – 2002

Cultivar	Total Harvest Days	Total Boxes/A	Marketable Boxes/A	Cull Boxes/A	% Marketable	Marketable Fruit Wt. Oz.
Arkansas Traveler	74	2973	2599	375	88	4.0
Baccone	74	3596	2420	1176	68	4.1
Black	60	2548	1145	1404	44	2.7
Black Ethiopian	74	2702	1450	1252	52	1.9
Carmello	74	4651	3290	1361	70	4.1
Costoluto Genovese	74	2977	2188	789	74	3.3
Eva Purple Ball	68	2416	2158	258	90	4.4
Green Zebra	68	2197	1307	891	59	2.5
Healthkick	74	3704	2849	856	77	2.6
Jutland	74	2977	2053	924	69	3.0
Moskvich	74	1871	911	939	50	3.2
Odoriko	74	3027	2271	757	75	3.7
Pantano Romanesco	74	3622	2266	1357	63	4.5
Purple Calabash	74	2884	1123	1763	39	3.5
Rose of Berne	74	2619	1649	971	63	3.4
Royal Hillbilly	74	3289	1731	1556	53	9.6
Thessaloniki	74	3658	3086	572	85	4.3
LSD 0.05	--------	**1172**	**945**	**573**	**16**	**0.8**

Table 8 summarizes the fruit characteristics for the seventh harvest from a sample of 5 marketable fruit per replication. The fruit shapes varied from a beef stake to flat types. Most cultivars were round to very deep oval. There was a range of exterior fruit color from deep yellow to red mahogany. This provides a good selection of skin colors for different markets. Fruit firmness is a concern if producers plan to wholesale heirloom tomatoes. 'Arkansas Traveler', 'Baccone', 'Black Ethiopian', 'Healthkick', 'Moskvich' and 'Pantano Romanesco' had firm fruit, which would make them easy to transport. The cultivars 'Green Zebra' and 'Thessaloniki' were soft and may have handling problems. All cultivars had acceptable stem and blossom scars except 'Purple Calabash' and 'Royal Hillbilly', which were large and may affect the appearance. The overall exterior and interior ratings for all cultivars were good or better except for 'Carmello', and 'Royal Hillbilly' which had fair ratings for overall interior quality. There was a full range of jelly and flesh colors, which provides options for different consumers. The flesh color would probably be more obvious to consumers than the jelly color. Core size can be a detriment for a cultivar since the larger the core the less flesh and jelly, which provide the flavor. 'Baccone', 'Black', and 'Royal Hillbilly' had large cores.

Table 8. Medium Round Heirloom fruit characteristics for the seventh harvest – RAREC, Bridgeton, New Jersey – 2002

Cultivar	Length (in)[1]	Width (in)[1]	L/W[1]	Shape[2]	Ext. Color[2]	Firm-ness[3]	Stem Scar[4]	Blossom Scar[4]	Overall Ext.[5]	Overall Int.[5]	Jelly Color[6]	Intern. Flesh[6]	Core Size[4]
Arkansas Traveler	2.1	2.3	0.9	3	12	1	3	1	1	1	2	1	2
Baccone	2.2	2.4	0.9	3	8	1	2	1	1	3	3	3	5
Black	2.1	1.9	1.1	8	15	3	1	1	1	1	5	1	5
Black Ethiopian	1.8	1.8	1.1	8	16	1	1	1	1	2	4	3	3
Carmello	2.1	2.3	0.9	3	7	2	2	1	3	4	2	5	4
Costoluto Genovese	2.5	2.6	1.0	11	9	2	2	3	1	1	2	2	1
Eva Purple Ball	2.2	2.3	1.0	3	12	3	2	1	1	1	3	1	3
Green Zebra	1.8	1.9	1.0	3	5	4	2	1	1	1	5	2	4
Healthkick	2.4	1.8	1.4	6	9	1	2	1	2	2	1	2	2
Jutland	3.2	1.8	1.7	5	9	3	2	1	3	1	2	1	4
Moskvich	1.8	1.9	0.9	3	8	1	2	1	1	1	2	1	2
Odoriko	2.1	2.3	0.9	3	11	2	2	1	1	2	3	1	3
Pantano Romanesco	1.9	2.3	0.8	3	8	1	2	2	2	3	4	2	3
Purple Calabash	1.4	2.5	0.7	11	12	3	3	5	3	1	5	2	1
Rose of Berne	2.1	2.3	0.9	3	11	3	2	2	2	2	2	1	3
Royal Hillbilly	2.2	3.2	0.7	1	12	2	5	5	3	4	2	3	5
Thessaloniki	2.2	2.6	0.8	3	8	4	3	1	1	3	2	1	4
LSD 0.05	**0.7**	**0.3**	**0.3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

[1]Mean of 5 fruit; [2] – see table 2; [3] – 1=firm, 5=soft; [4] – 1=small, 5=large; [5] – 1=excellent, 5=poor; 6 – 1=red, 5 =green

Table 9 summarizes the plant characteristics evaluated at the last harvest. All cultivars had green to dark green foliage. Plant vigor was good to excellent except for 'Healthkick', which was fair. Plant height varied between 3.7 and 7.4 feet. 'Healthkick', 'Carmello' and 'Pantano Romanesco' could be grown on standard tomato 5-foot stakes, but the other cultivars need at least 7-foot stakes. Fruit cover for most cultivars was fair to good, but this may relate to rating

the plots at the end of the season. All cultivars had a regular leaf type with some being narrow or curled. Vine size was medium large to large for all cultivars except 'Healthkick', which was medium. Two cultivars had jointless stem attachment, 'Pantano Romanesco' and 'Black'.

Table 9. Medium Round Heirloom plant characteristics for the seventh harvest – RAREC, Bridgeton, New Jersey – 2002

Cultivar	Plant Color [1]	Plant Vigor [2]	Avg. Plant Height (ft) [3]	Fruit Cover [2]	Leaf Type [4]	Vine Size [5]	Stem Attachment [6]
Arkansas Traveler	1	2	6.7	3	1	4	1
Baccone	2	2	6.4	3	1	4	1
Black	1	2	7.3	2	1	5	2
Black Ethiopian	1	2	7.1	4	1	5	1
Carmello	2	3	5.4	4	2	3	1
Costoluto Genovese	2	2	7.1	3	1	5	1
Eva Purple Ball	2	3	6.4	4	2	4	1
Green Zebra	1	2	6.6	4	1	5	1
Healthkick	1	4	3.7	4	1	3	1
Jutland	2	2	7.4	4	2	5	1
Moskvich	2	2	6.7	3	2	4	1
Odoriko	2	2	6.6	3	2	4	1
Pantano Romanesco	1	2	5.7	2	2	4	2
Purple Calabash	1	2	7.6	3	2	4	1
Rose of Berne	2	2	6.9	4	2	4	1
Royal Hillbilly	2	1	7.4	2	1	5	1
Thessaloniki	2	2	7.1	3	3	4	1
LSD 0.05	**-**	**-**	**1.1**	**-**	**-**	**-**	**-**

[1] – 1=dark green, 3=light green; [2] – 1=excellent, 5=poor; [3] – mean two plants; [4] – 1=regular, 5=potato; [5] – 1=small, 5=large; [6] – 1=jointed, 2=jointless

SUMMARY

There are seven cultivars from this observation trial, which should be evaluated in a regular replicated cultivar trial. They are: 'Arkansas Traveler', 'Baccone', 'Carmello', 'Costoluto Genovese', 'Eva Purple Ball', 'Healthkick' and 'Thessaloniki'. These cultivars provide a range of colors, shapes and acceptable yields for most mark