

*The  
Connecticut  
Agricultural  
Experiment  
Station,  
New Haven*

Heirloom  
Tomato Trials –  
2007 - 2009

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*Bulletin 1029  
February 2010*



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## SUMMARY

In 2007-2009, thirty varieties of heirloom tomatoes were grown on a sandy terrace soil (Windsor, CT) and a loamy upland soil (Mt. Carmel, CT). Yields were determined weekly from mid July until frost in October. The average total estimated yield for 30 varieties in 2007-2009 was 33.3 T/A at Windsor compared to 27.7 T/A at Mt. Carmel. This difference was due mostly to the greater average number of tomatoes/plant and, to a lesser extent, a greater average weight of each tomato. Even though different varieties were grown, the average total yields at Mt. Carmel were within 3% when comparing data obtained in all the years. The varieties with the greatest yields were Rose, Reif Red Heart, Dr. Wyche's Yellow, Thessaloniki, Kentucky Beefsteak, and Soldaki. Kentucky Beefsteak produced the largest tomatoes (16.5 oz). The variety producing the greatest number of tomatoes/plant was Stupice (158.9 tomatoes/plant). For a few varieties, we observed radial concentric cracking and catfacing, but overall fruit quality was very good to excellent. Varieties with the highest consistent quality were Taxi, Beefsteak, Eva Purple Ball, Nepal, Valencia, and Caro Rich. Characteristics of each variety including timing of harvest are discussed along with management techniques.

## INTRODUCTION

Investigation of new crops is essential to provide new opportunities for farmers during a time of changing agriculture in Connecticut. Tobacco and dairy farming, once the largest agricultural industries, have diversified with vegetables, nursery stock, and Christmas trees. New farming ventures on idle and rented land have increased the number of farms (annual income exceeding \$1,000) from 3900 in 2000 to 4900 in 2007 (Anon. 2007). The number of vegetable farms increased from 579 in 1992 to 582 in 2002 (Anon. 2004). Today, about 11,000 acres in Connecticut are devoted to vegetable production. Seventy-seven percent of these farms are less than 100 acres in size. In 2007, the cash value of all vegetable crops grown in Connecticut was 30.2 million dollars or 5.5% of all crops grown (Anon. 2007). This compares to 16.2 million dollars in 1999. In 2007, tomatoes were the most popular vegetable crop grown in Connecticut with 425 farms growing the fruit (Anon. 2007). Only sweet corn and pumpkins exceeded tomatoes in acres harvested.

Produce marketing in Connecticut has shifted from wholesale contracts with local supermarkets to direct retail sales. Approximately 441 farms offer direct sales through roadside stands and sales rooms, where a variety of fruit, vegetables, nursery stock, and Christmas trees are offered (Anon. 2008). About thirty-six of these are open all year. Nearly 30% of vegetable farms offer pick-your-own fruit and vegetables to reduce the cost of harvest labor. These savings are passed on to the consumer.

The development of a network of farmers' markets in Connecticut's major urban centers and densely populated suburbs is an important segment of direct sales of vegetables to consumers. All produce sold at farmers' markets must be "Connecticut Grown". Farm fresh produce is offered at reasonable prices to urbanites who cannot travel to the farms. Niche crops valued by diverse ethnic groups are generally sold through these markets. In 2009, there were 121 farmers' markets attended by over 400 farmers compared to 87 markets in 2007, a 28% increase.

As the popularity of farmers' markets in Connecticut have surged, so too has the need for growers to diversify with high value niche crops. Consumers used to a wide variety of fruits and vegetables in large supermarkets are seeking a greater diversity of ethnic and specialty crops at farmers' markets and roadside stands. Because of this demand, specialty crops have been a topic at both fruit and vegetable growers' meetings in Connecticut and New England for the past five years. Since 1982, the Connecticut Agricultural Experiment Station has been investigating specialty crops to provide new opportunities for Connecticut's farmers. Over 40 fruits and vegetables have been studied resulting in over 50 publications. Some of the crops studied in the New Crops Program include globe artichoke, Belgian endive, radicchio, jilo, specialty melons, sweet potato, okra, and tomatillos. Research included variety trials and experiments to determine the best cultural methods for growing the crop in Connecticut. Crops that were chosen have a high market value and an existing or expanding market that would readily accommodate these commodities.

Tomato varieties produced by the commercial tomato industry are designed to withstand the considerable

physical stresses imposed by the industry's picking, packing, and shipping techniques. Hybridized plants are selected to produce uniform, attractive, even-ripening fruit that is easy to store and ship. Less emphasis is given to flavor. Seed from the fruit of these hybridized plants will not produce the same characteristics due to cross-pollination with similar plants. Hybrids are often patented and require annual re-breeding under controlled conditions to reproduce the desired characteristics.

Heirlooms, on the other hand, are open pollinated. They have adapted to the local environment and produce seeds that grow true despite cross pollination from other plants. What is an heirloom tomato? According to Taylor's Guide to Heirloom Vegetables (Watson 1996), a tomato must meet three criteria to be considered an heirloom variety: (1) the variety must grow "true to type" from seed saved from each fruit; (2) the seed must have been available for more than 50 years; (3) the tomato variety must have a unique history or folklore of its own.

A strong market for heirloom tomatoes has developed because home gardeners and consumers seek tomatoes with excellent flavor in a variety of colors, shapes, and sizes. The specialty and heirloom tomato industry is looking for producers to fill this niche market. While some specialty varieties of tomato (beefsteak, roma, grape) are fairly new to the market, many heirloom varieties have regained their initial appeal. Consumers perceive that heirlooms taste better and have thinner skins than hybridized tomatoes. There is a nostalgic attraction for the 'ole time' varieties that Grandma used to grow. Heirloom varieties come in many interesting colors and shapes and have unique names that just make them stand out from standard tomatoes.

Heirloom tomatoes provide an excellent opportunity for local growers, despite several production problems. Most heirloom tomatoes have little disease resistance. Organic production, in particular, can be difficult in a wet season, because plants may become diseased before they yield much fruit. They can also be prone to catfacing, a physiological disorder that occurs during flowering and fruit set, which blemishes and distorts the fruit. Because their skin is tender, heirloom varieties may crack easily. This makes them difficult to pack and ship long distances. Thin skins, however, are less important for home gardeners and growers who sell their fruit at local farm stands or farmers' markets. In addition to direct market sales, connection to chefs in upscale restaurants provides a valuable outlet for an unusual and beautiful crop.

Previous heirloom tomato trials grown from 2004-2006 were described in Bulletin B1008 (Maynard 2007). In this bulletin, I report yield and quality of 30 additional heirloom tomato varieties grown from 2007-2009 at our experimental farms in Windsor and Mt. Carmel. Characteristics of each variety are discussed as well as management and cultural techniques.

## METHODS AND MATERIALS

*Sites and soils.* Trials of heirloom tomatoes were conducted over three years at the Valley Laboratory in Windsor on Merrimac sandy loam (Entic Haplorthod), a sandy terrace soil with somewhat limited moisture holding capacity (Shearin and Hill, 1962); and at Lockwood Farm in Mt. Carmel on Cheshire fine sandy loam (Typic Dystrochrept), a loamy upland soil with moderate moisture holding capacity (Reynolds, 1979).

*Cultivars.* Seeds were obtained from Totally Tomatoes, Randolph, WI. The cultivars evaluated in 2007 were determinate cultivars Alaskan Fancy, Glacier, Manitoba, Oregon Spring, Sub-Arctic Plenty, and Taxi. Determinate varieties of tomatoes stop growing when fruit sets on the terminal bud and ripen their entire crop at about the same time. Indeterminate cultivars were Bloody Butcher, Siberian, Stupice, and Thessaloniki. Indeterminate varieties will grow and produce fruit until killed by frost. All these cultivars have a short days-to-harvest (mostly 55 days).

In 2008 and 2009, all the cultivars were indeterminate beefsteak cultivars. In 2008, the varieties were: Cuostralee, Eva Purple Ball, Green Tall Vine, Great White, Japanese Black Trifele, Nepal, Prudens Purple, Reif Red Heart, Rose, and Valencia. The cultivars evaluated in 2009 were: Andrew Rahart's Jumbo Red, Beefsteak, Caro Rich, Dr. Wyche's Yellow, Georgia Streak, Kentucky Beefsteak, Persimmon Orange, Rainbow, Soldacki, and Watermelon Beefsteak. Characteristics of each variety are shown in Table 1. Folklore and history of some of the varieties are shown in Table 2.

*Culture.* Each year, 10 heirloom tomato varieties were seeded in a greenhouse on April 6-12. The seedlings were grown in Promix BX (Premier, Red Hill PA) in standard plastic pots (3601 insert) measuring 2 5/8 X 2 1/4 X 2 5/8 inches (volume 15.5 cubic inches). The seedlings were fertilized with water soluble 20-20-20 (N-P2O5-K2O) (0.5 oz/gal) four weeks after germination. After hardening the plants in a cold frame, they were transplanted between May 24-28 at both sites. Spacing was three feet within

the row with rows four feet apart. Each row consisted of 15 plants of each cultivar. The first and last rows were planted with Big Beef, a cultivar serving as guard rows. Yields were not taken from the guard rows. The plants were staked and vegetative suckers removed up to the first flower cluster. Weeds were controlled by hand cultivation. Overhead irrigation was used as necessary. Plants were removed from all plots at the end of the growing season and field fallowed over winter.

*Fertilization.* Soil fertility at both sites was low. The soils were fertilized each year with commercial grade 10-10-10 (N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O) material at 1300 lb/A, a rate determined from analysis of soil from both sites before the experiment.

*Harvest.* Marketable tomatoes (at least 3" diameter with some red or yellow showing) were harvested weekly from mid July until frost (October). The harvest of each cultivar was counted and weighed in the field.

*Insect and disease control.* Insects and diseases were controlled by Manzate (mancozeb), Quadris (azostobin), Asana (esferivaterate), and Bravo (chlorothalmil) applied bi-weekly throughout the growing season.

## **YIELD**

In 2007, the average yield of 10 cultivars of heirloom tomatoes was 15.1 lbs/plant at Mt. Carmel compared to 11.0 lbs/plant at Windsor, a 37% difference (Tables 3 and 4). This was the only year in which Mt. Carmel's average yield exceeded Windsor's yield. Lower yields in Windsor were due to a rapid plant decline as a result of diseases (early blight, late blight, and septoria) in September. The total estimated yield was as much as 20.2 T/A greater at Mt. Carmel. Only two determinate cultivars (Manitoba and Taxi) had greater yields at Windsor. These early varieties produced most of their fruit early in the season before the plants succumbed to disease. When separated into determinate and indeterminate varieties, the average yield (lbs/plant) of determinates was 29% greater at Mt. Carmel and 47% greater for the indeterminate varieties. In 2008, the average yield was 21.7 lbs/plant at Windsor and 15.5 lbs/plant at Mt. Carmel, a 40% difference. All cultivars in Windsor had greater yields than those grown in Mt. Carmel with total estimated yields as much as 26.8 T/A greater. In 2009, the average yield was 22.0 lbs/plant at Windsor compared to 15.1 lbs/plant at Mt. Carmel, a 46% difference. All cultivars in Windsor had greater yields than those grown in Mt. Carmel with total estimated yields as much as 21.1 T/A greater. Greater yield of heirloom tomato

cultivars in all years was due mostly to greater average number of tomatoes/plant and, to a lesser extent, a greater average weight of each tomato. Plants at Windsor in 2008 and 2009 were larger and healthier than at Mt. Carmel.

In 2007 at Windsor, Thessaloniki had the greatest yields (16.7 lbs/plant). Bloody Butcher, Stupice, and Oregon Spring also produced greater than 11 lbs/plant, or an estimated yield of greater than 20 T/A (Table 3). Indeterminate cultivars averaged 12.9 lbs/plant compared to 9.8 lbs/plant for determinate cultivars, a 32% difference. At Mt. Carmel, Thessaloniki had the greatest yields (27.8 lbs/plant), producing over 50 T/A (Table 4). Alaskan Fancy and Stupice had yields greater than 17 lbs/plant or 30 T/A. Indeterminate cultivars averaged 19.0 lbs/plant compared to 12.6 lbs/plant for determinate cultivars, a 51% difference. The heaviest fruit at Windsor were produced by Manitoba (3.8 oz/fruit) whereas, at Mt. Carmel Oregon Spring produced the heaviest fruit (4.6 oz/fruit), both determinate cultivars. The greater number of fruit at Windsor and Mt. Carmel was produced by the indeterminate cultivar, Stupice (151.6 fruit/plant and 158.9 fruit/plant, respectively). The great number of fruit/plant resulted in Stupice producing the lightest fruit at Windsor (1.2 oz/fruit) and the second lightest at Mt. Carmel (1.7 oz/fruit). At both sites, Taxi, Glacier, and Stupice had the best quality fruit, while Manitoba was prone to catfacing.

In 2008 at Windsor, Rose had the greatest yields (33.0 lbs/plant) with Reif Red Heart also producing greater than 30 lbs/plant. The total estimated yield of both cultivars exceeded 56 T/A (Table 3). At Mt. Carmel, Reif Red Heart had the greatest yields (20.5 lbs/plant) with Rose producing 18.3 lbs/plant. The total estimated yield of both cultivars exceeded 33 T/A (Table 4). The heaviest fruit at Windsor was Rose (13.4 oz/fruit) followed closely by Cuostralee (13.3 oz/fruit). At Mt. Carmel, Prudens Purple produced the heaviest fruit (10.4 oz/fruit) followed closely by Rose (10.3 oz/fruit) and Great White (10.2 oz/fruit). Japanese Black Trifele produced the greatest number of fruit per plant at both Windsor and Mt. Carmel. Eva Purple Ball, Nepal, and Valencia had the best quality fruit while Japanese Black Trifele showed some disease resistance.

In 2009, due to a cool wet spring and an influx of contaminated plants, there was a large outbreak of late blight throughout the region starting in early July. As a result of our spray program, our experimental plots remained disease-free until late September. Thus, total yields were not affected by the late blight outbreak. At Windsor, Dr. Wyche's Yellow, Kentucky Beefsteak, and Soldacki had

the greatest yields, exceeding 25 lbs/plant (45 T/A) (Table 3). At Mt. Carmel, the highest yielding cultivars were Dr. Wyche's Yellow and Watermelon Beefsteak which exceeded 18 lbs/plant. The total estimated yield of both cultivars exceeded 33 T/A (Table 4). Kentucky Beefsteak and Andrew Rahart's Red the heaviest fruit averaging 16.5 oz/fruit and 11.8 oz/fruit at Windsor and Mt. Carmel, respectively. Soldacki (35.5 fruit/plant) and Georgia Streak (30.6 fruit/plant) produced the greatest number of fruit per plant at Windsor and Mt. Carmel, respectively. Beefsteak and Caro Rich had the highest quality fruit and the plants were short in stature, which made them easier to stake. Dr. Wyche's Yellow's fruit were very variable in quality and the plants were very tall and difficult to control.

### TIMING OF HARVEST

Table 5 shows the percent distribution of the 2007 harvest for each cultivar at each site for the three time periods throughout the growing season: beginning of harvest to August 15 (early), August 16 to September 15 (mid), September 16 to frost (late). The cultivars in 2007 were chosen because they had short days-to-harvest (<60 days) with the exception of Glacier (63 days), Taxi (65 days), and Thessaloniki (68 days). Unlike 2008 and 2009, the distribution of the harvest was quite different at the two sites due to disease pressure in Windsor starting in September. In general, a greater percentage of the crop was harvested earlier at Windsor with an average of 50% of the total crop harvested by August 15 compared to 30% of the crop harvested at Mt. Carmel. By September 15, 90% of the crop was harvested at Windsor compared to 72% at Mt. Carmel. At Windsor, all of the cultivars except for Oregon Spring, Stupice, and Thessaloniki produced over half of their total yield by August 15 and would appear to be early varieties. Oregon Spring, Stupice, and Thessaloniki produced most of their tomatoes between August 15 and September 15 and would appear to be mid varieties. However, these labels are misleading as the harvest was cut short by the early decline of the plants from disease.

Plant behavior at Mt. Carmel provided a better indication on whether the variety is an early, mid, or late season variety. At Mt. Carmel, only Manitoba and Taxi produced over half of their total yield by August 15 (early varieties) with the remaining cultivars producing less than 30% of their total yield by August 15 (Table 5). These remaining cultivars with the exception of Bloody Butcher and Glacier had their greatest yield between August 15 and September 15 (mid varieties). The large early harvest of the determinate cultivars, Manitoba and Taxi, led to a

smaller total harvest due to the smaller average number of fruit per plant. The indeterminate cultivar, Thessaloniki, on the other hand, produced only 12% of its total yield before August 15 and had the greatest yields between August 15 and September 15.

Table 6 shows the distribution of the 2008 harvest for each cultivar at each site for the three time periods throughout the growing season: beginning of harvest to August 15 (early), August 16 to September 15 (mid), September 16 to frost (late). At both sites, most of the cultivars were harvested between August 15 and September 15 (mid varieties). The only exception was Reif Red Heart at Mt. Carmel in which almost half the total yield (49%) ripened after September 15 (late variety). In general, the total harvest progressed faster at Windsor on September 15 with an average of three-quarters (75%) of the fruit picked by September 15 compared to 65% of the fruit at Mt. Carmel. At both sites, the earliest cultivar was Great White with about 25% of the fruit ripening before August 15.

Table 7 shows the distribution of the 2009 harvest for each cultivar at each site in three time periods throughout the growing season. Both sites responded similarly in the timing of the harvest with about 50% of the total crop ripening between August 15 and September 15 and less than 10% of the total crop ripening before August 15. At both sites, Watermelon Beefsteak was the earliest to produce ripe fruit. At Windsor, it produced over a quarter of its crop before August 15. Rainbow, at both sites, had its greatest yields after September 15. Georgia Streak and Kentucky Beefsteak at Mt. Carmel also had their greatest yields after September 15.

### MANAGEMENT STRATEGIES

*Selection of cultivars.* Many heirloom tomato varieties can be grown successfully in Connecticut. All 30 varieties evaluated produced marketable tomatoes. There are four fruit characteristics to consider when choosing a variety: fruit color, size, timing of harvest, and quality. Fruit colors ranged from yellow to orange to pink to red to purplish dark red. Color, a cosmetic characteristic, has little effect on taste. The size of all varieties tested in 2008 and 2009 were labeled "beefsteak" (the largest size category) in the catalog, but some were much smaller. Timing of harvest is an important consideration. A planting strategy using varieties with differing maturities creates a constant supply of tomatoes throughout the harvest season. Consistent quality is important for commercial enterprises as is the total yield of fruit. Varieties with large yields at both sites with varying soils and climate should do well in most of

Connecticut.

Taking all these factors into consideration, these appear to be good choices.

#### Very Early

Manitoba – red  
Taxi – yellow

#### Early

Alaskan Fancy – red  
Great White – yellow

#### Mid

Thessaloniki – red  
Beefsteak – red  
Oregon Spring – red  
Eva Purple Ball – pinkish-red  
Rose – pinkish-red  
Japanese Black Trifele – purplish-red  
Watermelon Beefsteak – purplish-red  
Caro Rich – yellow  
Georgia Streak – yellow

#### Late

Reif Red Heart – red  
Rainbow – yellow  
Kentucky Beefsteak – yellow

*Planting times.* Seeds were sown in the greenhouse on April 6-12. When 6-weeks old, the seedlings were transplanted in the field May 27-29 after a week of hardening off in a cold frame. At this stage, the seedlings were large enough for transplanting, but not leggy or root bound. There was no growth interruption. Many backyard gardeners, anxious to start the gardening season, start their transplants in late February or early March. At transplant time, seedlings are often root bound and their growth has slowed or stopped. Flowers may form if the plant is stressed, diverting some energy into fruit production rather than vegetative growth. Transplanting in the third or fourth week of May is ideal for Connecticut because the soil has warmed sufficiently and the threat of frost is gone.

*Soil Amendments.* While no soil amendments, other than fertilizer, were used in these trials, other studies have shown that some soil amendments improve tomato growth and yields. Maynard (2000) showed that, 1-inch of leaf compost applied to both loamy and sandy soils could be substituted for inorganic 10-10-10 fertilizer with equivalent tomato yields expected in the first year. Plots amended

with compost appeared to have less blossom-end rot in years when this disorder was prevalent. For the greatest yields, it appeared that a combination of compost and 10-10-10 fertilizer is optimum, but the full rate (1300 lb/A) was not usually necessary. A lower fertilizer rate (650 lb/A) plus one-inch compost was sufficient for optimum yields on loamy soils and for most years on sandy soils. Compost increased the organic matter content of the soil and increased its water holding capacity. Hill et al. (1982) showed that tomatoes mulched with grass clippings yielded significantly more fruit than plants mulched with clear or black plastic or unmulched. The reduced yields of tomato plants with clear or black plastic was probably due to insufficient soil moisture because the impermeable plastic often limited resupply by rain or irrigation. Grass mulch applied before the first flower cluster had formed, however, often limited fruit set. Grass clippings from lawns treated with herbicides may inhibit crop growth.

*Pruning and Staking.* All plants were pruned to two main stems. All suckers were removed up to the fruit flower cluster. Lower suckers are less productive and more prone to soil borne diseases.

The plants were tied to metal stakes weekly as they grew. Staked tomatoes control many foliar diseases by promoting air circulation. Staking separates most of the plant away from the soil where many diseases originate. Most indeterminate varieties reached the top of the 6-foot stakes midway through the growing season and were then allowed to cascade toward the base.

*Harvesting.* Harvest began with the first ripe tomato on July 16 in 2007, August 1 in 2008, and August 4 in 2009. Fruits in these trials were harvested weekly until frost. Harvesting 2-3 times a week would be optimum. One of the factors that makes heirloom tomatoes so desirable is the tenderness of the skin. This tenderness also makes many heirlooms vulnerable to cracking. Cracking can be avoided by providing even moisture. Since the skins lose elasticity as fruits approach maturity, a heavy rain (or prolonged irrigation) will swell the fruits rapidly and cause cracking. If heavy rain is predicted, it would be desirable to pick ripe and almost ripe fruits to prevent cracking.

*Insect and Disease Control.* Plants in these trials were sprayed proactively for Early Blight, Late Blight, and Septoria or before symptoms appeared. Heirlooms have little or no disease resistance. Once disease symptoms occur, they spread rapidly through the field. Home gardeners can slow down the spread of disease by removing diseased



Table 1. Fruit characteristics of tomato cultivars in 2007-2009 heirloom tomato trials.

<u>Cultivar</u>	<u>Color</u>	<u>Size*</u>	<u>Comments</u>
Alaskan Fancy	red	medium	pear-shaped, juicy
Andrew's Rahart	red	very large	thin-skinned, short plants
Beefsteak	red	large	excellent quality, very short
Bloody Butcher	dark red	small	early, many fruit per plant
Caro Rich	orange-yellow	large	high beta-carotene, consistent
Cuostralee	red	large	meaty, few seeds
Dr. Wyche's Yellow	yellow	very large	tall, hard-to-pick, variable
Eva Purple Ball	pinkish red	medium	consistent, ball-shaped
Georgia Streak	pinkish-yellow	medium	cracks easily, tall
Glacier	red	small	early, many fruit per plant
Green Tall Vine	yellow	medium	green stripes, blossom endrot
Great White	pale yellow	large	splits easily, hard to pick
Jap. Black Trifele	reddish-purple	medium	pear-shaped, disease resistant
Kentucky Beefsteak	orange-yellow	very large	very tall, globe shaped
Manitoba	red	medium	very early, slightly flattened
Nepal	red	medium	excellent quality, meaty
Oregon Spring	red	medium	early, nearly seedless
Persimmon Orange	orange-yellow	very large	meaty, mild, few seeds
Prudens Purple	reddish purple	large	big leaves, meaty, sweet
Rainbow	orange	very large	very tall, meaty, low acid
Reif Red Heart	red	large	heart-shaped, lacy leaves
Rose	dusty rose	large	crack resistant, good flavor
Siberian	red	medium	dwarf, early, egg-shaped
Soldaki	red	large	meaty, low acid
Stupice	red	small	early, many fruit per plant
Sub-Arctic Plenty	red	medium	early, small plants
Taxi	yellow	medium	very early, meaty, mild
Thessaloniki	red	small	many fruit per plant, mild
Valencia	orange-yellow	medium	consistent, meaty, mild
Watermelon	purplish-red	large	thin-skinned, mild, oblong

\*small < 3 ounces

medium 3-8 ounces

large 8-12 ounces

very large > 12 ounces

Table 2. Folklore and History of some of the Varieties

Alaskan Fancy – an heirloom tomato from Russia (Aljaska is the Russian spelling)

Andrew Rahart's Jumbo Red – New York heirloom beefsteak passed on from Andrew through his son John

Beefsteak – Considered the original heirloom "Beefsteak" tomato

Caro Rich – variety selected for its high vitamin content, particularly that of beta-carotene (10 times as much as most tomatoes)

Cuostralee – a French beefsteak heirloom

Dr. Wyche's Yellow – Named after Dr. Wyche who supposedly lived in the mountains and fertilized his garden with elephant manure from a nearby zoo

Eva's Purple Ball – a vigorous, 1800's heirloom from the Black Forest Region of Germany

Georgia Streak – a popular heirloom from Georgia

Japanese Black Trifele – Russian origin. In Russia, the Trifele varieties of tomatoes (of which there are several colors) are highly prized and command high prices

Kentucky Beefsteak – old heirloom from the hills of eastern Kentucky

Manitoba – an extremely early variety developed by the Morden Experiment Farm in Manitoba for southern Canadian prairies

Nepal – originally from Farmer's Seed Company, from India's Himalaya Mountains

Oregon Spring – developed at Oregon State University

Prudens Purple – developed from Brandywine

Rainbow – originally from Polk County, Minnesota

Reif Red Heart – from J. Reif in Pennsylvania, who got the seeds from an elderly Italian man

Rose – Amish heirloom from Pennsylvania

Siberian – heirloom from Russia

Soldacki – heirloom from Poland

Stupice – heirloom from Czechoslovakia

Sub-Arctic Plenty – Allegedly developed in the 1940's by the U.S. military to provide fresh tomatoes to their troops in Greenland

Thessaloniki – variety developed in southern Greece

Valencia – heirloom from Maine

Watermelon Beefsteak – heirloom from the 1800's

Table 3. Yields of marketable fruit at Windsor, 2007-2009

Cultivar	Avg fruit/plant #	Avg wt/fruit oz	Avg wt/plant lb	Total est. yield* T/A
<u>2007</u>				
<u>Determinate</u>				
Oregon Spring	48.6	3.7	11.4	20.7
Taxi	47.3	3.5	10.5	19.1
Sub-Arctic Plenty	46.5	3.4	9.9	18.0
Glacier	120.9	1.3	9.7	17.6
Alaskan Fancy	47.9	3.1	9.3	16.9
Manitoba	34.9	3.8	8.2	14.9
<u>Indeterminate</u>				
Thessaloniki	121.5	2.2	16.7	30.3
Bloody Butcher	131.9	1.6	12.8	23.2
Stupice	151.6	1.2	11.7	21.2
Siberian	49.7	3.3	10.3	18.7
<u>2008</u>				
Rose	37.8	13.4	33.0	60.0
Reif Red Heart	46.5	10.7	31.0	56.3
Japanese Black Trifele	85.9	4.9	23.6	42.8
Cuostralee	25.1	13.3	20.9	37.9
Eva Purple Ball	61.9	5.4	20.7	37.6
Prudens Purple	28.3	11.0	19.5	35.4
Nepal	46.4	6.3	18.4	33.4
Great White	24.1	11.7	17.6	31.9
Valencia	38.1	7.1	16.9	30.7
Green Tall Vine	70.7	3.4	15.2	27.6
<u>2009</u>				
Dr. Wyche's Yellow	33.7	13.5	28.4	51.5
Kentucky Beefsteak	24.5	16.5	25.3	45.9
Soldacki	35.5	11.3	25.1	45.6
Georgia Streak	30.0	12.7	23.6	42.8
Watermelon Beefsteak	28.7	12.1	21.8	39.6
Rainbow	21.3	15.4	20.6	37.4
Andrew Rahart's Red	23.7	13.8	20.3	36.8
Caro Rich	26.0	10.8	19.4	35.2
Persimmon Orange	19.1	15.9	19.0	34.5
Beefsteak	27.3	10.5	17.9	32.5

\* Total estimated yield = Avg. wt/plant x 3630 plants/A (spacing 3' x 4')

Table 4. Yields of marketable fruit at Mt. Carmel, 2007-2009

Cultivar	Avg fruit/plant #	Avg wt/fruit oz	Avg wt/plant lb	Total est. yield* T/A
<u>2007</u>				
<u>Determinate</u>				
Alaskan Fancy	76.7	3.7	17.8	32.3
Sub-Arctic Plenty	66.1	3.9	16.0	29.0
Glacier	147.9	1.5	13.7	24.9
Oregon Spring	44.1	4.6	12.7	23.1
Taxi	40.9	3.4	8.6	15.6
Manitoba	41.4	2.6	6.8	12.3
<u>Indeterminate</u>				
Thessaloniki	153.7	2.9	27.8	50.5
Stupice	158.9	1.7	17.1	31.0
Bloody Butcher	148.6	1.8	16.3	29.6
Siberian	59.5	3.9	14.6	26.5
<u>2008</u>				
Reif Red Heart	41.5	7.9	20.5	37.2
Rose	28.5	10.3	18.3	33.2
Japanese Black Trifele	70.5	3.9	17.2	31.2
Prudens Purple	25.6	10.4	16.7	30.3
Cuostralee	28.0	9.5	16.6	30.1
Eva Purple Ball	56.1	4.6	16.3	29.6
Nepal	39.8	5.6	13.9	25.2
Great White	19.8	10.2	12.6	22.9
Green Tall Vine	62.9	2.9	11.5	20.9
Valencia	36.0	5.1	11.4	20.7
<u>2009</u>				
Dr. Wyche's Yellow	26.9	10.9	18.3	33.2
Watermelon Beefsteak	27.7	10.5	18.2	33.0
Beefsteak	28.1	9.5	16.7	30.3
Persimmon Orange	25.7	10.0	16.0	29.0
Rainbow	23.0	10.6	15.3	27.8
Kentucky Beefsteak	21.3	11.2	14.9	27.0
Georgia Streak	30.6	7.3	14.0	25.4
Andrew Rahart's Red	18.3	11.8	13.5	24.5
Soldacki	22.9	9.4	13.5	24.5
Caro Rich	23.5	7.3	10.7	19.4

\* Total estimated yield = Avg. wt/plant x 3630 plants/A (spacing 3' x 4')

Table 5. Timing of harvest in 2007 (average % of harvest)

Mt. Carmel

	<u>Before Aug. 15</u>	<u>Aug.15 - Sept. 15</u>	<u>After Sept. 15</u>
<u>Determinate</u>			
Alaskan Fancy	21	57	22
Glacier	26	37	39
Manitoba	53	27	20
Oregon Spring	26	57	16
Sub-Arctic Plenty	27	50	23
Taxi	61	20	19
<u>Indeterminate</u>			
Bloody Butcher	27	34	38
Siberian	29	46	25
Stupice	22	40	39
Thessaloniki	12	55	33

Windsor

	<u>Before Aug. 15</u>	<u>Aug.15 - Sept. 15</u>	<u>After Sept. 15</u>
<u>Determinate</u>			
Alaskan Fancy	56	37	7
Glacier	54	32	13
Manitoba	70	25	5
Oregon Spring	33	60	7
Sub-Arctic Plenty	57	36	7
Taxi	60	29	11
<u>Indeterminate</u>			
Bloody Butcher	55	34	11
Siberian	53	39	8
Stupice	35	48	17
Thessaloniki	22	57	22

Table 6. Timing of harvest in 2008 (average % of harvest)

Mt. Carmel

	<u>Before Aug. 15</u>	<u>Aug. 15 - Sept. 15</u>	<u>After Sept. 15</u>
Cuostralee	4	53	43
Eva Purple Ball	10	54	36
Green Tall Vine	4	57	39
Great White	26	48	26
Japanese Black Trifele	16	54	30
Nepal	12	50	39
Prudens Purple	24	46	30
Reif Red Heart	22	29	49
Rose	13	58	29
Valencia	17	50	33

Windsor

	<u>Before Aug. 15</u>	<u>Aug. 15 - Sept. 15</u>	<u>After Sept. 15</u>
Cuostralee	4	70	26
Eva Purple Ball	4	69	27
Green Tall Vine	1	67	32
Great White	23	56	21
Japanese Black Trifele	5	66	29
Nepal	8	64	28
Prudens Purple	10	75	16
Reif Red Heart	8	63	29
Rose	3	82	15
Valencia	2	70	27

Table 7. Timing of harvest in 2009 (average % of harvest)

Mt. Carmel

	<u>Before Aug. 15</u>	<u>Aug. 15 - Sept. 15</u>	<u>After Sept. 15</u>
Andrew Rahart's Jumbo Red	2	59	40
Beefsteak	3	49	48
Caro Rich	3	69	28
Dr. Wyche's Yellow	4	49	46
Georgia Streak	4	46	50
Kentucky Beefsteak	1	40	59
Persimmon Orange	2	50	49
Rainbow	1	35	63
Soldacki	4	51	45
Watermelon Beefsteak	16	51	32

Windsor

	<u>Before Aug. 15</u>	<u>Aug. 15 - Sept. 15</u>	<u>After Sept. 15</u>
Andrew Raharts's Red	9	52	39
Beefsteak	6	58	36
Caro Rich	7	62	32
Dr. Wyche's Yellow	9	61	29
Georgia Streak	4	49	46
Kentucky Beefsteak	9	56	35
Persimmon Orange	11	66	24
Rainbow	2	40	58
Soldacki	9	58	33
Watermelon Beefsteak	27	54	19

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