

## What's New – Crossville Tomato Variety Trial

Variety trial of six greenhouse tomato varieties grown over two short (Fall & Spring) cropping cycles.

### VARIETIES TESTED:

1. Dundee
2. Geronimo
3. Grace
4. Matrix
5. Style
6. Trust

**Horticultural Management:** Plants were grown in 3 gallon bags containing coco-coir. Two plants were transplanted into each bag. The experiment was set up in a Randomized Complete Block design with 30 plants per replicate, three replicates per variety, for a total of 90 plants of each variety. Bags were placed 18 inches on center within rows, with six feet between rows. The entire greenhouse was irrigated automatically with drip irrigation lines controlled by a timer. Fertilizer was provided to each plant by means of a series of Dosatron injectors and liquid stock fertilizers. The same fertilizer mix was provided to all varieties. Fertility was targeted the concentrations listed in Table 1, although actual concentrations of Magnesium remained low throughout the fall crop, and levels of Magnesium, Calcium, and Iron were below target ranges for the first two months of the fall crop.

Table 1. Target concentrations for nutrients at the drippers:

Nutrient	Transplant to 6 weeks Conc (ppm)	6 weeks + Conc (ppm)
N	140-150	180
Mg	60-80	60-80
P (calculated as total P, not P <sub>2</sub> O <sub>5</sub> )	45-60	45-60
K (calculated as total K, not K <sub>2</sub> O)	210-300	270-360
Ca	140-150	180
Fe	2	2
Zn	0.33	0.33
Mn	0.55	0.55
Cu	0.05	0.05
Mo	0.05	0.05

Plants were pruned to a single stem clipped to a string and grown to a height of ten feet. Plants were topped when they reached the support wire and the crop was terminated after 5 months. Pollination was achieved using commercial bumblebees from Koppert.

**Cropping Dates:** 1<sup>st</sup> crop: Plants were seeded July 15 2006, transplanted September 5 2006 and terminated in January 18 2007. This is a slightly later transplant date than desired, optimal transplant date would have been closer to mid-August. Fruits were harvested from November 27 2006 through January 18 2007 (8 weeks), again, this is a slightly delayed harvest period, optimal would have been the first week in November. Resulting yields are lower than expected due to the delayed harvest period. The 2<sup>nd</sup> crop was planted December 12 2006, transplanted February 1 2007, and terminated in June 2007.

**Pest and Pathogen Management:** No serious pest or pathogen problems were encountered during the fall crop in the variety trial greenhouse. The biological control, Serenade, was applied to both crops during late winter and early spring to protect against Botrytis stem rot, and the fungicide Botran was sprayed once in April 2007 for the same reason.

**Yield Data:** Fruits were harvested once per week, graded and each grade of fruit weighed separately. Grades were as follows:

1. Jumbo fruit – greater than 3 inches in diameter
2. Extra Large – between 2.75 and 3.0 inches in diameter
3. Large – between 2.5 and 2.75 inches in diameter
4. Medium – less than 2.5 inches in diameter
5. smalls and culls (not reported)

**Table 2. Total yields reported in pounds per plant**

Harvest period Nov 27- Jan 18 (8 weeks)

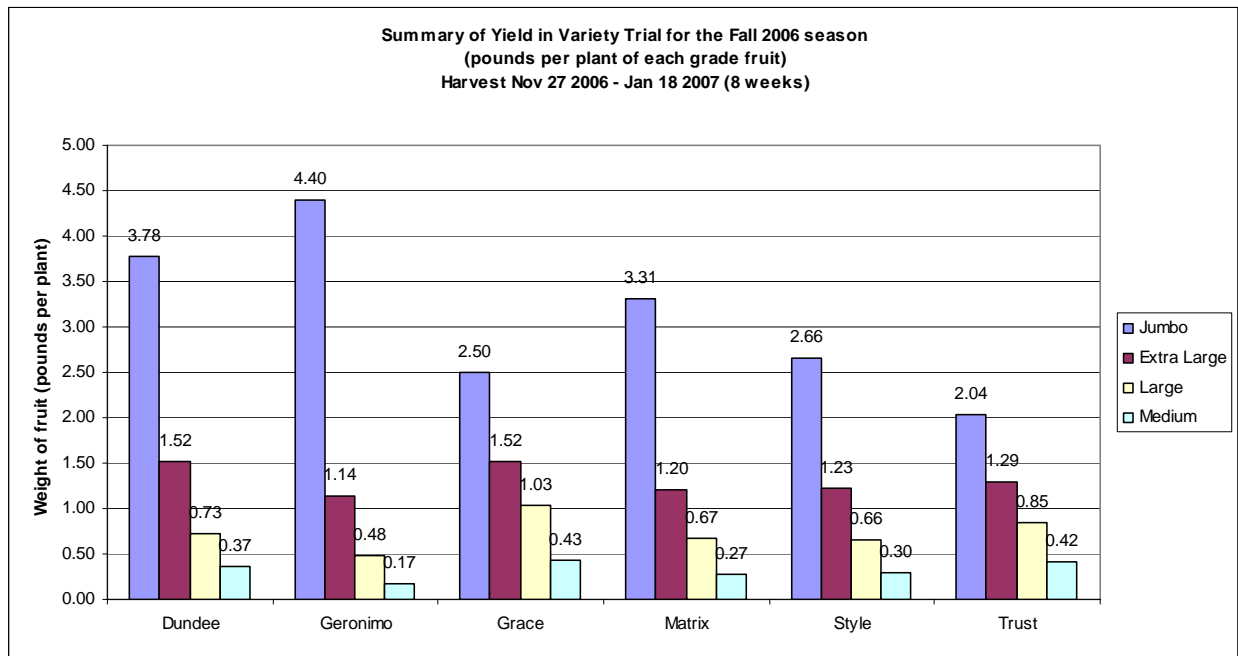
(all grades Med - Jumbo combined)

Dundee	6.4
Geronimo	6.2
Grace	5.5
Matrix	5.5
Style	4.8
Trust	4.6

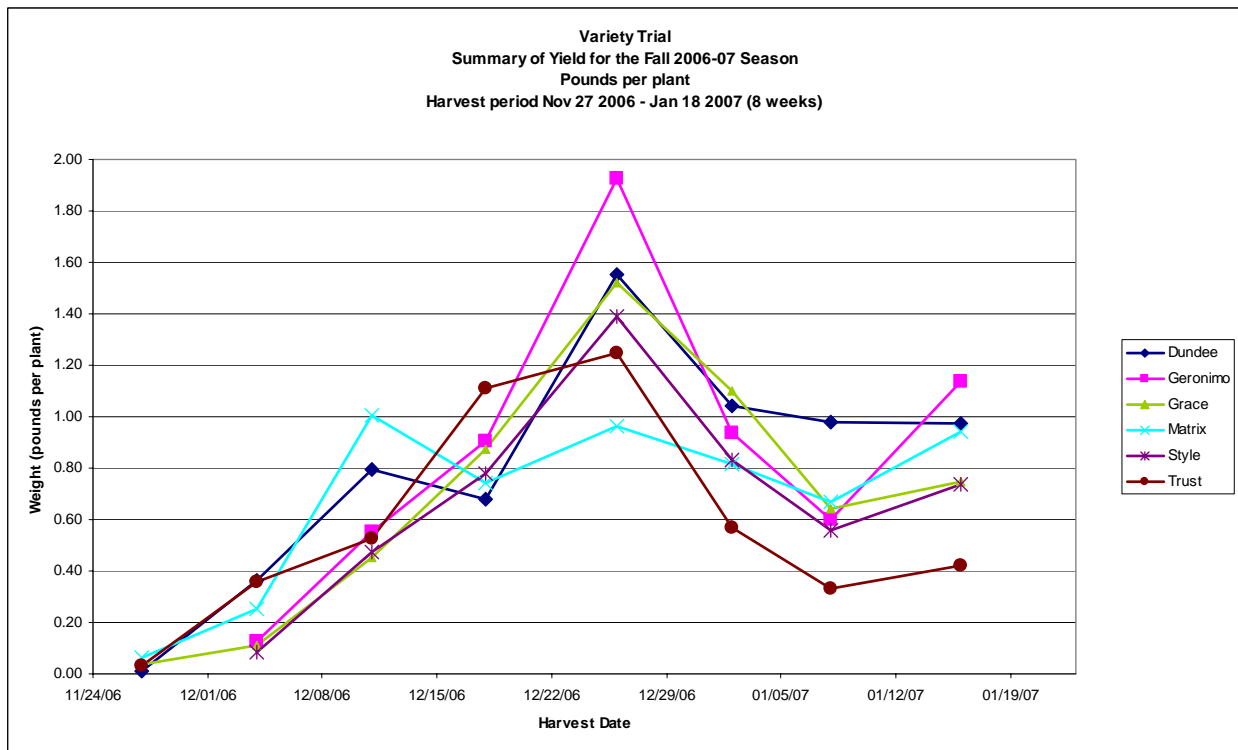
During the 8 week harvest period in the Fall 2006 crop, Dundee produced the highest yields of total marketable fruit (6.4 pounds per plant), followed closely by Geronimo (6.2 pounds per plant), although Geronimo produced slightly more jumbos than Dundee (4.4 vs. 3.8 pounds per plant, respectively). Grace and Matrix were identical in total yields (5.5 pounds per plant), although Matrix produced more jumbo fruit (3.3 pounds per plant) than Grace (2.5 pounds per plant). Style yielded 4.8 total pounds per plant, of which 2.7 were jumbo grade, and Trust weighed in last with 4.6 total pounds per plant, including only 2.0 pounds of jumbos per plant. (See Figure 1).

In many of the fresh vegetable markets in Tennessee, jumbo size fruit can demand a premium price over standard large and extra large fruit. Each variety tested offers different attributes that should be weighed carefully in addition to the total fruit yield. Dundee is a longer shelf life variety, ripening slowly and keeping well at room temperature. Dundee and Geronimo are very fast growing vines, aggressively reaching heights well above the other varieties early in the crop's life cycle and may not be the best choices for growers in low greenhouses who do not intend to lean and lower the crop over a long growing cycle. Grace and Style are similar in that they are moderately fast growing vines with good fruit set. Matrix is a shorter vine (growing slower than the previously discussed varieties), but has a remarkably even rate of fruit production, which may be valuable to growers desiring uniform yields over time (see Figure 2). Finally, Trust is the standard variety grown in greenhouses throughout the US and Canada. It is a reliable variety, but does have lower total yields and a lower ratio of jumbo fruit compared to other grades of fruit, which may be an asset in some markets. Note that the size, number, and amount of fruit harvested each week can be manipulated somewhat through pruning, crop nutrition, timing, and other external activities.

**Figure 1. Yields of each grade of fruit for each variety, reported as pounds per plant**



**Figure 2. Total yield of all grades of fruit for each variety, reported as pounds per plant over time**



The Spring 2007 variety trial is currently underway, and results will be included here for comparisons.

DeRuiter Seed variety descriptions:

# Geronimo

## beef tomato

DeRuiter Seed's most promising big beef tomato variety from 2003. High yield from a well-balanced plant. Ideal for later plantings in glasshouses.

Resistance: HR ToMV/Ff:1-5/Fol:0,1/For/On/Va/Vd/Si IR

Weight: 240 g

Plant habit: Vigorous but generative (reproductive)

### *General :*

- Excellent vigour with a generative character
- High yield with low labour costs
- Grows nice and straight along the twine
- Avoid high plant densities
- Tolerance to Powdery Mildew

### *Fruit:*

- Firm fruits with a nice red colour
- Good flavour

# Dundee

## beef tomato

Ideal variety for autumn crops and late spring planting. Very firm fruits!

Resistance: HR ToMV/Ff:1-5/Fol:0,1/For/Va/Vd/Ma/Mi/Mj/Si IR

Weight: 230 g

Plant habit: Generative

### *General :*

- Open plant with a generative character
- High yield with low labour costs

### *Fruit:*

- Fruits are large and very firm
- Tolerant to russetting
- Smooth shape, shiny skin

# Matrix

## beef tomato

Large beefsteak variety with a very uniform quality and a high yield. Matrix performs best in areas with a good light intensity, such as the South-west of the USA.

Resistance: HR ToMV/Ff:1-5/Fol:0,1/For/On/Va/Vd/Si IR

Weight: 240 g

Plant habit: Vigorous, but very easy to work with

### *General :*

- High yield potential
- Tolerant to Oidium (powdery mildew)
- The plant requires a relatively low labour input

### *Fruit:*

- Deep red shiny colour
- Firm and filled up; perfect for slicing
- Slightly ribbed and round shape

# Grace

## beef tomato

Beef variety with a strong reputation in many countries. Grace is very reliable and easily gives a high yield. The Oidium (powdery mildew) tolerance can be a welcome feature as well.

Resistance: HR ToMV/Ff:1-5/Fol:0,1/For/On/Va/Vd/Si IR

Weight: 200 g

Plant habit: Vigorous, stretched plant habit with long leaves

### *General :*

- Quite strong and easy recovering after a high fruit load
- Slightly hanging leaf position
- Performs well in high light and high temperature conditions
- Sensitive to low light, so do not sow before half of November in Northern countries

### *Fruit:*

- Round and shiny
- The calyx is embedded in the fruit, meaning less susceptibility to fruit punctures

# Style

## **beef tomato**

Style is a perfect variety for short crops and early sowings. It is one of the best tasting beef tomatoes.

Resistance: HR ToMV/Ff:1-5/Fol:0,1/For/On/Va/Vd IR

Weight: 220 g

Plant habit: Generative, open plant habit

### ***General :***

- High early yield, can be sown early
- Straight growing head, labour friendly

### ***Fruit:***

1. Perfectly shaped beef tomatoes
2. One of the best tasting varieties in this market segment