SPECIALTY TOMATO VARIETY TRIAL RESULTS - 2003

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Introduction

Commercial varieties and advanced breeding lines of tomatoes for the fresh specialty market were evaluated for adaptation to New Jersey growing conditions. A total of twenty three promising lines were included in the trial, conducted at Bald Eagle Farms, Harrisonville, New Jersey.[5]

Methods

Culture

Seeds were sown on April 7, in 72-cell (1½" X 1½") trays containing peat-vermiculite media formulated for tomato transplant production. Seedlings were thinned to 1 plant per cell. Black plastic mulch and drip irrigation tube were laid. Transplants were set 18" apart on raised beds with 5-ft centers on May 19. Plants were grown on 4 or 6 foot stakes depending on variety characteristics. All other cultural practices were those used for commercial production of grape tomatoes. Insects were controlled as required using commercial recommendations for tomatoes. Fungicides were applied for suppression of foliar diseases and fruit rots. Rainfall was 3.25, 6.19, 4.72, 4.69 and 4.73 inches in May, June, July, August, and September respectively.

Experimental, Harvesting and Evaluation

Field plots were replicated two times in a randomized block design. Data were obtained on foliage and fruit characteristics for all of the varieties in the trial. Yields, external and internal fruit characteristics were also obtained for all lines. Hand harvest of each plot of all fruits were made on July 30 when early fruits were ripening and on 8/7, 8/13, 8/25 and 9/9. All fruits with pink to red maturity were harvested. Fruits were separated into usable, and culls. Major defects were identified and recorded. At the August 7th harvest, a sample of 20 representative fruit from each plot was used to evaluate fruit size, external and internal characteristics.

Plant Vigor	White Tissue	Interior Color	Fruit Firmness
5 = Excellent	5 = Excellent	5 = Excellent	5 = Firm
4 = Very Good	4 = Very Good	4 = Very Good	4 = Medium Firm
3 = Good	3 = Good	3 = Good	3 = Medium
2 = Fair	2 = Fair	2 = Fair	2 = Medium Soft
1 = Poor	1 = Poor	1 = Poor	1 = Soft

Plant vigor and fruit characteristics, vascular white tissue (VW), color and firmness were evaluated and rated according to the above chart. Plant height is an average of a sample of plants from two replications.

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Results

Wet soil conditions delayed planting by ten days, and growth was slower than normal due to below average temperatures and cloudy conditions. Frequent rainfall during the harvest season caused fruit cracking, which was the most serious defect of most varieties in the trial.

Data from the trial are summarized in tables 1 and 2. There were statistical differences among varieties for most characteristics.

Table 1. Plant Vigor and Early and Season Yield, Specialty Tomato Trial - 2003

Variety	Seed Source	Plant[1] Height	Plant[2] Vigor	Market Yield Lb/A Early[3]	Market[4]	Season %[4] Market
BHN 268	BHN Seeds	4.3	3.5	520	29452	64
BHN YC1	BHN Seeds	4.8	4.0	539	39273	85
Camelia	Siegers	8.3	4.0	365	30495	79
Cherry Blossom	Sakata	4.6	3.5	473	41590	80
Favorita	Johnny's	7.6	4.0	490	33992	96
S 151496	Seminis	7.7	3.0	443	28327	97
Sun Cherry	Johnny's	8.5	2.7	449	20355	79
Sweet 100	Stokes	9.3	4.0	131	10214	73
Sweet Million	Stokes	8.3	3.5	543	28828	88
Jolly Elf	Siegers	5.6	3.0	399	20075	79
Juliet	Johnny's	8.1	4.0	489	36197	90
Morning Light	Siegers	8.8	4.0	119	18804	86
Red Grape	Johnny's	7.7	2.5	257	14172	88
St. Nick	Siegers	8.7	3.5	380	22444	90
Cupid F (S 2036)	Seminis	8.1	3.0	469	28139	97
Sweet Olive	Johnny's	5.4	2.5	902	27874	85
Tami G	Seedway	8.8	3.5	362	22398	92
Cherry Brandywine	Marianna's	9.0	3.5	538	9574	45
Isis Candy	Tomato Growers Supply Co.	9.0	4.0	64	2299	60
Snow White	Marianna's	9.3	5.0	166	18667	92
Juane Flamme	Seed Savers	7.0	4.0	231	11663	49
Garden Peach	Seeds of Change	7.8	4.5	44	8767	59
Dr. Carolyn	Marianna's	9.4	5.0	22	19395	93
HSD 5%		3.8	NS	320	14793	13

[1]Plant height in feet was measured at the end of the growing season.
[2]Plant vigor is density of foliage.
[3]Early Marketable Yield = First two harvests.
[4]Season Marketable Yield=Four harvests.

Based on plant height (Table 1) BHN 208, BHN YC1, Cherry Blossom, Jolly Elf, and Sweet Olive could be grown on short stakes (4 ft.). All other varieties would require 6 foot or taller stakes.

Table 2. Fruit Characteristics – Specialty Tomato Trial – 2003

Variety	Color[1] Type	Fruit[2] Shape	Grams Per Fruit	Firmness	Internal Color	White Tissue
BHN 268	R	C	21.0	4.0	3.0	4.0
BHN YC1	G/Y	C	11.3	5.0	2.0	4.0
Camelia	R	LC	21.9	4.5	3.0	3.0
Cherry Blossom	R	LC	28.1	3.5	4.0	5.0
Favorita	R	C	12.9	3.0	3.0	2.0
S 151496	R	C	13.8	4.0	5.0	4.0
Sun Cherry	R	C	11.9	2.5	3.0	2.0
Sweet 100	R	C	9.0	1.0	3.0	2.0
Sweet Million	R	C	13.6	2.0	3.0	3.5
Jolly Elf	R	E,G	11.8	5.0	4.0	5.0
Juliet	R	E	25.1	3.0	4.0	5.0
Morning Light	G/Y	E,P	13.0	2.5	3.0	4.0
Red Grape	R	G	8.8	4.0	3.0	4.0
St. Nick	R	G	10.2	4.0	4.0	4.0
Cupid F (S 2036)	R	G	9.4	4.0	4.0	5.0
Sweet Olive	R	G	8.6	4.0	4.0	4.0
Tami G	R	G	8.9	4.0	3.0	4.0
Cherry Brandywine	R	O	41.9	3.5	2.0	5.0
Isis Candy	R	C	17.8	2.5	1.0	2.0
Snow White	Y	C	13.0	2.0	1.0	5.0
Juane Flamme	O	R	54.8	2.5	3.0	4.5
Garden Peach	Y	R	77.0	1.5	2.0	3.0
Dr. Carolyn	Y	LC	21.0	1.0	1.0	4.0
HSD 5%	-	-	10.6	1.7	1.0	0.8

[1]R=Red, Y=Yellow, OR=Orange, G=Golden
[2]R=Round, DR=Deep Round, E=Elongated, P=Pear, C=Cherry, LC=Large Cherry, O=Oblate, G=Grape

Plant vigor (foliage density) was not statistically different due to variability in the trial. However, there was a trend toward Sweet Olive, Red Grape, Sun Cherry, Jolly Elf, Cupid F, and S 151496 having lower foliage density than most of the other varieties in the trial.

Early Yields are shown in Table 1. Sweet Olive had the highest early yield. Other varieties with high early yields were Sweet Million, BHN YC1, Cherry Brandywine, and BHN 268. Dr. Carolyn, Garden Peach, Isis Candy, Morning Light, Sweet 100, and Snow White had low early yields.

Marketable yields for the period July 30 to August 25 are shown in Table 1. Additional marketable fruit were present on the plants through September. Marketable yields of Cherry Blossom, BHN YC1, Juliet, Favorita, and Camelia all exceeded 30,000 pounds per acre during the harvest period. Isis Candy, Garden Peach, Cherry Brandywine, Sweet 100, Juane Flamme, and Red Grape produced low yields. Other varieties produced between 18,000 and 28,000 pounds per acre.

The percentage of total yield that was marketable is shown in Table 1. The most frequent reason for non marketable fruit was fruit cracking. Yellow eye, small fruit and green shoulders also contributed to culls in some varieties. Cupid F, S 151496, Favorita, Dr. Carolyn, Tami G, and Snow White all had over 90% marketable fruits.

Summary

The following varieties within each fruit type show promise for commercial production:

Cherry – Favorita, S 151496, Sweet Million, BHN YC1 (yellow), and Snow White (yellow).

Large cherry/Saladette – The variety Cherry Blossom produced high yields of attractive fruits. Cracking was present. Camelia showed some promise but had a significant number of fruits with green/yellow shoulders. Dr. Carolyn was an attractive, large yellow cherry with crack resistance. However fruits were soft.

Grape – Cupid F, St. Nick, Tami G were the most promising varieties in 2003. Tami G showed some variability in size and Sweet Olive and Jolly Elf had some yellow eye and more cracking than the other grape varieties.

Large grape – Juliet, a saladette size grape variety produced very high yields of attractive crack resistant fruits.

Small Pear – Morning Light, a yellow pear, had attractive fruits with low cracking, but the taste evaluations were unfavorable.

The following varieties were not suitable for commercial use due to low yields, low percentage of marketable yields, or some defect in fruit characteristics: Isis Candy, Garden Peach, Cherry Brandywine, Juane Flamme, BHN 268, Sweet 100, Red Grape and Sun Cherry.