EARLY ROUND TOMATO VARIETY TRIAL RESULTS - 2005

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INTRODUCTION

Commercial varieties and advanced breeding lines of tomatoes for the early round market were evaluated for adaptation to New Jersey growing conditions. A total of seven early promising lines were included in the 2005 trial conducted at Rutgers Agricultural Research and Extension Center, Bridgeton, NJ.

METHODS

Culture

Seeds were sown on March 24, in 72-cell (1½" X 1½") trays containing peat-vermiculite media formulated for tomato transplant production. Seedlings were thinned to 1 plant per cell. Sixty-five pounds of N per acre plus P_2O_5 and K_2O based on soil tests were disked into the sandy loam soil. Devrinol 50DF (3 lb/A), and Sencor 4F (0.33 lb/A), were applied and incorporated during bedding. Black plastic mulch and drip irrigation tube were laid. Transplants were set 24" apart on raised beds with 5-ft centers on May 6. Plants were grown on four foot stakes. The plants were pruned to allow three axillaries to develop below the main fork. Four applications of 40 pounds/A of N, P_2O_5 and K_2O were applied through the drip system during the growing season. Insects were controlled as required using commercial recommendations for tomatoes. Fungicides were applied for suppression of foliar diseases and fruit rots. Rainfall was 2.22, 2.46, 4.43, 1.52 and 1.07 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. A hand harvest of each plot was made on July 14, when early fruits were ripening and on 7/18, 7/22, 7/26, August 1, 8/8, 8/15, and 8/29. All fruits with breaker to red maturity were harvested. Fruits were separated into usable, and culls. Major defects were identified and recorded. On August 19th, a sample of 16 representative fruit from each plot was used to evaluate external and internal fruit characteristics using the rating system shown in the table below.

Color	Shoulder Appearance	Fruit Firmness	Blossom Scar	White Tissue
5 = Excellent	5 = Excellent	5 = Firm	5 = Large	5 = None
4 = Very Good	4 = Very Good	4 = Medium Firm	4 = Medium - Large	4 = Slight-Some
3 = Good	3 = Good	3 = Medium	3 =Medium	3 = Moderate
2 = Fair	2 = Fair	2 = Medium Soft	2 = Small - Medium	2 = Mod-Severe
1 = Poor	1 = Poor	1 = Soft	1 = Small	1 = Severe

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RESULTS

The environmental conditions 2005 growing season were variable. Temperatures were below average after transplanting and early vegetative growth was only fair. Temperatures were favorable during the early fruit set period, but above average temperatures during mid-season caused stress and reduced vegetative vigor and fruit size.

Table 1. Vine Vigor, Early and Total Marketable Yield, Early Round Tomato Trial - 2005

Variety	Seed Source	Vine[1] Vigor Rating	Early[2] Market Yield Boxes/A	Season Marketable Yield Large &[3] Ex.Large Box/A	%	Total %
Applause	Seminis	1	333	2009	45	63
Debut	Seminis	1.5	334	2258	32	56
Escudero	Harris Moran	2.5	64	2113	27	65
Indy	Rodgers	2	110	2066	18	63
Sunbrite	Seminis	2	49	2125	42	70
Sunshine	Seminis	1	388	2168	20	49
Sunstart	Seminis	1	409	2077	22	58
LSD 5%		0.8	144	NS	18	NS
HSD 5%		1.4	245		31	

[1]5=Excellent, 3=Good, 1=Poor. [2]Early Yields from harvest 1 and 2. [3]Large = 2.75 – 3.5, Extra Large = > 3.5 size fruit.

Vine vigor of Applause, Sunshine and Sunstart were rated poor. Debut, Indy and Sunbrite were rated fair, while the vigor of Escudero was rated good (Table 1).

Early marketable yield (harvest 1 & 2) was significantly higher for Sunstart, Sunshine, Applause and Debut, compared to Indy, Escudero and Sunbrite (Table 1). There were no differences among varieties for season marketable yield (Box/Acre) or for the percentages of total yield that was marketable. However, Applause and Sunbrite had a higher percentage of the marketable yield in the large (2.75 – 3.5 inch) and extra large (over 3.5 inch) size categories compared to Indy, Sunshine and Sunstart (Table 1).

Table 2. Fruit Characteristics, Early Round Tomato Trial – 2005

Variety	External[1] Color	Internal[1] Color	Firmness[1]	Blossom[1] Scar	Shoulder[1] Appear.	White[1] Tissue
Applause	3	3	4	2.5	3	2.5
Debut	2	2	3	2	2	1
Escudero	3	3.5	4.5	2.5	4	3.5
Indy	3	4	4	2.5	3	4.5
Sunbrite	3	2.5	3	3	4	3
Sunshine	3	4	2	3.5	3	3
Sunstart	3	3	2	4.5	2.5	2
LSD 5%	0.1	0.8	0.6	NS	0.6	1.7
HSD 5 %	0.2	1.4	1.1		1.1	2.9

[1]See Table in methods section for a description of ratings.

Fruit characteristics of varieties in the 2005 early round tomato trial are summarized in Table 2. There was very little difference among varieties for external fruit color. (Table 2) However rating of internal color indicated that Indy, Escudero and Sunshine had very good color compared to fair for Debut. Applause, Sunbrite and Sunstart were rated good for internal color.

Fruits of Escudero were rated firm and Applause and Indy were rated medium firm. Firmness of Sunbrite and Debut was medium, whereas Sunshine and Sunstart were rated medium soft.

Blossom scar sizes were not significantly different for the varieties in the early tomato trial. (Table2) There was a trend (not significant) toward larger blossom scars in Sunstart compared to Debut.

The amount of white tissue in the fruit differed significantly among varieties. (Table 2) Indy had no white tissue (rating of 5) and Escudero had slight to some (rating of 4). Applause, Sunbrite and Sunshine all had a moderate amount of white tissue. Where as Sunstart had a moderate to severe rating and Debut had a severe rating for white tissue in 2005.

SUMMARY

Sunstart, Sunshine, Applause and Debut were early maturing whereas Indy, Escudero and Sunbrite were in the second early maturity class. In 2005, Applause and Sunbrite had a larger percentage of fruits in the large and extra large size classes, compared with Indy, Sunshine and Sunstart. Indy and Escudero had less white tissue and better overall internal fruit quality, than the other varieties.