

PERFORMANCE OF 16 FRESH MARKET AND 6 ROMA TOMATOES IN SOUTHWEST MICHIGAN

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OBJECTIVE:

To evaluate adaptability of 16 fresh market and 6 Roma tomato varieties to southwest Michigan conditions.

SUMMARY:

Of the 16 fresh market tomatoes evaluated STM 0231 had the best overall rating in terms of yield, quality, size and firmness. Other fresh market selections were similar to STM 0231 in some categories but none were better overall. No one selection stood out for the six Roma-type tomatoes evaluated ACR 8625, 'Mariana', SD-257 and SD-256 all had similar total yields, yield of number one fruit and fruit weight.

METHODS:

Fertilizer: Prior to planting 33-0-0, 0-0-60, Cal-fortified (calcium plus micronutrients), sulfur and Solubor were broadcast and incorporated at 125, 250, 100, 25 and 10 pounds/acre respectively. After planting 4-0-8-2(Ca) was applied through the drip irrigation at a rate of 1 pound of nitrogen/acre/day. Application of 4-0-8-2 began 13 June and continued through 9 September 2005.

Fumigation/weed control: Beds were fumigated with 350 pounds/acre 67/33% Methyl Bromide/Chloropicrin at shaping and plastic laying. Between-row weeds were controlled by cultivating and hoeing.

Planting: Seed was planted to 72 cell trays in a greenhouse on 7 April and transplants set in the field 27 May. Beds were 6" high and spaced 5.5' on center with an in row spacing of 1.5' (5280 plants/acre). The two fruit types were planted in separate trials. Trials were planted and analyzed as completely randomized designs with four replications with eight plants/replication. Two guard plants bordered each plot.

Plant Care: Plots were irrigated as needed and disease and insect pests were controlled using recommended cultural practices.

Harvest and data collection: Harvest was conducted seven times between 4 August and 14 September. Fruit was graded into Number One large (>2.5" in dia) and small (2.0 to 2.5" in dia), Number Two and Culls. Fruit firmness was also obtained using an IMADA DPS-44R force gauge fitted with a 12 mm tip. To obtain readings a section of the skin was removed from similarly mature fruit, exposing the underlying fruit wall. Maximum pressure required to displace the wall was then recorded.

RESULTS:

Fresh Market Trial: Total yield of the 16 entries ranged from 3409 (STM 0231) to 2414 ('Soraya') 25-pound cartons/acre (Table 1). The highest yielding line was STM 0231, however nine other entries had statistically similar yields, including 'Mountain Spring' (3029), the standard for southwest Michigan.

Yield of number one large fruit ranged from 1986 (STM 0231) to 468 (R-1516) cartons. STM 0231 was statistically greater than all other entries in this category. 'Crista' was next closest at

1460 cartons. STM 0231 and 'Crista' also had the highest percent number one yield at 58 and 51%, respectively, and were among the leaders in number one fruit weight, both averaging 290 grams/fruit. 'Mountain Spring' (268 gms) and B-807 (277 gms) were the only other entries with statistically similar fruit weights.

Yield of cull fruit ranged from 1964 (B-807) to 524 (STM 0231) cartons/acre. B-807 was among the leaders in firm fruit (2.36 kg) as was R-448 (2.25 kg), which also had a large number of culled fruit (1324 cartons). Both B-807 and R-448 exhibited a significant amount of fruit cracking, leading to a large number of culls. 'Mountain Crest' had the firmest fruit at 2.54 kg, but it was not significantly different than three other entries.

The most impressive entry was STM 0231. The fruit was free of cracks and blemishes and had high yield of number one fruit (58% of total yield). Fruit size and firmness were comparable to 'Mountain Spring' and it maintained fruit size over the harvest period.

Roma Trial: Total yield in the Roma trial ranged from 3605 (ACR 8625) to 2809 (ACR 374) 25-pound cartons/acre (Table 2). The four leading entries, ACR 8625, 'Mariana', SD-257 and SD 256 all had similar total yield, yield of number one fruit and percent number one fruit. SD 257, ACR 8625, SD-256 and ACR 374 all had similar number one fruit weight. SD-257 and ACR 8625 had the lowest number of culled fruit at 406 and 454, respectively. 'Mariana' had the firmest fruit at 2.22 kg.

ACR 374 is later ripening than the other entries. There was no fruit from ACR 374 for the first two harvests. It was harvested five times compared to seven for the other entries. Therefore, yields may have been higher than what are reported in this trial.

Fruit size with each harvest was relatively stable for the six entries (Figure 1). When trend lines are added to Figure 1 - SD 256, SD257 and ACR 374 are shown to increase slightly in number one fruit weight over time and 'Plum Crimson', ACR 8625 and 'Mariana' decrease slightly.

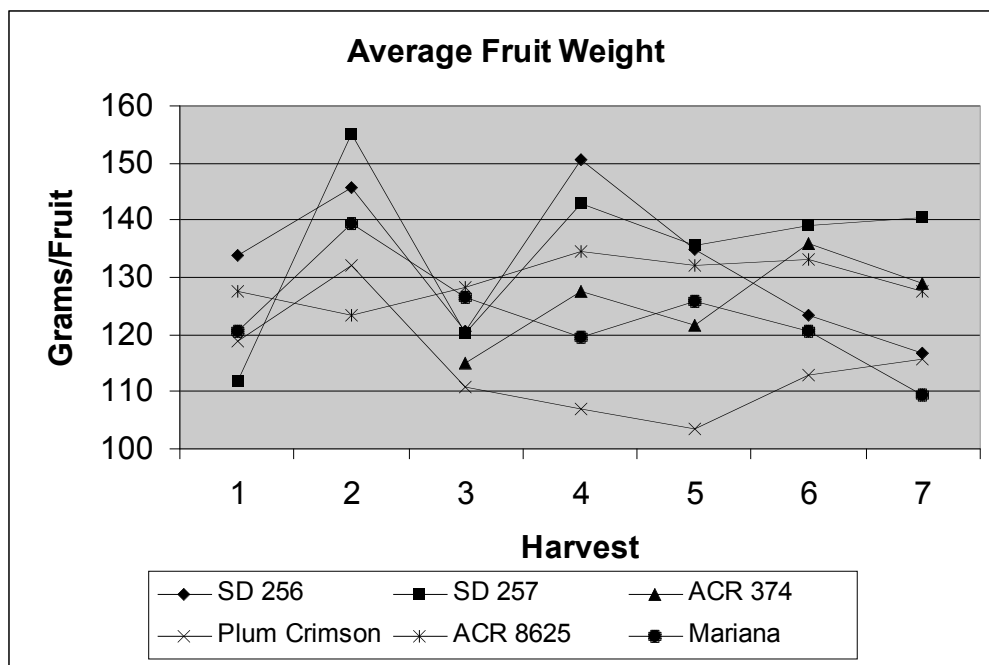


Figure 1. Average fruit weight in grams over seven harvests of six Roma-type tomatoes grown at the Southwest Michigan Research and Extension Center, Benton Harbor, Michigan in 2005.

Figure 1. Yield in 25-pound cartons/acre of 16 fresh market tomato varieties grown at the Southwest Michigan Research and Extension Center, Benton Harbor, Michigan in 2005

Variety	Seed Source	Total Yield	Yield No.1 Large	% Total	Fruit Weight (gms)	Yield No. 2	% Total	Yield No.1 Small	% Total	Yield Cull	% Total	Firm (kg)
STM 0231	SK	3409	1986	58	290	415	12	483	14	524	15	1.86
ACR 2012	AC	3390	1382	42	255	374	11	695	21	939	27	1.19
Paragon F1	JS	3251	1318	41	243	325	10	830	25	779	24	1.03
R-448	LSL	3128	956	31	245	357	11	492	16	1324	42	2.25
Mt. Spring	SY/RG	3029	1311	43	268	488	16	352	12	878	29	1.77
B-807	LSL	2984	628	21	277	271	9	120	4	1964	65	2.36
Indy	SY/RG	2948	882	30	236	441	15	648	21	978	33	1.21
R-449	LSL	2943	1015	33	254	447	15	527	18	954	34	1.84
Mt. Crest	NU	2933	1119	38	228	243	8	775	27	795	27	2.54
Crista	HM	2882	1460	51	290	357	12	347	12	718	25	1.33
Sebring	SY/RG	2829	1181	41	260	294	10	506	18	848	30	1.37
NRT 6785	NU	2773	1130	41	263	279	10	582	21	783	28	2.23
R-1516	LSL	2718	468	17	253	434	15	223	9	1594	59	1.56
Florida 7514	RU	2621	957	37	244	276	10	585	22	803	31	1.35
Big Shot	RI	2539	786	31	234	263	10	576	23	914	36	1.87
Soraya	SY/RG	2414	1023	42	247	270	11	291	12	829	35	1.62
	lsd .05	545	359	9	25	190	6	173	5	346	10	0.37

Figure 2. Yield in 25-pound cartons/acre of 16 Roma-type tomato varieties grown at the Southwest Michigan Research and Extension Center, Benton Harbor, Michigan in 2005.

Variety	Seed Source	Total Yield	Yield No.1	% Total Yield	No. 1 Fruit Wt. (gms)	Yield No. 2	% Total Yield	Yield Cull	% Total Yield	Firmness (kg)
ACR 8625	AC	3605	2421	67	131	730	21	454	13	1.28
Mariana	SK	3480	2193	62	120	689	20	598	18	2.22
SD-257	LSL	3378	2266	67	135	706	21	406	12	1.68
SD-256	LSL	3314	2063	62	130	664	20	587	18	1.25
Plum Crimson	RI	2978	1686	56	111	679	23	612	21	1.28
ACR 374	AC	2809	1522	54	127	695	25	593	21	1.31
	lsd .05	485	482	7	9	ns	ns	139	5	0.24