

Tomato Cultivar Trial and Pruning Observation

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Seventeen fresh market globe and eight specialty tomato cultivars were evaluated at the Muscatine Island Research Farm in Fruitland, Iowa, during 2000. All tomatoes were grown on black plastic mulch and fertigated with drip lines beneath the mulch. Due to moderate temperatures and rainy weather during June and early July plant growth was slow and the first ripe tomatoes weren't picked until July 24, about a week later than normal. However, harvested fruit were generally large, nicely colored and flavorful. *Sunshine* and *Sunstart* produced the best early yields (Table 1). Fruit size and quality of both cultivars was pretty good considering their earliness. The cultivars *Emperador*, *Carolina Gold*, *Florida 47*, *Floralina*, *Mountain Fresh*, *Sun Leaper*, *BHN 543* and *Sunpride* all produced above average yields of good quality marketable fruit. Some impressively large tomatoes were harvested from *Emperador* - note the 34% jumbo size in Table 2. The golden yellow fruits of *Carolina Gold* took a full season to mature but were quite attractive and free of blemishes. Both *Floralina* and *Florida 47* stood out as good commercial cultivars because of their uniform size, color and shape.

One of the most intriguing cultivars of the specialty tomatoes in Table 2 was *Santa*. It is the red 'grape' tomato that has recently attracted so much attention because of its novelty and market price. *Santa* had vigorous indeterminate vines that were very productive and held clusters of grape-sized tomatoes that were tasty and easy to eat whole. *Juliet* is a larger version of *Santa* whose performance and quality was also impressive. *Victoria Supreme*, a saladette type, produced variable sized fruit (some rather large) that were round to distinctly pear shaped. It was noted during data collection that fruit from *Victoria Supreme* had a pleasing garden tomato taste that differed from the bland 'paste' flavor typical of some saladette cultivars. *Plum Dandy* was a high-yielding, uniformly sized and colored 'Roma' tomato.

Since cultivar plots were replicated it was decided to prune and stake one half of them while plants in the other half were allowed to grow naturally as a bush. Pruning was achieved by snapping off all suckers below, but not including, the one under the first fruit cluster. Stakes were driven between every other plant and supporting twines were woven around plants and stakes. We used three tiers of twine spaced approximately 12" apart. Yield data from the two treatments were collected at harvest and then compared to determine effect of pruning. Averaged over all cultivars (large globe cultivars only) pruning affected number of fruit harvested, fruit size and total weight harvested (Table 3). The most striking difference at harvest was larger fruit size (.69 lb vs. .55 lb) from pruned plots. However, pruning also reduced the number of fruit harvested by 32% and total marketable weight by 15%. Differences between treatments for early yield, cull yield and percent fruit cracking weren't significant. So why prune and stake? The obvious advantage, if desired, would be to produce larger, more uniformly sized fruit. And, although not a factor in this experiment, it has been reported that staking to keep fruit off the ground can reduce fruit rot and ground spotting that is prone to develop in wet seasons. On the other hand, under certain conditions, I have observed more sunburn and fruit cracking on staked tomatoes. Management is critical and can play a factor in minimizing some of these problems. Ultimately, the decision to stake and prune can be a difficult one for the grower and should be selected only if it fits the growing situation and its advantages outweigh the increased input costs and possible yield penalty.

Materials and Methods

Planting: Planted in greenhouse April 12, 2000, 72 cell-packs. Transplanted to field May 16.
Plot Design: RCB, 2 reps. Plot = one row of six plants 21" apart.
Soil Type: Alluvial coarse sand, O.M. content 1.5% or less, CEC 2.5 - 5 meq/100g.
Fertility: Fertilizer applied preplant incorporated in a band under plastic mulch and by fertigation during growing season. Rates determined by plant and soil tests.
Pesticides: Sencor, Poast herbicide; Bravo 720, Kocide DF, Quadris fungicide; Warrior insecticide.

Table 1. 2000 tomato cultivar yield and fruit characteristics, Fruitland, IA.

Cultivar	Seed Source	Market Yield lbs/plt	Avg Frt Wt lbs	Early Yield lbs/plt	Total Yield lbs/plt	% Cull	% Crack	% Jumbo	% Large
Emperador	SW	9.2	.70	0.0	11.8	22	9	34	63
Carolina Gold	NV	8.2	.60	0.4	10.1	19	11	24	64
Florida 47	AS	8.1	.57	0.3	10.0	19	3	19	72
Floralina	RP	8.0	.58	0.9	9.8	18	2	16	78
Mountain Fresh	HM	8.0	.61	0.0	9.3	14	5	24	69
Sun Leaper	NV	7.7	.50	1.0	10.4	26	8	10	76
BHN 543	BH	7.7	.58	0.8	10.8	29	10	14	68
Sunpride	AS	7.4	.59	0.5	10.9	32	25	19	72
Mountain Spring	NV	7.0	.57	2.2	10.5	33	17	15	74
Jet Star	HM	6.9	.58	1.5	11.1	38	15	21	69
Sunshine	AS	6.8	.51	4.6	10.4	35	19	6	76
Sunstart	AS	6.7	.54	4.9	11.9	44	17	6	82
Sunbrite	AS	6.5	.72	1.5	11.8	45	30	34	64
Sun Gem	AS	6.1	.60	1.0	8.0	24	8	27	61
Classy Lady	SU	3.9	.68	1.0	10.5	63	56	18	79
BHN 22	BH	3.9	.64	0.2	9.0	57	28	22	72
Sunchief	AS	3.8	.60	2.2	7.4	48	29	23	59
<i>Grand Mean</i>		<i>6.8</i>	<i>.60</i>	<i>1.4</i>	<i>10.2</i>	<i>33</i>	<i>17</i>	<i>19</i>	<i>70</i>

Early Harvest = 7/22 through 8/7. Total harvest = 7/22 through 8/25.

Market = marketable fruit having good shape and color, free of cracks, rot, yellow shoulders.

Percentages calculated from fruit numbers.

Jumbo = fruit diameter 3 1/2 inches or greater. Large = fruit diameter between 2 5/8 and 3 1/2 inches.

Table 2. Specialty tomato cultivar marketable yields and descriptions.

Cultivar	Seed Source	Avg Frt Wt lbs	Early Yield lbs/plt	Total Yield lbs/plt	Vine	Fruit Description
Juliet	JS	.06	3.1	13.6	I	elongated plum
Plum Dandy	HM	.18	.9	12.5	D	blocky egg shape
Victoria Supreme	SW	.27	1.5	12.3	D	variable size, round to pear
XPH 12048	AS	.20	1.1	10.5	D	blocky pear
Hybrid 882	AS	.19	1.3	9.0	D	elongated blocky pear
Santa	JS	.02	1.5	9.0	I	'grape' tomato (small pear)
Puebla	SW	.19	1.3	8.8	D	large elongated plum
Matt Wild Cherry	JS	.01	0.5	6.5	I	very small sweet cherry, cracks

Early Harvest = 7/22 through 8/7. Total harvest = 7/22 through 8/25.

I = indeterminate vine, D = determinate vine.

Table 3. Average fruit yield, size and percent cracking of seventeen globe-shaped tomato cultivars grown on black plastic mulch with and without pruning and staking.

Treatment	Total # frt/plt	Total Wt lbs/plt	Avg Frt Wt lbs	Early Yield lbs/plt	Cull Yield lbs/plt	% Crack
Bush/Unpruned	16.5	9.1	.55	1.3	3.0	15.4
Pruned/Staked	11.3	7.7	.69	1.1	3.0	15.6
<i>LSD 5%</i>	2.2	1.3	.05	<i>n.s.</i>	<i>n.s.</i>	<i>n.s.</i>