Tomato Variety Trial — 2011

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Introduction

Daviess County, as well as the entire state of Indiana, continues to see an increase in the number of small and medium-scale vegetable producers. Growers are producing vegetables for sale and distribution through a variety of marketing venues. Tomato is one of the most frequently grown vegetable crops in the region. Fresh market tomato serves as a leading product for many local roadside stands and produce auctions. It has been observed locally that new commercial vegetable growers tend to use older fresh market varieties. While many newer commercial varieties are available, locally generated performance data that would encourage growers to switch to these varieties is lacking.

This report is a continuation of our previous work, where our goal continues to be to evaluate fresh market tomato varieties available to local growers in an effort to identify those that are best suited to production in our region.

Materials and Methods

Seeds of 24 fresh market tomato varieties were sown into 73-cell flats on April 21. Seeds were germinated and the resulting transplants were grown in a greenhouse at the Southwest Purdue Agriculture Center near Vincennes, IN. Tomato varieties consisted of mostly globe types, with one saladette type and one Campari type. Both determinate and indeterminate varieties were included.

Transplants were planted into a field on a local farm. Prior to transplanting, a blended commercial fertilizer (26.6N-0P-20.1K-2.7S-.08B) was applied at the rate of 625 lbs/acre. Transplants were planted into rows arranged on 6.5-foot centers on May 24-25. Each row was covered by a 3-foot strip of clear plastic mulch, with drip irrigation installed. Individual varieties were transplanted into plots of ten plants. Spacing between plants was 24 inches. The trial simulated production at 3,350 plants per acre. Plots were arranged in a randomized complete block design with three replications of each variety. After transplanting, plants were grown in accordance with accepted commercial practices and were trellised using the Florida Weave System.

Individual plots were harvested between July 29 and August 29. Following harvest, fruit from each plot were graded as number one, number two, or culls, in accordance with USDA standards. All number one and number two fruit were counted and weighed, while culls were only counted. Data were then compiled and subjected to appropriate statistical analysis.

Results and Discussion

Shortly after planting, it was discovered that the trial had been located in a field containing root knot nematodes (*Meloidogyne* spp.). The nematode population was scattered across the trial area. Consequently, susceptible plants were damaged or killed outright. Following harvest, data were

compiled and subjected to an analysis of variance (ANOVA). Additionally, treatment means were subjected a mean separation procedure (Fischer's LSD). The trial contained saladette, globe, and Campari-type varieties. Although final plant populations were affected by the presence of root knot nematodes across many sections of the trial, the ANOVA failed to detect significant variation among replications. In general, differences were noted in the data among fruit types. The largest yield was seen in 'Mt. Magic,' the lone Campari-type variety, followed by 'Tormenta,' the lone saladette variety. Yield data, as the mean of the two replications of each variety that produced the greatest quantity of number one fruit, and the LSD for those means, are summarized in Table 1.

The ANOVA indicated highly significant varietal differences in the yield of number one fruit ($\alpha = 0.05$). Mean yield of number one fruit for the two highest yielding replications of each variety ranged from 17,092-430,478 fruit/acre, with 'Mt. Magic' yielding the largest quantity of fruit and 'BHN 961' yielding the lowest. Mean yield of number one fruit for 'Tormenta,' the lone saladette variety, was 116,961 fruit/acre. Mean number one fruit yield among globe varieties ranged from 17,092-35,189 fruit/acre, with 'HM 8849CR' having the largest, and BHN 961 having the smallest mean yield.

Overall, the mean weight of number one fruit produced for the two highest yielding replications ranged from 7,017-23,995 lbs/acre, with 'Mt. Magic' being the largest yielder. The mean weight of number one fruit for the single saladette variety was 15,667 lbs/acre. The range of mean number one fruit weights for globe varieties was 7,017-13,196 lbs/acre. 'HM 8849CR' produced the largest weight of number one globes, while 'BHN 961' produced the smallest.

When selling into large wholesale marketing channels, growers frequently do not differentiate between number two fruit (or seconds) and culls. However, in local markets and produce auctions, number two tomatoes are routinely identified and sold. While this class of tomato generally commands a lower price in the marketplace, the ability to move tomatoes of this class beyond the farm gate presents growers with an opportunity to not only maximize income, but also to prevent losses associated with unmarketable fruit. Consequently, when evaluating fruit from this trial, yields of number two fruit were taken into consideration.

ANOVA results indicated significant differences in the weight of number two fruit produced, as well as highly significant differences ($\alpha = 0.05$) in the quantity of number two fruit among varieties. 'Tormenta,' the single saladette entry in the trial, produced more seconds than the globe varieties. As saladette varieties tended to be the largest yielders, one would expect a corresponding increase in the quantity of number two fruit produced. The mean quantity of number two fruit from the two highest yielding replications of each variety ranged from 25,637-114,113 fruit/acre, with 'BHN 602' producing the lowest quantity and 'Tormenta' producing the highest. For these varieties, number two production constituted 48.9 and 45.5 percent of mean total yield respectively.

Culls, defined as fruit not classed as number one or number two and being unmarketable, were counted at harvest. Statistical analysis indicated significant differences ($\alpha = 0.05$) in the mean number of culls/acre, and number of culls as a percent of mean total yield, among varieties. 'Mt. Magic,' the single Campari-type entry, produced the lowest percent of culls. Among globe varieties, percent of culls ranged from 8.0-20.1%, with 'BHN 876' and 'Rocky Top' having the lowest and highest percentages respectively.

Table 1. Mean yield data for the two highest yielding replications of 24 commercial tomato varieties evaluated in 2011.

Variety	Seed Source[1]	#1 Fruit[2]	#1 Fruit Weight[3]	Percent #1[4]	#2 Fruit[2]	#2 Fruit Weight[3]	Culls[2]	Percent Culls[4]	Total Yield[2]
Mt. Magic[5]	BE	430,478	23,995	86.6	53,956	3,560	12,735	2.6	497,169
Tormenta[6]	BE	116,961	15,667	47.0	114,113	14,327	19,772	7.7	250,846
HM 8849CR	HM	35,189	13,196	49.1	28,151	11,457	7,373	11.8	70,713
BHN 876	RU	32,173	11,415	41.5	38,875	15,835	6,032	8.0	77,080
Mt. Glory	RU	31,838	10,452	48.4	28,989	11,226	8,378	10.6	69,204
Mt. Crest	CT	29,827	9,425	38.6	40,718	12,064	8,378	10.1	78,923
Polbig	BE	28,319	9,635	31.9	52,280	17,008	12,065	13.4	92,664
Red Deuce	HM	25,805	11,541	40.3	33,681	14,766	5,864	8.6	65,351
Florida 47R	RU	25,302	16,610	33.6	41,891	15,053	8,210	10.9	75,405
Red Bounty	HM	25,302	12,672	30.3	44,405	23,354	13,740	16.5	83,448
Mt. Fresh Plus	CT	23,124	11,562	27.9	47,924	21,972	11,897	14.3	82,945
Carolina Gold	RU	22,956	8,902	37.0	33,178	12,735	13,237	18.8	69,372
Florida 91	CT	22,454	10,703	36.5	33,513	16,212	7,708	11.6	63,675
Finish Line	SW	22,286	9,300	28.6	47,086	20,527	8,713	11.1	78,086
PrimoRed	HM	21,113	9,132	31.9	36,194	16,882	10,389	14.9	67,696
Tribeca	SW	20,946	9,341	36.6	30,664	14,069	5,530	9.7	57,140
BHN 602	SW	19,773	8,336	37.1	25,637	11,143	7,038	13.7	52,448
Mt. Spring	CT	19,772	8,902	28.9	40,551	13,489	9,719	14.0	70,042
SecuriTy 28	HM	19,102	9,090	28.7	40,048	17,196	7,540	11.3	66,691
Celebrity	CT	19,102	9,719	16.9	79,426	34,016	13,740	12.2	112,269
Rocky Top	RU	18,767	7,771	28.5	33,848	15,500	13,237	20.1	65,853
BSS 832	BE	17,929	7,435	33.3	28,989	11,855	6,367	12.2	53,286

Table 1 (*continued*)

Variety	Seed Source[1]	#1 Fruit[2]	#1 Fruit Weight[3]	Percent #1[4]	#2 Fruit[2]	#2 Fruit Weight[3]	Culls[2]	Percent Culls[4]	Total Yield[2]
Fletcher	BE	17,427	7,135	23.8	45,913	19,647	10,221	13.9	73,561
BHN 961	RU	17,092	7,017	29.6	29,491	11,394	10,054	17.9	56,637
lsd (α=.05)		25,764	5,827	15.5	23,280	8,803	9,806	8.8	40,856

[1]SW=Seedway; RU=Rupp; HM=Harris Moran; BE=Bejo Seeds; CT=CropTech Seeds.
[2]Mean yield (fruit/acre) of two highest yielding (greatest quantity of number one fruit) replications.
[3]Mean weight (lbs/acre) of two highest yielding (greatest quantity of number one fruit) replications.
[4]Quantity of indicated grade of fruit as a percentage of total yield (fruit/acre) for two highest yielding replications.
[5]Campari-type variety.
[6]Saladette Variety.