

Title: High Tunnel Trellised Cucumber Variety Trial: 2013
Report to: Pennsylvania Vegetable Marketing Research Program

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Introduction

Cucumbers mature quickly and produce high yields but are extremely sensitive to frost. As the demand for locally grown cucumbers has increased from major grocery chains in central Pennsylvania, many growers are seeking to extend the cucumber growing season to take advantage of periods where local market supply is relatively low. It has been shown that the most cost effective way to extend the growing season is by using unheated, plastic covered, high tunnels. This is a reason why, behind tomatoes and peppers, cucumbers are the most significant high tunnel crop. Additionally, high tunnels allow the grower to be extremely efficient with space as trellising is a viable option in high tunnels. Trellising also increases the likelihood of the production of long, thin, straight, fruit which will more readily meet the high standards of large grocery chains. For the benefit of plant health, trellising increases air flow between plants, reducing incidence of disease by keeping leaves dry.

As many growers know, choosing the right variety can result a large difference in yields and market value. This is especially true in the high tunnel environment because some varieties are specifically bred for higher temperatures and trellising.

Objectives

- Identify parthenocarpic slicing cucumber cultivars that perform well in a high tunnel environment.
- Rate cultivars on their resistance and susceptibility to powdery and downy mildew while using a standard disease management program.
- Identify cultivars considered superior in flavor and appearance.

Methodology

The varieties listed below were replicated 3 times in 4 plant blocks in #5 containers filled with a high coir potting media in a 25'x48' LedgeWood high tunnel at the Penn State Southeast Research and Extension

Center (SEAREC). Pots were spaced 12” apart in rows 5’ apart on landscape fabric. Cucumbers were trellised vertically using #2100 polyethylene twine dropline and 3/4” vine clips.

Fruit was harvested regularly for yield, individual weight, and grade. Fruit was graded as being marketable or cull. Tissue samples were submitted to Agri-Analysis for nutrient recommendations. Soluble fertilizers were chosen based on these recommendations and applied through the drip irrigation system as needed.

Variety	Company
Corinto	Johnny's
Diva	Johnny's
Excelsior	Seedway
Katrina	Johnny's
Lisboa	Seedway
Picolino	Seedway
Rocky	Johnny's
Socrates	Johnny's
USAC0030	US Agriseeds - Seedway
USACX0329	US Agriseeds-Seedway
USACX8835	US Agriseeds-Seedway

Data

Table 1.1 Data Overview (Total of 12 plants, 4 plants per block x 3 blocks)

Variety	Total Count	Total Weight	Average Weight	Total Cull Count	Total Cull Weight	Cull Weight (% of Total)
Corinto	224	164.91	0.73	7	2.24	1.34
Diva	99	62.16	0.62	4	1.63	2.56
Excelsior	193	101.91	0.52	4	1	0.97
Katrina	171	83.29	0.48	20	9.28	10.02
Lisboa	165	117.16	0.71	6	2.95	2.46
Picolino	242	103.64	0.42	7	3.4	3.18
Rocky	213	91.39	0.42	16.5	4.92	5.11
Socrates	208	123.93	0.59	31	15.8	11.31
USAC0030	174	103.33	0.59	23	9.05	8.05

USACX0329	218	113.518	0.52	42	18.05	13.72
USACX8835	208	107.78	0.51	68	11.51	9.65

Figure 1.1 Total Harvest (Number)

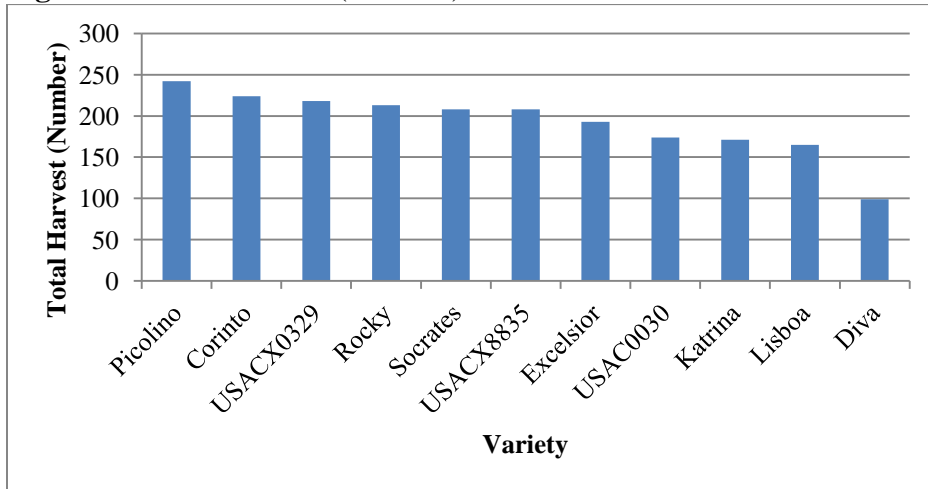


Figure 1.2 Total Harvest (lbs)

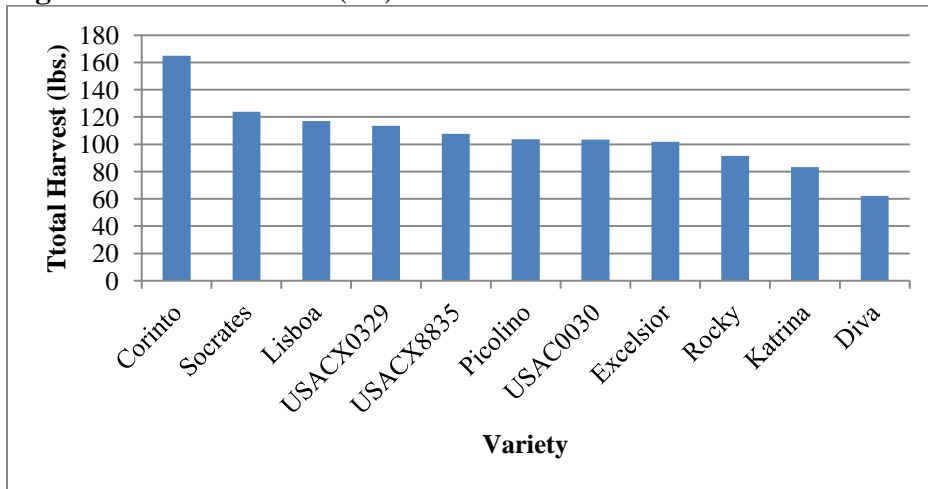
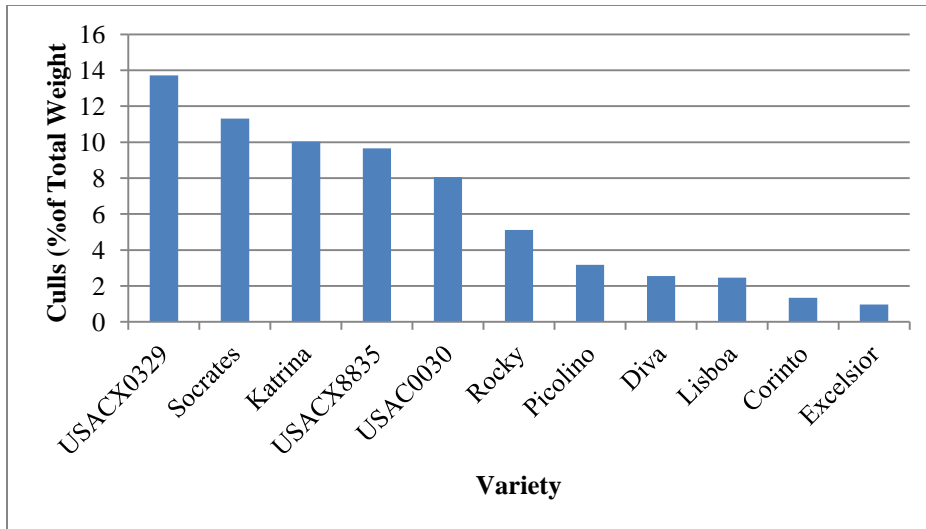


Figure 1.3 Culls (% of Total Weight)



Variety Comments

Corinto: This slicer was bred specifically for the greenhouse environment which partially explains its superior performance, flavor, and durability. Skin is an attractive deep, smooth, green. Producing the second most fruit by count and the most by weight, Corinto is a very good option for a grower looking for a relatively disease resistant cucumber with high yields and relative disease resistance.

Diva: As displayed in the data, Diva performed the poorest in all evaluations of yield. Despite its prolific vegetative growth, Diva failed to produce fruit until nearly three weeks after the other varieties. These results were consistent throughout all three production runs in this program.

Excelsior: This was the sole pickling type cucumber in the trials. What set excelsior apart was its consistent production of high quality fruit, having the lowest cull percentage at 0.97% waste.

Katrina: Like Picolino, Katrina started yielding earlier than most others. However, it also faded quickly, so would require a 4 week succession replanting schedule to maintain consistent harvests.

Lisboa: Reasonable yields of very large fruit (0.71 lbs./fruit, third highest) characterizes this multipurpose variety. Management became an issue half way through the growing period as the plants became extremely tall (taller than other varieties) with much branching. Possibly using a different trellis system would help this problem. Skin is an attractive dark green. Lisboa and Corinto are the two high tunnel types that appear most like standard field types.

Picolino: The highest producing in terms of number of fruit, Picolino cucumbers are small, 4-5", and have a very desirable, mild flavor. Very early yielding with consistent harvests over the entire production run.

Rocky: An oddly shaped, stout cucumber, Rocky produced tasty, attractive fruit that are somewhat blocky in appearance. Acclaimed by some as a good farmers market variety in upscale

markets. Now only available from one online supplier, Johnny's Seeds now offers Iznik and Unistar varieties for those seeking something close to Rocky.

Socrates: Socrates consistently produced high-quality fruit in moderately large quantities. Yield was fairly high and fruit was sweet with a moderately attractive dark green flesh.

USAC0330: Nondescript and typical was USAC0330. Low yields and high cull rates plagued this dark skinned variety. This variety did not perform well in this program.

USACX0329: Out of all the varieties from US Agriseeds, this variety performed the best. It had high yields (both weight and number of fruit), but also had a high cull rate at 13.7% Superior in both flavor and appearance.

USACX08835: Similar to its relative, USAC0330, USACX8835 had excellent flavor but had mediocre performance with low yields and high cull rates.

Note on Powdery and Downy Mildew: PM only appeared on high tunnel plants as they started to senesce and had been harvested for 3 weeks or more. Downy mildew was a short term challenge as there were only about 3-4 weeks this past growing season when DM on cucumbers was an issue. We alternated crops between the PSU SEAREC (Landisville Farm) 17' x 48' high tunnel and the same sized house at the Franklin County Horticultural Center, Chambersburg, PA with three crops total.

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