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# URI Muskmelon Trial – 2020 Report

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Cantaloupes are the most commonly grown *Cucumis melo* melons in southern New England, and many new varieties have entered the market since our last variety trial in 2013. The goal of the current trial was to compare the new varieties with the top performers from our trials in 2011 through 2013. The 2020 trial included 20 entries, with Athena and Wrangler as the standards for comparison.

## Trial Description

The summer of 2020 was excellent for muskmelon production, with temperatures in the upper 80s during fruit ripening at the Gardiner Crops Research Center in Kingston, RI. Cucumber beetle pressure and bacterial wilt incidence were low, and cucurbit downy mildew did not arrive until mid-August, when melon harvest was nearly finished.



Figure 1. Melon trial on July 14, 10 days prior to beginning of harvest.

Muskmelons were seeded into plug trays in the greenhouse on May 5, and moved outdoors to harden off on May 25. On June 1 the seedlings were transplanted into raised beds with black plastic mulch, and covered with perforated plastic row cover. The beds were on 5-foot centers with one row of melons per bed and 24 inches between plants in the row. Each plot consisted of 12 plants, and the trial was a randomized complete block with 3 replications. Alleys between beds were covered with landscape fabric for weed suppression. Nutrients to provide 70 lbs/acre nitrogen, 25 lbs/acre phosphorous and 70 lbs/acre potassium were broadcast and incorporated prior to shaping beds. An additional 20 lbs/acre nitrogen was applied through fertigation every two weeks until the beginning of harvest. Plants were sprayed with Regalia at transplanting. Rowcovers were removed June 30 and additional doses of Regalia were applied June 30 and July 15. Harvest began July 24 and ended August 19; ripe fruits were harvested every 2 to 3 days.

## Yields

At harvest fruit were counted, weighed, and graded into marketable and cull. Most culls were due to animal damage or rind cracking leading to rot. The date of first harvest and the number of harvests producing marketable fruit were recorded for each plot. Entry means are

presented in Table 1.

**Eastern melons:** Athena showed once again why it is the most widely grown cantaloupe in the Northeast, with 27.8 marketable fruit per plot and only 6% cull fruit. Astound produced the most fruit of any of the Eastern melons, averaging 30.8 marketable fruit and 40 total fruit per plot. Most of the cull fruit had cracked or split rinds, suggesting that marketable yields could have been increased by harvesting at half-slip. Triton ranked second among the Eastern melons with 28.1 marketable fruit per plot. Of the Eastern melons, only Aphrodite and Solstice produced significantly fewer fruit than Athena, although Minerva was borderline.



Figure 2. Melon trial on July 29, at onset of peak fruit ripening.

**Tuscan melons:** The Tuscan varieties were more variable. Wrangler performed well, as expected, averaging 32 marketable fruit per plot. Milan out-yielded Wrangler, averaging 38.3 marketable fruit per plot and only 6% cull fruit. However, the fruit were prone to splitting in the sutures if not harvested before they were fully ripe. Tirreno produced a comparable numbers of fruit to Wrangler and fruit size averaged a full pound heavier. In contrast, Da Vinci and Iperione were two of the poorest performers in the trial, with high numbers of unmarketable fruit. Da Vinci in particular had many fruit which appeared marketable, but proved to be rotten inside when cut.



Figure 3. A Da Vinci fruit, showing the internal breakdown which resulted in extremely low yields and poor quality in our trial.

**Specialty melons:** The trial included several varieties which did not fit cleanly into either the Eastern or Tuscan market classes. Afterglow and Hannah's Choice are intermediate types, with characteristics of both the Tuscan and Eastern melons. Both varieties performed well, with fruit yields similar to Athena and Wrangler. Hannah's Choice fruit were similar in size to Athena, and Afterglow fruit were significantly larger than Wrangler but smaller than Athena. Divergent is a new cantaloupe – Galia hybrid. Yields were similar to Athena but the cull rate was significantly higher. Shockwave is a long shelf-life or Harper melon which was introduced to the Northeast by Harris Seeds in 2014. It is later than Athena and fruit average a half pound smaller, but yields are similar. Gold Crown was the only western shipper type variety in the trial. The plants grew well and yield potential was similar to Astound. However, the fruits were very rough and rinds cracked at maturity, resulting in a 64% cull rate. Sensation is a new white-fleshed specialty melon. Fruit size, yields and cull rate were similar to Divergent; yields were significantly lower than those of Athena.

## Quality

At the peak of harvest for each plot three marketable fruit were randomly selected for quality testing. Each fruit was split lengthwise and flesh samples were collected from the stem end, center, and blossom end. Samples were juiced and sugar content was measured using a refractometer. Brix values were averaged for the three samples to represent the fruit. Due to the COVID pandemic we were not able to hold a tasting, but a single person rated all melons on a 0 to 5 scale from inedible to excellent, and attempted to describe the flavor.



Figure 4. URI undergraduate student Joe Manetta doing soluble solids analysis on melons from the trial. Melons were harvested in the morning and stored for no more than 4 hours in the shade before testing.

**Eastern melons:** As a group the eastern melons averaged 9.5 Brix. Athena was sweeter than most of the eastern melons, with an average Brix of 11 and a maximum Brix of 13.2. Aphrodite was just slightly sweeter at 11.1 and 13.5, respectively. Atlantis, Minerva, Sugar Rush and Triton were less sweet but still statistically similar. Athena was also one of the best for overall flavor, with a flavor score of 4.1 out of 5.

**Tuscan melons:** The Tuscan melons were more variable than the Eastern melons. Wrangler was the second-sweetest melon in the trial, with an average Brix of 12.2 and a maximum Brix of 14. All of the other entries were significantly less sweet. Iperione, Milan and Tirreno were similar to each other, with

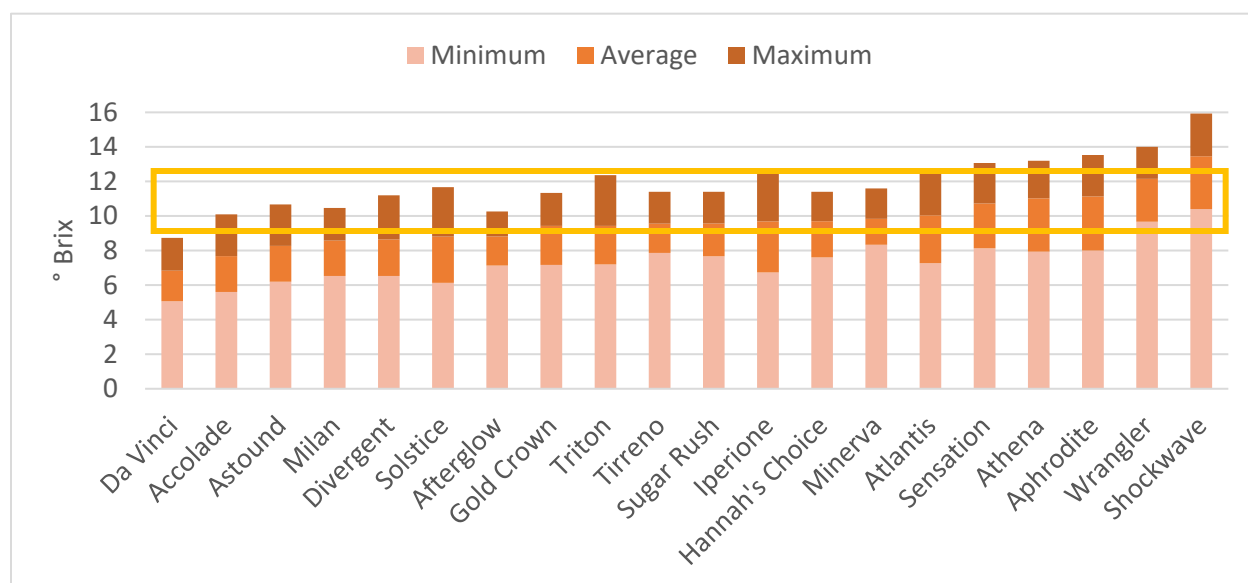


Figure 5. Soluble solids/sugar levels for trial entries. Average values are based on 9 fruits per entry. Minimum and maximum values are the averages of the fruit from each plot with the lowest or highest Brix score and are based on 3 fruits per entry. Entries for which the average bar lands inside the yellow box have an average Brix statistically similar to Athena.



average Brix scores of 9.7, 8.6 and 9.6, respectively. Da Vinci fruit did not ripen properly, and were essentially inedible. Da Vinci had the lowest Brix in the trial, averaging only 6.8 with a maximum of 8.7.

**Specialty melons:** Shockwave was the sweetest melon in the trial, and the only entry with an average Brix significantly above Athena. Shockwave tied with Athena for overall flavor. The eastern-tuscan hybrids Afterglow and Hannah’s Choice were similar to Iperione, Milan and Tirreno. All three were significantly less sweet than Wrangler, and Afterglow was significantly less sweet than Athena. Divergent was also significantly less sweet than Athena, with an average Brix of 8.6 and a maximum Brix of 11.2. Sensation was very close to Athena, with an average Brix of 10.7 and a maximum Brix of 13.2. This was unexpected, as white-fleshed and green-fleshed melons usually have low Brix in our trials due to tendency of the vines to collapse under fruit load.

### Maturity and Harvest Period

Average time from planting to maturity was 85 days, approximately one week longer than catalog estimates. Due to the unusually warm weather in late July and August the melons ripened quickly, with little difference between entries. Most of the fruits were harvested July 29 thru August 3. Catalog days

Entry	Catalog DTM	Trial DTM
Accolade	73	86
Afterglow	80	85
Aphrodite	72	85
Astound	75	84.3
Athena	79	85.7
Atlantis	74	84.3
Da Vinci	75	89.7
Divergent	70	83.7
Gold Crown	85	86.3
Hannah's Choice	75	86
Iperione	75	87.3
Milan	72	80
Minerva	78	86.3
Sensation	85	82.7
Shockwave	85	90
Solstice	76	85
Sugar Rush	74	80
Tirreno	80	85.7
Triton	75	82
Wrangler	85	84.3

**Table 1. Expected maturity for melon trial entries based on catalog information and trial results. Average time to maturity was 1 week later than catalog estimates.**

to maturity ranged from 70 days for Divergent to 85 days for Shockwave, Wrangler, Sensation and Gold Crown. Order of maturity in our trial did not match expected maturity for several entries. Milan and Sugar Rush were the first entries to ripen in our trial, and Da Vinci and Shockwave were the last. Accolade, Aphrodite, Divergent and Da Vinci ripened noticeably later than expected, while Afterglow, Gold Crown, Sensation, Sugar Rush, Tirreno, Triton and Wrangler ripened noticeably earlier than expected.

The trial entries also differed in the length of the harvest period. Aphrodite had the most concentrated harvest with 79% of the fruit ripening over a three day period. Triton also had a concentrated harvest, with 69% of the fruit ripening over three days. In contrast, Atlantis and Iperione had fruit maturity distributed evenly across a 2-week harvest.

### Acknowledgements

I thank Joe Manetta for providing most of the labor for this project. Funding was provided by the University of Rhode Island Cooperative Extension. Melon seed was donated by Harris Seeds, Osborne Quality Seeds, and Johnny’s Selected Seeds.

Entry	Type	1 <sup>st</sup> Hvst	No. Hvsts.	Fruit Size (lbs)	Mkt. Fruit	Cull Rate	Avg. Brix	Max. Brix	Flavor
<b>Accolade</b>	eastern shipper	27-Jul	5.0	4.4	23.0	23%	7.7	10.1	Bland, juicy, musky, winey
<b>Afterglow</b>	eastern-tuscan hybrid	27-Jul	6.0	3.5	26.1	22%	8.8	10.3	Firm, nutty, winey, sour
<b>Aphrodite</b>	eastern fresh market	29-Jul	3.7	5.7	15.7	15%	11.1	13.5	Nutty, firm, sweet, juicy
<b>Astound</b>	eastern shipper	27-Jul	6.7	4.6	30.8	23%	8.3	10.7	Crisp, bland, winey
<b>Athena</b>	eastern standard	27-Jul	5.7	4.0	27.8	6%	11.0	13.2	Juicy, fruity, firm
<b>Atlantis</b>	eastern shipper	27-Jul	6.3	4.5	24.0	22%	10.0	12.5	Winey, fruity, sweet, floral
<b>Da Vinci</b>	tuscan	29-Jul	3.3	2.5	11.2	24%	6.8	8.7	Rotten, sour, off
<b>Divergent</b>	cantaloupe - galia hybrid	27-Jul	3.7	3.4	22.4	29%	8.6	11.2	Bland, musky, winey
<b>Gold Crown</b>	western	27-Jul	4.0	2.9	14.7	64%	9.4	11.3	Winey, juicy, nutty, sour
<b>Hannah's Choice</b>	eastern-tuscan hybrid	27-Jul	4.7	3.6	23.3	19%	9.7	11.4	Juicy, winey, sweet
<b>Iperione</b>	tuscan	29-Jul	5.7	3.2	15.3	49%	9.7	12.6	Off, bland, fruity, sweet
<b>Milan</b>	tuscan	24-Jul	5.0	2.6	38.3	6%	8.6	10.5	Sweet, floral, winey
<b>Minerva</b>	eastern shipper	29-Jul	7.0	6.4	19.0	20%	9.8	11.6	Bland, hard, nutty
<b>Sensation</b>	white-fleshed	24-Jul	4.0	3.6	17.5	35%	10.7	13.1	Sweet, musky, off
<b>Shockwave</b>	long shelf life (Harper)	3-Aug	5.0	3.5	27.0	16%	13.5	15.9	Nutty, firm, fruity, sweet
<b>Solstice</b>	eastern fresh market	27-Jul	4.7	5.8	14.7	28%	8.8	11.7	Juicy, fruity, bland
<b>Sugar Rush</b>	eastern fresh market	24-Jul	4.3	2.9	23.9	28%	9.6	11.4	Nutty, firm, fruity, sweet
<b>Tirreno</b>	tuscan	27-Jul	6.0	3.9	28.3	24%	9.6	11.4	Crisp, winey, sweet
<b>Triton</b>	eastern fresh market	24-Jul	5.7	4.0	28.1	21%	9.4	12.4	Juicy, winey, sweet
<b>Wrangler</b>	tuscan	27-Jul	6.7	2.9	32.0	14%	12.2	14.0	Fruity, sweet, crisp, firm
		<i>P</i> value	0.0167	<0.0001	0.0003	<0.0001	<0.0001	0.0096	
		LSD	2.1	0.5	9.0	17%	1.7	2.9	

Table 2. Data for entries in the 2020 melon variety trial. The experimental unit was a plot of 12 plants. Plots were 25 feet long and rows were 5 feet apart. The trial was harvested MWF from July 24 until August 19. When comparing entries, values which differ by less than the LSD are not considered significantly different as the variation between entries is less than the variation between plots of the same entry in different locations within the field.